STATE OF INDUSTRY REPORT 2021

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STATISTICAL DATA ABOUT ENERGY AND ELECTRICITY SECTOR

FOREWORD

The availability, accessibility and affordability of electricity for the people across the country is necessary for economic progress as well as social uplift of the citizens. The rapid technological advancement and unique commercial dynamics of the power sector pose complex challenge for the policy makers and planners to develop a sector capable to ensure energy security and affordability for all segments of the society. The complexity of the power sector calls for robust planning with the flexibility to adjust with the changing technological and commercial realities. Needless to emphasize that effective planning is implausible without comprehensive data of the operational performance. The data gives visibility about the real outcome of the implemented plans and decisions which is necessary to take the corrective measures and adjustments in planning compatible with the policy objectives.

NEPRA established under the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, amended from time to time, is performing its functions as stipulated in NEPRA Act. As a statutory obligation, every year NEPRA publishes the State of Industry Report presenting data of the year-long performance of the generation, transmission and distribution segments of the power sector of the country. The Report serves the purpose to highlight the present state of the whole sector, its strengths and weaknesses, inefficiencies and gaps in the system etc. This data, while helps the decision makers to focus on the lagging areas for improvement of performance at operational level, at the same time it also assists the planners and policy makers to take a long term view to identify the structural flaws and setting the direction of the sector right.

The in-hand State of Industry Report 2021 captures the performance of generation, transmission and distribution segments of the power sector during FY 2020-21. Besides presenting the detailed operational data, the Report highlights the critical issues confronted by power sector over the years and the inefficiencies restraining the optimal utilization of available resources. The Report contains suggestions for corrective measures to check the inefficiencies at operational level as well as clues for the short and long term planning to develop an efficiency driven and financially viable power sector. The Report also highlights the initiatives taken by the Governments for addressing the perturbing issues like circular debt and increasing cost of electricity for the end consumers.

In order to make the Report more comprehensive and useful, some valuable additions have been made in the Statistical portion. The additions include the year-long daily data of the technology wise generation capacity, actual generation, utilization and daily load management etc. based on the Daily Log Reports of the System Operator. This data, being included in the Report for the first time is expected to be highly useful for researchers and planners to see the trends and patterns of electricity generation

through different technologies, seasonal and daily variations in generation, system constraints etc. and accordingly recommend the corrective measures in the short as well as long run.

The State of Industry Report 2021 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 timely provision of data by all NEPRA Licensees whose cooperation deserves due acknowledgement. We are especially thankful to the Ministry of Energy (Power Division), Private Power and Infrastructure Board, Alternative Energy Development Board, Pakhtunkhwa Energy Development Organization, Punjab Power Development Board, Energy Department (Government of Balochistan) and Energy Department (Government of Sindh) for their valuable inputs.

In this State of Industry Report, 2021, the data received from the Licensees and other stakeholders has been compiled. Since the data upto 30th June, 2021 was provided by the licensees in July/August 2021, therefore, due to paucity of time some data has been provided as provisional and subject to minor corrections subsequently.

EXECUTIVE SUMMARY

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The FY 2020-21 has been yet another challenging year for the power sector of Pakistan. The biggest challenge currently faced by power sector of Pakistan is the high cost of electricity for which there is no single reason. The unutilized 'Take or Pay' power generation capacity, impact of 'Must Run' power Plants, old in-efficient power plants, increasing capacity payments, whopping circular debt, weak transmission and distribution system, lack of coordination among relevant power sector stakeholders, improper planning, poor governance, use of primitive technology, taxes, fees and levies in electricity bills etc. are amongst the factors making the price of electricity unaffordable for consumers. The issues faced by the power sector of Pakistan persist for past many years.

The Government, wary of the high cost of electricity, seemed attentive to lower down the prices of electricity in the short run as well as future development of power sector for sustainable and affordable provision of electricity in the country. With the efforts of the Government, the operational private and the public sector power generation companies agreed to lower down their tariff on account of Return on Equity (RoE), Operation and Maintenance (O&M) cost, Insurance Cost, etc. Accordingly, their tariff were revised downwards by NEPRA through modified decision/determination. Further, as an immediate relief to electricity consumers, the Government has also been providing subsidy to various categories of electricity consumers.

The approval of much awaited and needed National Electricity Policy 2021 (NEP-2021) by the Council of Common Interests (CCI) during FY 2020-21 is a major development for the power sector. NEP-2021 is centered on the broader goal of access to affordable, secure and sustainable energy. It provides principles for integrated planning in the areas of generation, transmission and distribution, market development, improving efficiency and good governance which are all necessary to ensure healthy and balanced growth of power sector. The NEP-2021 stipulates that expansion in generation capacity shall be only on competitive and least cost basis except for strategic projects which will be approved by the Government in consultation with the Provincial Governments on case to case basis and the relevant sponsoring Government/Provincial Government shall provide the funding to bridge the incremental cost beyond least cost of any such project. The NEP-2021 serves as the overarching umbrella for reforms development, improvement and sustainability of power sector.

The availability of electric power at affordable price is a basic requirement for economic progress of any country and uplift of the living standard of its citizens. Pakistan's per capita annual electricity consumption is much lesser than world average.

Access to affordable electricity is a necessary condition to raise living standards of people and accelerate the economic progress of the country. The affordable power supply gives rise to demand for electricity which induces investment in the power sector and helps drive the country on the path of economic progress. Encouragingly, the economy of country took pace and GDP growth of 3.94% has been recorded during FY 2020-21. Further, the large scale manufacturing witnessed 8.99% growth during July-March of FY 2020-21.

To boost the industrial activity in the country, the Federal Government introduced an Industrial Support Package (ISP) to give discount to industrial consumers on electricity consumption. The Package was initially for a shorter period from November 01, 2020 till April 30, 2021. Although the ISP comes with the additional subsidy which was borne by the Government, however, based on the result of this Package on industry and economy, the Government has extended this package up to June 30, 2022 with budgeted subsidy of approximately Rs. 26 billion for extended period. The package was extended with the subsequent re-evaluation in May, 2022. Besides the ISP, Federal Government has already been providing subsidy to Zero rated industrial consumers against the electricity supplied to such consumers.

During the FY 2020-21, the power sector of Pakistan has witnessed a positive impact of the ISP in term of increased demand of electricity. The increased demand of electricity in response to lower prices reveals the sensitivity of demand to changes in prices of electricity. Thus the surplus capacity appears to be an issue of suppressed demand on account of high cost of electricity. Additionally, the unserved demand on account of pending new electricity connections and the load management towards existing electricity consumers are other reasons for under-utilization of existing generation capacity. The reduction in price through measures like ISP may stimulate economic activity in the short run, however, for sustainable economic growth, there is a need to curb the inefficiencies in the power sector with proper planning and timely execution of the approved plans so that the cost of electricity for end-consumers could be reduced without burdening the exchequer.

During the FY 2020-21, the electric power generation segment continued to face the challenge of capacity payment for unutilized 'Take or Pay' power generation capacity. The power generation capacity can be broadly placed in two categories; the first category comprises of those power plants whose electricity generation is intermittent in nature which include hydel, wind, solar and bagasse based power plants, while the other one comprises of the conventional base load thermal power plants including RLNG, Coal, Gas, RFO and Nuclear. The combined installed capacity of intermittent nature electric power generation plants and conventional base load thermal power plants, including Nuclear Power Plants as on 30-06-2021 remained around 12,062 MW and 27,711 MW respectively. The utilization factor of intermittent nature power plant and base load thermal power plants remained around 41% and 45% of their respective combined dependable capacities. The intermittent nature power plants enjoy the priority dispatch condition and in case of non-evacuation of available power from these plants, they are entitled for payment on account of Non-Project Missed Volume (NPMV). Further, due to 'Take or Pay' contracts, the power plants despite their low utilization factor qualified for capacity payments against their full available capacity. The capacity payments to the power generation companies, as verified by CPPA-G, during FY 2020-21 stood at Rs. 613,923.55 million as compared to Rs. 611,561.40 million during FY 2019-20.

During the FY 2020-21, the power sector witnessed the under-utilization of most efficient RLNG power plants and some other cost efficient power plants. Under-utilization of these power plants i.e. operating these power plants on part load is reducing their efficiency and increasing their Energy Purchase Price (EPP) on one hand while on the other hand, unutilized capacity is increasing their per unit capacity payment. Evidently, the under-utilization is not solely for the reason of lack of demand in the system;

the pending new electricity connections, load-shedding despite availability of electric power generation capacity, non-availability of fuel, weak transmission & distribution system as well as poor governance were some major contributing factors for lower utilization of efficient power plants. Under-utilization of efficient power plants is one of the major causes of increase in consumer-end price of electricity. Therefore, determined efforts are needed to remove all constraints leading to under-utilization of available efficient generation capacity.

During the FY 2020-21, power sector also witnessed the challenge of fuel supply. During the period, the System Operator (SO) reported that it had been conveying its demand for RLNG to concerned quarters well before time but still it could not get the required volume of RLNG and resultantly, at occasions, various RLNG power plants were either unutilized or under-utilized. The RLNG is an imported fuel and its supply is controllable through proper planning/scheduling coupled with efficient supply chain. Therefore, efforts should be made to improve the supply chain of RLNG so that non-utilization and/or under-utilization of efficient RLNG power plants could be avoided. In case of RLNG, the firm Gas Supply Agreement need to be singed between the parties with back to back agreements so that burden of non-supply of gas could not be passed on to the electricity consumers.

During the FY 2020-21, NEPRA has granted Generation Licences to 27 companies for accumulated capacity of around 1,591 MW. These licences include, 04 Generation Licences granted to hydropower plants for accumulated capacity of around 294 MW, 18 Licences granted to solar power plants with accumulated capacity of around 49 MW, 02 Licences granted to Bagasse/Biomass Power Plants with accumulated capacity of around 47 MW, 01 Licence granted to Nuclear Power Plant with capacity of 1145 MW, 01 Licence granted to coal based power plant with installed capacity of 55 MW and 01 Licence granted to a 350 kW hybrid (solar+biogas) power plant. The main purpose to induct new capacity is to displace the costlier electricity. The induction of new power generation capacity through different technologies is a big challenge in consideration of energy security vis-à-vis cost effectiveness.

During the FY 2020-21, NEPRA also issued a total 8,417 Net-Metering Licences with accumulated capacity of around 146 MW. In the wake of high electricity prices by DISCOs, there has been a growing trend for net-metering as well as Distributed Generation through solar PVs for sale to BPCs. The total installed capacity of net-metering consumers as on 30-06-2021, reached around 232 MW. Induction of DGs within permissible technical limits, either through net metering or in isolated mode, is good for electric power sector on several accounts including but not limited to displacing the high cost electricity, saving on account of Transmission & Distribution (T&D) losses, improvement in voltage profile in the area etc. DISCOs, however, view the growing trend for Net-Metering and other DGs a threat for their consumer base. DISCOs need to realize that the power sector is gradually opening up for competition where retention of consumers will depend on improved quality of service and reduced cost for end-consumer.

Induction of power generation capacity under 'Take or Pay' and 'Must Run' regime is cost sensitive and needs to be made not only after careful consideration of the accurate load demand but also taking into account the load management policies. Induction of power generation capacities in accordance with load shed free scenario while operating the system under load-shedding policy results in increase of consumer-end tariff on account of more unutilized 'Take or Pay' power generation capacity; the situation which power sector of the country is facing now. Load management/load-shedding to the tune of around 2,500 MW to 3,000 MW on daily basis in CPPA-G System was noted during FY 2020-21. K-Electric Limited (KE) is also carrying out the load shedding in its service territory.

While inducting the power generation capacity under 'Take or Pay' and/or 'Must Run' power plant regime, striking a balance between intermittent nature power plants, vis-à-vis conventional base load power plants, is important for cost efficient power system. In electric power system, intermittent nature power generation capacity requires a backup of conventional power plants to cope up with the impact of less and/or no generation by intermittent nature power plants due to variation in primary energy

source (hydro, wind, solar and bagasse) of power generation. The requirement of back-up arrangement for complementing the intermittent power generation capacity increases the EPP on account of part load operation and CPP on account of non-utilization of available capacity of base load thermal power plants, while no backup may result in load-shedding. As on 30-06-2021, the share of the installed capacity of intermittent nature power plants (hydel, wind, solar and bagasse) in the generation mix was around 30% with 12,062 MW while the share of base load power plants, including nuclear power plants, was around 70% with 27,710.70 MW.

Despite all challenges, the induction of cheap and environment friendly Renewable Energy (RE) power plants (wind and solar) to displace the costlier electricity is need of the hour. The RE resources are viewed as indigenously available cheap source of electric power generation. However, since the RE plants cannot replace the base load plants due to intermittency; therefore, while analyzing the financial viability of RE resources, the intermittency cost arising out of the need for keeping back-up generation capacity as well as the affiliated transmission system construction and operation costs must be accounted-for to induct the appropriate share of RE in the generation mix.

Like wind and solar, hydropower is also based on indigenously available cleaner resource and helpful in reducing reliance on imported fuel. However, hydropower plants are capital intensive due to their own peculiar conditions and often need huge investment for construction/augmentation of transmission facilities to evacuate power from hydropower plants due to their remote location. Further, hydro power plants are not base load power plant due to seasonal variation in the water availability; hence prone to intermittency cost. These factors, with front loaded tariff (initial 10-12 years), at various occasions, make the induction of hydropower plants expensive during the period of their debt repayment. On the flip side, although the tariff of power plants during debt repayment period is higher; however, after the debt retirement, the tariff of hydropower plants is reduced considerably due to no fuel cost. As regards the higher tariff of hydropower plants during debt servicing period, the longer operational life of hydropower plants can be used as advantage for reducing their tariff through large spread of the cost over the life of the project and the soft loan repayment conditions. NEPRA in recent cases of PEDO hydropower projects have determined their tariff on the basis of their operational period which make them comparable with other renewable projects.

In recent past, efforts have been made to create a balance between the obligations of the hydropower producers and power purchaser through modification of tariff terms and conditions. During FY 2020-21, NEPRA received two tariff petitions from Pakhtunkhwa Energy Development Organization (PEDO) for conversion of their tariff from 'Take or Pay' to 'Take and Pay' basis. The Authority has also engaged WAPDA Hydroelectric to convert the tariff of some of its old hydropower plants from 'Take or Pay' to 'Take and Pay' basis. The single part 'Take and Pay' tariff on energy delivered basis instead of capacity based tariff will require the power producer to be more vigilant towards their plant performance and would be in the better interest of the power sector and electricity consumers.

During the FY 2020-21, the basket price of electric power in KE System remained higher as compared to CPPA-G system. It was noted that when KE was generating and/or purchasing the electricity from higher cost power plants of its generation fleet, the cost efficient 'Take or Pay' generation capacity in CPPA-G System was either unutilized or under-utilized. Apart from others, a main reason for non-purchase of cheaper electricity by KE from CPPA-G appears to be inadequate transmission system. NEPRA has been highlighting the issue of inadequacy of transmission system between KE and National Transmission and Despatch Company Limited (NTDC). This issue due to which all stakeholders are suffering, require urgent decisions and quick actions to utilize available resources efficiently.

During the FY 2020-21, KE has been reporting low pressure of gas supplied by Sui Southern Gas Company Limited (SSGC) to its gas based power plants located at Site and Korangi. KE informed that due to low pressure, it could not burn this gas in its efficient gas based power plants at Korangi and Site and resultantly, at occasions, the available cheapest priced local gas was burnt in its Steam Turbines

power plants having net efficiency of around 32%. Non-optimal use of primary energy resources is not only affecting the electricity consumers adversely but also to all other stake holders including exchequer. Therefore, the issues like long awaited firm Gas Supply Agreement between KE and SSGC and all other issues hindering the optimal utilization of available capacity need to be checked and resolved among relevant stakeholders without any delay.

Under the above stated complex situation the need for integrated planning is felt more than ever before. While lack of generation capacity hampers the economic activities and social life of people, the excess capacity, amid the 'Take or Pay' and 'Must Run' obligation, create an undesirable burden on economy; a situation the country is currently going through. Therefore, a robust planning process needs to be put in place for integrated planning for expansion of generation capacity based on accurate demand forecast, selection of best suitable location, technologies, optimum generation mix, gradual induction of new plant while retiring the old inefficient plants without delay, concomitant transmission and distribution system up-gradation/expansion etc. It is further necessary that evaluation of the viability of inducting new power plants should not be limited to the extent of generation tariff but its impact on the tariff for the end-consumer should be kept in consideration. So far, no approved Indicative Generation Capacity Expansion Plan (IGCEP) is available. The IGCEP submitted by NTDC earlier and during FY 2020-21 were not upto the mark to get the approval of the Authority and hence returned along with observations for revision and resubmission.

Upon induction of the generation capacity, the operation of the available power plants in accordance with the Economic Merit Order (EMO) is also necessary to avoid unnecessary burden of high electricity cost. However, at various instances, the operation of power plants in violation of EMO has been witnessed.

Over the years SO has been reporting constraints in transmission system as one of the major causes of under-utilization of efficient power plants. During FY 2020-21, at several instances, the transmission system remained incapable to transmit the electric power from efficient power plants to load centers. NTDC is still requiring a longer period to fix the existing constraints which are causing the operation of power plants in violation of EMO. Due to inadequate transmission system, the term of generation licence of some power plants was extended despite availability of unutilized 'Take or Pay' power generation capacity in CPPA-G System. NTDC needs to devise short term plans to remove constraints in its network to off-take electric power from existing power plants as well as long term Transmission System Expansion Plan (TSEP) duly integrated with the plans for induction of new electric power generation plants.

On 9th January 2021, the NTDC and KE System underwent a major breakdown and the country suddenly plunged into darkness. The inquiry of the incident by NEPRA revealed serious lapses on the part of NTDC, Central Power Generation Company Limited (CPGCL) and KE which caused the major power breakdown in the country and delayed restoration of power thereof. Further, during supply restoration efforts, several IPPs failed to synchronize their power plants with the System within the time as required by the SO.

For evacuation of electric power from newly commissioned power plants in the South region and its transmission to the load centers in the central part of the country, the first ±660 kV High Voltage Direct Current ("HVDC") transmission line of the country is being constructed in the private sector. The project is planned to realize bipolar operation with a power transmission capacity of 4,000 MW over a line length of about 886 km from the Matiari (Sindh) to the Lahore (Punjab). Under the Transmission Service Agreement (TSA), the Required Commercial Operation Date (RCOD) of the project was March 01, 2021. However, due to Covid-19 and other reasons, the RCOD has been delayed.

The National Grid was developed not only for system reliability but also to provide a nationwide

transmission network capable to evacuate power from the electric power generation plants located anywhere in Pakistan and transmit it to load centers across the country. Development and maintenance of high voltage transmission network to longer distances entails high cost which can be offset on account of system reliability as well as through transmission of cheaper electricity from their point of generation to load centers. The existing transmission network, at various occasions, proved incapable to do so.

With the advancement of RE technologies and promotion of distributed generation as well as improvement in the gas transmission system, it is now high time to evaluate and plan for need of regional grids and micro/mini grids besides the National Grid. As a matter of fact, still millions of people in the country do not have access to electricity. Through development of micro/mini grid, the electricity could be provided to those areas of the country where people are still living without this basic necessity while the cost of provision of electricity from National Grid to such areas is quite high. NEPRA has initiated work on development of framework for establishing micro/mini grid.

During the FY 2020-21, the regulator noted plant operations by National Power Control Center (NPCC) i.e. the SO, in deviation of EMO, for reasons one or another, causing increase in electricity price. Efficient working of SO has great bearing for optimum utilization of electric power generation capacity on the basis of EMO as well as safe and reliable operation of the transmission and distribution networks. The use of primitive manual methods to control the system is a main impediment for efficient and effective operations of the SO. The complexity of the modern day power systems require automation for real time data collection enabling quick and intelligent decisions for supervision, monitoring and control of the system. NEPRA has long been emphasizing a need to deploy modern Supervisory Control and Data Acquisition (SCADA) System by NPCC to supervise and control the economic dispatch of electric power generation which has still not turned up. NPCC needs to deploy SCADA System immediately for optimal performance of the generation, transmission and distribution system.

During the FY 2020-21, NEPRA continually directed the CPPA-G, an agent of DISCOs for procurement of electricity, to undertake strict technical and financial scrutiny while procuring the electricity on behalf of DISCOs. During the period, NEPRA has noted operation of power plants in violation of EMO for reasons one or another. In order to ensure thorough scrutiny of data by the power purchaser (CPPA-G), as well as to tighten the vigilance of the concerned entities for economic operation of the power plants, NEPRA has directed the CPPA-G to scrutinize the NPCC's dispatch report in terms of Scheduling and Dispatch Code (SDC) of the Grid Code and prepare a report comprising of all dispatch deviation from merit order, the plants available but not dispatched and dispatch deviation justified in terms of SDC of the Grid Code along with their financial impact. CPPA-G was directed to share the report with the SO and also submit it to NEPRA at the time of filing of monthly fuel charges adjustment request. While giving the directions to CPPA-G, NEPRA has simultaneously directed the SO that in case of out of merit dispatch of generation plant(s), NPCC shall report the same to CPPA-G within 24 hours with its copy to NEPRA along with the reasons of such dispatch. Besides the above directions, the Authority has also initiated an operational audit of CPPA-G through NEPRA internal audit team. Further, the Authority has also directed for a comprehensive study of system operations of NPCC for past years.

During the FY 2020-21, CPPA-G could not conclude the process of imposing LDs on WAPDA for availing higher outages than the allowed limit in past years. Moreover, CPPA-G could not recover the LDs already imposed on GENCOs for past period. Besides, LDs, 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 Dependable Capacity 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.

The performance of Distribution Sector has been of concern for a long time and DISCOs could not show visible progress during FY 2020-21. The health of the whole power sector depends on the efficiency

of Distribution Sector being responsible to provide electricity to the end consumer and recovering bills thereof to pay for the transmission and generation services. High T&D losses and low recoveries of DISCOs hamper payments to transmission and generation companies which is a major cause for accumulation of circular debt. The indiscriminate load-shedding by DISCOs on feeder level reflects their failure to take action against the individuals involved in electricity theft and at default in making due payments. This collective penalizing is not only compelling the law abiding and good paying consumers to opt for alternate resources but also causing social problems. During the FY 2020-21, less drawl of power by DISCOs against the allocated quota particularly, PESCO HESCO, SEPCO and QESCO was witnessed which caused load shedding despite availability of generation capacity. The practice of load-shedding despite availability of generation capacity causes unutilized capacity qualifying for undesirable capacity payments. Lack of financial autonomy and poor governance are the major causes for DISCO's inefficiencies.

The health and safety is one of the highly important areas where DISCOs need to improve their performance. During FY 2020-21, a total 189 numbers of fatalities were reported in all DISCOs including KE. These fatalities included 47 employees of Distribution Companies and 142 persons from general public. Strict adherence to the Performance Standards (Distribution) Rules by the DISCOs is necessary to avoid safety hazards for their field employees as well as the general public. NEPRA has established a Directorate of Health, Safety & Environment (HSE) for close monitoring of its licensees with NEPRA Safety Code and applicable legal requirements.

DISCOs need to focus on improvement of their corporate governance and associated issues, check their inefficiencies and prepare themselves to operate in competitive market to be operationalized by April, 2022 under the approved Competitive Trading Bilateral Contract Market (CTBCM). Under the Amended NEPRA Act, the supply of electricity is a distinct licensed activity from the distribution which is essentially confined to wire business. The introduction of supply licence is aimed at developing competitive electric power market in the country. Although, DISCO are deemed supply licensee for a period of five year from coming into effect of the NEPRA (Amendment) Act, 2018, however, the market is now open for entry of the competitors for supply of electric power.

Growing circular debt in the power sector is worrying not only for the power sector but for the whole economy. The circular debt as on 30-06-2021 stood at Rs. 2,280,149 million as compared to Rs. 2,150,425 million as on 30-06-2020. This increase in the circular debt is detrimental for the financial viability of the power sector. High T&D losses of DISCOs, lower recovery of the billed amount and non-payment of subsidies in time are the major causes of circular debt accumulation.

To arrest the pace of accumulation of circular debt, necessary measures, including but not limited to, increase in electricity sales, ensuring optimum utilization of efficient electric power generation plants, converting the tariff from 'Take or Pay' to 'Take and Pay' wherever possible, retiring the old GENCOs plants with very low efficiency and utilization, converting the tariff of old power plants of WAPDA Hydroelectric from 'Take or Pay' to 'Take and Pay' basis, retiring the IPPs having completed term of their licences, improving governance of DISCOs to curb T&D losses, enhanced recovery of the billed amount and timely payment of subsidies etc. need to be taken immediately. On its part, the Authority has decided to convert the tariff of all old blocks of GENCOs from 'Take or Pay' to 'Take and Pay' basis in a bid to reduce capacity payment obligations. Accordingly, during FY 2020-21, the tariff of old blocks of GENCO-III has been converted from 'Take or Pay' to 'Take and Pay'. Further, NEPRA has also engaged WAPDA Hydroelectric to convert the tariff of their old power stations from 'Take or Pay' to 'Take and Pay' basis.

In view of the fact that electricity is not a luxury but a necessity for every one and a basic requirement for economic progress, the Regulator in coordination with all stakeholders is making all-out effort to develop a sustainable efficient competitive electric power market in Pakistan. The development of competitive market has been a longstanding goal envisaged during 1990s to get away from the inefficiencies inherent in the monopolistic structure. Though protracted, in a landmark achievement

during the year, the detailed design of CTBCM, along with the roadmap for its implementation, has been approved for developing a competitive power market in the country. The CTBCM is a paradigm shift from the existing single buyer regime to the wholesale market with balancing mechanism. Under the CTBCM, DISCOs as supplier of last resort and competitive suppliers will directly sign bilateral contracts with the consumers and generators to meet their demand and capacity obligations. It provides for the procurement of new capacity/energy through competition and prescribes the mechanism of doing away with government guarantees for payment security of generators with market participants sharing the equitable risks.

For functioning of the market, the CTBCM envisages the different roles that will be performed by the existing and new market participants and service providers in the power market, while also stating the requirement of restructuring and strengthening of different entities for efficient and transparent market operations. The Authority is actively monitoring the implementation and progress of the approved group of actions by the different power sector entities. For this purpose, progress review meetings are being held regularly with the management of DISCOs, NTDC/NPCC, CPPA-G, KE and PPIB/AEDB to ensure that all actions are taken as per the approved timelines.

With an objective of reducing air pollution and curbing climate change, the Government has already announced Electric Vehicle Policy 2019 (EV Policy). Under a requirement of the EV Policy, NEPRA is in the process of finalizing tariff structure and regulatory regime for Electric Vehicle Charging Stations (EVCS). NEPRA is of the opinion that the regulatory oversight should be minimum that can be ensured by considering EVCS as consumers. In order to encourage the EV charging business, the DISCOs needs to allow connections to EVs on priority basis. Uninterrupted power supply is necessary for the EV charging stations to carry out its business. To do so, the DISCOs would be required to enhance their distribution system for better services especially on highways and motorways.

During FY 2020-21, NEPRA introduced the Corporate Social Responsibility (CSR) initiative to engage NEPRA Licensees for socio-economic uplift of the local communities. Under this initiative, NEPRA carried out the CSR assessment of all licensees (Generation, Transmission and Distribution) to know who stands where in terms of social and environmental compliance and what are the standards of corporate governance as well as the community-led interventions of licensees in their areas of operations. The CSR initiative of NEPRA is driven under NEPRA's vision for "Power with Prosperity". It aims to bring a culture of social and environmental responsibility in the power sector and to transform the community by ensuring that power brings prosperity.

OVERVIEW OF THE ELECTRIC POWER SECTOR

02

In today's world, the life without electricity is unimaginable. The electricity has become a basic need equally important for the economic progress of the country as well as the daily life of the ordinary people. Efficiency of the electric power sector is gauged by its ability to meet the electricity demand of different segments of society at affordable rates. The electric power sector of Pakistan has been striving to meet the objective of provision of affordable electricity to the citizens of Pakistan for quite some time. Once faced with the shortage of electric power generation capacity, the biggest challenge for the power sector today is to control and bring down the increasing cost of electricity for consumers. The competitive electricity price is not only necessary to boost the industrial activity in the country but also to up-lift the living standard of the common man.

The electric power sector comprises of three segments namely Generation, Transmission and Distribution sectors. The cost efficiency of all three sub-sectors is inevitable for economic and social uplift of the country. The biggest challenge currently faced by the power sector of Pakistan is the high cost of electricity for which there is no single reason. The issues persistently affecting the performance of the power sector relates to all three segments i.e. Generation, Transmission and Distribution. For permanent solution of power sector problems, an innovative approach is necessary. The succeeding paragraphs give an overview of the performance of the Generation, Transmission and Distribution sectors during FY 2020-21 and the challenges faces in these sub-sectors along with remedial measures to be taken to improve the situation.

2.1 INSTALLED POWER GENERATION CAPACITY

The break-up of installed generation capacity of the country in various combinations as on 30-06-2021 is as follows:

(a) The total installed generation capacity of the country, including CPPA-G and KE Systems as on 30-06-2021 was 39,772 MW, against 38,719 MW on 30-06-2020 showing a net increase of 1,053 MW.

(b) The total installed generation capacity of public sector power plants in the country was 20,820 MW while the installed generation capacity of private sector power plants, including KE, was 18,952 MW.

(c) The total installed generation capacity of the country comprised of 25,098 MW thermal (GENCOs, IPPs, SPPs/CPPs and KE), 9,915 MW hydroelectric, 1,248 MW wind, 530

MW solar, 369 MW bagasse and 2,612 MW nuclear.

(d) The installed capacity of power plants in CPPA-G System was 36,934 MW. The total installed generation capacity in CPPA-G System comprised of 9,915 MW hydroelectric, 22,497 MW thermal, 1,248 MW wind, 430 MW solar, 369 MW bagasse and 2,475 MW nuclear.

(e) CPPA-G also imports electricity from Iran to the tune of 104 MW.

(f) The installed capacity of power plants in KE System as on 30-06-2021 was 2,838 MW. The installed capacity of power plants in KE comprised of 2,084 MW of KE own power plants and 754 MW of other power plants connected with KE System.

(g) The power plants connected with KE system which are supplying electric power to KE included 366 MW IPPs, 151 MW SPPs/CPPs, 137 MW KANUPP and 100 MW solar power plants.

(h) During FY 2020-21, KE continued to purchase 650 MW electric power from CPPA-G. In addition to 650 MW, CPPA-G is also supplying electricity to KE from three dedicated wind power plants including Zephyr Power, Tenaga Generasi and HydroChina Dawood, with total 150 MW capacity since 2019 for two years, extendable with mutual consent, under a Power Purchase and Agency Agreement between KE, CPPA-G and NTDC.

2.1.1 Dependable Capacity:

(a) The total dependable generation capacity of the country, including CPPA-G and KE Systems as on 30-06-2021 was 37,271 MW.

(b) The total dependable generation capacity of public sector power plants in the country was 19,777 MW while the dependable generation capacity of private sector power plants, including KE, was 17,494 MW.

(c) The total dependable generation capacity of the country comprised of 22,915 MW thermal (GENCOs, IPPs, SPPs/CPPs and KE), 9,872 MW hydroelectric, 1,235 MW wind, 536 MW solar, 252 MW bagasse and 2,461 MW nuclear.

(d) The dependable capacity of power plants in CPPA-G System was 34,871 MW. The total dependable generation capacity in CPPA-G System comprised of 9,872 MW hydroelectric, 20,681 MW thermal, 1,235 MW wind, 436 MW solar, 252 MW bagasse and 2,395 MW nuclear.

(e) The dependable capacity of power plants in KE System as on 30-06-2021 was 2,400 MW. The dependable capacity of power plants in KE comprised of 1,774 MW of KE own power plants and 626 MW of other power plants connected with KE System.

(f) The dependable capacity of the power plants connected with KE System which are supplying electric power to KE included 354 MW IPPs, 106 MW SPPs/CPPs, 66 MW KANUPP and 100 MW solar power plants.

2.2 ELECTRICITY GENERATION

Details of the electric power generation in the country during FY 2020-21 in various combinations are given below:

(a) During FY 2020-21, the total electricity generation in the country including the power plants connected with NTDC and KE Systems was recorded as 143,090.64 GWh compared to 133,727.20 GWh electric power generation of FY 2019-20 showing increase of 9,363.44 GWh.

(b) In the country, the electricity generation by the public sector power plants remained 75,875 GWh while private sector power plants generated 67,215 GWh.

(c) The total electricity generation from power plants in CPPA-G System remained 129,722.05 GWh which included 38,800.55 GWh hydel, 75,728.36 GWh thermal (including generation by SPPs/CPPs), 10,871.01 GWh nuclear, 2,899.94 GWh wind, 711.63 GWh solar and 710.56 GWh bagasse/biomass.

(d) Besides the local generation, 498.37 GWh were imported in CPPA-G System during FY 2020-21 compared to 513.74 GWh import during FY 2019-20.

(e) During FY 2020-21, the total electric power generation in the KE System, including the KE own power plants as well as the power plants connected with KE System remained 13,368.59 GWh compared to 12,372.69 GWh generated during FY 2019-20 showing increase of 995.90 GWh.

(f) The electric power generation in KE System included 10,186 GWh generation by KE's own power plants, 2184.57 GWh by IPPs, 219 GWh by KANUPP, 200 GWh by two solar power projects, and 579.02 GWh from SPPs/CPPs connected with KE System

(g) Besides the generation by power plants connected with KE System during FY 2020-21, KE also imported 6,118 GWh from CPPA-G System (including 354 GWh from 150 MW dedicated WPPs). Since KE purchases electricity from CPPA-G, the import of KE from CPPA-G is counted in the generation in CPPA-G System.

2.3 ISSUES OF GENERATION SECTOR

2.3.1 Assessment of Generation Capacity Needs:

The induction of appropriate volume of power generation capacity that too with the condition of 'Take or Pay', priority/mandatory dispatch is a big challenge for the power system planners. While it is critical to commission the required level of generation capacity, along with spinning reserve ensuring reliability to meet the demand, it is also necessary to avoid the undesired surplus capacity in the system. This challenge becomes more critical when intermittent nature power generation capacity, which always require backup and enjoys priority/mandatory dispatch is added in the power system. The compulsion of priority dispatch to intermittent RE projects and maintaining the base load generation capacity on 'Take or Pay' basis adds to the cost of electricity for end consumers. The accurate assessment of varied load in different seasons, proper generation mix as well as the demand side management policy are the most important factors to be considered while planning to induct the generation capacity. Over the years, Pakistan has gone through cycles of either deficit of the power generation capacity or sometimes undesired surplus. After facing a long period of capacity shortfall, the country is now facing the issue of underutilization of available capacity.

2.3.2 Balanced Generation Mix:

The generation mix represents the combination of various sources of electric power generation in a power system. It varies from country to country depending upon the available resources and choices for power generation. The selection of right combination of the power generation sources to meet the electricity needs of a country is a planning issue and carries immense importance from the perspectives of energy security, sustainability and affordability of electricity.

The electric power generation sector of Pakistan comprises of hydro, thermal, nuclear, wind, solar and bagasse/biomass power plants. The power generation plants in Pakistan can broadly be categorized into (a) intermittent nature power plants and (b) base load power plants. The intermittent nature power plant comprise of RE power plants including hydro which have to be operated on priority during resource availability. On the other hand, the base load thermal power plants are inducted to meet the base load demand of the system at any point in time. Such plants were inducted in Pakistan on 'Take or Pay' basis qualifying for capacity payments regardless the available capacity is utilized or not. During the supply of electricity by 'Must Run' RE plants, the base load power plants are usually under-utilized. As on 30-06-2021, the share of the installed capacity of intermittent nature power plants (hydel, wind, solar and bagasse) in the generation mix was around 30% with 12,062 MW while the share of thermal power plants, including nuclear power plants, was around 70% with 27,711 MW.

The hydro, wind, solar and bagasse based power plants generate electricity using the indigenous available renewable resources; hence suitable to reduce reliance on imported fuel. However, the electricity

generation of HPPs and other RE plants is subject to intermittency caused by uncertain availability of the primary energy source like water, wind, solar and bagasse, whose supply is uncontrollable and subject to variation from hours of the day to different seasons. During FY 2020-21, the utilization of intermittent nature power plants (i.e. hydro, wind, solar and bagasse) varied between around 15% and 67% of their dependable capacity. The overall utilization of all such power plants remained around 41% of their combined dependable capacity.

The intermittency of RE power necessitates keeping back up generation capacity in the form of base load thermal power plants to meet the demand during reduction of generation by RE plants. The investment to make the backup capacity available and its operation on part load keeping the capacity as hot reserve results in intermittency cost of RE plants.

The diversity in the generation mix is needed for energy security and sustainability using the indigenous resources along with the imported fuels for power generation. However, the share of each of the technologies in the generation mix must be very carefully decided by the planners to avert the unnecessary burden of unutilized/under-utilized capacity and achieve the least cost generation while meeting the maximum demand of the system. The scientific approach with financial models based on sizable hourly data of demand vis-à-vis generation capability of different power plants for different scenarios need to be considered while developing the generation mix.

2.3.3 Phased Induction of Generation Capacity:

Induction of base load thermal power plants in power system of the country is mostly on 'Take or Pay' basis with control period of about 30 years. In the tariff design, the project is allowed to pay its loan during first 10-12 years. Therefore, the tariff of the project during its period of loan repayment is always higher. Similarly, in the case of RE power plants, there may be difference in the tariff control period and/or loan repayment period. This front loaded tariff impacts the consumer-end tariff adversely. Further, for induction of new power generation capacity, the transmission system also needs to be expanded/upgraded at parallel to evacuate power from new power plants. Therefore, sudden induction of large generation capacity in few years increases the burden of capacity payment and thus increases the consumer end tariff abnormally. Therefore, it is necessary to induct new power plants in phased manner.

2.3.4 Optimum Utilization of Generation Capacity:

Upon development of a balanced and cost efficient generation mix, the optimal utilization of inducted capacity considering the load demand is very important. In the past few years, sufficient addition has been made in the generation capacity, both conventional and RE power plants. The RE power plants are given priority in dispatch while the base load thermal power plants are given dispatch on the basis of their ranking in the Merit Order. Generally the RE plants are eligible for payment on account of NPMV, if plants are available to dispatch energy but the available power could not be evacuated by the power purchaser. During FY 2020-21, CPPA-G has verified an amount of Rs. 3,939.51 million payable to the wind power plants on account of NPMV.

The base load thermal power plants and the hydropower plants have been established in the public as well as private sector for supply of electricity to the power purchaser (CPPA-G) on 'Take or Pay' basis creating obligation to pay the capacity charges for the available capacity regardless the electricity is fully evacuated or not. During FY 2020-21, the utilization factor of combined base load thermal power plants in the country remained around 45 % of their dependable generation capacity.

The 'Take or Pay' obligation necessitates optimum (as maximum as possible) utilization of the available generation capacity to avoid unnecessary capacity payments. Like previous years, during FY 2020-21 also underutilization of power plants was witnessed mainly for reasons of load-shedding and less demand due to high electricity price which is one of the main causes for higher consumer-end tariff.
Depending on the contracts, thermal power plants are generally eligible for Partial Load Adjustment

Charges (PLAC) in case of their operation on part load. Therefore, in case of their underutilization, not only the capacity charge have to be paid for available idle capacity but PLAC is also to be paid on account of their operation on part load. The impact of operation of power plants on part load during FY 2020-21 stood at Rs. 18,714.72 million.

In addition to above issues, at occasions, the operation of less efficient power plants while underutilizing comparatively efficient power plants has also been witnessed during the year. While replacing the efficient plants with the less efficient ones, the fuel is burnt inefficiently which is another loss for the country. The power sector, during FY 2020-21, has gone through these challenges.

In order to reap the benefit of available efficient power plants and avoiding or minimizing the undesirable costs of capacity payments for unutilized capacity, PLAC and inefficient burning of fuel in less efficient power plants, necessary measures need to be taken to ensure the maximum utilization of all available power plants especially the efficient power plants. The constraints including but not limited to the fuel shortage, load-shedding/load management and transmission system shortcomings hampering the maximum utilization of efficient power plants need to be checked immediately.

2.3.5 Plant Operation in Accordance of Economic Merit Order:

The economic operation of the available power plant carries immense importance for least cost generation. The power plants available in the generation sector have varying efficiencies and resultant cost of generation. The power plants are ranked on EMO on the basis of specific Fuel Cost comprising of Fuel Cost Component (FCC) and the variable O&M.

The NPCC of NTDC is responsible to record the availability of power plants and placing the Dispatch Order to the power plants as per the EMO established on the above mentioned basis and the provisions of the Grid Code in the matter. Over the period, the plant operation in deviation of EMO has been noted which is a cause of serious concern for the Regulator. The issue of dispatch of power plants out of merit has been raised repeatedly in proceedings of the monthly Fuel Charge Adjustment (FCA) applications of CPPA-G. NEPRA engaged both NPCC and CPPA-G to provide complete details on hourly basis with justifications/reasons for deviations from EMO and its financial impact.

During FY 2020-21, while giving its decision on the monthly FCA of CPPA-G, NEPRA has withheld the amounts in different months on account of operation of power plants in violation of EMO.

2.3.6 Annual Dependable Capacity Tests:

CPPA-G is responsible to ensure that Dependable and/or Annual Dependable Capacity Test of the power plants supplying electricity on 'Take or Pay' basis, are carried out wherever required under the provisions of relevant PPAs. Timely execution of Dependable Capacity Tests is necessary to establish the dependable capacity of the power plant to make capacity payments accordingly. Delay in Dependable Capacity Tests after due time may result in excessive capacity payment to power producers, if the actual capacity of the plant is degraded. Despite repeated directions to CPPA-G by NEPRA, the Dependable Capacity Tests in case of several power plants have not been carried out.

2.3.7 Directions to System Operator (NPCC) and Power Purchaser (CPPA-G):

With an aim to sensitize the relevant entities for observance of EMO and fixing the causes for operation of power plants in deviation of EMO, the Authority through its FCA Decision gave direction to the NPCC, the System Operator, 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 the reasons of such dispatch. NEPRA has further directed the CPPA-G, being agent of DISCOs to procure electricity on their behalf, to scrutinize the NPCC's 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 dispatch deviation justified in terms of SDC of Grid Code along with

their 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 of monthly fuel price adjustment request.

In view of the repeated events of the operation of plants in deviation of EMO, the Authority has decided to carry out a comprehensive study on the working of System Operator encompassing the assessment of NPCC's working for at least past two years. The study shall include but not limited to covering the details of energy generated in violation of EMO with reasons for such violation and its financial impact. Such a study is vital to know the reasons for violation of EMO, its financial impact, the controllable and un-controllable causes of violation of EMO etc. The findings of the study will lead to the necessary measures to improve transmission system as well as the performance of the System Operator.

2.3.8 Criteria for Determining EMO:

Presently EMO is being prepared only on the basis of fuel cost and variable O&M while the other cost curves like PLAC, degradation factor, start-up charges, plant location vis-à-vis load centers etc. are not considered while preparing the EMO.

Further, at present there is no separate criteria in EMO for ranking of 'Take and Pay' power plants. Separate criteria for ranking of 'Take or Pay' and 'Take and Pay' power plants are needed as the capacity payments in case of 'Take and Pay' power plants are avoidable. The tariff of old blocks of GENCO-III has been converted to 'Take and Pay' while conversion of the tariff of other GENCOs is also under consideration. Therefore, separate criteria for ranking of 'Take and Pay' plants is needed on urgent basis.

It is further noted that EMO of several power plants is also being determined on pipeline quality cheaper gas despite the fact that this gas is not available to these power plants and the same are operating on RLNG for last many months. The EMO list can be made simpler and true reflective if determined on the basis of actual available fuel.

It was highlighted in the previous State of Industry Report (SIR) that in order to develop competitive electric power market and to have cheaper electricity in the generation basket, criteria should also be given in EMO to purchase electricity from 'Take and Pay' merchant power plants. At present, only those power plants are included in the EMO which have executed PPA with CPPA-G while the merchant power plants, if any, who intend to sell their electricity to CPPA-G at competitive rates are not considered.

2.3.9 Procurement of Cheaper 'Take and Pay' Power at DISCO Level:

Under the Applicable Documents of NEPRA, DISCOs can also procure electricity from cheap resources for its further supply to their consumers after following the criteria laid down in NEPRA Rules/ Regulations. At times, it is noted that DISCOs do not come forward to purchase cheaper 'Take and Pay' electricity from power generators.

NEPRA received applications from various sugar mills that DISCOs were not accepting their offer to purchase cheaper electricity that too on 'Take and Pay' basis. For procurement of cheaper electricity available at voltage level of 132 kV and below, NEPRA has already directed DISCOs to set up generation power plants dispatch centers in their respective territories for dispatch of generation from power plants in their area at voltage level of 132 kV and below. However, DISCOs are shy of procuring power from the available power plants in their territories.

2.3.10 Need of SCADA System:

The System Operations is a complex task requiring quick and accurate decisions for system stability and optimum utilization of available resources. The efficiency of System Operator greatly depends on availability of data and swift dissemination of instructions for required action. The remote monitoring of the electric power system has been made easy by the technological solution in the shape of SCADA being used by efficient system operators around the world. However, in Pakistan, system operations are still

not fully automated. The use of primitive manual methods to control the system is a main impediment for efficient and effective functioning of the system operator. NEPRA has long been emphasizing a need to deploy modern SCADA System by NPCC to supervise and control the economic dispatch of electric power generation which has still not turned up. NPCC needs to deploy SCADA System immediately for real time data collection enabling quick and intelligent decisions for supervision, monitoring and control of the generation, transmission and distribution systems.

2.3.11 Scheduled and Forced Outages:

The System Operator, NPCC, approves the scheduled outage plans of the power plants considering the load demand as well as availability of other power plants in the System. System Operator also keeps eye on the forced outages of the power plants and notifies it to power purchaser as well as to respective power plants for appropriate actions at their end.

Scheduled outages of the power plants, particularly the efficient ones, during high-demand periods, is undesirable as it results in electricity generation through alternate, usually expensive/less efficient power plants. Noting the outages of some power plants in high demand period, NEPRA took up the matter with NTDC/NPCC to ensure that outages of efficient plants are avoided during high-demand period. Further, the matter of prolonged forced outages of various power plants was also taken up with their management for clarifying the reasons for prolonged outages. NEPRA is in the process of developing a mechanism to ensure that the forced outages of the power plants are kept in check and higher reliability is achieved through proper and timely maintenance.

2.3.12 Peaking Load Power Plants:

With increasing share of intermittent nature power plants and increasing gap in demand during a day as well as in different seasons, there is a need to have efficient peaking load plants. Besides demand side management, the reservoir based hydropower plants as well as the efficient single cycle gas based power plants with flexibility of quick start and stop can be used to meet the demand during peak hours while the efficient power plants be used at full load to avoid/minimize PLAC payments. A comprehensive study needs to be carried out using the financial model to evaluate the cost of PLAC vis-à-vis cost of operating peaking load plants in the system. Further, policy is also required to be developed to minimize the power demand gap through demand side management.

2.3.13 Separate baskets of CPPA-G and KE:

In Pakistan, two separate electric power generation baskets are being maintained; first one by CPPA-G and the other one by KE which is a vertically integrated private utility. During FY 2020-21, the basket price of electric power in KE System remained higher as compared to CPPA-G system, despite the fact that sufficient quantity of gas was supplied to KE on local gas price which is lower than the RLNG price. The CPPA-G is also supplying sufficient quantity of electricity to KE at cheaper rates as compared to KE's own generation and power purchases. Further, the power purchases of KE are largely on 'Take and Pay' basis. The apparent reasons for high cost of electricity in KE System include but not limited to low efficiency of their newly inducted gas based power plants in comparison to most of the gas based IPPs in CPPA-G System, generation of electricity by KE through RFO/RLNG from their low efficiency steam turbine thermal power plants, generation of electricity by KE through costliest fuel i.e. HSD, purchases of electricity by KE from RFO based power plants (Gul Ahmed and Tapal Energy) as well as KANUPP etc. it was noted that when KE was generating and/or purchasing the electricity from higher cost power plants the cost efficient 'Take or Pay' generation capacity in CPPA-G System were either unutilized or under-utilized. Besides others, one main reason for non-purchase of cheaper electricity by KE from CPPA-G appears to be inadequate transmission system. NEPRA has been highlighting the issue of inadequacy of transmission system between KE and NTDC. This and all other issues which are hampering the bilateral trade between the two systems need to be sorted out for optimal utilization of available resources in the country.

2.3.14 Operation of Combined Cycle Power Plants in Open Cycle:

During FY 2020-21, the operation of few Combined Cycle Power Plants (CCPP) on Open Cycle has been witnessed. Operation of combined cycle power plants in open cycle is adversely affecting the cost of power generation. Generally the cost of operating the CCPP in open cycle mode is around 1.5 times the cost of operating in combined cycle mode. Efficient burning of gas is of prime importance for the best use of this resource. Operation of CCPPs on single cycle is one of the examples of inefficient burning of gas which adds to the cost of electricity for the end-consumers. During the FY 2020-21 as well, the combined cycle power plants of CPGCL were operated on Open Cycle mode. The Authority has taken notice and initiated a proceeding in the matter.

2.3.15 Shift Towards Renewable Energy:

The RE sources are most suitable for providing environment friendly cheap electricity. Being indigenous, RE are assumed to contribute to achieve the goal of energy security for the country and sustainable supply of electricity. Pakistan is blessed with abundant RE sources like wind, solar, bagasse and hydro; therefore, the Government is putting added focus on development of RE in the country to reduce reliance on imported fuels.

Presently the share of RE power plants (wind, solar and bagasse) in the generation mix of the country is around 5.40%. Given the abundant potential for solar power generation across the country and considerable potential for wind power generation in specific corridor along with the coastal line, the solar and wind energy can play a significant role in providing sustainable supply of electricity in the country's power system. Accordingly, the RE Policy 2019 (RE Policy) envisages increase of share of RE in the generation mix of the country to 30% by 2030.

Although the technological advancement has reduced considerably the prices of equipment; resulting in a very low Levelized Cost of Energy (LCoE) as compared to conventional thermal power plants. However, due to the intermittent nature of solar and wind power generation, the LCoE does not reflect the true cost of electricity from these sources. The intermittency of wind, solar and bagasse power due to seasonal and hourly variation in resource availability necessitates to keep the back-up capacity of almost equal magnitudes in the system. The RE generation, particularly the wind and hydro are site specific usually away from the load centers. Therefore, additional investments are needed to evacuate power from the RE power plants and transmitting to the load centers. The back-up plants are operated on partial load to cater for load fluctuation of wind and solar plants which also adds to the cost of generation due to capacity payments obligations for under-utilized capacity.

The true picture of the cost of generation of RE plants can only be seen by factoring-in the additional cost for maintaining back-up generation capacity, construction and operation of transmission facilities and impact of T&D losses in transmitting the power from point of generation to load centers. Therefore, it is necessary for the planners to account for all these factors to know the true cost of generation from RE to decide their share in the generation mix.

Notwithstanding the intermittent nature of the RE sources, there is an increasing trend in the world to absorb more RE generation using the innovative techniques to minimize the intermittency cost. Pakistan, being blessed with the abundant sources, particularly solar irradiation, can benefit from these indigenous resources through use of modern and innovative method to minimize the intermittency of RE sources and increasing the economic viability of such projects. Induction of RE power generation capacity without undertaking the comprehensive technical and financial studies may affect the power sector adversely.

2.3.16 Hydropower: Challenge of Capital Intensiveness and Seasonal Variation:

The share of installed capacity of hydropower plants in the generation mix of the country as on 30-06-2021 is 24.96% with the total installed capacity of 9,915 MW comprising 9,443 MW of WAPDA Hydro and 472 MW of IPPs. The generation from these power plants during FY 2020-21 remained 38,800.55

GWh which is 27% of the total generation of 143,588.60 GWh during FY 2020-21. As per the draft IGCEP-2021 submitted by NTDC, the hydropower projects of around 13,000 MW, both committed and candidate projects, in public and private sector are stipulated for commissioning during the current decade.

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

Notwithstanding the indigenous availability of water, the cost of hydropower, especially during debt repayment period, needs to be carefully analyzed while contemplating increase of the share of HPPs in the generation mix. Construction of hydropower plants is capital intensive which translates into higher Levelized Cost of Energy (LCoE). Due to high capital cost and front loaded tariff, the tariff of power plants during debt repayment period which is usually initial 10-12 years, is always higher. However, after the debt retirement, the tariff of hydropower plants is reduced considerably due to no fuel cost. As regards the higher tariff of HPPs during debt servicing period, the longer operational life of HPPs can be used as advantage for reducing their tariff through large spread of the cost over the life of the project and the soft loan repayment conditions. NEPRA, in recent cases of PEDO hydropower projects, has determined their tariff on the basis of their operational period which make them comparable with other renewable projects.

Besides the levelized cost of electricity, hydropower also poses the challenge of intermittency due to seasonal variation in water flows. In the month of August, 2020 the utilization of hydropower plants reached around 74% of the overall dependable capacity of Hydro power plants, while it touched the lowest i.e. around 15% utilization in the month of January, 2021. Though the hydropower generation is reduced during winter season; however, the effect of reduction of hydropower is mitigated due to lesser demand during winter. The intermittence of HPP gives rise to the need of back-up generation capacity to meet the demand.

Further, the hydropower plants are usually constructed at far flung areas, away from the load centers and thus heavy investment is needed for providing transmission facilities 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 upto 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 planners 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.

2.3.17 Non-Firm Supply of RLNG:

During last week of June 2021, peak summer time, the country faced shortage of RLNG due to dry-docking of an RLNG terminal which affected the power generation from gas based power plants. Further during the year, the System Operator reported that it had been conveying its demand for RLNG to concerned quarters well before time but still it could not get the demanded volume of RLNG and resultantly, at occasions, various RLNG power plants were either unutilized or under-utilized. The RLNG shortage not only results in curtailment in power generation leading to load-shedding but also compels generation on alternate expensive RFO/HSD fuels which increases the cost of electricity for end consumers. During FY 2020-21, around 10,596 GWh was generated using the RFO fuel while around 402 GWh electricity was generated through costliest HSD fuel. Generally the generation of electricity from these two fuels is costlier than electricity generation by RLNG.

The RLNG is an imported fuel and its supply is controllable through proper planning/scheduling coupled with efficient supply chain. Therefore, efforts should be made to improve the supply chain of RLNG so that non-utilization and/or underutilization of efficient RLNG power plants could be avoided. The firm Gas Supply Agreement need to be singed between the parties with back to back arrangement in order to save the consumers from unnecessary burden.

2.3.18 Reimbursement Claims against SNGPL:

CPPA-G has executed the "Reimbursement Agreements" with the SNGPL in respect of three RLNG based IPPs at Balloki, Bhikki and Haveli Bahadur Shah, Punjab. As per the Reimbursement Agreement, Upon the occurrence of a SNGPL Non-Supply Event solely due to which the company is not available for dispatch, SNGPL shall be liable to reimburse the Capacity Payments (or part thereof to the extent that the Company is unavailable) to CPPA-G, within a period of thirty (30) days of any notice received from it seeking such reimbursement of Capacity Payments or part thereof paid by CPPA-G to the Company under the PPA during the period of the SNGPL Non-Supply Event. Failure of SNGPL to timely reimburse the aforesaid undisputed payments shall entitle CPPA-G to deduct the undisputed amounts from the Energy Payments under the PPA, in turn, the Company shall be entitled to deduct the same amount from payments due to SNGPL under the GSA. CPPA-G, has raised the claims amounting to Rs. 4.173 billion and Rs. 0.527 billion for different periods against SNGPL on account of 'Non-Supply Event' in respect of three RLNG based power plants. The claimed amount has since been under dispute between CPPA-G and SNGPL. CPPA-G and SNGPL must expedite settlement of the claim.

2.3.19 Supply of Low Pressure Gas:

Besides non-availability of Gas/RLNG, the issue of low pressure of gas supplied to the power plants was also noted during FY 2020-21. During the year, KE has been reporting low pressure of gas supplied by SSGC to its gas based power plants located at Site and Korangi. KE informed that due to low pressure of gas, it could not use this gas in its relatively efficient gas based plants at Korangi and Site and resultantly, at occasions, the available cheapest priced local gas was to burn in the boiler of BQPS-I Steam Turbines power plant having efficiency of around 32%. Non-optimal use of precious primary energy resources is not only affecting the electricity consumers adversely but also all other stakeholders including exchequer. Therefore, the issues like long awaited firm Gas Supply Agreement between KE and SSGC and all other issues hindering the optimal utilization of country's resources need to be checked and resolved among relevant stakeholders without any delay.

2.3.20 Liquidated Damages:

Under the PPA/EPAs signed by CPPA-G, Liquidated Damages (LDs) are required to be imposed by the power purchaser on the power producer at a prescribed rate for outages beyond allowed limit. Timely imposition of LDs and recovery thereof is the responsibility of the power purchaser to save the electricity consumers from undue financial burden.

It is noted that the CPPA-G during FY 2020-21 as well could not be able to impose the LDs against various power plants on breach of the contractual obligations. Further CPPA-G also could not recover or settle the amount of LDs already imposed against various power plants. For the period from FY 2014-15 to FY 2018-19, CPPA-G imposed LDs amounting to Rs. 1.404 billion, Rs. 15.176 billion and Rs. 14.767 billion against GENCO-I, GENCO-II and GENCO-III respectively on account of availing higher outages than allowed in respective PPAs of these GENCOs. However, CPPA-G has not so far reported that the above amount of LDs has been recovered from GENCOs. Further, in March 2021, NEPRA directed CPPA-G to share the details of LDs imposed on WAPDA hydel power stations on account of availing higher outages during the past years. CPPA-G informed that it was in the process of scrutiny and verification of data for imposing LDs on WAPDA. By not imposing or non-recovery of imposed LDs, the electricity consumers are adversely affected. Efforts need to be made to impose the due LDs and their recovery within due time.

2.4 TRANSMISSION SYSTEM OF NTDC

The NTDC is the sole National Grid Company (NGC) in Pakistan and its transmission network is spread all over the country except the area served by KE. The transmission line network of NTDC includes 8,059 km long transmission lines operating at 500 kV level and 11,438 km long 220 kV lines.

As of 30th June, 2021, NTDC is maintaining 16 (sixteen) 500 kV grid stations with a transformation capacity of 30,610 MVA. There are 44 (forty-four) 500/220 kV transformers and 34 (thirty-four) 220/132 kV transformers installed at these grid stations.

NTDC also maintains 46 grid stations at 220 kV level with a transformation capacity of 25,770 MVA. There are 129 (one hundred and twenty-nine) 220/132 kV transformers installed at 220 kV grid stations.

During FY 2020-21, the length of transmission lines of NTDC at 500 kV increased from 7,238 km to 8,059 while the length of transmission line at 220 kV increased from 11,281 km to 11,438 km. Similarly during FY 2020-21, one (01) Power Transformer has been added at 500/220 kV level while three (03) power transformers have been added at 220/132 kV level in NTDC system.

For evacuation of electric power from power plants in the South region and its transmission to the load centers, country's first ±660 kV High Voltage Direct Current ("HVDC") transmission line is being constructed in the private sector. The project is planned to realize bipolar operation with a bipolar power transmission capacity of 4,000 MW over a line length of about 886 km from the Matiari (Sindh) to the Lahore (Punjab).

2.5 LOADING POSITION OF POWER TRANSFORMERS IN NTDC SYSTEM

The power transformers having more than 80% load are generally considered overloaded. The loading pattern of transformers changed on monthly basis. The monthly information, given in Chapter 4, shows that in the month of August 2020, the ratio of overloaded transformers reached its maximum with 60% of all the power transformers including 500/220 kV and 220/132 kV were overloaded. Whereas the ratio touched the minimum in the month of December, 2020 when 13% of the total power transformers were overloaded. The overloading of these 13% power transformers need to be fixed immediately and thereafter the issues with the other power transformers be fixed as deemed required.

2.6 OUTAGES ON TRANSMISSION LINES OF NTDC

As reported by NTDC the number of planned outages at 500 kV and 220 kV levels in FY 2020-21 have decreased as compared to FY 2019-20. The total duration of planned outages at 500 kV and 220 kV level, however, increased during FY 2020-21 while the duration of forced outages on 500 kV as well as 220 kV has decreased during FY 2020-21 as compared to FY 2019-20.

Year	Description	Planned Outages		Forced Outages	
		500 kV	220 kV	500 kV	220 kV
2019-20	No. of Outages	547	1,774	131	360
	Total duration in minutes	262,560	851,520	74,446	183,176
	Maximum duration of any single outage (Minutes)	18,720	23,040	24,038	20,160
2020-21	No. of Outages	533	1,442	87	271
	Total duration in minutes	280,697	671,452	60,058	109,795
	Maximum duration of any single outage (Minutes)	18,567	43,573	12,663	31,629

Source: NTDC

2.7 TRANSMISSION SYSTEM OF K-ELECTRIC

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:

(a) 365 km of 220 kV Transmission Lines
(b) 11 Nos. of 220 kV Grid Stations with transformation capacity of 4,580 MVA
(c) 833 km of 132 kV Transmission Lines
(d) 69 Nos. of 132 kV Grid Stations having transformation capacity of 7,135 MVA

During FY 2020-21, one (01) Grid Station has been added at 132 kV level in KE system.

2.8 LOADING POSITION OF POWER TRANSFORMERS IN K-ELECTRIC 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 168 power transformers of 7,135 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 2020-21 whereas, 49 out of 168 of KE's power transformers at 132/11 kV level were reported over-loaded in the same period.

2.9 OUTAGE ON TRANSMISSION LINES OF K-ELECTRIC

The following table provides a comparison of transmission outages for FY 2020-21 and FY 2019-20 as reported by KE. It is noted that at 132 kV level, number of planned and forced outages and total duration of outages have decreased in FY 2020-21 as compared to FY 2019-20:

Year	Description	Planned Outages		Forced Outages	
		220 kV	132 kV	220 kV	132 kV
2019-20	No. of Outages	0	5	2	35
	Total duration in minutes	0	3417	673	3823
	Maximum duration of any single outage (Minutes)	0	1279	558	666
2020-21	No. of Outages	0	4	0	16
	Total duration in minutes	0	2,050	0	1,101
	Maximum duration of any single outage (Minutes)	0	1,153	0	164

Source: KE

2.10 ISSUES OF TRANSMISSION SECTOR

2.10.1 Transmission System Constraints Hampering Optimal Utilization of Power Plants:

During last decade, a sizeable generation capacity was added in the power sector of Pakistan at different locations right from center of the country to South in Karachi and in Thar. Being latest technology, the efficiency of RLNG power plants installed in the center of the country is highest i.e. above 60% while coal and nuclear power plants located in Karachi and Thar are cost efficient. Similarly the Uch Power and Uch-II Power Plants in Balochistan are also cost efficient. These power plants are supplying electricity on 'Take or Pay' basis eligible for capacity charges even if unutilized and PLAC, if operated on part load.

NEPRA approved Grid Code is a comprehensive document clearly mentioning the requirements for development and operation of the transmission system by NGC. Under the Grid Code, NTDC being NGC, is responsible to establish a planning process that leads to the recommendations of specific transmission system reinforcements, up-gradation and expansion projects. Further, NTDC is also required to present TSEP to NEPRA each year as part of the "Annual System Reliability Assessment and Improvement Report" in terms of specific projects. The projects shall be identified in terms of new transmission lines,

new transmission circuits, new grid stations, new transformer installations, Sub-station bus expansion, voltage control projects, circuit breaker upgrading projects, elimination of congestions bottlenecks and system stability improvement projects.

For last many years, the main reason for under-utilization of efficient power plants has been the constraints of transmission and distribution networks such as over-loading of transmission lines, insufficient transformation capacity of power transformers, outages of transmission lines, etc. Like past many years, at certain occasion during the FY 2020-21 also the transmission network of NTDC could not be able transmit the available power from efficient power plants to load centers and thus caused underutilization of efficient power plants and utilization of some other comparatively inefficient power plants. Operation of power plants on costlier RFO and HSD fuel despite availability of efficient RLNG and cost efficient power plants is a serious concern for the regulator. NEPRA, at various occasions during FY 2020-21, has disallowed the amount of underutilization of power plants for reasons of constraints in transmission system. Further, the transmission system issues are also causing curtailment of wind power which is making the wind power plants eligible for NPMV. During FY 2020-21, CPPA-G verified an amount of Rs. 3,939.51 million payable to the Wind Power Plants on account of NPMV.

2.10.2 System Breakdown:

On 9th January 2021, the NTDC System underwent a major breakdown and the country suddenly plunged into darkness. The inquiry of the incident by NEPRA revealed serious lapses on the part of NTDC, CPGCL and KE which caused the breakdown and delayed restoration of power. Further, during supply restoration efforts, several IPPs could not synchronize their power plants with the System within the time as required by the System Operator. NEPRA has initiated proceedings in the matter.

The transmission system of NTDC has been facing major breakdowns in the past; a list of some major tripping/breakdowns in NTDC system during last seven (07) years causing cascaded/partial tripping in different parts of the country is given below:

S. No.	Date	Details of Blackouts
1	30-06-2020	90% of HESCO network tripped due to the fire incident at 500 kV Jamshoro Grid Station of NTDC.
2	25-01-2019	Tripping of 500/220 kV transmission lines in Guddu, Shikarpur and Multan region caused tripping of HUBCO, Port Qasim and Guddu Power Plants thereby resulting in power failure to large parts of Sindh and Balochistan.
3	12-11-2018	Tripping of NTDC's 500 kV and 220 kV Transmission Lines in South affected power supply to KE from National Grid as well as generation from 1320 MW Port Qasim Power Plant.
4	25-10-2018	Tripping of NTDC's 500 kV and 220 kV Transmission Lines in South affected power supply to K-Electric from National Grid as well as generation from 1320 MW Port Qasim Power Plant.
5	04-10-2018	Tripping of NTDC's 500 kV and 220 kV Transmission Lines in South affected power supply to K-Electric from National Grid as well as generation from 1,320 MW Port Qasim Power Plant.
6	02-10-2018	Tripping of NTDC's 500 kV and 220 kV Transmission Lines in South affected power supply to KE from National Grid as well as generation from 1,320 MW Port Qasim Power Plant.
7	24-09-2018	Tripping of NTDC's 500 kV and 220 kV Transmission Lines in South affected power supply to K-Electric from National Grid as well as generation from 1320 MW Port Qasim Power Plant and Wind Power Plants operating in region of Jhimpir and Gharo.
8	12-08-2018	Tripping of NTDC's 500 kV and 220 kV Transmission Lines in South affected power supply to KE from National Grid as well as generation from 1320 MW Port Qasim Power Plant and Wind Power Plants operating in region of Jhimpir and Gharo.
9	01-08-2018	Power Breakdown in Lahore due to tripping of 220 kV Bund Road Grid Station.

S. No.	Date	Details of Blackouts
10	16-05-2018	Tripping of three number 500 kV Guddu-747-RY Khan, 500 kV Guddu-DG Khan and 500 kV Guddu-Muzaffargarh caused tripping of two number of RLNG plants i.e. HB Shah and Bhikki resulted in cascaded tripping in the Northern Part from Guddu to Peshawar leading to power collapse in North (Punjab and KPK).
11	21-01-2016	Tripping of 500/220 kV 450 MVA Auto Transformers T-3 along with 500 kV Guddu Old-Guddu 747 Circuit resulted in partial breakdown from Muzaffargarh to Peshawar.
12	15-01-2016	Damage of porcelain insulator of isolator controlling 220 kV Muzaffargarh Phase-2-Multan CCT 3 resulted in partial breakdown from Multan to Peshawar,
13	24-01-2015	Tripping of 220 kV Uch-I-Sibbi CCT-2 resulted in major breakdown from Karachi to Peshawar.
14	08-01-2015	Tripping at Guddu causing splitting of Northern and Southern Part. Northern Part (Guddu to Peshawar) went under dark due to low frequency.
15	21-12-2014	500 kV Guddu-Dadu CCT-1 & 2 went under fault. Southern Part (Dadu-Hub-KE) went under dark.
16	12-12-2014	Tripping of Auto Transformers at Guddu caused splitting of Northern and Southern Part. Northern Part (Guddu to Peshawar) went under dark.

Source: NEPRA

2.10.3 Need for Independent System Operator:

Under NEPRA Act, System Operations is a licensed activity to be performed by System Operator (SO) primarily responsible to undertake the functions including but not limited to (a) generation scheduling, commitment and dispatch; (b) transmission scheduling and generation outage coordination; (c) transmission congestion management; (d) cross border transmission coordination; (e) procurement and scheduling of ancillary services and system planning for long term capacity; and (f) such other activities as may be required for reliable and efficient system operations.

Under NEPRA Act, NTDC being the NGC is deemed to be SO for a period of two years from the commencement of the NEPRA (Amendment) Act, 2018 which came into effect on 30-04-2018. The period of two years has since been expired; however, NPCC of NTDC is still operating under NTDC as SO.

There is a need to immediately put in place an independent SO, separate from the NGC, for smooth transparent and efficient operations. The SO must deploy the state of the art SCADA system on fast track basis for required transparency and efficiency in real-time system operation. NPCC needs to be equipped with adequate human, technical and financial resources to be able to perform its function effectively in the upcoming competitive market. The Road Map for implementation of CTBCM stipulates specific actions to be performed by NPCC including requirement to apply for licence for SO, restructuring of SO, IT infrastructure and process automation etc. NPCC needs to expedite actions under the Road Map to adapt to the upgraded functions of the SO under CTBCM.

2.10.4 Transmission Infrastructure between NTDC and K-Electric:

During last few years, various efficient power plants have been inducted in the CPPA-G System on 'Take or Pay' basis. Some of these plants are in close proximity to KE area; however, not being fully utilized for various reasons. On the other hand, demand exists in KE area which is being fulfilled by operating costlier power plants in KE generation system.

At present, CPPA-G is supplying around 650 MW electric power to KE through NTDC network while three WPPs of CPPA-G basket are supplying power to KE directly. Since CPPA-G and KE are maintaining two separate electric power generation basket, it is noted that price of electric power in KE basket is higher than that of CPPA-G basket. Although there are obvious reasons for high electricity cost in

KE basket but still there is a need to utilize the country's resources in efficient manner. Inadequate transmission and sub-transmission system between NTDC and KE impedes the possibility of selling the available surplus cheaper electricity in CPPA-G system to KE on mutually agreed terms and conditions, duly approved by NEPRA. There is an urgent need to have a strong transmission links between NTDC and KE Systems capable to import/export cheaper electric power available in the two systems under contractual agreements after its approval by the competent forums.

The import/export between the KE and NTDC can facilitate absorption of the cheaper power available with either KE or CPPA-G on priority basis thus ensuring the economic operation of the generation plants in whole of the country.

2.10.5 Need for Integrated Planning:

The Grid-code, stipulates the requirement that each year, the NTDC shall prepare and deliver to NEPRA a Ten Year IGCEP covering 0-10 years' timeframe. The Planning Code of the Grid Code has laid down the basic principles and factors to be taken into account while planning expansion of generation capacity with simultaneous reinforcement, upgradation and expansion of transmission system.

Planning for adding generation capacity integrated with the corresponding transmission and distribution system expansion and strengthening holds central importance for least cost generation and to accomplish the goal of availability, accessibility and affordability of electricity for all segments of society. The standard PPAs/EPAs stipulate the responsibilities of both the seller and purchaser with regard to construction of their respective interconnection facilities, timelines for completion of interconnection facilities and penalties in case of default on the part of any of the parties to meet with the given timelines.

In the past, in various cases, NTDC could not be able to complete the interconnection facilities for evacuation of power from new power plants as per the approved design and within the stipulated time period and thus caused under-utilization of the available capacity. To avoid the unnecessary loss due to its network shortcomings, adversely affecting the end-consumer, NTDC needs to strengthen its planning process on two prongs; first to remove system constraints for uninterrupted evacuation of power from existing power plants located across the country and its transmission to load centers and secondly to expand its network to make the interconnection facilities ready for evacuation of electric power from upcoming projects within the time period stipulated in the PPAs/EPAs.

2.10.6 Micro/Mini Grid:

Provision of electricity to every nook and corner of the country is inevitable to meet this basic need of the people indiscriminately. However, the cost of transmission of electricity by the National Grid Company to remote areas is sometimes too high making it financially unfeasible. As a matter of fact, millions of people living in the remote areas of the country still do not have access to electricity. While the National Grid is used to provide electricity to the load centers and thickly populated areas, micro/mini grids have emerged as a viable solution to energize the remote rural areas, where there is no central grid available.

Through distributed generation, particularly solar power and simultaneous development of micro/mini grid, the electricity could be provided to those areas of the country where people are still living without this basic necessity while the cost of provision of electricity from National Grid to such areas is quite high. One glaring example is the province of Balochistan where the population is sparse and scattered in the large swaths where extension of national grid is financially and technically unfeasible. Some of the border areas of Balochistan are energized through import of power from Iran. However, the supply from Iran is not firm and often these areas face electricity outages. Balochistan is blessed with abundant solar power potential which is completely untapped so far as not a single solar power project has so far been developed in Balochistan. The remotely located rural population of the Balochistan, and alike in the other parts of the country, can be provided electricity through development of solar power plants

near the populated areas and decentralized distribution of electricity through micro/mini grids.

With the advancement of RE technologies and promotion of distributed generation, the option of micro/mini grids, besides the National Grid needs to be given a place in planning for power sector.

2.11 DISTRIBUTION SYSTEM OF DISCOS

Distribution of electricity is a licensed activity and an important function for provision of electricity to the end-consumers. As on 30-06-2021 there were ten public sector DISCOs responsible for supply of electricity in their respective areas. These DISCOs are performing distribution function under licences granted by NEPRA. In addition KE also possesses the Distribution licence to supply electricity in its designated area.

Besides DISCOs and KE, Distribution licences have also been granted to Defence Housing Authority, Lahore and Aujla Associates, Gujranwala to supply electricity in the territory specified in their respective distribution licences. Further, Distribution licences were also granted to nine (09) Small Power Producer to supply electricity to their designated Bulk Power Consumers (BPCs).

During FY 2020-21, on the request of Bahria Town Private Limited (BTPL) the Distribution licence granted to BTPL back in 2010 for Distribution facilities located at Bahria Town Islamabad/Rawalpindi has been cancelled.

The Distribution Licence granted to IESCO and FESCO are going to expire in November, 2021 and March, 2022 respectively, while the Distribution licence granted to LESCO, GEPCO, MEPCO, HESCO, QESCO and PESCO will expire in April, 2022. The Distribution licences granted to SEPCO and TESCO are valid till August, 2031 and August, 2033 respectively. The Distribution licence of KE is valid till 20-07-2023.

Out of nine (09) SPPs, the Distribution licences of four (04) SPPs namely Crescent Power Tech, Gulistan Power, Kohinoor Mills and Mehmood Textiles has expired in 2016 while the Distribution licence of Sitara Energy expired in 2017. The Distribution licence of Ibrahim Fibers is valid till 30-12-2021. Similarly the Distribution licences of Monoo Energy, Quetta Textiles and Sapphire Power are valid till 31-12-2031, 30-01-2037 and 12-07-2040 respectively.

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 and for sale of electricity, 'Electric Power Supply Licence' is required. 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.

During FY 2020-21, the Authority initiated an Authority Proposed Modification (APM) in the Distribution licence granted to DISCOs as well as KE in the backdrop of the amendments in the NEPRA Act promulgated in 2018 through which the distribution and supply of power have been bifurcated and a new Section 23 has been included to provide for grant of licence for supply of electricity. In the Determination of APM of KE, the Authority observed that KE has no exclusivity after the NEPRA (Amendment) Act, 2018. However, the Authority decided to honour the terms of Distribution licence of KE and maintained its exclusivity till the expiry of its Distribution licence i.e. 20-07-2023 with certain conditions given in the Determination. The conditions interalia, include that the exclusivity of KEL will be strictly in terms of Article 7 of its existing Distribution Licence which categorically allows BPC(s) to obtain the supply from any generating company. The KE has filed a review motion against the decision of the Authority which is under processing at NEPRA.

2.12 FATAL ACCIDENTS

During FY 2020-21, a total 189 numbers of fatalities were reported in all DISCOs including KE. These fatalities included 47 employees and 142 persons from general public. Highest number of 46 fatalities were reported in KE area followed by HESCO with 32 fatalities, PESCO with 23 and IESCO with 22 fatal accidents. In SEPCO, MEPCO, FESCO, LESCO, TESCO, GEPCO and QESCO the number of fatal accidents remained 14, 13, 09, 09, 08, 07 and 06 respectively.

Safety of human lives, including the employees of DISCOs as well as public must be given the highest priority by DISCOs for which strict compliance to the Performance Standards (Distribution) Rules is necessary. The Authority has taken serious notice of each of the fatal accidents in the DISCO territories and initiated legal proceedings in all cases under relevant NEPRA Rules. In various cases, fines have already been imposed on the relevant DISCOs on their negligence.

2.13 OVER-LOADING POSITION OF DISCOS DISTRIBUTION NETWORK

Power delivery through DISCOs' networks mainly depends on the adequacy of three major components including 11 kV feeders, power transformers (mostly 132/11 kV transformers) and finally the distribution transformers. Province-wise statistics of over-loading position for FY 2020-21 is shown in the following table:

Description	Punjab	Sindh	Khyber Pakhtunkhwa	Balochistan	Total
Total No. of 11 kV Feeders	6,969	1,118	1,413	688	**10,188**
Over-loaded 11 kV Feeders (Nos.)	815	160	579	688	**2,242**
Over-loaded 11 kV Feeders (%)	**11.69**	**14.31**	**40.98**	**100.00**	**22.01**
Total No. of Power Transformers	1421	255	307	179	**2162**
Over-Loaded Power Transformers (Nos.)	192	34	109	49	**384**
Over-Loaded Power Transformers (%)	**13.51**	**13.33**	**35.50**	**27.37**	**17.76**
Total No. of Distribution Transformers	558,474	82,949	98,340	64,119	**803,882**
Over-loaded Distribution Transformers (Nos.)	28,535	3791	5,932	5,343	**43,601**
Over-loaded Distribution Transformers (%)	**5.11**	**4.57**	**6.03**	**8.33**	**5.42**

Source: DISCOs

2.14 TRANSMISSION AND DISTRIBUTION LOSSES OF DISCOS

NEPRA, through consumer-end tariff determinations, set targets of T&D losses for each DISCO. The actual losses beyond the allowed target losses has to be borne by the company. The T&D losses beyond the allowed limit result in increase in circular debt. The comparison of the target/allowed T&D losses vis-à-vis actual losses in respect of each DISCO a given in the following table:

Year	PESCO	TESCO	IESCO	GEPCO	LESCO	FESCO	MEPCO	HESCO	SEPCO	QESCO
Target Losses (%)										
2019-20	27.90	12.24	8.50	9.83	10.03	9.76	14.96	21.29	25.06	17.36
DISCO's Reported Actual Losses (%)										
2019-20	38.69	16.20	8.69	9.51	12.40	9.56	15.23	42.89	36.27	26.68
2020-21	38.18	9.58	8.54	9.23	11.96	9.28	14.93	38.55	35.27	27.92
Financial Cost of T&D Losses worked out over and above NEPRA Target (Rs. in Million)										
2020-21	32,280.01	(866.01)	327.97	(848.14)	8,301.68	(748.85)	(1,951.28)	22,844.30	10,017.92	13,309.39

Source: DISCOs

Through the tariff determinations, the DISCOs were given targets of T&D losses for the FY 2019-20, as mentioned in the above table; however, except GEPCO and FESCO, none of the DISCOs could meet the target in FY 2019-20. Further, the actual losses of all DISCOs for FY 2020-21, except GEPCO, MEPCO, TESCO and FESCO, are still higher than the target given for FY 2019-20.

2.15 RECOVERIES OF BILLED AMOUNT IN DISCOS SYSTEM

The recovery position (%) of each DISCO against the billed amount during FY 2020-21 and its comparison with FY 2019-20 is shown in the below table:

Year	PESCO	TESCO	IESCO	GEPCO	LESCO	FESCO	MEPCO	HESCO	SEPCO	QESCO	Overall DISCOs
2019-20	87.65	68.16	90.27	94.36	94.48	94.18	92.94	73.19	56.54	49.25	**88.77**
2020-21	101.87	83.27	116.87	105.10	98.72	97.20	102.15	75.63	64.48	39.80	**97.30**
Inc./ (Dec.)	**14.22**	**15.11**	**26.60**	**10.74**	**4.24**	**3.02**	**9.21**	**2.44**	**7.94**	**(9.45)**	**8.53**

Source: DISCOs

DISCOs have been given target of 100% recovery against the billed amount. However, against the target of 100%, the combined recovery of all DISCOs during FY 2020-21 remained 97.30% i.e. short by 2.70%. The recovery of all DISCOs except QESCO showed improvement during FY 2020-21 over the last year. The recovery of QESCO has dropped from already low 49.25% to 39.80% showing a decrease of 9.45%. The short recovery of billed amount results in increase in circular debt.

2.16 RECEIVABLES IN DISCOS SYSTEM

The receivables of each DISCO during FY 2020-21 and their comparison with FY 2019-20 is shown in the below table:

(Rs. in Million)

Year	PESCO	TESCO	IESCO	GEPCO	LESCO	FESCO	MEPCO	HESCO	SEPCO	QESCO	Overall DISCOs
2019-20	174,887	58,080	119,109	41,774	109,824	46,944	75,367	98,894	130,133	346,905	**1,201,918**
2020-21	171,346	63,225	82,071	32,906	129,560	54,223	69,343	116,447	148,058	398,486	**1,265,665**
Inc./ (Dec.)	**(3,541)**	**5,145**	**(37,038)**	**(8,868)**	**19,736**	**7,279**	**(6,024)**	**17,553**	**17,925**	**51,581**	**63,747**

Source: DISCOs

The total receivables at DISCOs level as on 30-06-2021 stood at around Rs. 1,266 billion whereas, the receivables at the start of this financial year were around Rs. 1,202 billion. Form above table, it is evident that receivables of PESCO, IESCO, GEPCO and MEPCO slightly decreased whereas, the receivables of TESCO, LESCO and FESCO have slightly increased during reporting year as compared to last year. However, a huge increase in the receivables of HESCO, SEPCO and QESCO is noted this year as shown in the above table.

2.17 TOU METERS

Back in 2010, the Authority directed the DISCOs through tariff determinations that all new consumers having sanctioned load of 5 kW and above shall be provided Time of Use (TOU) metering arrangement. The Authority further directed that all existing consumers having sanctioned load of 5 kW and above shall be provided TOU metering arrangement by no later than June 30, 2010. Subsequently, Authority granted several extensions; however, despite several extensions, DISCOs, except MEPCO, have not yet completed the installation of TOU meters at the premises of all eligible consumers.

As on 30-06-2021, a total number of 139299 TOU meters were pending for installation in all DISCOs including KE. The highest number i.e. 74088 TOU meters are pending for installation in KE area followed by PESCO with 25586, LESCO 16424, FESCO 10095, GEPCO 7284, IESCO 3004, QESCO 1725, HESCO 672 and SEPCO 400 TOU meters pending for installation. Only MEPCO has reported nil pendency. Non-provision of TOU meters may affect the consumers adversely as the non-TOU tariff is higher than the off-peak tariff applicable for larger part of a day.

2.18 DISTRIBUTION SYSTEM IN K-ELECTRIC AREA

KE manages, maintains and operates distribution network within its service area. The distribution assets of KE include:

(a) 1,937 Nos. of 11 kV Feeders, 10,283 km long
(b) 29,702 No. of Distribution Transformers having transformation capacity of 8,153 MVA and
(c) 18,509 km of LT Lines

2.19 OVER-LOADING POSITION OF K-ELECTRIC DISTRIBUTION NETWORK

The over-loading position of 11 kV Feeders, Power Transformers and Distribution Transformers in KE System during the FY 2020-21 in comparison with the position of FY 2019-20 is given below:

Description	2019-20	2020-21
Total No. of Over-Loaded 11 kV Feeders (above 80%)	52	24
Total No. of Over-Loaded Power Transformers (above 80%)	40	50
Total No. of Over-Loaded Distribution Transformers (above 80%)	2,250	2,567

Source: KE

As above, there has been a decrease in over-loaded 11 kV feeders from 52 in FY 2019-20 to 24 in the FY 2020-21. On the other hand, the number of overloaded distribution transformers has increased from 2,250 to 2,567 in FY 2020-21.

2.20 TRANSMISSION AND DISTRIBUTION LOSSES IN K-ELECTRIC

NEPRA has granted a Multi-Year Tariff (MYT) to KE with a control period of 07 years (from 2016-17 to 2022-23). Under its MYT, KE has been given the following targets of T&D losses.

1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year
20.90%	19.80%	18.75%	17.76%	16.80%	15.95%	15.36%

Source: KE

During FY 2020-21, KE has reported 17.54% T&D losses.

2.21 RECOVERIES OF BILLED AMOUNT IN K-ELECTRIC

During FY 2020-21, the overall recovery ratio of KE remained 94.87% as compared to 92.14% of 2019-20. The recovery position in the industrial sector has increased from 90.93% to 100.52%. Further, the position has also improved in the 'Others' category from 73.62% to 92.78%. In domestic sector, the recovery ratio has decreased from 92.25% to 89.98% and in the agricultural sector, the recovery has decreased from 28.62% to 22.94%. Further, recovery from the public lighting has also reduced from 66.39% to 60.29%.

Recovery Position of K-Electric Limited (2019-20 and 2020-21)

Category	Amount of Billed Units		Amount Realized and %age Recovery to Billed Amount			
	(Rs. in Million)		(Rs. in Million)		(%)	
	2019-20	2020-21	2019-20	2020-21	2019-20	2020-21
Domestic	107,747	133,515.60	99,394	120,138.34	92.25	89.98
Commercial	43,996	49,511.32	42,968	48,131.04	97.66	97.21
Industrial	80,796	107,778.33	73,470	108,337.18	90.93	100.52
Agricultural	975	1,361.47	279	312.29	28.62	22.94
Public Lighting	2,728	2,399.50	1,811	1,446.59	66.39	60.29
Bulk Supply	9,534	11,051.50	10,227	11,792.57	107.27	106.71
Others	9,109	10,255.13	6,706	9,514.40	73.62	92.78
Total	**254,885**	**315,872.85**	**234,855**	**299,672.41**	**92.14**	**94.87**

Source: KE

2.22 ISSUES OF DISTRIBUTION SECTOR

The efficiency of the whole power sector depends very much on efficient distribution of electricity. Being responsible to sell electricity to the end-consumer, the distribution sector generates cash flows to pay for the cost of distribution, transmission as well as generation of electricity. The efforts to build adequate generation capacity and transmission network may go futile if the units generated are not optimally delivered to the end consumers and the billed amount is not fully recovered.

The distribution sector has not attained the desired levels of efficiency. Load-shedding on feeder level, higher T&D losses, low recoveries, pending new connection are the factors contributing to rising cost of electricity for the end-consumer and also for increase in circular debt.

2.22.1 Load-Shedding Despite Available Generation Capacity:

DISCOs are responsible to provide uninterrupted supply of available electricity to consumers in their respective territories. However, despite enough generation capacity available in the system, the country could not get rid of the menace of load-shedding. The Daily Log Reports of System Operator show daily load management/load-shedding of around 2,500 MW to 3,000 MW during FY 2020-21. Similarly, KE also continued to carry out load-shedding in its service territory.

During FY 2020-21, DISCOs carried out load-shedding on feeder level at the pretext of aggregate technical and commercial losses arising due to network flaws as well as theft and low recovery. Such losses are outcome of poor governance as DISCOs have failed to improve their infrastructure and quality of service over the period of time. It is the prime responsibility of the DISCOs to control theft by taking actions against individuals involved in electricity theft. Similarly, DISCOs are also responsible to disconnect the electricity meters of those consumers who are at default in payment of their bills. Unable to improve the governance, DISCOs have found an easy way of load-shed at feeder level instead of improving their recovery position and apprehending the persons involved in theft. This indiscriminate load-shedding is tantamount to penalize the law abiding and good paying consumers in the area for the fault of others.

During the FY 2020-21, less drawl of power by DISCOs against the allocated quota particularly, PESCO HESCO, SEPCO and QESCO was witnessed which caused load shedding despite availability of generation capacity. The load-shedding by DISCOs at feeder level causes a decrease in sale of electricity from available sources leaving idle capacity which translated into increased per unit cost for the consumers in the wake of obligation to pay capacity charge against the available unutilized capacity.

The irrational load-shedding of DISCOs is not only adversely affecting the consumers financially and socially, but it has a very negative impact on the business of DISCOs themselves. It hurts the sale of DISCOs and negatively effects their revenues. The more worrisome consequence of DISCO's poor service is the increasing trend of consumers to have electricity storage devices (UPS) and/or inefficient generators. Both such arrangements are non-efficient use of the capital and energy resources. Apart from adverse financial impact, the load-shedding issues are also creating social problems and resulting even in moving from one locality to other.

2.22.2 High T&D Losses:

During FY 2020-21, HESCO, PESCO, SEPCO and QESCO reported highest losses with 38.55%, 38.18%, 35.27% and 27.9% losses respectively. While the losses of TESCO, GEPCO, FESCO, MEPCO, LESCO and IESCO remained 9.58%, 9.23%, 9.28%, 14.93%, 11.96% and 8.54% respectively. The actual losses of most of the DISCOs for FY 2020-21 remained higher than the given targets of even FY 2019-20.

Over the period, the Regulator has been stressing the need for the DISCOs, to reduce their losses which are causing burden to the exchequer. However, no significant improvement could be seen on the part of DISCOs in this regard.

2.22.3 Less Recoveries:

Efficient billing and 100% recovery by the power distribution companies is needed to ensure financial viability of the DISCOs and the power sector as a whole.

During FY 2020-21, IESCO, GEPCO, MEPCO and PESCO reported above 100% recoveries. The worst performers were QESCO, SEPCO, HESCO and TESCO with 39.80%, 64.48%, 75.63% and 83.27% recoveries respectively. LESCO and FESCO reported 98.72% and 97.30% recoveries during the year.

The T&D losses beyond allowed limit and recoveries less than 100% hamper the payment to transmission and generation companies. The widening of gap between the payable and the actual payments to the transmission and generation companies is resulting in increase in the circulate debt.

2.22.4 Pending Applications for New Electricity Connections:

Authority has times and again emphasized DISCOs to provide electricity connections to the applicants within the time period stipulated in the Consumer Service Manual. However, it is noted that a large number of applications for new connections were pending with DISCOs as on 30-06-2021. The main reason for delay in providing the new electricity connection, as reported by DISCOs, was non-availability of material in their stores which is not a cogent reason and only reflects the poor governance on part of respective DISCOs. Non-provision of connections is one of the reasons for lesser demand causing underutilization of available generation capacity. Sometimes, the non-provision of electricity connection also results in use of the electricity by the applicant directly without the metering and billing by the DISCO. Timely provision of connections is imperative for DISCOs to improve their sales and resultant utilization of generation capacity besides providing relief to the applicant.

2.22.5 Sustainable Sales Growth:

During FY 2020-21, the overall sales of DISCOs and KE increased by around 8% over the sales of FY 2019-20. Besides the impact of lifting Covid-19 related lock downs during FY 2020-21, the ISP announced by the Government played major role for increase in sale of electricity. Starting from November 2020, the Government announced the ISP for industrial consumers abolishing peak and off-peak tariff structure initially upto April 30, 2021. The scheme was initially implemented for the period from November, 2020 to 30th April, 2021 for industrial consumers of DISCOs as well as KE. Encouraged with the demand growth in response to the ISP, the Government decided to extend the ToU Tariff Package from 1st May, 2021 till 30th June, 2022.

The Government's initiative to stimulate industrial activity through discount on electricity price 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 additional subsidy to be picked by the Government. 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.

2.22.6 Over-Loading of Power Transformers, 11 kV Feeders and Distribution Transformers:

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 on an overall basis.

(a) Over-loading on power transformers has increased from 16.50% in FY 2019-20 to 17.76% in FY 2020-21.
(b) Over-loading on 11 kV Feeders decreased from 22.90% of FY 2019-20 to 20.59% in FY 2020-21.
(c) Over-loading of distribution transformers decreased from 7.40% in FY 2019-20 to 5.42% in FY 2020-21.

The power transformers (mostly 132/11 kV transformers), 11 kV feeders and the distribution transformers are the main components of the DISCOs' networks for delivery of electric power to end-consumer. Overloading of these components badly affects the quality of service of DISCOs. Despite sufficient amounts allowed to DISCOs in their tariffs for O&M as well as new investments, their networks have not yet been improved upto the required standards. DISCOs need to design their networks following the best engineering practices and also carry out proper O&M for improving the performance of their distribution system.

2.22.7 Centralized Control of DISCOs:

Although DISCOs have been incorporated as companies to be managed by their respective Board of Directors; they still seem shy of independent decisions in their 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 established for a specific mandate for a period of two years. However, after lapse of more than 20 years, PEPCO remained functional till 30-06-2021. During its stay, PEPCO assumed the role of overseeing and managing DISCOs with the objective to improve their quality of service, reduce line losses and load-shedding, minimize tripping and theft, constructing new grids and such other matters. However, over the years DISCOs performance in all key areas has not shown any significant improvement.

NEPRA has long been highlighting that centralized control of DISCOs is one of the main reasons for the inability to grow as commercially viable entities confident to take their financial and commercial decisions. DISCOs independence is inevitably required to enable them to think commercially and focus on efficiency rather take government's shelter for their survival despite continued losses.

2.23 GROWING CIRCULAR DEBT

The huge circular debt is alarming not only for the power sector but for the whole economy. As on 30-06-2021, the circular debt stood at Rs. 2,280,149 million against Rs. 2,150,425 million on 30-06-2020 showing an increase of Rs. 129,724 million during the year. The inefficiencies in the power generation, transmission and distribution and non-payment of subsidies in timely manner are the main causes of increase in circular debt.

The increasing circular debt is not only a big financial stress for the power sector and national exchequer, it is impairing the economic outlook of the country sending negative signals for foreign investment. The permanent solution to the problem of circular debt lies in developing the efficiency driven and financially viable power sector.

2.24 COMPETITIVE TRADING BILATERAL CONTRACT MARKET (CTBCM)

The development of the competitive electricity market in Pakistan was envisioned at the outset of power market reforms of the 1990s. Under the licence granted to NTDC, it was required to move towards a CTBCM. However, for reasons one or the other including unpreparedness of the relevant entities, the competitive market could not be developed within envisaged timelines.

In 2018, CPPA-G was registered as Market Operator by NEPRA and was mandated with the responsibility to design a wholesale Competitive Market Model for the country. CPPA-G submitted a High-Level Conceptual Design followed by Detailed Design of the CTBCM Model for review and approval of the Authority. The Authority has given the approval of said design, based on which market is to be operationalized by April, 2022. To this effect, a number of actions to be performed by different entities along with implementation roadmap timelines were also prescribed. Further, CPPA-G has been mandated with the role of a Central Coordinator by the Authority to facilitate the implementation of the CTBCM and to ensure timely completion of the associated group actions by relevant entities.

The CTBCM is a shift from the existing single buyer regime to the wholesale bilateral contract market, with balancing mechanism. Under the CTBCM, DISCOs as supplier of last resort and competitive suppliers will directly sign bilateral contracts with the consumers and generators to meet their demand and capacity obligations. It provides for the procurement of new capacity/energy through competition and prescribes the mechanism of doing away with Government Guarantees for payment security of generators. For functioning of the market, the CTBCM defines the different roles that will be performed by the existing and new market participants and service providers in the power market, while also stating the requirement of restructuring and strengthening of different entities for efficient and transparent market operations.

The Authority is monitoring the implementation and progress of the approved group of actions by the different power sector entities. For this purpose, quarterly progress review meetings are being held with the management of DISCOs, NTDC/NPCC, CPPA-G, KE and PPIB/AEDB to review and assess their performance on the relevant actions as per the approved timelines and highlight the gap analysis and any delays for necessary corrective measures.

2.25 ELECTRIC VEHICLES

Electric Vehicles (EVs) have potential to solve critical environmental challenges faced by Pakistan in the 21st century. In Pakistan, transport sector is the leading factor in deteriorating the climatic conditions. For example, 43% of the airborne emissions in Punjab are from transport sector. With the anticipated rise in Fossil Fuel Vehicles (FFVs), the problem of air pollution is only going to get worse. Since EVs do not emit any pollutants, introduction of EVs will limit emissions to a large extent.

The Government of Pakistan, announced National Electric Vehicle (EV) Policy 2019, in June, 2019. The EV Policy 2019 has set 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 2019 also focuses on development of nationwide charging infrastructure for electric vehicles.

The EV Policy 2019 requires to develop a framework to enact EV tariffs and to ensure compliance with EV standards and specifications. The foremost of which are safety standards for EVs.

NEPRA is of the considered opinion that the regulatory oversight should be minimum and that can be ensured by considering Electric Vehicle Charging Stations (EVCS) as consumers. In order to encourage the EV charging business, the DISCOs needs to allow connections to EVCS on priority basis. Uninterrupted power supply is necessary for the EV charging stations to carry out its business. To do so, the DISCOs would be required to enhance their distribution system for better services at highways and motorways.

2.26 CYBER SECURITY

The increasing automation and interconnectivity of the power systems give rise to the importance of cyber security. Intrusion of malicious attackers in the SCADA system, Automatic Generation Control, voltage control of transmission and distribution networks, market operations etc. can jeopardize the functioning of whole of the sector. The competitive power market is set to be established under the approved CTBCM by April, 2022. The smooth and transparent market operations will be highly reliant on the reliability of the information system shielded against cyber attacks intended for service interruption or injection of wrong data or both. This vulnerability calls for effective cyber security strategy and tools for deterrence against possible cyber attacks on the power system. In order to create awareness about the importance of cyber security, NEPRA during the FY 2020-21 held webinar on the issue of Industrial Cyber Security "The Modern Threat Landscape on Industrial Control System".

2.27 KEY RECOMMENDATIONS

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

Area	Recommendations
General	(a) Use of technological solutions and innovations in all segments of electric power services. (b) Ensure implementation of codes and measures of health, safety and environment in overall power sector. (c) The Licensees must ensure sharing benefits of their returns with local communities under the ambit of CSR. (d) Overall governance of the power sector must be improved for better delivery. (e) With automation and digitalization in the electricity sector, it is crucial to ensure high level of cyber security provision to avoid any mis-hap.
Generation	(a) No more Take or Pay Agreements in future. (b) Feasibility Studies for hybrid and floating solar projects. (c) Project financing in PKR for local investors. (d) Surplus and affordable grid power to displace inefficient captive plants. (e) Targeted price incentives to quickly increase base load and bring captive consumers back on gird. (f) Exploring newer cost effective indigenous generation technologies (impoundment of water, pumped storage hydel plants,floating solar PV projects and hydrogen).
Innovation	(a) Optimizing Coal Procurement through Competitive Pricing Mechanism. (b) Wind and Solar Hybrid System. (c) Development of Mini/Micro Grids for harnessing the RE resources to provide access to clean and affordable electricity. (d) Strategic Alignment of Power Sector Stakeholders. (e) Energy Storage with Li Batteries, hydrogen, pump storage hydro and etc. (f) Timely implementation of IGCEP, CTBCM, Power Policy, Rules and Regulations etc.
Transmission	(a) Identification of sites for private transmission lines & grids and preparation of RFP in the given timelines. (b) Implementation of SCADA-III at NPCC. (c) Competition in the transmission sector: More Provincial Grid Companies. (d) Addition of relevant provisions for HVDC facilities in the Grid Code. (e) Accurate demand projections and preparation of priority investment plans by NTDC. (f) Chalking out the terms and conditions for land acquisition and Right of Way by NTDC. (g) Special laws for procurement of land for timely completion of transmission lines and grids. (h) Best operational practices and development of an advanced and automated monitoring tool to generate periodic performance reports. (i) Wheeling of Power.
Distribution	(a) Roadmap for improving commercial and operational performance of DISCOs. (b) Strict monitoring of investment for loss reduction. (c) Unbundling of large/huge DISCOs in terms of area i.e. PESCO, QESCO, MEPCO, SEPCO and HESCO. (d) Automation in DISCOs for effective and timely planning, procurement, operation & maintenance, technical and financial audits, load planning, load analysis and disposal of complaints. (e) Breaking DISCOs into retail and wire businesses. (f) Mechanism for transferring committed PPAs into market domain. (g) Privatization of the DISCOs. (h) Third party checking of meters. (i) Zero tolerance policy on safety violations and Demand Side Management (DSM).

03 PERFORMANCE OF GENERATION SECTOR

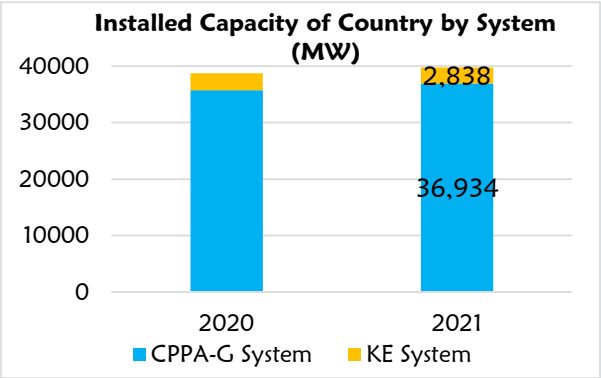
3.1 GENERAL

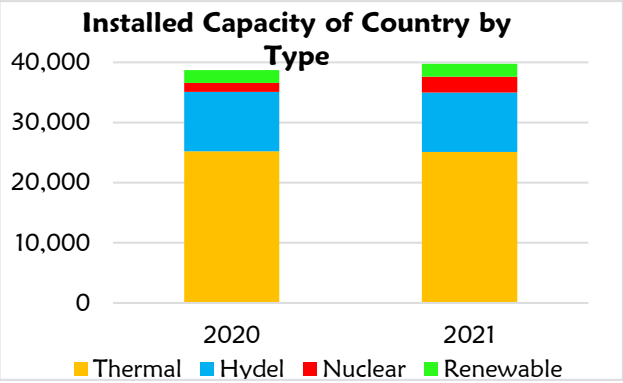
The power generation mix of the country is diversified comprising hydropower plants, thermal power plants, nuclear power plants, RE power plants including wind, solar and bagasse/biomass power plants. Besides local generation, Pakistan also imports electric power from Iran. After the power sector reforms, the private sector Independent Power Producers (IPPs) have been actively contributing to the power generation side by side the public sector power plants.

3.2 INSTALLED CAPACITY

As on 30th June	2020	2021	Variation	
			Capacity	%
A. CPPA-G SYSTEM				
WAPDA Hydel	9,389	9,443	54	0.57
IPPs Hydel	472	472	0	0.00
Total: Hydel	**9,861**	**9,915**	**54**	**0.54**
GENCOs	4,881	4,881	0	0.00
IPPs	17,276	17,276	0	0.00
SPPs/CPPs	340	340	0	0.00
Nuclear	1,330	2,475	1,145	86.10
Total: Thermal including Nuclear	**23,827**	**24,972**	**1,145**	**4.80**
Wind	1,248	**1,248**	0	0.00
Solar	430	430	0	0.00
Bagasse/Biomass	369	369	0	0.00
Total: CPPA-G System	**35,735**	**36,934**	**1,199**	**3.36**
B. K-ELECTRIC SYSTEM				
KE Own	2,294	2,084	-210	-9.15
IPPs	366	366	0	0.00
SPPs/CPPs	87	151	64	73.56
KANUPP	137	137	0	0.00
Solar	100	100	0	0.00
Total: KE System	**2,984**	**2,838**	**-146**	**-4.89**
Grand Total: Installed Capacity of the Country	**38,719**	**39,772**	**1,053**	**2.72**

Source: GENCOs/WAPDA/IPPs/DISCOs/KE





The total installed capacity of power plants in CPPA-G System and KE Systems as on 30-06-2021 was 36,934 MW and 2,838 MW respectively.

The total installed generation capacity of public sector power plants in the country as on 30-06-2021 was 20,820 MW while the installed generation capacity of private sector power plants, including KE, was 18,952 MW. Out of 39,772 MW, 25,098 MW is thermal (GENCOs, IPPs, SPPs & KE), 9,915 MW hydroelectric, 1,248 MW wind, 530 MW solar, 369 MW bagasse and 2,612 MW nuclear. The addition of 1,145 K-2 Nuclear Power Plant in May, 2021 has significantly increased the nuclear power generation capacity in the country.

The installed capacity of public sector and private sector power plants in CPPA-G system as on 30-06-2021 was 20,683 MW and 16,251 MW respectively.

The total installed capacity of KE's own power plants as on 30-06-2021 was 2,084 MW. KE's own generation capacity is not sufficient to meet the demand in its area. Therefore, besides its own generation, KE also purchased electric power from external sources including 366 MW IPPs, 151 MW SPPs/CPPs, 137 MW KANUPP and 100 MW solar power plants connected with KE System.

CPPA-G is supplying 650 MW electricity to KE through its generation basket. In addition to this 650 MW, CPPA-G is also supplying electricity to KE from three dedicated wind power plants including Zephyr Power, Tenaga Generasi and HydroChina Dawood, with total 150 MW capacity since 2019 for two years, extendable with mutual consent, under a Power Purchase and Agency Agreement between KE, CPPA-G and NTDC.

3.2.1 Dependable Capacity:

The total dependable generation capacity of the country, including CPPA-G and KE Systems as on 30-06-2021 was 37,271 MW comprising of 34,871 MW capacity in CPPA-G System and 2,400 MW in KE System.

3.3 ELECTRICITY GENERATION

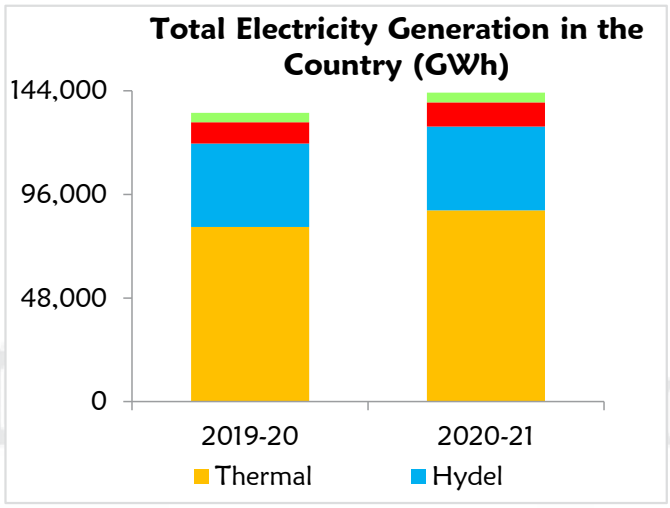
During FY 2020-21, the total electricity generation in the country including the power plants in CPPA-G and KE Systems was recorded as 143,090.64 GWh compared to 133,727.2 GWh electric power generation of FY 2019-20. Besides the local generation, 498.37 GWh were imported during FY 2020-21 compared to 513.74 GWh import during FY 2019-20. The total electricity generation from power plants in CPPA-G system remained 129,722.05 GWh which included 38,800.55 GWh hydel, 75,728.36 GWh thermal (including generation by SPPs/CPPs), 10,871.01 GWh nuclear, 2,899.94 GWh wind, 711.63 GWh solar and 710.56 GWh bagasse/biomass.

During the year under consideration, the public sector power plants generated 75,875.03 GWh electricity while private sector power plants generated 67,215.19 GWh.

The following table give details of source-wise electricity generation in CPPA-G and KE systems during FY 2019-20 and FY 2020-21:

	FY 2019-20	FY 2020-21	Variation	
			Energy	%
A. CPPA-G SYSTEM				
WAPDA Hydel	37,136.04	36,982.54	-153.50	0.41
IPPs Hydel	1,562.55	1,818.01	255.46	16.35
Total: Hydel	**38,698.59**	**38,800.55**	**101.96**	**0.26**
GENCOs	7,907.85	6,802.93	-1,104.92	-13.97
IPPs	60,720.31	68,708.63	7988.32	13.16
SPPs/CPPs	170.99	216.80	45.81	26.80
Nuclear	9,704.89	10,871.01	1,166.12	12.02
Total: Thermal including Nuclear	**78,504.12**	**86,599.37**	**8,095.25**	**10.31**
Wind	2,882.48	2,899.94	17.46	0.61
Solar	704.97	711.63	6.66	0.94
Bagasse/Biomass	564.46	710.56	146.10	25.88
Total: RE Power Plants	**4,151.91**	**4,322.13**	**170.22**	**4.10**
Total: CPPA-G System	**121,354.60**	**129,722.05**	**8,367.45**	**6.89**
B. K-ELECTRIC SYSTEM				
KE Own	9,629.00	10,186.00	557	5.78
IPPs	1,862.69	2,184.57	321.88	17.28
SPPs/CPPs	535.00	579.02	44.02	8.23
KANUPP	193.00	219.00	26	13.47
Solar	153.00	200	47	30.72
Total: KE System	**12,372.69**	**13,368.59**	**995.90**	**8.05**
Total Generation (A+B)	**133727.20**	**143,090.64**	**9,363.44**	**7.00**
C. IMPORT FROM IRAN	**513.74**	**498.37**	**-15.37**	**-2.99**
Grand Total: (A+B+C)	**134,240.97**	**143,588.60**	**9,347.63**	**6.96**

Source: GENCOs/WAPDA/IPPs/DISCOs/KE



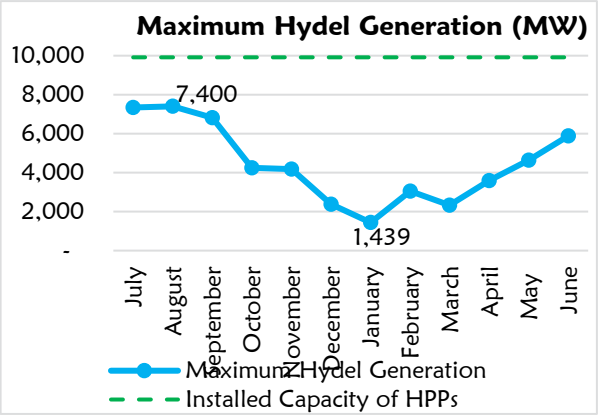
During FY 2020-21, the generation of thermal IPPs in CPPA-G System has shown a significant increase of 13.16% over the last year's generation with the same generation capacity. Similarly, the generation from hydel IPPs, and RE power plants also recorded increase of 0.26% and 4.10% respectively. However, the generation from GENCOs decreased by 13.97% over the last year's generation.

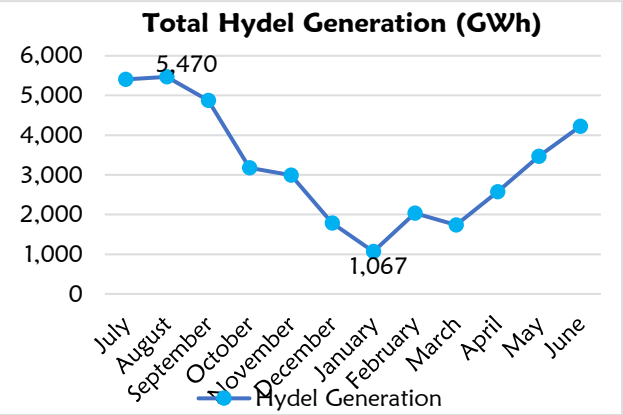
During FY 2020-21, KE's own generation increased by 5.78% over the last year's generation. In KE's basket, the lower utilization of KE's comparatively efficient gas based power plants (BQPS-II, KCCPP, Site and Korangi Gas Engines) was noted at various occasions. Operation of less efficient power plants of BQPS-I by using the pipeline quality gas was also noted during FY 2020-21.

The purchases from IPPs also increased during the period; major chunk coming from the RFO based power plants of Gul Ahmed and Tapal Energy which increases the per unit cost of electricity in KE system. During FY 2020-21, Gul Ahmed and Tapal Energy supplied 673 GWh and 737 GWh of electricity to KE respectively.

3.3.1 Hydropower Generation:

During FY 2020-21, WAPDA hydel generated 36,982 GWh electricity compared to 37,136.04 GWh during FY 2019-20 recording a decrease of 153.50 GWh. During the same period, the hydel IPPs generated 1,818.01 GWh electricity as compared to 1,562.55 GWh during FY 2019-20 showing an increase of 255.46 GWh. During FY 2020-21, the highest utilization of HPPs was recorded in the month of August, 2020 which was around 74% of their dependable capacity while the lowest utilization of HPPs recorded in the month of January, 2021 which was around 15% of their dependable capacity. The capacity based tariff vis-à-vis intermittent fluctuated generation affects the per unit power generation cost which is higher in low generation months.





3.3.2 Fuel-wise Thermal Power Generation:

(a) Gas based Generation: During FY 2020-21, a total 17,917.02 GWh electricity was generated using gas as compared to 20,323.86 GWh generation during FY 2019-20 showing decrease of 2,406.84 GWh. The gas based generation during FY 2020-21 included 14,496.43 GWh generation in CPPA-G area while 3,420.59 GWh in KE area while the gas based generation during FY 2019-20 in CPPA-G and KE systems remained 15,236 GWh and 5,087 GWh respectively. The share of gas based electricity generation in total thermal generation during FY 2020-21 remained 20.20% while the share of gas based electricity generation during FY 2018-19 and FY 2019-20 was 31.32% and 25.15% respectively.

(b) RLNG based Generation: During FY 2020-21, total 31,761.81 GWh electricity was generated using RLNG as compared to 26,625.59 GWh generated during FY 2019-20 showing an increase of 5,136.22 GWh. The RLNG based electricity generation included 26,983.81 GWh in CPPA-G area and

4,778 GWh in KE area. The share of RLNG based generation in total thermal generation during FY 2020-21 remained 35.82% while the share of the same during FY 2018-19 and FY 2019-20 was 34.47% and 32.94% respectively.

(c) RFO based Generation: During FY 2020-21 total 10,596.06 GWh electricity was generated using RFO as compared to 7,909.16 GWh during FY 2019-20 showing an increase of 2,686.9 GWh. The RFO based generation of FY 2020-21 included 6,331.06 GWh in CPPA-G area and 4,265 GWh in KE area. The share of RFO based electricity generation in total thermal generation during FY 2020-21 remained 11.96% while the share of the same during FY 2018-19 and FY 2019-20 was 15.47% and 9.79% respectively.

(d) Coal based Generation: During FY 2020-21, total 28,000.78 GWh electricity has been generated using coal as compared to 25,966.25 GWh during FY 2019-20 showing an increase of 2,034.53 GWh. The coal based electricity generation included 27,547.78 GWh in CPPA-G area and 453 GWh in KE area. The share of coal based electricity generation in total thermal generation during FY 2020-21 remained 31.59% while the share of the same during FY 2018-19 and FY 2019-20 was 18.71% and 32.13% respectively.

(e) HSD based Generation: During FY 2020-21, a total of 369.25 GWh electricity has been generated using HSD fuel in NTDC area as compared to 0.67 GWh during FY 2019-20. HSD based generation in KE area during FY 2020-21 remained 33 GWh compared to nil generation during the 2019-20. The share of HSD based electricity generation in total thermal generation during FY 2020-21 remained 0.45% while the share of the same during FY 2018-19 and FY 2019-20 was 0.03% and 0.01% respectively.

3.3.3 Public Sector GENCOs:

The total electricity generation of GENCOs during FY 2020-21 remained 6,802.93 GWh as compared to 7,907.85 GWh during FY 2019-20 showing a decrease of 1,104.92 GWh.

(a) Jamshoro Power Company Limited (GENCO-I): The installed capacity of GENCO-I as on 30-06-2021 was 880 MW while total electricity generation of GENCO-I during FY 2020-21 remained only 199.04 GWh as compared to 209.90 GWh during FY 2019-20 showing a decrease of 10.86 GWh over last year.

(b) Central Power Generation Company Limited (GENCO-II): The installed capacity of GENCO-II as on 30-06-2021 was 1,790 MW. The total electricity generation of GENCO-II during FY 2020-21 has been recorded at 4,824.89 GWh as compared to 5,921.75 GWh during FY 2019-20 showing a decrease of 1,096.86 GWh.

The generation of 747 MW CCPP Guddu of GENCO-II dropped from 4,315.35 GWh of last year to 3,123 GWh during FY 2020-21 showing decrease of 1,191.53 GWh. This decrease in the generation of the most efficient power plant of GENCO-II has further decreased its utilization factor which remained 49.5%.

The old block of GENCO-II i.e. TPS Guddu (Unit 5-10) and TPS Guddu (Unit 11-13) with accumulated installed generation capacity of 1,015 MW collectively generated only 1,701.07 GWh. The combined cycle power plants, Units 5 to 10 and Units 11 to 13, were operated in open cycle mode during FY 2020-21 as well.

(c) Northern Power Generation Company Limited (GENCO-III): The total installed capacity of GENCO-III as on 30-06-2021 was 2,061 MW. The total electricity generated by GENCO-III during FY 2020-21 remained 1,777.26 compared to 1,775.86 GWh during FY 2019-20, showing a slight increase of 1.4 GWh.

The generation of 546 MW TPS Nandipur of GENCO-III has remained 1,481 GWh with annual utilization of 41.20%.

The old block of GENCO-III, i.e. TPS Muzaffargarh and GTPS Faisalabad with accumulated capacity of 1,494 MW generated only 296.52 GWh. Keeping in view the very low utilization of these power plants over the years, the Authority has converted their tariff from 'Take or Pay' to 'Take and Pay' basis.

(d) Lakhra Power Generation Company Limited (GENCO-IV): During FY 2020-21, GENCO-IV recorded nil generation for third consecutive year. The tariff of GENCO-IV is on 'Take and Pay' basis. Zero generation from cheaper local coal fuel is affecting the power sector of Pakistan. Further, this plant is a burden on national exchequer as it is unable to recover its fixed costs.

3.3.4 Nuclear (CHASNUPP-I, II, III, IV & K-2):

The nuclear power generation in the country is managed by Pakistan Atomic Energy Commission (PAEC) who has been undertaking all development, execution, operation and maintenance of nuclear based power generation. During FY 2020-21, the nuclear power generation capacity was significantly increased by commissioning of 1,145 MW K-2 in May, 2021. The total installed capacity of nuclear power plants connected with NTDC System as on 30-06-2021 was 2,475 MW. The electricity generation of the Nuclear Power Plants connected with NTDC system during the FY 2020-21 remained 10,871 GWh as compared to 9,704.89 GWh during the FY 2019-20 showing an increase of 1,166.12 GWh.

3.3.5 Independent Power Producers:

The total installed capacity of thermal IPPs connected with NTDC System as on 30-06-2021 was 17,276 MW. The electricity generated by thermal IPPs connected with NTDC system during the FY 2020-21 is noted as 68,708.63 GWh compared to 60,720 GWh during the FY 2019-20 showing an increase of 7,988.32 GWh.

3.3.6 Renewables:

The total installed capacity of RE power plants (wind, solar and bagasse) connected with NTDC System as on 30-06-2021 was 2,047 MW. The total electric power generation of RE power plants connected with NTDC system during FY 2020-21 has been recorded as 4,322.13 GWh compared to 4,151.91 GWh during FY 2019-20 showing increase of 170.22 GWh.

(a) Wind: The total installed capacity of Wind Power Plants (WPPs) as on 30-06-2021 was 1,248 MW. The electricity generation of the WPPs during FY 2020-21 remained 2,899.94 GWh compared to 2,882.48 GWh during FY 2019-20 showing an increase of 17.46 GWh.

Out of 1,248 MW wind power plants, three WPPs with total 150 MW capacity namely Zephyr Power, Tenaga Generasi and HydroChina Dawood, are providing electricity to KE under a Power Purchase and Agency Agreement between KE, CPPA-G and NTDC. During FY 2020-21, these three WPPs supplied 354 GWh electric power to KE as compared to 423.88 GWh supplied during FY 2019-20.

(b) Solar: The installed capacity of Solar Power Plants (SPPs) connected with NTDC System as on 30-06-2021 was 430 MW. The total electricity generation of these SPPs connected during FY 2020-21 was recorded as 711.63 GWh as compared to 704.97 GWh during FY 2019-20 showing increase of 6.66 GWh.

(c) Bagasse/Biomass: The installed capacity of bagasse/biomass power plants connected with NTDC System as on 30-06-2021 was 369 MW. The total electricity generation of these power plants during FY 2020-21 remained 710.56 GWh as compared to 564.46 GWh during last year showing an increase of 146.10 GWh.

3.3.7 Others:

Various small power plants are providing their surplus power on 'Take and Pay' basis. During FY 2020-21, the supply of electricity from these plants remained 168.58 GWh compared to 170.99 GWh supplied during FY 2019-20. These small power plants supply electricity on 'Take and Pay' basis with no must-run condition. If included in the EMO, such power plants may compete with the 'Take or Pay' power plants and pave way for development of a competitive market in the country.

3.4 ELECTRICITY GENERATION IN K-ELECTRIC BASKET

The total installed capacity of KE own power plants as on 30-06-2021 was 2,084 MW. KE generated 10,186 GWh electricity through its own power plants during FY 2020-21 compared to the last year's generation of 9,629 GWh showing increase of 557 GWh.

During FY 2020-21, KE has also generated electricity through BQPS-I steam turbine thermal power plant by using local gas. Presently, the gas supply companies are supplying comingled gas (indigenous gas+RLNG) through their gas transmission network to gas consumers in the country including the power plants located in their respective territories. However, the rates of local/pipeline quality gas and RLNG are different. Ideally the plants with higher efficiency need to be charged the cheaper rates of local gas to capture the full advantage of their efficiency or a single rate be determined for power sector. Burning of the cheap rate gas in inefficient power plants is non-optimal use of the precious resource and adversely affecting the power sector for Pakistan as well as national exchequer.

3.4.1 KE Purchases:

During FY 2020-21, KE purchased electric power from IPPs/CPPs including Gul Ahmed, Tapal Energy, Anoud Power, International Steel Limited, International Industries Limited, FFBL Power, SNPCL-I & II, Oursun Pakistan and Gharo Solar as well as from KANUPP-I. Further, CPPA-G is supplying 650 MW electricity to KE through its generation Basket. In addition to this 650 MW, CPPA-G is also supplying electricity to KE from three dedicated wind power plants including Zephyr Power, Tenaga Generasi, and HydroChina Dawood, with total 150 MW capacity since 2019 for two years, extendable with mutual consent, under a Power Purchase and Agency Agreement between KE, CPPA-G and NTDC. The position of electricity generated by KE through its own power plants and purchases of electricity from external sources including CPPA-G during FY 2020-21 and FY 2019-20 is as below:

Source of Electric Power (GWh)	FY 2019-20	FY 2020-21
KE's Own Generation (A)	9,629.00	10,186.00
Purchases from CPPA-G (B)	5,426.00	6,118.00
Purchases from Other Sources (C)	2,743.68	3,182.59
Total Purchases (B+C)	**8,169.68**	**9,300.59**
Total units purchased by KE including own generation for Distribution (A+B+C)	**17,798.69**	**19,486.59**

Source: KE

3.5 GENERATION LICENCES EXPIRING IN NEXT 5 YEARS

During the next five years, the Generation Licences of following 03 IPPs and a nuclear power plant with cumulative 2,392.23 MW capacity are due for expiry:

S. No.	Name of Power Plant	Capacity (MW)	Fuel	COD	Licence Issue Date	Licence Expiry Date
1	KAPCO	1,638.00	HSD/Gas	01-12-1996	22-09-2004	21-09-2021
2	Altern Energy	31.23	Gas	06-06-2001 (Ph-I) 20-09-2008 (Ph-II)	22-09-2004	21-09-2021
3	Uch Power	586.00	Gas	18-10-2000	26-08-2003	25-08-2023
4	Karachi Nuclear Power Plant (Unit-1)	137.00	Nuclear	1972	04-03-2005	21-08-2021

During FY 2020-21, the Generation Licence of 140 MW Habibullah Coastal power plant has been renewed for a period of 10 years uptill 10-09-2029. Further, KAPCO has approached NEPRA for renewal of Generation Licence of its 1,638 MW power plant which is going to expire on 21st September, 2021.

PERFORMANCE OF TRANSMISSION SECTOR

04

4.1 GENERAL

Transmission of electric power is a licensed activity under the NEPRA Act. The Act stipulates grant of Transmission Licence for National Grid Company, Special Purpose Transmission Licence (SPTL) and Licence for Provincial Grid Company.

4.2 NATIONAL GRID COMPANY (NGC)

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 engaged in transmission of electric power in whole country except the specific territory of KE. NTDC is engaged in transmitting electric power at voltage level 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 Bulk Power Consumer (BPC) who proposes to become directly connected to its facilities. NGC is, interalia, 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.

Under NEPRA Act, amended in 2018, System Operation is licensed activity. However, as per the Proviso under Section 23 (G), the NGC shall deemed to be a system operator for a period of two years from the commencement of the NEPRA (Amendment) Act, 2018.

Besides NTDC, KE has also been granted a Transmission Licence for transmission of electric power in its territory.

4.3 PROVINCIAL GRID COMPANY (PGC)

NEPRA (Amendment) Act, 2018 provides that the Government of a Province may construct power houses 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 licences have been granted; first one to STDC for transmission of electric power within the province of Sindh while the other one is granted to Khyber Pakhtunkhwa Transmission and Grid Company to engage in the transmission of electric power in the province of Khyber Pakhtunkhwa. The PGC Licenses for the provinces of Sindh and Khyber Pakhtunkhwa were issued on 05-11-2019 and 26-02-2021 respectively, however, there has been no progress reported so far by these licensees regarding the development of their transmission infrastructure.

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 PGC are given in detail in the NEPRA Act as well as in the licences granted to the companies.

4.4 SPECIAL PURPOSE TRANSMISSION LICENCE (SPTL)

Under the NEPRA Act, Authority 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 licences granted to the companies.

NEPRA has, so far, issued SPTL to three private sector companies namely, Pak Matiari-Lahore Transmission Company (Pvt.) Limited, Fatima Transmission Company Limited and STDC.

(a) Pak Matiari-Lahore Transmission Company (Pvt.) Limited has been granted SPTL for constructing first-ever 886 km dedicated ±660 kV HVDC transmission line from Matiari to Lahore with a capability to transmit 4,000 MW power.

(b) Fatima Transmission Company Limited has been granted SPTL to establish special purpose transmission lines to evacuate power from its 120 MW cogeneration power plant.

(c) STDC has been granted SPTL to evacuate power from the power plant of SNPC-I and SNPC-II and transmit it to KE network. STDC has constructed Transmission Line of 132 kV Double Circuit from SNPC to KDA-33 Grid Station of KE at Karachi. The length of the line is around 95.47 km.

4.5 POWER BALANCES IN NTDC SYSTEM

The installed 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 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)**
2017	19,020	25,117		-6,097
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
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)**
2022	32,989	5.4	30,921	2,068
2023	35,896	3.3	31,953	3,943

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)
2024	37,918	5.5	33,696	4,222
2025	39,157	5.1	35,422	3,735
2026	42,075	2.2	36,206	5,869
2027	40,433	5.6	38,227	2,206
2028	44,639	5.5	40,324	4,315
2029	45,437	5.4	42,519	2,918
2030	47,127	5.7	44,958	2,169

** Generation Capability is the maximum Generation Capability of any day recorded during the year and Demand is the Maximum Demand of any day recorded during the year.*
Source: NTDC

4.6 UNDER-UTILIZATION OF TRANSMISSION SYSTEM OF NTDC

(a) 220 kV Grid Station along with 40 km 220 kV D/C transmission line at 220 kV Lal Suhanra Grid Station are under-utilized/un-utilized since 2018 due to delay in commissioning of Phase-II of Quaid-e-Azam Solar Park.

(b) 220 kV Gharo Jhimpir D/C transmission line, 75 km is energized at 132 kV since 2018 due to delay in construction of 220 kV Grid Station at Gharo.

(c) 2x220 kV D/C transmission line, 50 km from 1230 MW Trimmu Power Plant to 220 kV TT Singh Grid Station is un-utilized/under-utilized since 2018 due to delayed commissioning of Trimmu Power Plant.

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

As of 30th June 2021, NTDC is maintaining 16 (Sixteen) 500 kV grid stations with a transformation capacity of 30,610 MVA and 46 (forty-six) 220 KV grid stations with a transformation capacity of 25,770 MVA. There are 44 (forty-four) 500/220 kV transformers and 34 (thirty-four) 220/132 kV transformers installed at 500/220 kV grid stations. There are 129 (one hundred and twenty-nine) 220/132 kV transformers installed at 220 kV grid stations.

Month Wise NTDC's Transformers Loading Position

Month	500/220 kV Transformers		220/132 kV Transformers		Grand Total		
	Total (Nos.)	Loaded (80% & above)	Total (Nos.)	Loaded (80% & above)	Total (Nos.)	Loaded (80% & above)	% of Total
July, 2020	44	24	160	91	204	115	56
August, 2020	44	29	160	93	204	122	60
September, 2020	44	19	160	81	204	100	49
October, 2020	44	13	160	48	204	61	30
November, 2020	44	4	160	16	204	20	10
December, 2020	44	3	160	23	204	26	13
January, 2021	44	2	160	33	204	35	17
February, 2021	44	4	160	25	204	29	14
March, 2021	44	4	163	41	207	45	22
April, 2021	44	13	163	45	207	58	28
May, 2021	44	13	163	70	207	83	40
June, 2021	44	20	163	96	207	116	56

Source: NTDC

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

NTDC reported the following month-wise T&T losses during FY 2020-21:

Month	Energy Received by NTDC at CDPs (GWh)	Energy Delivered by NTDC at CDPs (GWh)	T&T Loss (GWh)	T&T Losses (%)	T&T Losses (Rs. in Million)
July, 2020	14,397.28	14,016.19	381.09	2.65	The financial cost of the T&T losses over and above NEPRA target losses is Rs. 120 million for the FY 2020-21.
August, 2020	14,943.32	14,541.58	401.74	2.69	
September, 2020	13,502.06	13,159.98	342.08	2.53	
October, 2020	10,515.05	10,264.95	250.10	2.38	
November, 2020	8,189.78	7,977.03	212.75	2.60	
December, 2020	8,693.71	8,412.92	280.79	3.23	
January, 2021	9,301.51	8,972.00	329.51	3.54	
February, 2021	7,572.43	7,320.63	251.80	3.33	
March, 2021	9,471.35	9,154.32	317.03	3.35	
April, 2021	10,233.07	9,955.74	277.32	2.71	
May, 2021	12,063.88	11,800.11	263.77	2.19	
June, 2021	13,415.68	13,044.81	370.87	2.76	
TOTAL	**132,299.11**	**128,620.26**	**3,678.85**	**2.78**	

Source: NTDC

4.9 INVESTMENT DETAILS OF NTDC

A summary of investments allowed (Rs. in Million) by NEPRA to NTDC and actual expenditure by NTDC during last 05 years is given below:

Description	2015-16	2016-17	2017-18	2018-19	2019-20
Requested by NTDC	42,363	74,700	46,428	49,815	39,062
Allowed by NEPRA	28,222	49,810	42,336	41,380	37,257
Actual expenditure by NTDC	28,749	44,194	42,336	47,406	37,257

Source: NTDC

4.10 POWER BALANCES IN K-ELECTRIC 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 2021, 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)*****
2017	2,920 (including IPPs+NTDC)	3,270	(350)
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)

B: Projected Figures				
FY ending 30th June	**Planned Generation Capability as per KE (MW)**	**KE's Projected Demand Growth Rate (%)**	**KE's Projected Demand during Peak hours (MW)**	**Surplus/ (Deficit) (MW)**
2022	4,317	6.50	4,110	207
2023	4,737		4,422	315
2024	4,878		4,588	290
2025	5,002		4,759	243
2026	5,002		4,935	67

Explanations given by KE in respect of above data are shown under Table given in statistical portion.

Source: KE

4.11 TRANSMISSION NETWORK OF K-ELECTRIC

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:

(a) 365 km of 220 kV Transmission Lines,
(b) 11 Nos. of 220 kV Grid Stations with transformation capacity of 4,580 MVA
(c) 833 km of 132 kV Transmission Lines.
(d) 69 Nos. of 132 kV Grid Stations having transformation capacity of 7,135 MVA.

During FY 2020-21, one grid station has been added at 132 kV level in KE system.

4.12 LOADING POSITION OF POWER TRANSFORMERS IN K-ELECTRIC 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 168 power transformers of 7,135 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 2020-21 whereas, 49 out of 168 of KE's power transformers at 132/11 kV level were reported over-loaded in the same period.

4.13 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.

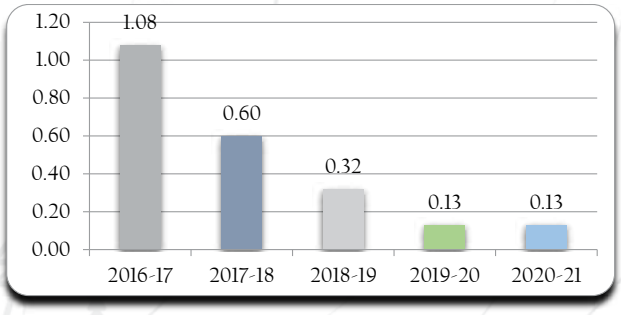
4.13.1 National Transmission and Despatch Company Limited:

NTDC has submitted its report of FY 2020-21. 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 and Frequency Variations violating limits prescribed in PSTR. Highlights of the analysis/findings are given in succeeding paras.

(A) SYSTEM RELIABILITY

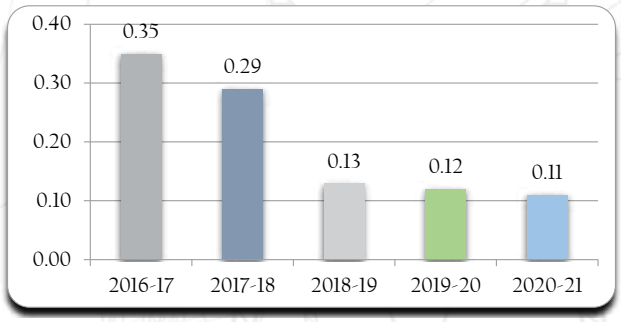
(i) System Duration of Interruption (Hrs/Point):

This parameter shows the average duration of outage an interconnection point experienced during a year. It was noted as 0.13 hrs. in FY 2020-21 as shown in the figure indicating no increase/ decrease in average outage duration per interconnection point as compared to preceding year.



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

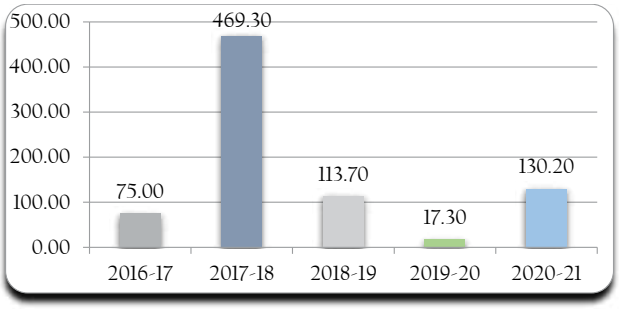
This parameter indicates the average number of outages at a circuit during a year. During FY 2020-21 it remained 0.11 as shown in the accompanying figure indicating 8.33% decrease in average number of outages per circuit as compared to preceding year.



(B) SYSTEM SECURITY

(i) Energy Not Served (ENS) (MkWh):

This parameter shows the estimates of the total ENS contributed by loss of supply incidents during the year. The ENS increased from 17.30 GWh in FY 2019-20 to 130.20 GWh in FY 2020-21; an increase by 652.60% as compared to previous year.



(ii) Loss of Supply Incidents, Average ENS per Incident and Average duration per Incident:

The table shows improvement in loss of supply incidents upto third quarter of FY 2020-21 over total incidents during FY 2019-20 and average energy not served per incident. NTDC is required to continue its efforts to achieve acceptable reliability levels:

Year	Loss of Supply Incidents (Nos.)	Average ENS per Incident (MWh)	Average Duration per Incident (Hrs:Min)
2016-17	165	454.00	03:12
2017-18	142	3,304.90	02:06
2018-19	66	1,722.70	2:40
2019-20	62	300.00	1:10
2020-21	57	2,284.00	1.20

(C) SYSTEM 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 permissible limits of ±1%. A gradual improvement in this area has been observed:

(i) NTDC System Frequency

Year	Number of times Frequency remained outside the Limits			Time duration the Frequency remained outside the Limits			Maximum Continuous period of Deviation	
	In A Year	Average/ Month	Average/ Day	Days	Hours	% Of Year	Hours	Minutes
2016-17	35	2.90	0.096	0.175	4.20	0.048	0.25	15
2017-18	25	2.10	0.068	0.171	4.10	0.047	0.18	11
2018-19	25	2.10	0.07	0.12	2.98	0.340	--	--
2019-20	9	0.80	0.02	0.03	0.80	0.009	--	--
2020-21	4	0.30	0.01	0.02	0.60	0.007	--	--

(ii) NTDC Monthly Highest System Frequency (Hertz)

Month	2016-17	2017-18	2018-19	2019-20	2020-21
July	NIL	50.55	50.66	50.62	50.72
August	50.72	50.56	50.54	50.55	NIL
September	50.60	50.56	50.60	NIL	50.54
October	NIL	NIL	50.58	50.59	NIL
November	NIL	NIL	NIL	NIL	NIL
December	50.63	NIL	50.64	NIL	NIL
January	50.68	50.64	50.67	50.58	NIL

Month	2016-17	2017-18	2018-19	2019-20	2020-21
February	50.65	NIL	NIL	NIL	NIL
March	50.61	50.54	50.59	NIL	NIL
April	50.63	50.56	50.68	NIL	NIL
May	50.65	50.62	NIL	50.60	NIL
June	50.64	50.60	50.79	50.54	NIL

(iii) NTDC Monthly Lowest System Frequency (Hertz)

Month	2016-17	2017-18	2018-19	2019-20	2020-21
July	NIL	50.51	50.51	NIL	NIL
August	49.36	50.51	50.51	NIL	NIL
September	50.51	50.51	50.51	NIL	NIL
October	NIL	NIL	50.51	NIL	NIL
November	NIL	NIL	NIL	NIL	NIL
December	49.44	NIL	50.51	NIL	NIL
January	49.37	NIL	49.44	NIL	NIL
February	50.53	NIL	NIL	NIL	NIL
March	50.51	NIL	50.51	NIL	NIL
April	49.32	NIL	50.52	NIL	NIL
May	50.52	NIL	NIL	NIL	NIL
June	50.51	NIL	50.51	NIL	NIL

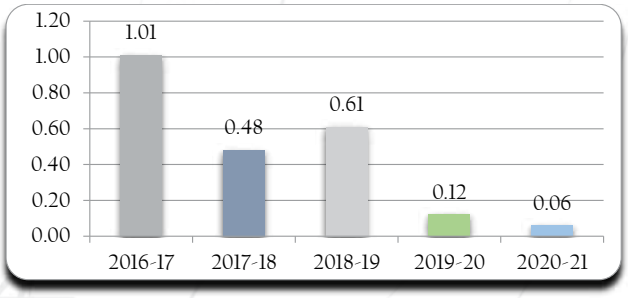
4.13.2 K-Electric Limited:

KE has submitted its APR for the FY 2020-21, under Performance Standards (Transmission) Rules, 2005. The same has been analyzed and following main observations have been noted:

(A) SYSTEM RELIABILITY

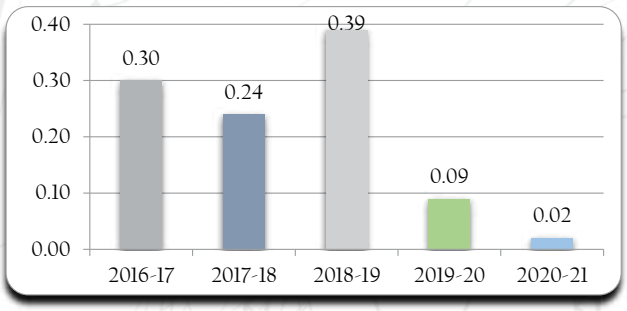
(i) System Duration of Interruption (Hrs/Point):

This KPI shows the average duration of outage an interconnection point observes during a year and it remained 0.06 hrs. in the year 2020-21 as shown in the accompanying figure. This indicates a 50% decrease in average outage duration per interconnection point as compared to preceding year.



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

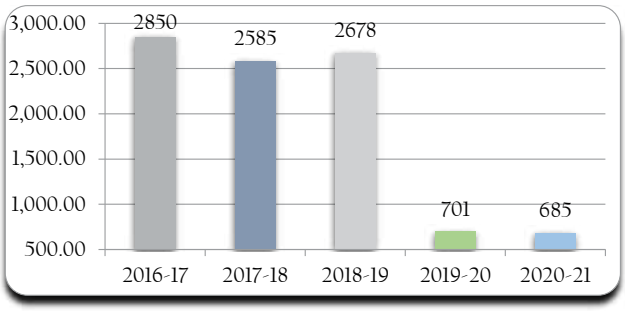
It indicates the average number of outages at a circuit during a year. As shown in the figure it remained 0.02 in the year 2020-21 (77.78% decrease with respect to preceding year).



(B) SYSTEM SECURITY

(i) Energy Not Served (ENS) (MWh):

This KPI shows the estimates of the total ENS as a result of loss of supply incidents during the year. The ENS in KE decreased in 2020-21 compared to the last year, implying that KE could not keep the momentum going in this area, by achieving gradual improvement since 2016-17. The number of incidents decreased compared to last year.



(ii) Loss of Supply Incidents, Average ENS per Incident and Average Duration per Incident

Year	Loss of Supply Incidents (Nos.)	Average ENS per Incident (MWh)	Average Duration per Incident (Hrs:Min)
2016-17	10	285	00:71
2017-18	8	323.1	00:42
2018-19	13	206	0:33
2019-20	3	234	0.32
2020-21	1	685	0.57

(C) SYSTEM FREQUENCY

(i) Monthly Highest System Frequency (Hertz)

Month	2016-17	2017-18	2018-19	2019-20	2020-21
July	50.60	N/A	Nil	Nil	Nil
August	Nil	N/A	Nil	Nil	Nil
September	Nil	N/A	51.50	Nil	Nil
October	Nil	N/A	Nil	Nil	Nil
November	Nil	N/A	Nil	Nil	Nil
December	Nil	N/A	Nil	Nil	Nil
January	50.60	50.90	50.80	Nil	Nil
February	Nil	N/A	Nil	Nil	Nil
March	Nil	N/A	Nil	Nil	Nil
April	Nil	50.60	Nil	Nil	Nil
May	50.60	50.60	Nil	Nil	Nil
June	Nil	N/A	Nil	Nil	Nil

N/A: Not Applicable because no frequency violation.

(ii) Monthly Lowest System Frequency (Hertz)

Month	2016-17	2017-18	2018-19	2019-20	2020-21
July	Nil	N/A	Nil	Nil	Nil
August	Nil	N/A	Nil	Nil	Nil
September	Nil	N/A	Nil	Nil	Nil
October	Nil	N/A	Nil	Nil	Nil
November	Nil	N/A	Nil	Nil	Nil
December	Nil	N/A	Nil	Nil	Nil
January	Nil	N/A	Nil	Nil	Nil
February	Nil	N/A	Nil	Nil	Nil
March	Nil	N/A	Nil	Nil	Nil
April	49.30	N/A	Nil	Nil	Nil
May	Nil	N/A	Nil	Nil	Nil
June	Nil	N/A	Nil	Nil	Nil

N/A: Not Applicable because no frequency violation.

PERFORMANCE OF DISTRIBUTION SECTOR

05

5.1 GENERAL

Distribution of electric power is a licensed activity under the NEPRA Act. At present ten (10) Distribution companies fully owned by the Federal Government are performing the function of electric power distribution in their respective 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 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.

Besides DISCOs, KE has also been granted a Distribution Licence for distribution of electricity in its specified territory.

5.2 DISCO'S AND KE'S INFRASTRUCTURE

The following table shows DISCO-wise details of Transmission Lines, Grid Stations, Power Transformers, 11 kV Feeders, Distribution Transformers and number of consumers:

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	2019-20	2,764	93	210	6,148.50	1,089	36,935	77,307	6,091.795	3,650,130
	2020-21	2,967	95	221	6,658.50	1,138	37,177	79,437	6,264.345	3,848,951
TESCO	2019-20	408	10	31	592.30	241	10,316	18,580	1,227.125	442,765
	2020-21	441	11	34	711.30	275	10,567	18,827	2,093.400	483,180
IESCO	2019-20	3,030	108	253	6,425.00	1,166	25,804	50,210	4,121.000	3,120,189
	2020-21	3,482	111	260	6,609.00	1,211	26,237	51,988	4,279.000	3,276,164
GEPCO	2019-20	2,611	59	171	4,939.30	876	24,231	72,007	4,538.000	3,717,843
	2020-21	2,611	59	172	5,084.80	910	24,659	76,125	4,745.000	3,933,086
LESCO	2019-20	3,012	162	403	12,128.00	1,923	30,005	116,030	8,885.600	5,187,194
	2020-21	3,051	167	427	12,916.00	2,011	30,055	122,124	9,245.095	5,527,854
FESCO	2019-20	2,288	98	212	5,673.00	1,150	44,397	113,079	7,291.000	4,401,464
	2020-21	2,337	102	217	5,778.00	1,185	45,690	120,446	7,628.000	4,641,802
MEPCO	2019-20	4,031	130	294	8,245.00	1,508	78,309	179,577	8,769.045	6,861,310
	2020-21	4,072	134	301	8,602.00	1,652	79,837	187,791	9,102.165	7,217,677
HESCO	2019-20	2,771	70	106	2,628.40	556	28,413	37,896	1,881.556	1,144,680
	2020-21	2,771	70	106	2,654.40	570	28,471	43,873	2,680.585	1,172,990
SEPCO	2019-20	2,241	58	110	2,687.10	541	25,571	38,616	2,163.805	788,816
	2020-21	2,262	60	111	2,782.10	548	25,682	39,076	2,178.305	805,717
QESCO	2019-20	5,420	72	133	3,221.00	652	39,745	62,337	3,213.540	642,976
	2020-21	5,500	73	135	3,267.00	688	40,822	64,119	3,339.400	662,168
Total CPPA-G	**2019-20**	**28,577**	**860**	**1,923**	**52,687.60**	**9,706**	**343,726**	**765,962**	**48,396.341**	**29,957,367**
	2020-21	**29,495**	**882**	**1,984**	**55,063.10**	**10,188**	**349,197**	**803,882**	**51,555.295**	**31,569,589**
KE	2019-20	801	68	163	6,273.00	1,890	10,204	28,842	7,915.705	2,959,099
	2020-21	833	69	168	6,457.00	1,937	10,283	29,702	8,153.340	3,185,332

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 2020-21 in comparison with the sales of FY 2019-20.

DISCO	Domestic		Commercial		Industrial		Agricultural		Public Lighting		Bulk Supply		Others		Total		Sales Growth (%)
	2019-20	2020-21	2019-20	2020-21	2019-20	2020-21	2019-20	2020-21	2019-20	2020-21	2019-20	2020-21	2019-20	2020-21	2019-20	2020-21	
PESCO	5099	5373	775	802	2008	2274	69	79	13	46	652	641	427	392	9043	9608	6.24
TESCO	1415	1402	5	5	330	554	33	31	0	0	10	12	10	9	1803	2013	11.64
IESCO	5028	5325	1099	1166	1487	1521	27	35	77	81	919	918	1804	1898	10442	10944	4.81
GEPCO	5944	6373	594	672	2397	2776	475	542	7	10	157	160	372	390	9946	10922	9.82
LESCO	9259	9664	1563	1662	7381	8351	1116	1188	117	140	627	654	547	693	20610	22352	8.45
FESCO	6656	7062	713	770	4133	4937	1139	1268	10	13	255	238	216	214	13123	14501	10.50
MEPCO	9470	9825	903	981	2509	2861	2917	3201	18	20	276	276	289	302	16382	17466	6.62
HESCO	2394	2409	262	265	717	824	214	201	3	5	107	106	193	205	3890	4014	3.19
SEPCO	1766	1796	209	227	365	375	81	85	16	166	160	23	112	106	2710	2778	2.49
QESCO	612	588	137	138	161	192	3572	3486	10	11	127	130	224	230	4842	4775	-1.38
	Supplied to K-Electric														5003	5764	15.22
Total CPPA-G (GWh)	47643	49815	6259	6688	21489	24665	9642	10115	273	492	3290	3159	4194	4439	97794	105137	7.51
Sales Growth in CPPA-G (%)		4.56		6.85		14.78		4.91		80.44		-3.98		5.84		7.51	
KE (GWh)	7489	8041	1615	1709	4158	5221	116	122	112	98	468	454	318	424	14277	16069	12.55
Sales Growth in KE (%)		7.37		5.78		25.56		4.81		-12.49		-2.87		33.13		12.55	
Overall Country (GWh)	55133	57856	7875	8397	25647	29886	9758	10237	385	590	3758	3613	4513	4863	112071	121206	8.15
Overall Sales Growth (%)		4.94		6.63		16.53		4.91		53.37		-3.85		7.77		8.15	

During FY 2020-21, around 8.15% overall growth has been recorded in the sales of Distribution Companies, including KE. In CPPA-G and KE territories, overall sales growth of 7.51% and 12.55% has been recorded respectively. DISCO-wise highest growth of 11.64% has been recorded in TESCO while in QESCO negative growth of -1.3% has been recorded during the year. Similarly, category-wise highest sales growth i.e. 53.37% has been recorded in the category of public lighting followed by the Industrial category where the sales growth of 16.53% has been recorded durigh the year. In the category of Bulk Supply, negative growth of -3.85% has been recorded during the year.

During FY 2020-21, total 1,838,455 new electricity consumers were added in the system. The new addition of electricity consumers included 1,612,222 consumers added in CPPA-G System and 226,233 consumers added in KE System. This addititon of electricity consumers have also contributed towards increase in the sales of DISCOs.

5.4 TRANSMISSION AND DISTRIBUTION LOSSES OF DISCOS

The following table shows a comparison between T&D losses for the FY 2019-20 and FY 2020-21 in each DISCO:

DISCO	For FY 2020-21 (Units in GWh)			Target Losses (%)	Actual Losses (%)		Financial Cost of Losses in FY 2020-21 (Rs. in Million)[1]
	Purchase	Sold	Lost	2019-20	2019-20	2020-21	
PESCO	15540.90	9607.54	5933.36	27.90	38.69	38.18	32280.01
TESCO	2226.00	2012.65	213.35	12.24	16.19	9.58	(866.01)
IESCO	11966.00	10944.00	1022.00	8.50	8.69	8.54	327.97
GEPCO	12032.48	10922.10	1110.38	9.83	9.51	9.23	(848.14)
LESCO	25387.87	22352.15	3035.72	10.03	12.40	11.96	8301.68
FESCO	15984.48	14501.20	1483.28	9.76	9.56	9.28	(784.85)
MEPCO	20532.21	17466.10	3066.11	14.96	15.23	14.93	(1951.28)
HESCO	6532.58	4014.18	2518.40	21.29	42.89	38.55	22844.30
SEPCO	4290.96	2777.63	1513.33	25.06	36.27	35.27	10017.92
QESCO	6624.56	4775.00	1849.56	17.36	26.68	27.92	13309.39

Source: DISCOs and Ministry of Energy (Circular Debt Report)

[1] Worked out against allowed T&D Losses of FY 2019-20

The actual losses of DISCOs for FY 2019-20, except GEPCO and FESCO, remained higher than the given targets. Although the losses of DISCOs during FY 2020-21 have shown decrease over the actual losses recorded during FY 2019-20, however, the losses of all DISCOs except TESCO, GEPCO, FESCO and MEPCO are still higher than the targets given for FY 2019-20.

5.5 RECOVERY RATIOS IN DISCOS SYSTEM

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

Year	PESCO	TESCO	IESCO	GEPCO	LESCO	FESCO	MEPCO	HESCO	SEPCO	QESCO	Overall DISCOs
2019-20	87.65	68.16	90.27	94.36	94.48	94.18	92.94	73.19	56.54	49.25	**88.77**
2020-21	101.87	83.27	116.87	105.10	98.72	97.20	102.15	75.63	64.48	39.80	**97.30**
Inc./(Dec.)	**14.22**	**15.11**	**26.60**	**10.74**	**4.24**	**3.02**	**9.21**	**2.44**	**7.94**	**(9.45)**	**8.53**

Source: DISCOs

The recovery of all DISCOs except QESCO shows improvement during FY 2020-21 over the last year. The recovery of QESCO has dropped from already low 49.25% to 39.80% showing a decrease of 9.45%. The combined recovery of all DISCOs during FY 2020-21 remained 97.30% as compared to 88.77% during FY 2019-20 showing an overall increase of 8.53% in recovery ratio in comparison

with the last year. Though the position of recoveries has improved over last year; however, still 100% recoveries have not been achieved by six DISCOs i.e. TESCO, LESCO, FESCO, HESCO, SEPCO and QESCO. While PESCO, IESCO, GEPCO and MEPCO have achieved above 100% recovery.

5.6 RECEIVABLES OF DISCOS

As on 30th June 2021, the overall distribution sector receivables stood at Rs. 1,495 billion whereas, the receivables were Rs. 1375.30 billion as on 30th June, 2020 showing an increase of Rs. 119.7 billion during the reporting year. Following is a detailed break-up of receivables for the FY 2020-21:

(Rs. in Billion)

S. No.	Category	Receivables (FY ended June, 2020)	July, 2020 to June, 2021		Receivables (FY ended June, 2021)
			Billing	Collection	
1	**FEDERAL GOVERNMENT**				
a)	Federal Governments Departments	3.41	20.40	20.75	3.07
b)	Local Bodies under Federal Govt.	3.05	6.42	5.43	4.06
c)	Autonomous Bodies under Fed. Govt.	3.06	11.05	10.92	3.22
d)	Defence	4.92	30.99	32.22	3.65
e)	W&P	3.03	2.24	1.87	3.40
	Total (Federal Government)	**17.47**	**71.10**	**71.19**	**17.40**
2	**AJ&K GOVERNMENT**				
i)	GoP Share	0.40	-	-	0.40
ii)	DISCOs Share	(0.00)	-	-	(0.00)
iii)	AJ&K Share	144.54	44.14	99.43	89.33
	Total (AJ&K)	**144.94**	**44.14**	**99.43**	**89.73**
3	**PROVINCIAL GOVT. DEPTTS./AGENCIES**				
a)	Punjab	8.14	45.00	39.16	14.05
b)	Khyber Pakhtunkhwa	21.02	10.67	10.38	21.28*
c)	Sindh	20.30	12.55	9.23	23.69
d)	Balochistan	21.64	6.86	5.78	22.73
	Total (Provi. Govt. Depts./Agencies)	**71.09**	**75.08**	**65.55**	**81.76**
	TOTAL (1 TO 3)	**233.50**	**190.32**	**235.17**	**188.88**
4	**FATA (DOMESTIC CONSUMERS)**	**38.40**	**17.48**	**16.43**	**39.45**
5	**AGRICULTURAL TUBE WELLS IN BALOCHISTAN**				
i)	GOP Share	19.40	7.53	7.00	19.94
ii)	GOB Share	20.39	11.30	2.00	29.69
iii)	GST Subsidy Agri. Tube well Balochistan	0.12	-	-	0.12
iv)	Consumers Share @ Rs. 10,000/-	266.48	39.58	1.37	304.72
	Total (Agri. Tube wells in Balochistan)	**306.39**	**58.42**	**10.37**	**354.47**
6	**PRIVATE (Including 4+5)**	**968.42**	**1,626.74**	**1,518.53**	**1,076.78**
7	**IPPS**	**3.96**	**9.41**	**8.67**	**4.34**
8	**K-ELECTRIC LIMITED**	**169.44**	**75.01**	**17.22**	**224.98**
	GRAND TOTAL (3+6+7+8)	**1,375.3**	**1,901.5**	**1,779.6**	**1,495.0**

** Include Rs. 18.6 billion assessed for KPK consumers for the period 05-09-2010 to 15-09-2010 on account of differential of tariff, after the withdrawal of KPK petition from PHC. The said assessed amount has not been passed on to consumers. The payment of these receivables has been linked with the markup on NHP arrears payable to Govt. of KPK, as proposed by KPK.*

5.7 OVER-LOADING POSITION OF POWER TRANSFORMERS, 11 KV FEEDERS AND DISTRIBUTION TRANSFORMERS 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.

(a) Loading Position of Power Transformers: The following table shows the overloading position of power transformers of DISCOs:

DISCO	Total No. of Power Transformers		Total No. of Over-Loaded Power Transformers (Above 80%)		Percentage of Total Over-Loaded Power Transformers (Above 80%)	
Upto June	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**
PESCO	239	252	86	95	35.98	37.70
TESCO	55	55	9	14	16.36	25.45
IESCO	263	267	9	9	3.42	3.37
GEPCO	173	174	15	34	8.67	19.54
LESCO	404	428	66	74	16.34	17.29
FESCO	236	240	25	45	10.59	18.75
MEPCO	302	312	37	30	12.25	9.62
HESCO	122	122	26	14	21.31	11.48
SEPCO	132	133	16	20	12.12	15.04
QESCO	177	179	51	49	28.81	27.37
Total	**2,103**	**2162**	**340**	**384**	**16.17**	**17.76**

Source: DISCOs

During FY 2020-21:

(a) On an overall basis, over-loading on power transformers has increased from 16.17% of FY 2019-20 to 17.76% in FY 2020-21.

(b) On DISCO-to-DISCO comparison, PESCO with above 37%, has the highest number of over-loaded power transformers among all the DISCOs followed by QESCO with 27.37% and TESCO with 25.45%.

(c) PESCO, TESCO, GEPCO, LESCO, FESCO, and SEPCO have shown increase in percentage of overloaded power transformers over last year reflecting decline in their performance.

(d) The percentage of overloaded transformers in IESCO, MEPCO, HESCO and QESCO has shown improvement during FY 2020-21 over last year.

(b) Loading Position of 11 kV Feeders: The following tables provide a comparison of over-loaded components in all DISCOs for FY 2020-21 and FY 2019-20.

DISCO	Total No. of 11 kV Feeders		Total No. of Over-Loaded 11 kV Feeders (Above 80%)		Percentage of Total Over-Loaded 11 kV Feeders (Above 80%)	
Up to June	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**
PESCO	1,089	1138	341	435	31.31	38.22
TESCO	245	275	193	144	78.78	52.36
IESCO	1,166	1211	65	26	5.57	2.15
GEPCO	876	910	57	106	6.51	11.65
LESCO	1,923	2011	458	285	23.82	14.17
FESCO	1,150	1185	56	75	4.87	6.33
MEPCO	1,508	1652	229	323	15.19	19.55
HESCO	556	570	69	77	12.41	13.51
SEPCO	541	548	103	83	19.04	15.15
QESCO	652	688	652	688	100.00	100.00
Total	**9,706**	**10188**	**2223**	**2098**	**22.90**	**20.59**

Source: DISCOs

During FY 2020-21:

(a) On an overall basis, over-loading on 11 kV feeders has decreased from 22.90% of FY 2019-20 to 20.59% in FY 2020-21.

(b) On individual DISCO level, QESCO has the highest percentage i.e. 100% of over-loaded 11 kV feeders followed by TESCO with 52.36%, PESCO with 38.22% and MEPCO with 19.55%.

(c) The percentage of overloaded feeders in TESCO, IESCO, LESCO, and SEPCO during FY 2020-21 has decreased showing improvement over last year.

(d) The percentage of overloaded feeders in PESCO, GEPCO, FESCO MEPCO and HESCO has increased during FY 2020-21 showing decline in their position.

(c) Loading Position of Distribution Transformers: The following table shows the over-loading position of distribution transformers of DISCOs:

DISCO	Total No. of Dist. Transformers		Total No. of Over-Loaded Dist. Transformers (Above 80%)		% of Total Over-Loaded Dist. Transformers (Above 80%)	
Upto June	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**
PESCO	77,307	79437	3,477	2441	4.50	3.07
TESCO	18,903	18903	6,682	3491	35.35	18.47
IESCO	50,210	51988	1,663	950	3.31	1.83
GEPCO	72,007	76125	1,942	1883	2.70	2.47
LESCO	116,030	122124	25,743	20447	22.19	16.74
FESCO	113,079	120446	652	1198	0.58	0.99
MEPCO	179577	187791	5,832	4057	3.25	2.16
HESCO	37,896	43873	1,211	1114	3.20	2.54
SEPCO	38,616	39076	2,676	2677	6.93	6.85
QESCO	62,337	64119	6,814	5343	10.93	8.33
Total	**765962**	**803882**	**56,692**	**43601**	**7.40**	**5.42**

Source: DISCOs

During FY 2020-21:

(a) On overall basis, the over-loading of distribution transformers has decreased from 7.40% in FY 2019-20 to 5.42% during FY 2020-21.

(b) All DISCOs have shown improvement in the loading position of distribution transformers except FESCO where the percentage increased from 0.58% to 0.99%. However, FESCO has still the lowest number of overloaded distribution transformers.

(c) TESCO has shown significant improvement with reduction of overloaded transformers from 35.35% to 18.47%.

5.8 PENDING CONNECTIONS

The number of applications for provision of new electricity connection pending as on 30-06-2021 in each DISCO is given in the following table:

S. No.	DISCO	Number of Pending Applications as on 30-06-2021	S. No.	DISCO	Number of Pending Applications as on 30-06-2021
1	PESCO	4,664	7	MEPCO	218,012
2	TESCO	0	8	HESCO	3,069
3	IESCO	44,225	9	SEPCO	524
4	GEPCO	51,030	10	QESCO	470
5	LESCO	107,866	11	KE	17,705
6	FESCO	54,278			

Source: DISCOs and KE

5.9 NUMBER OF FATAL ACCIDENTS

The following table shows the DISCO wise number of fatal accidents during FY 2020-21:

S. No.	DISCO	No. of Fatal Accidents (Employees)	No. of Fatal Accidents (Public)	Total	S. No.	DISCO	No. of Fatal Accidents (Employees)	No. of Fatal Accidents (Public)	Total
1	PESCO	07	16	23	7	MEPCO	06	07	13
2	TESCO	02	06	08	8	QESCO	02	04	06
3	IESCO	05	17	22	9	SEPCO	02	12	14
4	GEPCO	04	03	07	10	HESCO	02	30	32
5	FESCO	07	02	09	11	KE	03	43	46
6	LESCO	07	02	09					

Source: DISCOs and KE

5.10 STATUS OF TOU METERS

The following table shows the number of TOU Meters installed so far and pendency thereof in each of the Distribution companies till 30-06-2021:

S. No.	DISCO	Total No. of connections for installation of TOU meters	Total No. of TOU meters installed	TOU meters yet to be installed
1	KE	352372	278284	74088
2	IESCO	158448	155444	3004
3	GEPCO	185127	177843	7284
4	FESCO	103209	93114	10095
5	HESCO	28566	27894	672
6	MEPCO	38319	38319	0
7	LESCO	324330	307906	16424
8	TESCO	815	800	15
9	PESCO	92050	66464	25586
10	SEPCO	30157	29751	406
11	QESCO	4813	3088	1725
Total		**1318206**	**1178907**	**139299**

Source: DISCOs and KE

5.11 INVESTMENT ALLOWED AND MADE BY DISCOS DURING LAST FIVE YEARS

The details of investment allowed by NEPRA to DISCOs from FY 2015-16 to FY 2019-20 and actual expenditure against the allowed investments are given below:

(Rs. in Million)

DISCOs	Description	2015-16	2016-17	2017-18	2018-19	2019-20	Total
PESCO	Allowed	7,622	8,366	9,610	7,029	8,450	**41,077**
	Actual	7,622	8,366	11,347	7,029	5,725	**40,089**
TESCO	Allowed	1,013	971	770	2,150		**4,904**
	Actual	814	971	744	2,150		**4,679**
IESCO	Allowed	11,918	10,090	6,719	11,918	10,090	**50,735**
	Actual	5,195	5,313	7,451	10,259	7,413	**35,631**
GEPCO	Allowed	2,892	2,775	3,200	5,295	5,500	**19,662**
	Actual	2,892	2,775	1,617	5,295	6,749	**19,328**
LESCO	Allowed	10,826	19,781	21,459	10,826	19,781	**82,673**
	Actual	8,050	9,758	12,081	10,527	10,238	**50,654**
FESCO	Allowed	9,162	7,140	7,857	11,084	8,803	**44,046**
	Actual	6,621	8,033	3,502	6,244	7,640	**32,040**

DISCOs	Description	2015-16	2016-17	2017-18	2018-19	2019-20	Total
MEPCO	Allowed	10,546	11,416	13,000	13,439	14,000	**62,401**
	Actual	10,008	11,416	12,924	13,439	13,887	**61,674**
HESCO	Allowed	3,067	4,729	5,500	3,072	4,597	**20,965**
	Actual	4,048	4,729	4,804	3,072	1,971	**18,624**
SEPCO	Allowed	1,671	977	3,400	3,467	4,000	**13,515**
	Actual	1,671	977	3,062	3,467	2,137	**11,314**
QESCO	Allowed	4,300	3,080	8,000	4,308	3,763	**23,451**
	Actual	7,115	3,080	4,748	4,308	2,619	**21,870**
TOTAL	**Allowed**	**63,017**	**69,325**	**79,515**	**72,588**	**78,984**	**363,429**
	Actual	**54,036**	**55,418**	**62,280**	**65,790**	**58,379**	**295,903**

Source: DISCOs

5.12 DISTRIBUTION SYSTEM IN K-ELECTRIC AREA

KE manage, maintains and operates distribution network within its service area. The distribution assets of KE include:

(a) 1,937 Nos. of 11 kV Feeders, 10,283 km long
(b) 29,702 No. of Distribution Transformers having transformation capacity of 8,153 MVA and
(c) 18,509 km of LT Lines

5.13 TRANSMISSION AND DISTRIBUTION LOSSES IN K-ELECTRIC

Seven (07) year Multi-Year Tariff (MYT) was determined in respect of KE for the period from 2016-17 to 2022-23; KE has been allowed the following target of T&D losses during the tariff control period:

FY	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year
Allowed T&D Losses (%)	20.90	19.80	18.75	17.76	16.80	15.95	15.36

For the FY 2020-21, KE has reported 17.54% T&D losses.

5.14 RECOVERY OF BILLED AMOUNT IN K-ELECTRIC SYSTEM

The following table shows KE's recovery position for different consumer categories during FY 2020-21 in comparison to FY 2019-20.

Recovery Position of K-Electric Limited (2019-20 and 2020-21)

Category	Amount of Billed Units (Rs. in Million)		Amount Realized and %age Recovery to Billed Amount (Rs. in Million)		(%)	
	2019-20	2020-21	2019-20	2020-21	2019-20	2020-21
Domestic	107,747	133,515.60	99,394	120,138.34	92.25	89.98
Commercial	43,996	49,511.32	42,968	48,131.04	97.66	97.21
Industrial	80,796	107,778.33	73,470	108,337.18	90.93	100.52
Agricultural	975	1,361.47	279	312.29	28.62	22.94
Public Lighting	2,728	2,399.50	1,811	1,446.59	66.39	60.29
Bulk Supply	9,534	11,051.50	10,227	11,792.57	107.27	106.71
Others	9,109	10,255.13	6,706	9,514.40	73.62	92.78
Total	**254,885**	**315,872.85**	**234,855**	**299,672.41**	**92.14**	**94.87**

Source: KE

The overall recovery ratio of 94.87% has increased over the last year ratio of 92.14%. The recovery position in the industrial sector has increased from 90.93% to 100.52%. Further, the recovery position has also improved in the 'Others' category. In domestic sector, the recovery ratio has decreased from 92.25% to 89.98% and in the agricultural sector, the recovery has decreased from 28.62% to 22.94%. Further, recovery from the public lighting has also reduced from 66.39% to 60.29%.

5.15 OVER-LOADING POSITION OF 11 KV FEEDERS, POWER TRANSFORMERS AND DISTRIBUTION TRANSFORMERS IN K-ELECTRIC

The following table provides over-loading position of network components in KE for FY 2019-20 and FY 2020-21:

Description	2019-20	2020-21
Total No. of Power Transformers	167	172
Total No. of Over-Loaded Power Transformers (above 80%)	40	50
Percentage of Total Over-Loaded Power Transformers (above 80%)	**23.95**	**29.07**
Total No. of 11 kV Feeders	1890	1937
Total No. of Over-Loaded 11 kV Feeders (above 80%)	52	24
Percentage of Total Over-Loaded 11 kV Feeders (above 80%)	**2.75**	**1.24**
Total No. of Distribution Transformers	28842	29702
Total No. of Over-Loaded Distribution Transformers (above 80%)	2,250	2567
Percentage of Total Over-Loaded Distribution Transformers (above 80%)	**7.80**	**8.64**

Source: KE

The above table shows more than 29% power transformers of KE are over-loaded in FY 2020-21 as compared to 23.95% during FY 2019-20. Further, increase from 7.80% to 8.64% relative to the previous year is noted in the over-loading of 11 kV feeders. The percentage of total over-loaded 11 kV feeders has decreased in FY 2020-21 to 1.24% as compared to 2.75% recorded during FY 2019-20.

06 MONITORING OF THE SECTOR

6.1 HIGHLIGHTS OF MONITORING ACTIVITIES

Monitoring and Enforcement is an important function of NEPRA to ensure the compliance of NEPRA Licensees with the Applicable Documents. Following are the major highlights of Monitoring activities:

(a) Fine of Rs. 01 million was imposed on GENCO-II on account of excess auxiliary consumption.
(b) Fine of Rs. 0.5 million was imposed on GENCO-III on account of excess auxiliary consumption.
(c) Fine of Rs. 01 million was imposed on NTDC/NPCC on account of issuing unfair instructions to GENCO-I and GENCO-II for putting their plants/machines on stand-by mode for long time.
(d) Fine of Rs. 01 million was imposed on GENCO-I on account of excess auxiliary consumption.
(e) Fine of Rs. 01 million has been imposed on NTDC on account of violation of EMO, operation of plant on HSD fuel and failure to take up the issue of allocation of gas to less efficient plants while underutilizing efficient plants.
(f) Fine of Rs. 10 million has been imposed on MEPCO on account of fatal accident.
(g) Fine of Rs. 06 million has been imposed on MEPCO for violating Performance Standards, Distribution Code, and other applicable documents.
(h) Fine of Rs. 13 million has been imposed on PESCO on account of fatal accidents.
(i) Fine of Rs. 36 million has been imposed on KE on account of fatal accidents.
(j) KE was directed to complete the earthing of all HT/LT poles of its distribution network

to avoid recurrence of fatal accidents due to lack of earthing. NEPRA closely monitored compliance of the said direction by KE.

(k) Fine of Rs. 160 million has been imposed on KE on account of excessive load shedding and failure to provide the continuous and reliable supply to its consumers.

(l) Legal proceedings are underway against HESCO, SEPCO, GEPCO and FESCO on account of fatal accidents occurred in their respective territories.

(m) Final warning was issued to CPPA-G to impose LDs on WAPDA on account of availing higher outages than allowed in PPA.

(n) On 09 January, 2021 at 11:40 pm, the power system collapsed and the country suddenly plunged into darkness. The Authority took serious notice of this incident and constituted an Inquiry Committee which conducted the investigation and submitted its inquiry report. Based on findings/recommendations of inquiry report, the Authority gave directions to the concerned quarters to take actions against the responsible entities as well as to take remedial measures to avoid such events in future. The compliance of Authority's directions is being monitored.

(o) The Authority took a serious notice of the volume of pending applications for new connections with DISCOs and directed all DISCOs to fulfill their obligations under NEPRA's Performance Standards Distribution Rules, 2005 and Consumer Service Manual 2010. The compliance of DISCOs in this regard is being monitored on monthly basis.

(p) During FY 2020-21, the Authority while deciding the monthly FPAs withheld a total amount of Rs. 6,873 million from the claims of CPPA-G on account of deviation of Merit Order due to system constraints and underutilization of efficient power plants.

(q) The Authority initiated an operational audit of CPPA-G through NEPRA internal audit team. Further, the Authority has also directed for a comprehensive study of system operations of NPCC for past years.

(r) During FY 2020-21, the Authority noted that several units of TPS Guddu including Steam Turbines of the CCPPs were under shut down. Further, the CCPP of Guddu were operating in open cycle mode. Taking the notice of the capacity payments against shut down units as well as operating the CCPPs in open cycle mode, the Authority has initiated proceedings in the matter.

(s) Several hydropower stations operating under the Licence granted to WAPDA Hydroelectric have completed more than 50 years of their life. The cost of electricity generation from these power plants remained quite high due to their capacity based tariff. Therefore, the Authority decided to engage WAPDA Hydroelectric to convert their tariff from 'Take or Pay' to 'Take and Pay' basis.

(t) Certain efficient power plants were availing their scheduled outages during high-demand periods. NEPRA took up the matter with NTDC/NPCC to ensure that outages of efficient plants are avoided during high-demand period. The matter was also taken up with the managements of various power plants to clarify the reasons for prolonged outages. NEPRA is in the process of developing a mechanism to ensure that the forced outages of the power plants are kept in check and higher reliability is achieved through proper and timely maintenance.

(u) DISCOs have been allocated quota of electric power from central pool (CPPA-G basket) for drawl and supply to the consumers in their respective territories. During FY 2020-21, at instances it was noticed that various DISCOs drew less power than their allocated quota thereby causing additional load-shedding. Authority conveyed its serious concerns to DISCOs for drawing less power than allocated quota. Further, on direction of the Authority, an Adivsory was also issued to Ministry of Energy (Power Division) wherein poor performance of DISCOs including less drawl of power was highlighted for taking necessary actions.

6.2 ANNUAL PERFORMANCE REPORTS OF TRANSMISSION AND DISTRIBUTION COMPANIES

During FY 2020-21, The Annual Performance Reports (APRs) submitted by NTDC and KE for the FY 2019-20 under Performance Standards (Transmission) Rules, 2005 (PSTR) were reviewed and a comprehensive Performance Evaluation Report (PER) was prepared and uploaded on NEPRA website.

The APRs submitted by all DISCOs and KE for the FY 2019-20 were reviewed on the basis of parameters namely, Transmission and Distribution Losses, Recovery, SAIFI, SAIDI, Timeframe for new connections, Load-Shedding, Nominal Voltage, Consumer Complaints, Safety and Fault Rate and a comprehensive PER was prepared and uploaded on NEPRA website.

6.3 PENDING APPLICATIONS FOR NEW CONNECTIONS

NEPRA's Performance Standards (Distribution) Rules-2005 (PSDR-2005) read with clause 2.7 of Consumer Service Manual 2010, require the distribution company to provide electric power services to at least 95% of new connections to its eligible consumers within the stipulated time limit which is 20 days for residential consumers after payment of demand notice. The Authority took a notice of the volume of pending applications for new connections with DISCOs and directed all DISCOs to fulfill their obligations. The compliance of DISCOs in this regard is being monitored on monthly basis.

MAJOR REGULATORY ACTIVITIES

07

7.1 GRID CODE REVISION

The revision of Grid Code is being vigorously pursued with NTDC in the light of NEPRA (Amendment) Act, 2018 wherein the concept of PGC, System Operator, Market Operator, Traders and Suppliers has been introduced. In this regard, NTDC has hired M/s DNV (Det Norske Veritas) GL, (B.V) Netherlands for consultancy services for review and update of the current Grid Code as per latest international practices under NTDC's National Power Transmission Modernization Project Phase-1 (NPTM-1). Several meetings of the Grid Code Steering Committee were held wherein different drafts including the Draft Final Grid Code were discussed. NEPRA has provided its comments to NTDC on the Draft Final Grid Code. NEPRA is extending full support in this regard.

7.2 LITIGATION REPORT FY 2020-21

A summary of litigations pending in different Courts of Law on 30th June, 2021 in which either a decision of NEPRA is challenged or NEPRA is made a party are given below:

Court	Pending on 30th June, 2020	Filed in FY 2020-21	Total (No.)	Decided/Disposed in FY 2020-21	Pending on 30th June, 2021
Supreme Court of Pakistan	271	31	302	33	269
Islamabad High Court	125	24	149	27	122
Lahore High Court	547	150	697	183	514
Peshawar High Court	100	30	130	31	99
High Court of Sindh	233	130	363	107	256
Balochistan High Court	1	2	3	0	3
Civil Courts	27	5	32	2	30
Total	**1,304**	**372**	**1,676**	**383**	**1,293**

7.2.1 Notified Regulations and Amendments in FY 2020-21:

During FY 2020-21, the following Regulations/Amendments in Regulations have been notified by NEPRA:

(a) NEPRA (Fees) Regulations, 2021
(b) NEPRA (Selection of Operation and Maintenance Contractors by Generation Companies) Guidelines, 2021
(c) NEPRA Licensing (Application, Modification, Extension and Cancellation) Procedure Regulations, 2021
(d) Amendment to the NEPRA (Fees Pertaining to the Tariff Standards and Procedure) Regulations, 2002
(e) Amendment to the NEPRA (Review Procedure) Regulations, 2009
(f) Amendment to the NEPRA (Alternative and Renewable Energy) Distributed Generation and Net Metering Regulations, 2015
(g) Amendment to the NEPRA (Supply of Power) Regulations, 2015
(h) Amendment to the NEPRA (Import of Electric Power) Regulations, 2017

7.3 LICENSING

7.3.1 Generation Licences Granted During FY 2020-21:

During the FY 2020-21, NEPRA issued twenty seven (27) generation licences for accumulative installed capacity of 1591.343 MW. Details are given below:

S. No.	Name of Licensee	Capacity (MW)	Fuel	Licence Issuance Date
1	Shams Power (Pvt.) Limited	0.474	Solar	01 September, 2020
2	Solis Alpha Energy (Pvt.) Limited	1.00	Solar	07 September, 2020
3	Solis Alpha Energy (Pvt.) Limited	4.50	Solar	09 September, 2020
4	Solis Bravo Energy (Pvt.) Limited	5.00	Solar	09 September, 2020
5	Solis Charlie Energy (Pvt.) Limited	3.00	Solar	09 September, 2020
6	Solis Charlie Energy (Pvt.) Limited	3.50	Solar	09 September, 2020
7	Solis Bravo Energy (Pvt.) Limited	3.00	Solar	09 September, 2020
8	Solis Alpha Energy (Pvt.) Limited	2.50	Solar	09 September, 2020
9	Solis Delta Energy (Pvt.) Limited	6.50	Solar	09 September, 2020
10	Grid Edge (Pvt.) Limited	3.06	Solar	10 September, 2020
11	Atlas Energy Limited	0.8588	Solar	01 October, 2020
12	Atlas Energy Limited	0.6080	Solar	01 October, 2020
13	Atlas Energy Limited	0.5016	Solar	01 October, 2020
14	Atlas Energy Limited	0.6384	Solar	01 October, 2020
15	Atlas Energy Limited	0.9956	Solar	09 October, 2020
16	Nizam Power (Pvt.) Limited	9.50	Solar	15 October, 2020
17	PEDO (Koto Hydropower Project)	40.80	Hydel	16 October, 2020
18	Bulleh Shah Packaging (Pvt.) Limited	41.00	Bio-Mass	12 November, 2020
19	Uzghor Hydropower Company (Pvt.) Limited	82.25	Hydel	31 December, 2020
20	PEDO (Lawi Hydropower Project)	69.00	Hydel	09 February, 2021
21	Mughal Energy Limited	55.00	Coal	10 February, 2021
22	Karachi Nuclear Power Plant-3 (KANUPP-3)	1145	Nuclear	16 February, 2021
23	Master Hydro (Pvt.) Limited	102.063	Hydel	21 February, 2021
24	Government of Punjab (Micro Power Plant)	0.35	Solar/Bio-Gas	30 April, 2021
25	Zero Carbon Power (Pvt.) Limited	3.12	Solar	05 May, 2021
26	Burj DG (Pvt.) Limited	0.92	Solar	28 May, 2021
27	Matol (Pvt.) Limited	6.20	Bio-Mass/Bio-Gas	22 June, 2021

7.3.2 Modifications Approved in the Existing Generation Licences during FY 2020-21:

During FY 2020-21, NEPRA concluded the proceedings of twenty six (26) cases of Authority/Licensee proposed Modifications in Generation Licences of generation companies as below:

S. No.	Name of Licensee	Decision Date
1	Liberty Wind Power 1 (Pvt.) Limited	15 July, 2020
2	Liberty Wind Power 2 (Pvt.) Limited	30 July, 2020
3	Act2 Wind (Pvt.) Limited	30 July, 2020
4	Artistic Wind Power (Pvt.) Limited	30 July, 2020
5	NASDA Green Energy (Pvt.) Limited	13 August, 2020
6	Access Electric (Pvt.) Limited	09 September, 2020
7	Access Solar (Pvt.) Limited	07 September, 2020
8	Jamshoro Power Company Limited	01 October, 2020
9	Fimcotex Industries (Pvt.) Limited	23 October, 2020
10	Habibullah Coastal Power (Pvt.) Limited	05 November, 2020
11	Engro Polymer & Chemicals Limited	17 November, 2020
12	Safe Solar Power (Pvt.) Limited	17 November, 2020
13	K-Electric Limited	07 December, 2020
14	PAEC for its CPP at KPC Complex	08 December, 2020
15	Zhenfa Pakistan New Energy Company (Pvt.) Limited	30 December, 2020
16	Siachen Energy Limited	27 January, 2021
17	K-Electric Limited	19 February, 2021
18	Buksh Solar (Pvt.) Limited	04 March 2021
19	K-Electric Limited	21 April, 2021
20	K-Electric Limited	21 April, 2021
21	Finergy (Pvt.) Limited	22 April 2021
22	PAEC for KANUPP	05 May, 2021
23	Reshma Power Generation	05 May, 2021
24	Gulf Powergen	05 May, 2021
25	International Industries Limited	28 May, 2021
26	Jilani Energy (Pvt.) Limited	31 May, 2021

7.3.3 Licence Cancellation during FY 2020-21:

During the FY 2020-21, eight (08) Generation Licences and 01 Distribution Licence of following companies were cancelled:

S. No.	Name of Licensee	Category	Licence Cancellation Date
1	Deharki Sugar Mills (Pvt.) Limited	CPPs	16 October, 2020
2	JDW Sugar Mills Limited	CPPs	16 October, 2020
3	Bahria Town (Pvt.) Limited (Distribution Licence)	Distribution	20 October, 2020
4	The Thal Industries Corporation Limited	CPPs	11 November, 2020
5	Almoiz Industries Limited	CPPs	11 November, 2020
6	Colony Mills Limited	CPPs	29 January, 2021
7	Sadiqabad Power (Pvt.) Limited	IPP-RE 2006	24 February, 2021
8	Ghotki Power (Pvt.) Limited	IPP-RE 2006	23 February, 2021
9	Shaheen Renewable Energy-1 (Pvt.) Limited	IPP-RE 2006	26 April, 2021

7.3.4 Net-Metering Licences:

During the FY 2020-21, a total of eight thousand four hundred & seventeen (8,417) Net Metering licenses with total installed capacity of 145.881 MW were issued. The DISCO-wise details of the Net-Metering Licences issued are shown in the following table:

DISCOs	FY 2016-17		FY 2017-18		FY 2018-19		FY 2019-20		FY 2020-21	
	No. of Licence Issued	Cap. (kW)	No. of Licence Issued	Cap. (kW)	No. of Licence Issued	Cap. (kW)	No. of Licence Issued	Cap. (kW)	No. of Licence Issued	Cap. (kW)
PESCO	--	--	2	37.56	10	96.60	131	3,200.84	525	6,064.0
TESCO	--	--	--	--	--	--	--	--	--	--
IESCO	49	1,008.96	114	1,732.81	377	3,849.07	863	9,990.00	1,976	24,439.0
GEPCO	3	11	31	1190.37	56	908.64	134	4,720.00	433	11,138.0
LESCO	36	468.2	142	3,204.43	348	7,154.44	886	14,980.00	2,170	41,126.0
FESCO	2	305	13	217.60	24	258.17	152	3,960.00	564	14,879.0
MEPCO	10	470.57	7	251.96	47	1,129.94	166	4,300.00	876	17,928.0
HESCO	--	--	--	--	1	10.08	6	220.00	11	951.0
SEPCO	--	--	--	--	1	964.91	5	469.00	7	136.0
QESCO	--	--	--	--	1	6.18	1	20.00	4	326.0
KE	--	--	28	288.40	253	4,270.21	730	12,240.00	1,357	23,885.0
BTPL	6	52.95	13	84.79	48	490.62	204	2,140.00	221	1,862.0
DHA-XII (EME Sector)	--	--	--	--	1	10.40	56	630.00	273	3,147.0
Total	**106**	**2,316.68**	**350**	**7,007.92**	**1,167**	**19,149.30**	**3,334**	**56,869.84**	**8,417**	**145,881.0**

7.3.5 Provincial Grid Company Licence:

According to Section-18A of the NEPRA (Amendment) Act, 2018, a new category of licence i.e. PGC has been introduced. During FY 2020-21, NEPRA granted licence to Khyber Pakhtunkhwa Transmission and Grid System Company (Pvt.) Limited to act as PGC in the Province of Khyber Pakhtunkhwa.

7.3.6 Review Petitions against grant of Licence/Modification in Licence:

During the FY 2020-21, two (02) review motions have been concluded. The detail of the petitions is as below:

S. No.	Name of Company/Licensee
1	JPCL filed review against decision of the Authority regarding rejection of LPM of JPCL
2	KEL filed a review against grant of generation licence to Grid Edge (Pvt.) Limited

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.

7.4.1 Guidelines for Tariff Determination:

Under NEPRA (Amendment) Act, 2018, the following general guidelines are applicable to the Authority in the determination, modification or revision of rates, charges, and terms and conditions for provision of electric power services:

(a) Tariffs should allow licensees the recovery of any and all costs prudently incurred to meet the demonstrated needs of their customers, provided that assessments of licensees' prudence may not be required where tariffs are set on other than cost-of-service basis, such as formula-based tariffs that are designed to be in place for more than one year;

(b) Tariffs should generally be calculated by including a depreciation charge and a rate of return on the capital investment of each licensee commensurate to the earned by other investments of comparable risk;

(c) Tariffs should allow licensees a rate of return which promotes continued reasonable investment in equipment and facilities for improved and efficient service;

(d) Tariffs should include a mechanism to allow licensees a benefit from, and penalties for failure to achieve, the efficiencies in the cost of providing the service and the quality of service;

(e) Tariffs should reflect marginal cost principles to the extent feasible, keeping in view the financial stability of the sector;
(f) The Authority shall have a preference for competition rather than regulation and shall adopt policies and establish tariffs towards that end;
(g) Tariffs may be set below the level of cost of providing the service to consumers categories consuming electric power below such consumption as may be prescribed, as long as such tariffs are financially sustainable;
(h) Tariffs should, to the extent feasible, reflect the full cost of service to consumer categories with similar service requirements;
(i) Tariff should seek to provide stability and predictability for consumers; and
(j) Tariffs should be comprehensible, free of misinterpretation and shall state explicitly each component thereof.

Provided that the Authority shall strike a balance to the extent possible, among the general guidelines in order to optimize the benefits to all persons likely to be affected by the determination, modification or revision of rates, charges and terms and conditions.

The NEPRA (Amendment) Act, 2018, also requires to determine a uniform tariff for distribution licensees wholly owned and controlled by a common shareholder, on the basis of their consolidated accounts.

NEPRA determines the tariff through consultative process in transparent manners as provided in law. The tariff is determined on reference values which are subject to adjustment on actual basis at different intervals i.e. monthly, quarterly and biannually etc.

7.4.2 Tariff Determined during FY 2020-21:

The number of Tariff Determinations in respect of Generation Tariff, Modification of Tariff, Distribution Tariff, Supply of Electric Power Tariff and the Decision on Review Motions filed against tariff related determinations/decisions issued during FY 2020-21 are given below:

S. No.	Title	Nos.
1	Determinations on Generation Tariff	21
2	Determination on Tariff Modifications	24
3	Determination of Electric Power Distribution Tariff	12
4	Determination of Electric Power Supply Tariff	11
5	Decision on Review Motions	65
6	Decision on Annual Adjustments/Indexation under Multi-year Tariff granted to DISCOs	03
7	Other Tariff Related Decisions	06
	Total	**142**

7.4.3 COD Adjustments during FY 2020-21:

The tariff determined for the generation companies is adjusted when these companies' achieve Commercial Operations Date (COD). These adjustments are made to actualize the approved cost as well as to reflect the change in inflation, exchange rates and interest rates occurred during the construction period of these companies. During FY 2020-21, the COD adjustments of the following companies were issued:

S. No.	Title	Issuance Date
1	150 MW Patrind Hydropower Project of Star Hydro (Pvt.) Limited	29-07-2020
2	50 MW Solar Power Project of Gharo Solar Limited	09-04-2021

7.4.4 Adjustments/Indexations in Tariff of Generation Companies in Operations:

The tariff of generation companies, once actualized at the time of their COD, is adjusted periodically during their operations to reflect the change in different indices. These adjustments are recommended in the relevant power policies and mechanisms; therefore, prescribed in the tariff determinations. These variations are allowed for change in cost of inputs, inflation, PKR devaluation and interest rates. Different tariff components are adjusted during different intervals depending upon their nature and change in cost of their inputs.

7.4.5 Monthly Adjustments:

The decisions for the adjustment in the fuel cost component of the power generation companies (Coal, RLNG, RFO) is made on monthly basis on account of change in fuel prices. The decision for the change in the fuel cost component of gas based generation sources is made as and when prices are changed by the relevant organization. During FY 2020-21, a total of 243 Nos. of monthly FPA were issued in the tariff of generation companies.

7.4.6 Quarterly Adjustments:

The decisions for the adjustment in the Operations & Maintenance, Return and Debt Servicing Components are made on quarterly basis. These adjustments are made due to change in local/foreign inflation, exchange rate variations and interest rates. The adjustments due to change in interest rates are also made on bi-annual basis, depending on the final terms agreed by generation sources and approved by NEPRA. During FY 2020-21, a total of 333 quarterly adjustments were issued.

7.4.7 Annual Adjustments:

The decision for the adjustment in the Insurance component of tariff is made on yearly basis. The fuel cost component of bagasse is adjusted on yearly basis.

7.4.8 Adjustments in Consumer-end Tariff:

The consumer-end tariff of the DISCOs is subject to adjustment on account of fuel price variation and actual generation mix on monthly basis as per mechanism given in their respective tariff determinations.

The consumer-end tariff of the distribution companies is also subject to adjustment on account of quarterly indexation on account of capacity charge variation (US CPI, Local CPI, Exchange Rate Variation, T&D Losses Adjustments etc.).

7.5 CONSUMER AFFAIRS

Consumer Affairs Department (CAD) of 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/un-scheduled load-shedding, etc. The complaints are received through various channels, i.e. manual, by post, email, online, Pakistan Citizen's Portal, etc. For consumer facilitation, NEPRA has established regional offices at DISCOs Headquarter level for receiving and processing of consumer complaints.

7.5.1 Status of Consumer Complaints:

During FY 2020-21, a total of 10,867 complaints were processed by CAD at NEPRA Head Office and Regional Offices, out of which 9,984, i.e. 92% of total complaints/cases, were resolved/disposed of:

DISCO	Total Complaints Received/Processed	Total Complaints Disposed Off	Under Process
PESCO	418	330	88
TESCO	2	1	1
IESCO	169	158	11
GEPCO	305	273	32

DISCO	Total Complaints Received/Processed	Total Complaints Disposed Off	Under Process
LESCO	883	812	71
FESCO	412	372	40
MEPCO	546	503	43
HESCO	1,323	1,106	217
SEPCO	783	615	168
QESCO	105	57	48
NTDC	1	0	1
KE	5,213	5,056	157
BTPL	5	2	3
Pakistan Citizen Portal	702	699	3
Total	**10,867**	**9,984**	**883**

Source: NEPRA

7.5.2 Other Highlights/Developments:

(a) The Authority has inaugurated NEPRA Regional Office, Gwadar, in addition to already established 09 Regional Offices.

(b) The Consumer Service Manual (CSM), which includes procedure for obtaining new connection and other allied issues, was revised and issued on 13th January, 2021 for compliance. The revised CSM is currently in field, and the same is being implemented by all DISCOs including KE across Pakistan for all matters pertaining to electric power. Prior to issuance of revised CSM, there were different rates in KE and in rest of Pakistan. ABAD, the Builders Association of Karachi, also filed a complaint against KE regarding charging of higher rates which were not in uniformity with rest of the DISCOs. After issuance of the revised CSM, there are uniform connection charges for consumers across the country.

(c) In light of revised CSM, the industrial consumers have been allowed provision of connection for load above 5 MW upto 7.5 MW on 11 kV feeder subject to meeting certain conditions instead of independent Grid Station. Further, the requirement of land for Grid Station has been reduced from 32 kanal to 12 kanal for Gas Insulated Grid Station and 20 kanal for Air Insulated Grid Station.

(d) Earlier, only one industrial connection was allowed by DISCOs at any premises. On suggestion of the industrialists, more than one industrial connection have been allowed by NEPRA with the condition that another connection at the same premises will be allowed in case of different nature of industries.

(e) In order to resolve genuine grievances of residential consumers, NEPRA has allowed more than one domestic connection at the same premises subject to certain conditions. These conditions are not applicable where the applicant requests for separate connection under ToU tariff (5 kW and above) for the separate portion of the premises.

(f) In light of the suggestions of the Board of Investment, the time period for getting electricity connection (Category-III), i.e. for load above 70 kW to 5000 kW upto 400 Volts, has been reduced from 73 to 58 days and procedures/steps have also been reduced from 6 to 4 steps. Online submission of application for connection and payment of demand notice has also been introduced. This has resulted in improvement in the ranking of Pakistan with respect to Ease of Doing Business.

(g) Complaints against all DISCOs including KE are being processed online through NEPRA Online Complaint Management System.

(h) Directions have been issued to all DISCOs including KE regarding installation of bi-directional meter at the premises directly where the consumer intends to apply for a net-metering facility to avoid un-necessary costs involving installation of 3-phase meter. These directions have resulted in saving of Rs. 15,000/- each for such net-metering consumers.

(i) Recommendations/suggestions have been issued to the Provincial Governments for strengthening the role of Electric Inspectors/Provincial Offices of Inspection, who are performing their duties under the applicable law, to minimize the recurrence of accidents, incidents, fire, safety hazard, short circuiting, etc.

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 2020-21:

DISCO	Pending as on 01 July, 2020	Filed from 01st July, 2020 to 30th June, 2021	Total	Decided	Balance as on 30th June, 2021
PESCO	1	1	2	0	2
IESCO	28	17	45	20	25
GEPCO	11	15	26	10	16
LESCO	88	46	134	28	106
FESCO	47	8	55	12	43
MEPCO	39	11	50	21	29
HESCO	2	1	3	0	3
KE	30	20	50	25	25
Total	**246**	**119**	**365**	**116**	**249**

7.7 HEALTH, SAFETY AND ENVIRONMENT INITIATIVES

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

7.7.1 Power Safety Code (Second Edition):

NEPRA Authority in the year 2015, had published Power Safety Code (the "Code 2015") to ensure that the transmission & distribution licensees' networks are planned, developed, operated and maintained in an efficient and safe way without compromising on safety of any kind related to the systems, personnel and others. The Authority, has revised the Power Safety Code 2015 in terms of Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (XL of 1997) (the "NEPRA Act"), and developed second edition of the Power Safety Code (the "Code 2021") after due consultation with the stakeholders.

7.7.2 DISCO's Safety Manual:

NEPRA developed DISCO's Safety Manual draft with the collaboration of LESCO and MEPCO in compliance to Power Safety Code and communicated it to all distribution companies to customized/ tailored draft Safety Manual in the context of their business, organogram, risks, aspects and organizational need, and submit it to NEPRA for approval.

7.7.3 HSE Page at NEPRA Webpage:

NEPRA has developed HSE Page at NEPRA Webpage for sharing of Occupational HSE information, awareness, initiatives, and Incident Alerts for lessons learned.

7.7.4 NEPRA HSE Data Exchange Portal:

NEPRA has developed HSE Data Exchange Portal for the timely submission of Licensees' reports such as HSE Team Contact Details, Incident Notifications, and Annual HSE Performance Evaluation.

7.7.5 Annual Licensee HSE Performance Evaluation:

In order to ensure that the Licensees maintain an acceptable level of HSE Management system, NEPRA conducted HSE performance evaluation for 2020 to assess whether Licensees' HSE Management systems are adequate, well balanced, the requirement have been addressed and potential risks to consumers, employees, and contractors are controlled and kept as low as reasonably practicable. The purpose of HSE performance evaluation initiative is to create an HSE baseline for power sector, identify top HSE performers for benchmarking and provide an opportunity for further improvement. The assessment will be used in future to compare the Licensees performance with previous year's performance for their continuous improvement.

7.7.6 Safety Awareness Campaign:

NEPRA conducted incident analysis to identify major causes and launched a safety awareness campaign for Private Electricians, General Public, and Distribution Companies in order to ensure safety in DISCOs as well as among general public. NEPRA used his website as well as print media for safety awareness. NEPRA communicated suggestion and recommendations to Provincial Secretaries of Energy Departments, Provincial Office of Inspection (POI)/Regional Electric Inspector Offices, Provincial Local Governments/ Building Control Authorities, Engineering Development Board (EDB) and Pakistan Standard Quality Control Authority (PSQCA) for their consideration and implementation for:

(a) Electrical Inspectors,
(b) Private Electricians,
(c) Random checking and testing of distribution/ transmission networks and premises of commercial/ industrial consumers for hazardous condition,
(d) Development and enforcement a law for physical verification of house/building clearance from the power lines before building plan approval.

NEPRA also communicated suggestion and recommendations to EDB and PSQCA to establish and enforce standards for domestic and commercial electrical appliances, extension cords, cables, plugs and sockets to avoid manufacturing and import of substandard electrical products.

7.8 NEPRA'S CORPORATE SOCIAL RESPONSIBILITY DEPARTMENT

During FY 2020-21, NEPRA established CSR Department with a vision of "Power with Prosperity" to envisage model of inclusive development and impact investments in power sector. Chairman NEPRA, after his joining in 2019 observed a huge gap in the sector as far as monitoring of environmental and social compliance is concerned. He envisioned Corporate Social Responsibility from regulator's platform to act as catalyst to develop the culture of inclusiveness and holistic sustainable development where underserved and unserved host communities at the sites of power plants are included in the socio economic opportunities generating due to mega power business projects in their vicinities. It was also assessed that the IPPs, public sector power producers and other licensees are making pledges with different local & federal bodies, foreign investors and lenders to comply with the national and international environmental and social standards. However, the efforts were in bits and pieces and there was no real mechanism or platform that could provide an enabling environment to all such stakeholders who were putting lots of efforts to uplift host communities to ensure sustainable development and to bring environmental sustainability. Lack of regular reporting and monitoring from power regulator had created a clear divide among the stakeholders in terms of social and environmental performance. Few were doing more than just mere compliance and many were doing either haphazard initiatives due to external pressures by lenders and few were totally ignorant of the importance and need of

adopting inclusive sustainable development model which can improve the rating of Pakistan on human development index and save its environment by mitigating negative impact, preserving and protecting environment through more green initiatives and investments.

The mission to introduce the concept of Triple Bottom Line (people, planet & profits) in the power sector was realized through following steps taken by NEPRA's CSR Department.

7.8.1 NEPRA CSR Vision and Mission Webinar:

To spread awareness about the NEPRA's CSR vision, NEPRA held its 1st Webinar-cum-Seminar on January 18, 2021; duly attended by all major power sector stakeholders. The initiative was lauded by all Stakeholders and they showed immense interest to adopt NEPRA's CSR Policy on a war footing basis and ensured their commitment to improve social and environmental status under NEPRA's patronage.

7.8.2 NEPRA CSR Assessment and Ranking:

NEPRA's CSR strategy was designed to be more results oriented which is different from the traditional approach towards developmental challenges. For that, the process started with the CSR assessment of all licensees (Generation, transmission and Distribution) to know who stands where in terms of social & environmental compliance and what are the standards of corporate governance as well as the community-led interventions of licensees in their areas of operations. The exercise continued from January to July 2021 and NEPRA CSR Department successfully ranked all licensees in Category A, B and C based on the social environmental and governance performance. The ranking will help to identify the good and bad performers with help of which best performers will be given NEPRA CSR Best Performer Awards and ones with low performance will be given guidance and directives to improve their performance by setting KPIs and yearly targets.

7.8.3 NEPRA CSR Data Portal (Reporting & Monitoring App):

A CSR monitoring and reporting data portal/application with the support of Engro Energy, has been developed which will serve as CSR dashboard to monitor CSR performance of power companies. It will show the audience overall CSR performance of power companies' just on one click. Public can see power companies CSR projects, their ranking, financial commitments for CSR, beneficiaries number, jobs created and impact of projects to implement Sustainable Development Goals. It will also report any other special commitments made by licensees with regard to social & environmental compliance and community development initiatives.

7.8.4 NEPRA CSR Pull and Push Strategy:

The NEPRA CSR (Power with Prosperity) strategy for the current year has been carefully crafted to be more encouraging and enabling than setting-up any command & control system. It clearly supports more voluntary CSR interventions by Licensees than putting any obligation by the regulator to do it. The purpose behind is to sensitize the sector about the spirit behind CSR implementation which has to be backed by passion than pressure.

7.8.5 NEPRA Social Investment Guidelines, 2021:

In line with NEPRA's pull strategy and to complement NEPRA's CSR vision, NEPRA designed Social Investment Guidelines, 2021, which is a comprehensive document designed for the stakeholders to give them a clear roadmap for the CSR performance expectations of the regulator. The guidelines are aligned with the United Nations' Sustainable Development Goals, 2030 Agenda and also in line with other international social and environmental standards and CSR policies given by international electricity regulators. NEPRA Social Investment Guidelines, 2021 were framed by the CSR Department after due deliberations and inviting comments from all the stakeholders of the power sector industry.

7.8.6 NEPRA CSR Web Page:

NEPRA has integrated a new CSR webpage on its official website to showcase CSR dairies to keep all updated about the new CSR interventions, upcoming events, share reports and performance of power sector in respective domain.

7.8.7 NEPRA CSR Mass Covid Vaccination Drive (NCOC):

In pursuance of NCOC's Mass Vaccination Drive, NEPRA issued directives to all the licensees to make efforts to combat Covid-19 from Pakistan by ensuring 100% vaccination of the adopted community as well as their workforce along with families under intimation to NEPRA. It resulted in activating power companies and total population of more than 5535536 were reported to be vaccinated by companies till 7th September, 2021.

1- KE became best performer on vaccinating maximum number of employees with 10058
2- PAEC became best performer on vaccinating maximum number of families of employees with 5130
3- Narowal Energy, became best performer on vaccinating maximum number of people from local communities with 342757

7.8.8 NEPRA CSR – Power with Prosperity (PWP) Initiatives:

In less than 4 months, NEPRA CSR's initiative positioned itself in the sector and was able to gain full support from all stakeholders across the board and started following initiatives:

I. Roshni Baji - Women Ambassador Program by KE
II. HUBCO School Campus Pirkus
III. HUBCO Women Empowerment Project - Hunarmand
IV. Research Project on Asset Performance Monitoring of WPPs - Mehran University & Act Wind Power Plant
V. PAEC new CSR Policy
VI. PAEC special jobs quota for Balochistan's People
VII. Vocational Training School by Master Wind Energy in Jhimpir, Thatta
VIII. Community Hospital by Tricon Boston in Jhimpir, Thatta
IX. Solar powered Water Pumps for locals by Gul Ahmed in Jhimpir, Thatta
X. Solar Kits and Sewing Machines distribution by Metro Power in Jhimpir, Thatta
XI. 1st 40 Graduated Women Electricians in Pakistan by KE
XII. Free Covid Mobile Vaccinations for Karachi's and Balochistan's Communities by KE
XIII. NEPRA Akhuwat PWP Fund for execution of bilateral CSR agreements between Akhuwat and IPPs.

By consistent progress through CSR interventions under the "Power with Prosperity" banner NEPRA aims to improve the socio-economic outlook of the country which shall resultantly improve the Human Development Index (HDI) of Pakistan.

08 INITIATIVES BY STAKEHOLDERS

The Federal as well as Provincial Governments have established specific agencies to facilitate investment in the electric power sector of Pakistan under the relevant power policies. This chapter gives a glimpse of the major initiatives and activities of these agencies during FY 2020-21.

The Private Power and Infrastructure Board (PPIB) and Alternative Energy Development Board (AEDB) are working at Federal level as one window facilitators for investment in power sector under the relevant Power Policies of the Government. Besides the federal agencies, Punjab Power Development Board (PPDB), Pakhtunkhwa Energy Development Organization (PEDO), Energy Department of Government of Sindh, and Energy Department of Government of Balochistan are working as Provincial Government agencies to facilitate investment in power sector in the respective provinces PPIB, AEDB, PPDB, PEDO, Energy Department (Government of Sindh) and Energy Department (Government of Balochistan) have provided briefs on their respective roles, activities during FY 2020-21, initiative and planned activities etc. which are given in the following paragraphs:

8.1 PPIB ROLE, PLANNED ACTIVITIES, PROGRESS AND ACHIEVEMENTS

The PPIB, is a "One Window" facilitator for the private investors and specified public sector projects in the field of power generation and related infrastructure e.g. transmission lines under the prevailing policy frameworks.

(A) PPIB's Current Portfolio of Power Generation Projects:

PPIB is handling a diversified portfolio of 22 hydro, coal and RLNG based power generation projects of more than 12,000 MW. A 900 kilometers long HVDC Transmission Line Project between Matiari (Sindh) and Lahore (Punjab) is also being processed by PPIB under CPEC framework which is at advance stages of completion and set to be commissioned by September, 2021. Fuel-wise breakup of upcoming IPPs is as follows:

(a)	Hydropower based Projects:	6,175 MW
(b)	Thar Coal Project:	4,290 MW
(c)	Imported Coal Project:	300 MW
(d)	RLNG based Power Project:	1,263 MW

Table summarizing PPIB's portfolio of upcoming IPPs

Year	Hydro		Coal		RLNG		Total (MW)	No. of Projects
	MW	No.	MW	No.	MW	No.		
2021	720	1	660	1	800	0.5	**2,180**	**2.5**
2022	884	1	1,980	3	463	0.5*	**3,327**	**4.5**
2023	7.08	1	630	2	-	-	**637.08**	**3**
2024	8.00	1	-	-	-	-	**8.00**	**1**
2026	700.7	1	1,320	1	-	-	**2,020.7**	**2**
2027	1,124	1	-	-	-	-	**1,124**	**1**
2028	532	2	-	-	-	-	**532**	**2**
2029	640	1	-	-	-	-	**640**	**1**
2030	300	1	-	-	-	-	**300**	**1**
**	1,260	4	-	-	-	-	**1,260**	**4**
Grand Total	**6,175**	**14**	**4,590**	**7**	**1,263**	**1**	**12,028**	**22**

** Includes 2nd Units of projects from previous year.*

*** 4 hydropower projects are to be advertised by PPIB under the IGCEP timelines, the CODs of these projects will be assessed after issuance of LOI.*

Note: Due to COVID-19 pandemic, the COD and completion schedule of some of above projects is likely to be affected.

(B) Role of PPIB in Implementing Power Projects under CPEC Program:

Currently, PPIB's is processing thirteen multiple fuel based power generation projects of 11,648 MW as well as a 900 km long, ±660 kV Matiari-Lahore HVDC Project of 4,000 MW capacity. These Projects are at different stages of development gradually adding new generating capacity to the national grid. The CPEC projects being implemented by PPIB are spread all across the country, by giving due importance to energy needs and transmission and fuel related infrastructure of all provinces and AJ&K. Current status of projects under CPEC is as follows:

(a) Nine Coal based power projects of 8,220 MW including:

(i) Five Thar Coal based Projects of 3,960 MW

- 660 MW Engro at Thar Block-II achieved COD
- 330 MW Thar Energy Limited Project at Thar Block-I is under construction after achieving Financial Close
- 330 MW ThalNova Project at Thar Block-II is under construction after achieving Financial Close
- 1,320 MW Shanghai Project at Thar Block-I under construction prior to Financial Closing
- 1,320 MW Oracle Project at Thar Block-VI under issuance of LOI/NTP.

(ii) Four Imported Coal based Project of 4,260 MW

- 3xProjects of 1,320 MW each power generation capacity (i.e. Port Qasim, Sahiwal and Hub) already Commissioned
- 300 MW Gwadar Project is under Financial Closing

(b) Four Hydropower Projects of 3,428 MW:

- 720 MW Karot Project is under construction after achieving Financial Close
- 884 MW Suki Kinari Project is under construction after achieving Financial Close
- 700.7 MW Azad Pattan Project is under Financial Closing
- 1,124 MW Kohala Project is under Financial Closing

Approximately 900 km long 4,000 MW load transmitting capacity, ±660 kV Matiari-Lahore HVDC Transmission Line Project under final stages of completion. Testing and Commissioning is underway.

(C) Highlights of some Major Activities/Achievements of PPIB during 2020-21:

(a) Financial Closing of 1,263 MW RLNG based PTPL Project on 23rd April, 2021

(b) Financial Closing of 330 MW Thar Coal based ThalNova Power Project (a CPEC project) on 30th September, 2020.

(c) The Government of Pakistan Implementation Agreement (GoP IA), Tripartite Power Purchase Agreement (TPPA) and Government of Punjab Water Use Agreement (GoPb WUA) of another CPEC project i.e. 700.7 MW Azad Pattan Hydropower Project were signed on 6th July, 2020 in a ceremony graced by the Prime Ministers of Pakistan and Azad Jammu and Kashmir. Subsequently, the GoAJ&K Implementation Agreement (GoAJ&K IA) and GoAJ&K Water Use Agreement (GoAJ&KWUA) were signed on 1st December, 2020.

(d) The 1124 MW Kohala HPP is Pakistan's largest hydro IPP which is being processed by PPIB under CPEC. The project agreements comprising AJK-IA and WUA were signed on 23rd April, 2021.

(e) Project agreements which include GoP-IA, PPA and SIA of another CPEC project i.e. 300 MW imported coal based Gwadar power generation project were executed on 8th April, 2021.

(f) Suki Kinari HPP in Khyber Pakhtunkhwa province under CPEC has achieved its second-stage river closure on 30th April, 2021 and entered into a new phase of its dam construction.

(g) Despite COVID-19, PPIB ensured continuation of its operations and provision of uninterrupted services to the Project sponsors of ongoing IPPs, particularly to the under construction IPPs which include Suki Kinari HPP, Karot HPP, Thar Coal based Lucky, Thar Energy and ThalNova projects, RLNG based PTPL project and Matiari-Lahore Transmission Line Projects. With the help of PPIB's support and facilitation, all under construction projects have achieved considerable progress in construction activities.

(h) PPIB is directly involved in promoting alternative and renewable power generation in the country. Furthermore, PPIB is also providing legal services to AEDB on matters including but not limited to development of alternative and renewable power generation projects.

(i) For increasing operational efficiency, the merger of AEDB in PPIB has been re-initiated by the Power Division and in this regard, after necessary consultation and due diligence, same was presented before the CCOE on 17th June, 2021 which has been approved by the CCOE. PPIB is actively assisting the Power Division in this regard.

(j) PPIB having leading role in arranging power generating capacity, actively contributed and provided inputs on processes, methodology, assumptions, basis used to workout demand projection and selection criteria and timelines of projects being evaluated under IGCEP. During consultative process related to IGCEP, PPIB provided full support in the form of relevant data provision related to its future power projects.

(k) The National Electricity Policy 2021 has been approved by Council of Common Interests (CCI) in June, 2021. PPIB was actively involved during structuring process of said policy and being a skilled and experienced one-window facilitator with proven record of facilitation, provided valuable inputs in this regard.

(l) Apart from implementing new power generation projects, PPIB also deals with the affairs of commissioned IPPs and facilitate them in negotiating with different matter. Accordingly, PPIB signed Working Capital Direct Agreements (WCDAs) with Orient power generation project on 7th October, 2020.

(m) Under the GoP's E-Government initiatives at Federal Ministries, Divisions and Departments, including an e-office system which helps shifting from manual to a paperless electronic system, PPIB is in the process of adopting e-office and in this regard has done considerable progress. Necessary training has been given to the relevant staff through NITB while required equipment is being arranged in consultation with NITB.

(n) There are various important bipartite and tripartite activities involve in processing of power generation projects such as tariff determination, land acquisition, generation licence, environmental clearance, IA, PPA, WUA, CSA, TSA, FSA, SIA, DIA, Feasibility Study etc. PPIB keeps facilitating the sponsors for accomplishing these milestones.

(o) PPIB keeps strong liaison with all stakeholders, project sponsors, investors, national and multinational organizations like ADB, World Bank, USAID, JICA, SDPI, WEF etc. and remains engaged in different conferences, consultative sessions, workshops, webinars etc. either organized by PPIB and/or by various national and international organizations such as SDPI, ICAP, USAID, WEF, World Bank, ADB on various matters/topics related to power sector of Pakistan. Briefings/ presentations on investment opportunities in power sector of Pakistan are also arranged for investment groups/delegations visit Pakistan.

(D) <u>Major Targets/Activities to be undertaken by PPIB in Future:</u>

PPIB has intimated the following targets/activities to be undertaken in future:

(a) PPIB is actively working to improve the share of indigenous coal and renewable hydro based electricity in the overall energy mix of the country. PPIB has managed to form a portfolio of ongoing projects which is largely dominated by hydro and Thar Coal. Summary of ongoing power generation and transmission line projects targeted to be completed during next three years i.e. 2021-23 is as follows:

Year	Hydro (MW)	Thar Coal (MW)	Imported Coal (MW)	RLNG (MW)	Total (MW)
2021	720	660	-	800*	2,180
±660 kV Matiari-Lahore HVDC Transmission Line Project having transmission capacity of 4,000 MW is targeted to be completed by September 2021.					
2022	884	1,980	-	463*	3,327
2023	7.08	330	300	-	637
Grand Total	**1,611**	**2,970**	**300**	**1,263**	**6,144**

1,263 MW RLNG based PTPL project is targeted to come online in open cycle mode (800 MW) by October, 2021 while full project of 1,262 MW (in combined cycle mode) by June, 2022.

(b) Pursuant to CTBCM detailed design, PPIB would play an important role of Independent Auction Administrator (IAA). PPIB has constituted a dedicated Market Implementation Group (MIG) of its professionals which is working on achieving the tasks assigned to PPIB under NEPRA's CTBCM determination.

(c) The Government of Pakistan is emphasizing development of hydro potential to produce indigenous clean, green and affordable electricity. In this regard, under the agreement signed with Agence Française De Développement (AFD), AFD would be supporting PPIB for improvement of expertise and for implementation of hydropower projects more efficiently. In this regard, selection of consultant for the assignment pertaining to developing mechanism for tariff based bidding & review of feasibility studies for hydropower projects is in progress.

(d) Considering that a large number of transmission lines are envisaged to be added into the transmission network, private sector participation in implementing new transmission projects would be imminent. PPIB is also in liaison with NTDC to arrange a list of doable candidate transmission line projects. Upon receipt of the list and finalization of framework/ RFP/Security Package for transmission projects, PPIB would initiate the process of International Competitive Bidding (ICB) in consultation with all key stakeholders.

(e) PPIB is planning to advertise new hydro based IPPs under ICB mode in accordance with the findings of IGCEP study. Similarly, PPIB is aiming to undertake more small hydropower projects under TLOS regime so that share of hydro based electricity is increased in the overall energy-mix of country.

8.2 AEDB ROLE, PLANNED ACTIVITIES, PROGRESS AND ACHIEVEMENTS

AEDB has been promoting and facilitating the development and deployment of alternative and renewable energy technologies in the country. The development of renewable energy based power generation projects is being pursued on IPP mode through private sector investors. The status of RE power projects as of 30th June, 2021 is given below:

(a) 24 Wind Power Projects of 1,233.37 MW cumulative capacity were operational and providing electricity to the grid.
(b) 06 Solar Power Projects of 430 MW cumulative capacity were operational.
(c) 08 Bagasse based co-generation Projects of 259.10 MW capacity were operational.

AEDB informed that several ARE projects, initiated under the RE Policy 2006, were not able to proceed with their development due to restrictions imposed vide decisions taken by CCOE dated December, 12, 2017. The CCOE vide its decisions in case No. CCE-12/04/2019(V) dated February 27, 2019 allowed implementation of projects that had already achieved significant milestones of project development by placing them into following three categories;

Category-1: 19 projects of 531 MW that have already been issued Letter of Support (LOS) subject to revision of tariff in case tariff determination has been done since more than one year or if the tariff validity period has lapsed.

Category-II: 24 projects of 1,339 MW that have acquired tariff and generation licence subject to revision of tariff in case tariff determination has been done since more than one year or if the tariff validity period has lapsed.

Category-III: 107 projects of more than 6,557 MW cumulative capacity holding LOIs to be allowed to proceed ahead after becoming successful in a competitive bidding to be undertaken as per demand communicated by NTDC.

AEDB stated that in compliance of the CCoE's decision, AEDB has actively been facilitating the said projects as per the criterion set by the CCOE. Twelve (12) wind power projects with a cumulative capacity of 610 MW have been facilitated to successfully achieve Financial Closing in November, 2019. Moreover, 04 solar PV projects with a cumulative capacity of 250 MW have also been facilitated to achieve Financial Closing in February, 2021. Details are given in the following table:

S. No.	Name	Capacity (MW)	Type	Location	Expected COD
1	Master Green Energy Limited	50	Wind	Jhampir, Thatta	August, 2021
2	Tricom Wind Power (Pvt.) Limited	50	Wind	Jhampir, Thatta	August, 2021
3	Lakeside Energy (Pvt.) Limited	50	Wind	Jhampir, Thatta	December, 2021
4	Artistic Wind Power (Pvt.) Limited	50	Wind	Jhampir, Thatta	December, 2021
5	Liberty Wind Power-1 (Pvt.) Limited	50	Wind	Jhampir, Thatta	December, 2021
6	Indus Wind Energy Limited	50	Wind	Jhampir, Thatta	December, 2021
7	ACT2 Wind (Pvt.) Limited	50	Wind	Jhampir, Thatta	December, 2021
8	Liberty Wind Power-2 (Pvt.) Limited	50	Wind	Jhampir, Thatta	December, 2021
9	Metro Wind Power Limited	60	Wind	Jhampir, Thatta	December, 2021
10	NASDA Green Energy (Pvt.) Limited	50	Wind	Jhampir, Thatta	December, 2021
11	DIN Energy Limited	50	Wind	Jhampir, Thatta	December, 2021
12	Gul Ahmed Electric Limited	50	Wind	Jhampir, Thatta	December, 2021
13	Zhenfa Pakistan New Energy Company (Pvt.) Limited	100	Solar	Layyah, Punjab	March, 2022
14	Meridian Energy (Pvt.) Limited	50	Solar	Sukkur, Sindh	March, 2022
15	HND Energy (Pvt.) Limited	50	Solar	Sukkur, Sindh	March, 2022
16	Helios Power (Pvt.) Limited	50	Solar	Sukkur, Sindh	March, 2022

AEDB has intimated that in compliance of the CCoE's decision, AEDB prepared the RFP package for carrying out competitive bidding for wind and solar pipeline projects falling under Category-III. The RFP documents have been approved by NEPRA and are ready to be floated upon receipt of information pertaining to Interconnection Ready Zone (IRZs) and total evacuation capacity/quantum by NTDC through the approved IGCEP.

(A) Steps and Measures Taken by AEDB for Promotion and Development of Renewable Energy:

AEDB has conveyed the following supportive measures taken by AEDB in order to promote ARE technologies and to attract private sector investments:

(a) AEDB proactively facilitated the RE power projects in achieving their project milestones and resolution of issues and impediments faced by the project sponsors from different public sector entities.
(b) Assisted World Bank in study for analyzing the integration of variable renewable energy in the national grid with the objective of increasing the share of renewable energy in the energy mix of the country.
(c) Assisted World Bank in carrying out the Pakistan Renewable Energy Locational Study that has the objective to identify the most suitable locations for VRE deployment in Pakistan to enable an informed strategic planning process of the imminent capacity ramp-up.
(d) Engaged with World Bank for carrying out the Pakistan Renewable Energy Competitive Bidding Study that will provide strategic analysis and advice to the AEDB and other relevant sector agencies on the implementation of competitive bidding for the contracting of RE capacity to achieve the 2025 and 2030 targets in line with the Alternative Renewable Energy (ARE) Policy, 2019.
(e) Initiated the process of revision of AEDB (Certification) Regulations, 2018 with the aim to simply the procedures laid therein in order to ensure the implement the present Government's policy of Ease of Doing Business. The revised regulations would be placed for approval of the AEDB Board soon.
(f) Developed the RFP package after stakeholder consultation for carrying out competitive bidding amongst pipeline wind and solar projects are per the decisions of the Cabinet Committee on Energy (CCoE).
(g) Assisted NTDC in carrying out the feasibility study of solar water pumping in Balochistan.
(h) Supported Government of Balochistan in preparation of PC-IIs for renewable energy based off-grid electrification projects in districts of southern Balochistan.

8.3 PPDB (GOVERNMENT OF PUNJAB) ROLE, PLANNED ACTIVITIES, PROGRESS AND ACHIEVEMENTS

PPDB is a statutory body that performs its functions as a one window facilitator for development of IPP based power projects in the province of Punjab. PPDB has informed that so far, it has contributed in the capacity addition of 1,720 MW into the National Grid. PPDB being a provincial facilitator also maintains a constant liaison with the Federal and Provincial entities in achievements of its goals and objectives. PPDB has contributed in the development of detail design of CTBCM, updation/revision of Grid Code 2005 and participated in the formulating and approval process of National Electricity Policy 2021.

(A) Undertaken Projects and Progress Status:

The PPDB has issued a number of Letter of Interests (LOIs) for development of Thermal, Hydel, Solar and Wind power projects. The details of power projects of about 4,129 MW facilitated by PPDB is as under:

Thermal:

S. No.	Name of Project	Capacity (MW)	Location
Project(s) Achieved COD			
1	2 x 660 MW CFPP by HSR – Flagship CPEC Project	1,320	Sahiwal
LOI Issued – Pipeline Projects			
2	1 x 660 MW CFPP by KAPCO	660	Muzaffargarh
3	1 x 660 MW CFPP by Nishat Energy Limited (NEL)	660	Rahim Yar Khan
4	2 x 660 MW CFPP by Huaneng Power Generation Company Limited	1,320	Rahim Yar Khan

Hydel:

S. No.	Name of the Project	Capacity (MW)	Name of Company/Sponsor
1	Lucky HPP	20.00	Marala Barrage, Sialkot
2	Ravi HPP	4.60	Lower Bari Doab Canal, RD 260+000, Sahiwal
3	Alka HPP	1.80	Jhang Branch Canal, RD 0+000 to 69+000, Hafizabad
4	CJ HPP	25.00	Chashma Jhelum Link Tail Canal Fall, RD 316+622, Khushab
5	Gugera HPP	3.60	Upper Gugera Branch Canal, RD 214+000 to RD 220+750, Nankana
6	Mehar HPP	10.49	BS Link-I Canal, RD 106+250, Kasur
7	Lower Chenab Canal HPP	7.55	(LCC) RD 0+000, Gujranwala
8	Mandi Baha-ud-Din HPP	3.30	Mandi Baha-ud-Din, Lower Jhelum Canal
9	Khokhra HPP	2.80	Gujrat Branch Canal, RD 0+000 to 2+000, Gujrat
10	Rasul HPP	18.00	Rasul Barrage, Mandi Baha-ud-Din
11	Khanewal HPP	1.00	LBDC RD 602+000, Khanewal
12	Kasur HPP	2.54	BRBD Link Canal 509+712, Kasur
13	Murree HPP	12.00	River Jhelum Tributary
14	DG Khan HPP	4.63	DG Khan Link – III Canal RD 0+000 to RD 14+000, DG Khan
15	Chichawatni HPP	1.60	LBDC, RD 489 + 000, Sahiwal
16	Soan HPP	10.00	River Soan, Chakwal

Solar:

S. No.	Name of Project	Capacity (MW)	Location
1	Zonergy Company Limited (CPEC Project)	6x100	QA Solar Park, Bahawalpur
2	Zorlu Sun Power (Pvt.) Limited	3x100	QA Solar Park, Bahawalpur
3	Zhenfa Pakistan New Energy Company (Pvt.) Limited	100	Layyah
4	Solution De Energy	100	Chishtian
5	CWE & Welt Konnect (Pvt.) Limited (Joint Venture)	50	QA Solar Park, Bahawalpur
6	Vogt Solar Limited	15	Bhakkar
7	Roshan Power (Pvt.) Limited	10	Kasur

Wind:

S. No.	Name of Project	Capacity (MW)	Location
1	VESTAS Asia Pacific Wind Technology (Pvt.) Limited	250	Rojhan

PPDB has informed that it is also making efforts for realization of CPEC Energy Projects having a committed contribution of 3,960 MW. PPDB facilitated projects are considered as new power generation options, under newly devised IGCEP 2021 Section 5.10 as;

(a) Rahim Yar Khan Imported Coal based Power Plant (660 MW)
(b) KAPCO Imported Coal (660 MW)

In order to assist Government for exploring options for utilization of local coal for existing and new power projects, PPDB is in consultation with potential sponsors for exploitation and utilization of local coal/blending options.

(B) PPDB's Progress regarding Process of Different Projects based on Indigenous/RE Resources:

PPDB informed that it has prepared RFP for competitive bidding under NEPRA's Regulations CBTR-2017 for development of 135 MW Taunsa Hydropower Project. The pre-qualification process has been completed and four sponsor have been pre-qualified. The RFP, approved by NEPRA, will be issued for bidding and carrying out further development activities. Three hydel power projects of 26.40 MW have already approached PPIB for issuance of Tri-Partite Letter of Support.

PPDB is extending facilitation to 100 MW solar power projects by Zhenfa Pakistan New Energy Company (Pvt.) Limited at Rakh Chubara, Layyah. Company has achieved financial close in February, 2021. Construction work at the site has been started. Expected COD is till December, 2021. The project is reflected as committed project in IGCEP 2021-30.

PPDB is also extending facilitation to 100 MW Solar Power Project by Zorlu Solar Pakistan Limited at Quaid-e-Azam Solar Park, Bahawalpur. Advance stage Category-II project as per Federal CCOE decision dated April 4, 2019. Company has approached NEPRA for revalidation of fresh tariff on January 4, 2021, tariff determination is awaited. Company request of LPM modification of generation licence due to change in technology is pending with regulator.

(C) Initiatives being Undertaken by PPDB:

(i) Guidelines for development of Small Hydro Power Projects in captive mode:

PPDB is encouraging development of Small Hydropower Projects in captive mode for supply of generated energy for self-use of small, new and existing enterprises with the vision to enhance the development of small industries and increase in rural employment. In this regard, captive guidelines for small hydropower projects have been developed. PPDB will initially initiate 10 projects with an aggregate capacity of 13.35 MW within the capacity range of 1-2 MW. These projects are located in six (06) Districts of Punjab, as listed below:

S. No.	Project Locations	Capacity (MW)
1	Burala Branch Canal, RD 166+000, Faisalabad	1.55
2	Lower Gugera Canal, RD 27+000, Faisalabad	1.50
3	Lower Gugera Canal, RD 65+000, Faisalabad	1.00
4	Lower Jhelum Canal, RD 142+000, Mandi-Baha-Ud-Din	1.89
5	Northern Branch of LJC, RD 24+320, Mandi-Baha-Ud-Din	1.11
6	Pakpattan Canal, RD 304+340, Sahiwal	1.28
7	Lower Bari Doab Canal, RD 542+168, Sahiwal	1.20
8	Ahmedpur Branch Canal, RD 98+000, Bahawalpur	1.70
9	Thal Main Line Canal, RD 237+000, Bhakkar	1.32
10	BRBD Link Canal, RD 433+958, Kasur	1.00

(ii) Establishment of Provincial Grid Company under Punjab Generation Policy, 2009

Under Article 157 of the constitution of Pakistan and pursuing the provision of NEPRA (Amendment) Act, in synch with other provinces, Government of Punjab is pursuing the establishment of PGC to reap the advantage of wheeling regulations and optimally utilize spare generation capacities of IPPs plants after completion of their PPA term(s). In addition the indigenous generation made available in captive/ PPP/public mode will be transmitted to potential consumers. The establishment of PGC is in final stages

of government approval. Thereafter, the company will be registered with SECP and will proceed for acquisition of licence from NEPRA.

(iii) Socio-Economic Facilitation by PPDB

With a view to social well-being of people of Punjab, Energy Department/PPDB engaged Huaneng Shandong Ruyi (Pakistan) Energy (Pvt.) Limited (HSR) for Corporate Social Responsibility (CSR) initiative to improve the lives of local community and CSR activities to be completed at its own without any financial liability to the Government of Punjab. HSR established Technical Training School (TTS) during 2019 and first session of trainees have successfully completed their training under TEVTA arrangement, while during the current year 2020 the classes could not be held due to COVID-19 pandemic.

(iv) Social Responsibility Agreement (SRA) and establishment of Trust Fund

PPDB informed that SRA was signed and a Trust Fund has been established with approval of Government of Punjab. The trust has been registered under "the Punjab Trust Act, 2020". The first Board of Trustees (Directors) meeting has been convened. The process of establishing Hepatitis Clinic in Sahiwal Division is under process.

8.4 ENERGY DEPARTMENT (GOVERNMENT OF SINDH) ROLE, PLANNED ACTIVITIES, PROGRESS AND ACHIEVEMENTS

Energy Department (ED), Government of Sindh (GOS) is providing one window facility for investors in energy sector on provincial level. The ED, GOS has informed that it is committed to exploit and promote the RE potential in the province for sustainable economic growth through indigenous resources utilization and increase of RE share in the overall energy mix in Pakistan.

ED, GOS informed that it played proactive role in formulation of ARE Policy 2019 by giving its view/ comments for incorporation in the Policy for the promotion of RE in the Country and to achieve targets set by the Government.

(A) Success Story:

ED, GOS has conveyed the following progress in respect of development of RE projects being facilitated by it:

(i) Wind Power Development:

ED, GOS issued 35 Nos. of LOIs for development of Wind Power Projects having cumulative capacity of 2,485 MW which are at different stages of development. 12 Wind Power Projects obtained tariff from NEPRA and achieved financial close. The projects are expected to achieve COD by the end of year 2021.

(ii) Solar Power Projects:

ED, GOS issued 25 Nos. of LOIs for development of Solar Power Projects having cumulative capacity of 1,550 MW which are at different stage of development. 03 Solar Power Projects obtained tariff from NEPRA and achieved financial close. The projects are expected to achieve COD by the end of year 2021.

(iii) Hydropower Project:

ED, GOS issued LOI to Nara Hydropower Limited for development of Hydel Power Project capacity of 15 MW which is at tariff determination stage.

(iv) Sindh Solar Energy Project:

Sindh Solar Energy Project under ADP No. 541 has been initiated with the financial support of US$ 100 million by World Bank. The Project activities have been started in FY 2019-20 from the month of October, 2019 with the following three targets:

Component-I (Utility Scale Solar): 400 MW Gird-Connected Solar through Competitive Bidding. The inception report containing way forward for 400 MW Solar Park is forwarded to World Bank. The location study to identify project site has been completed and under the review of stakeholders.

Component-II (Distributed Solar): 20 MW Rooftop Solar on public sector buildings. The final survey report for pilot project (Sindh Assembly Building and JPMC Building) has been completed. Initial survey of 400 buildings has been completed. 40 site detailed survey reports submitted by the Consultant remaining 160 are in process. Under COVID-19 emergency project, out of 35 sites 28 design and survey report has been submitted by the firms which have been approved. Solar Panels installation has been completed on 13 sites. Remaining sites are under execution.

Component-III (Solar Home System): 200,000 Solar Home Systems in 10 Districts of low energy access. The prices of solar power are varying in International Market. The Consultants have been hired to carryout competitive bidding to discover the solar power prices. The Household Survey firm hired for Survey of Household in 10 Districts of Sindh.

The contract has been signed for Solar Home System (SHS) Social Mobilization and Consumer Awareness Campaign. The technical evaluation sent to World Bank for review and comments for Installation Verification and Quality Control (IVQC). The Social Mobilization and Consumer Awareness media campaign has completed pilot project successfully and submitted their report to SSEP. The selection process of "Call for Application" for round 2 has been completed, and started their product sales in 10 targeted districts after necessary approvals.

(v) Thar Projects:

Energy Department has outlined 12 Blocks in Thar out of which 06 are presently allocated to the companies and Block-I and II are actively developing/expanding their open-pit mines for extraction of Coal. The Block-wise progress is as under:

Block	Number & Capacity of Power Plant	Planned Activities	Progress Achieved
Thar Coalfield Block-I [Sino Sindh Resource (Pvt.) Limited]	2x660 MW	2x660 MW (subject to approval from PPIB)	60% construction progress achieved for both mining and power plant
Thar Coalfield Block-II [Sindh Engro Coal Mining Company]	2x330 MW COD achieved 10-07-2019	(a) Thar Energy Limited 1x330 MW expected COD March, 2022 (b) ThalNova Power Thar Limited 1x330 MW expected COD June, 2022 (c) Lucky Electric Power Company 1x660 MW expected COD October, 2021 (d) Siddiqsons Energy Limited 1x330 MW expected financial close 2nd half of 2021 (e) Jamshoro Power Company Limited 1st unit of 660 MW 20% blending 2nd half of 2022	COD of 3.8 Mtpa Phase-I Mine on 10th July, 2019

(B) <u>Sindh Transmission and Dispatch Company (STDC) Progress Report on FY 2020-21:</u>

(i) <u>Introduction:</u> STDC was incorporated on 7th January, 2015 under SECP Companies Ordinance, 1984 for the provision of extra high voltage electric power infrastructure. It is a subsidiary Company of Sindh Energy Holding Company (Pvt.) Limited. NEPRA also awarded the 1st ever Provincial Grid Company (PGC) Licence to STDC.

(ii) <u>Role of STDC in Power Sector:</u> ED, GOS has stated that for the last few decades our country has been facing shortage of transmission lines which is severely hampering the evacuation of power by the transmission network. To resolve the issues the Province of Sindh

has taken an initiative to establish its own Transmission Line Company to support and reduce the work load of NTDC. STDC has successfully constructed and completed the 1st ever provincial Transmission Line of 132 kV Double Circuit (95.47 km) from SNPCL to K-Electric KDA-33 Grid Station, Karachi.

(C) Planned Activates:

ED, GOS has conveyed the following activities planned by STDC

(a) Preparation and drafting of Provincial Power Policy for the province of Sindh so that the projects in pipeline could be implemented on fast track.

(b) An agreement has already been signed between KE, STDC and 05 wind power plants in Jhimpir area for evacuation of around 275 MW renewable energy to be evacuated into K-Electric transmission network. For evacuation of this RE power STDC will establish the Grid and Transmission line infrastructure in the vicinity of Jhimpir area.

(c) Engro Energy Limited has approached STDC for evacuation of around 500 MW of RE Solar/ Wind Hybrid on B2B basis proposed for supplying all this power to BPC. In this regard, MOU draft is ready which is expected to be signed by the end of August, 2021.

(d) Alka Power Holding BV of Netherlands has approached both STDC and SREC (Sindh Renewable Energy Company) for establishment of 200 MW of RE Solar/Wind Hybrid. The talks are in progress.

(D) Progress on Stated Goals in FY 2020-21: ED, GOS has conveyed the following progress on its stated goals:

(a) Improvement in the performance of Transmission Line during FY 2020-21:
- (i) Number of tripping is only 7.
- (ii) Number of outages hours 7 hours 33 minutes whereas NEPRA has allowed the annual outages allowance of 131.06 hours.
- (iii) Transmission line losses are approximately 1.73% which is also within the permissible limit.

(b) Acquirement of First ever Provincial Grid Company Licence in Pakistan.

8.5 PEDO (GOVERNMENT OF KHYBER PAKHTUNKHWA) ROLE, PLANNED ACTIVITIES, PROGRESS AND ACHIEVEMENTS

PEDO is an autonomous body of the Government of Khyber Pakhtunkhwa and is governed by PEDO Act, 2020. It is responsible for development of energy sector in the province. PEDO has been implementing different Hydropower Projects across Khyber Pakhtunkhwa. PEDO has informed that it has identified a potential of 3,900 MW hydropower generation in the province of Khyber Pakhtunkhwa which are under the process of implementation in Private and Public Sectors. PEDO has also moved towards Public Private Partnership model in order to take benefit of private capital, technical expertise, avoid time and cost overrun, provide comfort to private equity and share in profits.

The following Six (6) Hydropower Projects of PEDO having installed capacity of 157 MW are operational in Khyber Pakhtunkhwa:

S. No.	Name of the Project	Capacity (MW)	Location (District)	S. No.	Name of the Project	Capacity (MW)	Location (District)
1	Malakand-III HPP	81.00	Dargai	4	Ranolia HPP	17.00	Kohistan
2	Daral Khwar HPP	36.60	Swat	5	Machai HPP	2.60	Mardan
3	Pehur HPP	18.00	Swabi	6	Shishi HPP	1.80	Chitral

(A) First-Ever Auction and Wheeling of Power through Open Competition:

PEDO has stated that auction and Wheeling of Power Model for 18 MW Pehur Hydropower Station is first ever successful model in history of Pakistan's power sector. It has practically commenced on June 05, 2020 with supply of cheap electricity having a strike price of Rs. 7.5/kWh, against the average national industrial tariff of Rs.15/kWh, to 5 industrial consumers of Khyber Pakhtunkhwa. This historic step will offset the locational disadvantage faced by the industrial sector of Khyber Pakhtunkhwa and will open a new horizon for strengthening the socio-economic development of the province. Apart from making competitive environment for industrial growth, this model will contribute Rs. 305.38 million/annum to the provincial exchequer which is Rs. 254.58 million/annum more as compared to sale of electricity to the national grid. The 2nd Phase of wheeling has been initiated.

(B) Establishment of Khyber Pakhtunkhwa Transmission & Grid System Company Private Limited:

Government of Khyber Pakhtunkhwa has established a company for the transmission of electricity from the power projects to various Load Centers in Khyber Pakhtunkhwa, National Grid and/or Bulk Power Consumers. The Khyber Pakhtunkhwa Transmission & Grid System Company (Pvt.) Limited (KPT&GSC) was established and registered with SECP on 13th March, 2020. NEPRA has granted Transmission Licence to KPT&GSC to act as Provincial Grid Company on 26th February, 2021.

According to PEDO, the proposed strategy is to facilitate power evacuation of nearly 7,320 MW, which will be available in (KPT&GSC) province in the next 05-10 years from various HPPs located at Chitral, Dir, Swat, Kohistan and Mansehra regions.

In the 1st Phase, KP Government proposed the following two Transmission Line Projects which will be linked with the existing grid system at appropriate locations to disperse power from the hydropower plants to the major load centers:

(a) Construction of 500 kV Transmission Line from Chitral to Chakdara along with 500/220/132 kV Grid Stations at Chitral and Chakdara for power evacuation from Chitral Region.
(b) Feasibility and Construction of 220 kV Transmission Line in the Swat Corridor with 220 kV Grid Stations at Kalam (Swat) and Mingora/Chakdara for power evacuation from Swat Region.

(C) Development of Hydropower Projects:

List of the ongoing/under-construction hydropower projects under PEDO with their expected COD are given below:

S. No.	Name of the Project	Capacity (MW)	Expected COD	S. No.	Name of the Project	Capacity (MW)	Expected COD
1	Reshun HPP	4.20	December, 2021	5	Gorkin Matiltan HPP	84.00	July, 2023
2	Jabori HPP	10.20	January, 2022	6	Lawi HPP	69.00	September, 2023
3	Koto HPP	40.80	June, 2022	7	Chapri Charkel HPP	10.56	December, 2023
4	Karora HPP	11.80	June, 2022	8	Brando HPP	6.75	March, 2025

(i) Foreign Aided Hydropower Projects:

Provincial Government has singed Loan Agreement from World Bank and Asian Development Bank (ADB) for the development of following projects in public sector:

(a) Balakot HPP, District Mansehra (300 MW) through ADB which is double the entire installed capacity of the Province.
(b) World Bank Assisted Projects-Gabral Kalam HPP (88 MW), District Swat and Madyan HPP (157 MW), District Swat which not only includes the construction of these HPPs but also provides management support to the PEDO so as to enhance its capacity.

(ii) Development of New Business Model for PEDO:

PEDO has conveyed that it is working to develop new Business Model so as to embark PEDO on a corporate financial path. Through the said initiative, PEDO will transform into a financially independent and vibrant organization that does not rely on the conventional mode of financing as practiced in the public sector. The revenue generated from projects will be utilized in the development of new projects.

(iii) Private Power and Renewable Energy Power Projects:

Government of Khyber Pakhtunkhwa (GoKP) announces power policies from time to time which contain various financial and fiscal incentives for the investors. The KP Hydropower Policy, 2016 and associated Guidelines of the Provincial Government offer incentives and simplified processing to bridge the demand supply gap in the minimum possible time through generation of affordable electricity for socio-economic uplift of the province and the country as a whole. PEDO has informed that it is currently processing 4,000+MW capacity of Hydel and Solar Projects under different modes of implementation as listed below:

Solicited Sites (201 MW)

S. No.	Project	Capacity (MW)	S. No.	Project	Capacity (MW)
1	Shigo Kas HPP, Dir Lower	102	2	Arkari Gol HPP, Chitral	99

Public Sector – G to G Sites (918 MW)

S. No.	Project	Project Sponsor	Capacity (MW)
1	Laspur Marigram HPP, Chitral	FWO	230
2	Shushgai Zhendoli HPP, Chitral	FWO	144
3	Shogo Sin HPP, Chitral	FWO	132
4	Kalam Asrit HPP, Swat	KOEN	197
5	Asrit Kedam HPP, Swat	KOEN	215

(iv) Public Private Partnership (PPP) Mode:

PEDO has informed that GoKP is developing the 496 MW Lower Spat Gah HPP, District Kohistan with Korean State-Owned Company M/s Korea Hydro and Nuclear Power Company Limited (KHNP) with equity share of 26% and 74% respectively. The Provincial Government has also engaged the International Finance Corporation for providing Technical Advisory Services to PEDO for developing the following projects in PPP Mode:

(a) Construction of 96 MW Batakundi HPP, District Mansehra (cost Rs. 40 billion)
(b) Construction of 188 MW Naran HPP, District Mansehra (cost Rs. 70 billion)

(v) Semi-Raw Sites (237 MW):

PEDO is developing 237 MW of semi-raw sites under KP Hydropower Policy, 2016 and 59.50 MW of semi-raw sites under KP Hydropower Policy, 2006.

S. No.	Name of Project	Capacity (MW)	S. No.	Name of Project	Capacity (MW)
1	Sharmai HPP, Dir	150.00	3	Bhimbal Katha HPP, Mansehra	7.86
2	Nila Da Katha HPP, Mansehra	31.24	4	Chowkel Khwar HPP, Swat	48.00

(vi) Raw Sites (1,938 MW):

PEDO has informed that more than 300 raw sites with cumulative capacity of 1,938 MW have been registered under KP Hydropower Policy, 2016 by the Directorate of Renewable Energy, Private Power, which are at different stages of implementation.

(vii) Development of Mini/Micro Hydel Projects for far flung and un- electrified areas of Khyber Pakhtunkhwa:

Government of Khyber Pakhtunkhwa initiated "Access to Clean Energy Investment Program" with the financial assistance of ADB to provide environment friendly electricity to the local community in far flung areas across the province in order to improve the livelihood of the people, create employment opportunities and discourage deforestation. The total cost of the project is Rs. 18 billion. Under the Program, a total of 1,028 mini/micro hydropower plants are being constructed. These power plants are to be constructed in the Northern Districts of Khyber Pakhtunkhwa in two phases as below:

(a) Phase-I of the project will be completed in current financial year, whereby out of a total of 328 mini/micro hydropower plants of 32 MW capacity, so far 311 mini/micro plants have been completed while the rest are under construction and will be completed by June, 2022.

(b) Phase-II has already been initiated, and is expected to be completed by 2023, which will result in the construction of 672 mini/micro hydropower plants with a total capacity of 53 MW.

(D) Solar PV Projects (249.50 MW):

PEDO has informed that total 5 projects in solar sector are under process with cumulative capacity of 249.50 MW. Feasibility Studies have been approved. The project sponsors have obtained Generation Licence and tariff from NEPRA.

S. No.	Location	Capacity (MW)	S. No.	Location	Capacity (MW)
1	Kolachi, DI Khan (2 Projects)	2x50.00	3	District Nowshehra	50.00
2	Paharpur, DI Khan	49.50	4	Lachi, Kohat	50.00

(i) Solarization in the Province through on grid and off grids systems:

PEDO has successfully converted Civil Secretariat, Chief Minister's Secretariat and Chief Minister's House to solar energy through net-metering mechanism. Moreover 5,700 households and 300 mosques have also been solarized. The aggregate power generation capacity of the above solarization projects is 2.85 MW with accumulative savings of 5.6 million energy units/annum with approximate monetary savings of about Rs. 88 million/annum. The details are presented in the table:

S. No.	Project Name	Power Cap. (MW)	Energy Gen./ Annum (MWh)	Number of Beneficiaries	Units Savings / Annum	Monitory Savings (Million)
1	100 Villages through Solar/ Alternate Energy Phase-I	0.87 MW (200 W each system)	1,566 MWh	2,900 house holds	1.566 M units/yr	25.00
2	Electrification of Un-Electrified Villages Solar/ Alternate Energy Phase-II	0.55 MW (200 W each system)	960 MWh	2,750 house holds	0.990 M units/yr	15.00
		0.3 MW (300 W each System)	540 MWh	1,000 house holds	0.54 M units/yr	8.70
3	Solarization of Civil Secretariat	0.49 MW	882 MWh	Offices, Conference Rooms, etc.	0.88 M units/yr	14.00
4	Solarization of Chief Minister's Secretariat/Chief Minister's House	0.376 MW	677 MWh	Offices, Conference Rooms, etc.	0.677 M units/yr	11.00
5	Solar Electrification of 300 Masajid/ Worship Places of Non-Muslims	0.531 MW (1,770 W each system)	956 MWh	300 Masajid	0.955 M units/yr	15.00
Total (Million Rs.)		**2.85 MW**	**5,581 MWh**	**6,650 house holds and 300 masajid**	**5.60 M units/yr**	**88.70 (Approx.)**

PEDO has further informed that in addition to above, a portfolio of solarization of 4,000 mosques, 8,000 school and 187 basic health facilities throughout the province are under implementation. Conversion of 4,000 mosques on solar energy will result in saving of 12.80 million units with savings of Rs. 203 million/annum. Similarly, solarization of 8,000 schools will provide clean and uninterrupted power to 100,000 students in the un-electrified or poorly electrified far flung areas. The project will also lead to savings of Rs. 400 million/annum approximately and creation of 320 jobs.

8.6 ENERGY DEPARTMENT (GOVERNMENT OF BALOCHISTAN) ROLE, PLANNED ACTIVITIES, PROGRESS AND ACHIEVEMENTS

The mandate of Energy Department, Government of Balochistan (ED, GOB) is to electrify villages through QESCO, moreover the ED, GOB 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. The details of its activities and achievements during the FY 2020-21 as conveyed by ED, GOB are reproduced in the following paragraphs:

(i) Construction of New 132 kV Grid Stations:

The ED, GOB has also initiated projects to meet the energy short fall and resolve the issue of low voltage in Balochistan. Further, to distribute load of existing overloaded grid stations, the construction of new grid stations has been proposed and included in the PSDP 2020-21. The schemes have been approved and work is in progress for completion of new grid stations in the Districts of Pishin, Killa Abdullah, Ziarat and Quetta. The detail of the schemes/Grid Stations are as under:

S. No.	Grid Stations	Grid Station (Capacity)	Estimated Cost (Revised Cost) (Rs. in Million)
1	Pishin	132 kV	661.10
2	Killa Abdullah	132 kV	440.24
3	Sanjavi/Ziarat	132 kV	310.49
4	Grid Station and 11 kV Feeders Cardiac Centre, Quetta	132 kV	383.00

(ii) Village Electrification:

Despite electrification in the past, the vast areas of Balochistan is still un-electrified. In order to achieve the sustainable development goals to ensure excess to electricity to all in Balochistan, schemes for electrification of villages has been included in the PSDP 2020-21. The purpose is to provide electricity to un-electrified areas in Balochistan and to connect the villages to the National Grid and to resolve the electricity issues of the populations living in rural areas of the Balochistan. The ED, GOB has executed various schemes to provide electricity to villages in all districts of Balochistan. The works on the village has almost completed. Estimated cost of these village electrification schemes is Rs. 1,849.19 million.

(iii) Solar Electrification:

The Province of Balochistan has sufficient potentials of renewable energy. The Government of Balochistan in its five year plan have initiated several projects to avail the renewable energy potentials. The ED, GOB has executed various schemes to provide electricity from solar energy to various villages in remote areas of Balochistan. Moreover, streets and roads have been solarized through installation of solar street lights and hospitals in various areas of Balochistan. Estimated cost of these solar electrification schemes is Rs. 1,390.96 million.

(iv) Power Generation through Private Investors:

The ED, GOB under Balochistan Power Generation Policy 2007, has issued LOIs to various private investors to construct solar and wind power plants at suitable sites for generation of electricity. In this regard, LOIs have been issued to various firms interested in generation of electricity in Balochistan.

The Government of Balochistan is in liaison with Federal Government and NEPRA to resolve the Generation Licenses and tariff of these firms so that these renewable projects could be completed in Balochistan and to increase the energy mix of RE in National Grid. The detail of renewable energy projects to be implemented through private investors are as under:

S. No.	Company/LOI Date	Name of Project	Project Location	Remarks
1	Ener Tec Holding Co. (26-10-2016)	Two 50 MW Solar Power Project	Bostan, District Pishin	Generating Licence issued by NEPRA.
2	Nizam and Sons (28-10-2016)	50 MW Solar Power Project	District Quetta	Case is under process for acquisition of Land.
3	Canadian Commercial Co. (29-06-2016)	50 MW Power Plant at Anjeera	Company has to establish 1,000 MW Plants in Balochistan.	
4	El Passo Technology/ AJS Group Co., Karachi (26-12-2016)	Two 50 MW Solar Power Project	Kuchlak, District Quetta	Case under process at BOR.
5	IB VoghtGmBh (23-02-2018)	Three 50 MW Solar Plants at Khuzdar, Gwadar and Lasbela	50 MW Solar Plant at Maoza Chak Kharari, Lasbella. Land identification for 50 MW Plant at Maoza Karwat, Gwadar and 50 MW Plant at Khuzdar is underway.	Land issue resolved.
6	Engro Energy (28-02-2018)	Four 50 MW Solar Plants at Kuchlak Two 50 MW Plants at Khuzdar One 50 MW Plant at Panjgoor	300 MW Kuchlak site is located at 35 km from Quetta at Quetta Chaman Highway. Land identification for the solar projects at Khuzdar and Panjgoor is under process.	Land acquisition is in progress.
7	Engro Energy (28-02-2019)	Ten 50 MW Wind Power Projects at Nokundi	Mashkicha and Tuzgi area of Nokundi, District Chaghi	Feasibility Study is in progress and wind masts has been installed to collect data in order to select suitable sites to install wind turbines for power generation.

Statistical Data about Energy and Electricity Sector

TABLE 1

Primary Energy Supplies by Source (TOE)

Source	Unit	2015-16	2016-17	2017-18	2018-19	2019-20
Oil[1]	TOE	25,280,073	27,366,526	26,903,431	21,568,315	18,188,487
	% share	34.18	34.39	31.17	25.73	22.56
Gas	TOE	30,460,521	30,163,334	29,849,030	29,318,489	26,658,176
	% share	41.18	37.90	34.59	34.98	33.07
LPG[2]	TOE	908,705	1,008,673	1,054,006	953,834	1,026,048
	% share	1.23	1.27	1.22	1.14	1.27
Coal	TOE	5,066,935	6,482,401	10,925,200	12,933,087	14,711,973
	% share	6.85	8.15	12.66	15.43	18.25
Hydro Electricity[3]	TOE	8,266,670	7,681,699	6,665,328	6,525,607	8,016,386
	% share	11.18	9.65	7.72	7.79	9.94
Nuclear Electricity[3]	TOE	1,099,261	1,670,560	2,358,200	2,365,268	2,581,494
	% share	1.49	2.10	2.73	2.82	3.20
Renewable Electricity	TOE	369,731	636,825	920,580	1,117,482	991,041
	% share	0.50	0.80	1.07	1.33	1.23
LNG Import	TOE	2,404,128	4,455,734	7,492,597	8,913,006	8,320,497
	% share	3.25	5.60	8.68	10.63	10.32
Imported Electricity	TOE	110,525	118,480	132,659	116,196	122,625
	% share	0.15	0.15	0.15	0.14	0.15
Total	**TOE**	**73,966,549**	**79,584,232**	**86,301,031**	**83,811,284**	**80,616,727**
	% share	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
Annual Growth Rate (%)		**5.27**	**7.59**	**8.44**	**-2.88**	**-3.81**

[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

Figure 1: Primary Energy Supplies by Source (TOE)

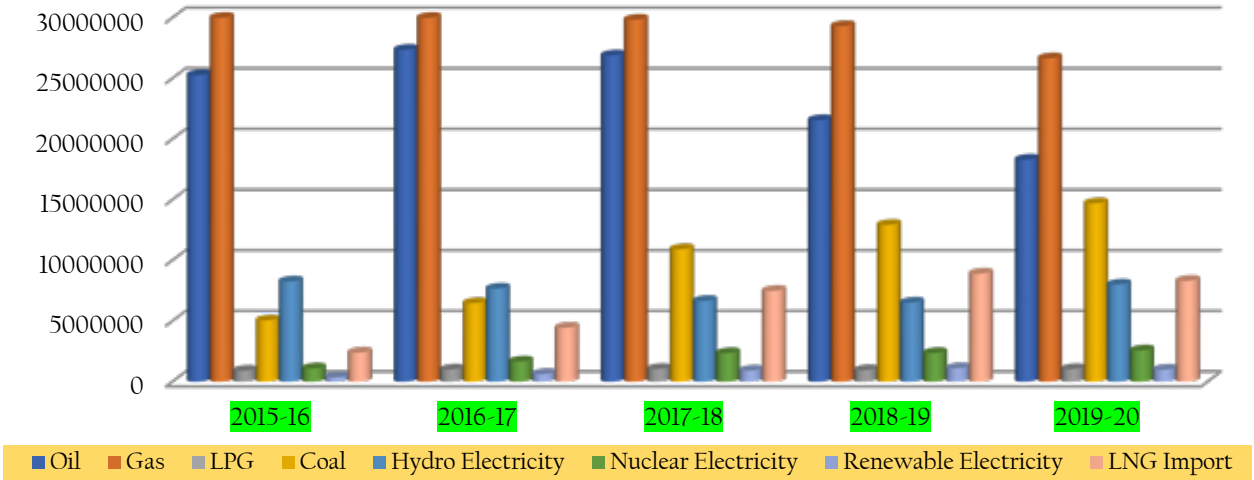


TABLE 2

Final Energy Consumption by Source (TOE)

Source	Unit	2015-16	2016-17	2017-18	2018-19	2019-20
Oil[1]	TOE	16,290,075	17,904,977	19,264,954	17,364,897	16,364,304
	% share	35.89	35.72	35.03	31.58	31.37
Gas[2]	TOE	15,544,358	17,031,100	16,693,880	17,275,180	15,944,781
	% share	34.25	33.98	30.36	31.41	30.56
LPG	TOE	1,210,419	1,308,471	1,385,427	1,148,380	1,196,005
	% share	2.67	2.61	2.52	2.09	2.29
Coal[2]	TOE	4,975,472	6,097,816	8,940,477	10,292,739	9,836,671
	% share	10.96	12.17	16.26	18.72	18.86
Electricity[3]	TOE	7,364,702	7,779,939	8,708,151	8,914,489	8,825,770
	% share	16.23	15.52	15.84	16.21	16.92
Total	**TOE**	**45,385,026**	**50,122,303**	**54,992,889**	**54,995,685**	**52,167,531**
	% share	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
Annual Growth Rate (%)		**8.10**	**10.44**	**9.72**	**0.01**	**-5.14**

[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

Figure 2: Final Energy Consumption by Source (TOE)

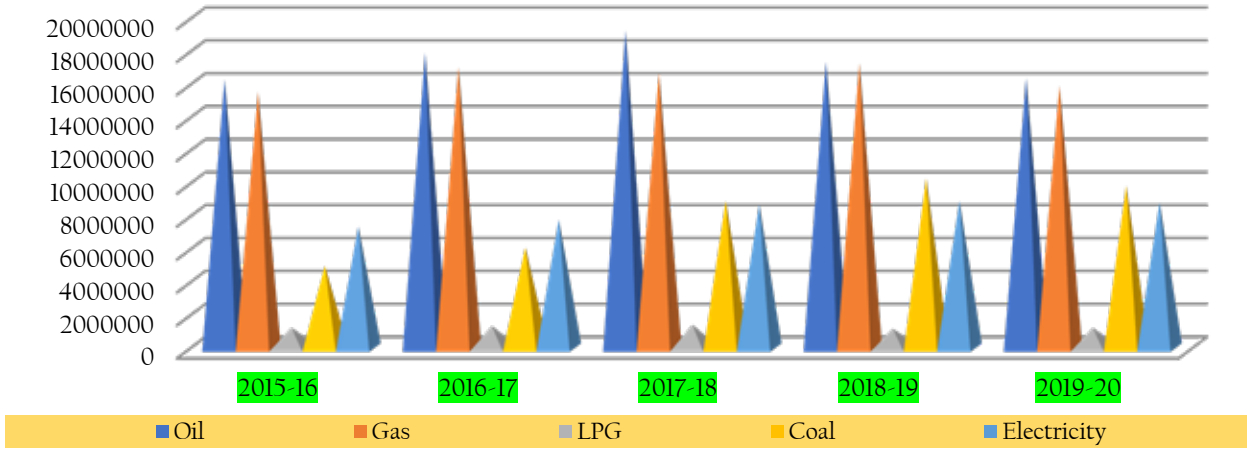


TABLE 3

Fuel Consumption for Thermal Power Generation (TOE)

Source	Unit	2015-16	2016-17	2017-18	2018-19	2019-20
Gas	TOE	8,577,146	8,643,403	10,831,662	10,050,101	8,426,767
	% share	52.78	49.80	56.89	65.35	56.98
Furnace Oil	TOE	7,288,400	8,037,139	6,029,947	2,661,528	1,474,895
	% share	44.85	46.30	31.67	17.31	9.97
Diesel Oil	TOE	294,755	291,841	194,033	27,383	12,683
	% share	1.81	1.68	1.02	0.18	0.09
Coal	TOE	91,463	384,585	1,984,722	2,640,347	4,875,302
	% share	0.56	2.22	10.42	17.17	32.96
Total	**TOE**	**16,251,764**	**17,356,968**	**19,040,364**	**15,379,359**	**14,789,647**
	% share	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
Annual Growth Rate (%)		**3.41**	**6.80**	**9.70**	**-19.23**	**-3.83**

Source: Provisional data by HDIP

Figure 3: Fuel Consumption for Thermal Power Generation (%)

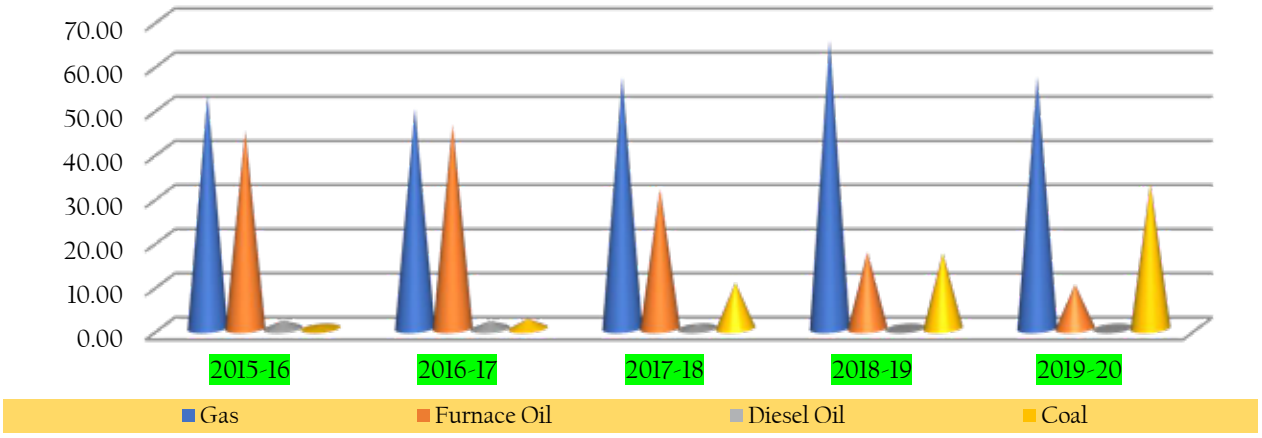


TABLE 4
Installed Capacity by Type (MW)

As on 30th June	2017	2018	2019	2020	2021
HYDEL					
WAPDA Hydel	6,902	8,341	9,389	9,389	9,443
IPPs Hydel	214	372	372	472	472
Sub-Total	**7,116**	**8,713**	**9,761**	**9,861**	**9,915**
% Share (Hydel Installed Capacity)	24.78	24.22	25.03	25.47	24.93
THERMAL					
GENCOs: CPPA-G System	5,897	5,637	5,637	4,881	4,881
KE Own	1,874	2,294	2,294	2,294	2,084
IPPs: CPPA-G System	10,566	15,297	16,946	17,276	17,276
IPPs: KE System	252	366	366	366	366
SPPs/CPPs/N-CPPs: CPPA-G System	313	340	340	340	340
SPPs/CPPs/N-CPPs connected with KE	87	87	87	87	151
Sub-Total	**18,989**	**24,020**	**25,670**	**25,244**	**25,098**
% Share (Thermal Installed Capacity)	66.14	66.76	65.83	65.20	63.11
NUCLEAR					
CHASNUPP (I, II, III and IV)	1,005	1,330	1,330	1,330	1,330
KANUPP (I & II)	137	137	137	137	1,282
Sub-Total	**1,142**	**1,467**	**1,467**	**1,467**	**2,612**
% Share (Nuclear Installed Capacity)	3.98	4.08	3.76	3.79	6.57
RENEWABLE ENERGY (WIND, SOLAR AND BAGASSE)					
Wind Power Plants	785	1,048	1,248	1,248	1,248
Solar Power Plants	400	430	430	430	430
Bagasse based Power Plants	280	301	369	369	369
RE Power Plants: CPPA-G System	**1,465**	**1,779**	**2,047**	**2,047**	**2,047**
Solar Power Plants: KE System	0	0	50	100	100
RE Power Plants: KE System	**0**	**0**	**50**	**100**	**100**
Sub-Total	**1,465**	**1,779**	**2,097**	**2,147**	**2,147**
% Share (RE Installed Capacity)	5.10	4.94	5.38	5.55	5.40
Total Installed Capacity of the Country	**28,712**	**35,979**	**38,995**	**38,719**	**39,772**

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

Figure 4: Share of Installed Generation Capacity by Type (%)

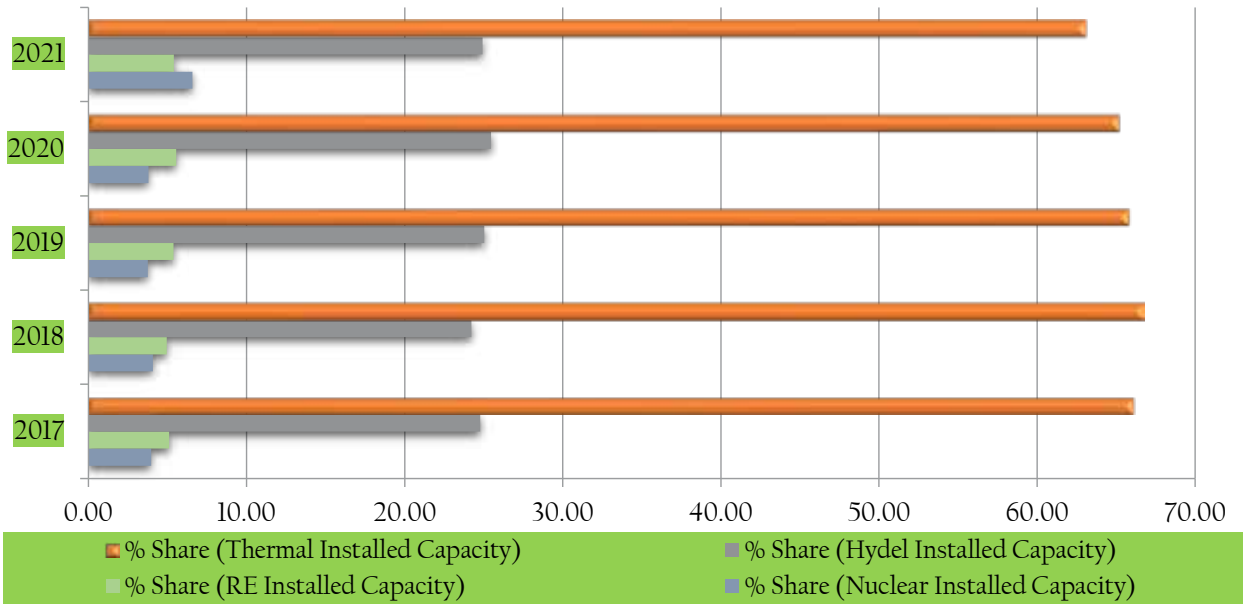


TABLE 5

Plant-wise Installed Capacity (MW) as on 30th June

Power Station	Plant Location	Type of Power Station	2017	2018*	2019*	2020*	2021*	Dep. Cap. as on 30-6-2021
A1: Hydel (WAPDA)								
Major Hydropower Units								
Tarbela	Tarbela, KPK	Reservoir	3,478	3,948	3,478	3,478	3,478	
Tarbela 4th Ext.	Tarbela, KPK	Reservoir	-	-	1,410	1,410	1,410	
Ghazi Barotha	Ghazi Barotha, Punjab	Run of River	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	
Warsak	Warsak, KPK	Run of River	243	243	243	243	243	
Chashma	Chashma, Punjab	Run of River	184	184	184	184	184	
Khan Khwar	Shangla, KPK	Reservoir	72	72	72	72	72	
Allai Khwar	Battagram, KPK	Reservoir	121	121	121	121	121	
Jinnah Hydel	Mianwali, Punjab	Run of River	96	96	96	96	96	
Duber Khwar	Kohistan, KPK	Reservoir	130	130	130	130	130	
Neelum Jhelum	Muzaffarabad, AJ&K	Run of River	-	969	969	969	969	
Golen Gol	Chitral, KPK	Run of River	-	-	108	108	108	
Small Hydropower Units								9,403
Dargai	Dargai, KPK	Run of Canal	20	20	20	20	20	
Rasul	Rasul, Punjab	Run of Canal	22	22	22	22	22	
Shadiwal	Shadiwal, Punjab	Run of Canal	14	14	14	14	14	
Chichoki Mallian	Chichoki M., Punjab	Run of Canal	13	13	13	13	13	
Nandipur	Nandipur, Punjab	Run of Canal	14	14	14	14	14	
Kurram Garhi	Kurram Garhi, KPK	Run of Canal	4	4	4	4	4	
Renala	Renala, Punjab	Run of Canal	1	1	1	1	1	
Chitral	Chitral, KPK	Run of Canal	1	1	1	1	1	
Gomal Zam	South Waziristan, KPK	Reservoir	17	17	17	17	17	
Malakand/Jabban	Malakand, KPK	Run of River	22	22	22	22	22	
Daral Khwar	Swat, KPK	Run of River	-	-	-	-	37	
Ranolia	Kohistan, KPK	High Head	-	-	-	-	17	
Total Hydel (WAPDA)			**6,902**	**8,341**	**9,389**	**9,389**	**9,443**	**9,403**
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	81	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	
Marala Hydro (PPDCL)	Sialkot, Punjab	Canal Fall/Run of River	-	8	8	8	8	8
Patrind Hydro (AJ&K)	Muzaffarabad, AJ&K	Run of River	-	147	147	147	147	147
Gulpur Hydropower	Gulpur, Kotli, AJK	Run of River	-	-	-	100	100	101
Total Hydel (IPPs)			**214**	**372**	**372**	**472**	**472**	**469**
Total Hydel (A1+A2)			**7,116**	**8,713**	**9,761**	**9,861**	**9,915**	**9,872**
B1: Thermal (GENCOs: CPPA-G System)								
TPS Jamshoro	Jamshoro, Sindh	STs	880	880	880	880	880	675
GTPS Kotri	Kotri, Sindh	GTs+CCPP	144	144	144	0	0###	0
TPS Guddu (Units 1-4)	Guddu, Sindh	STs	640	640	640	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	28	0	0	28	28	25
TPS Muzaffargarh	Muzaffargarh, Punjab	STs	1,350	1,350	1,350	1,350	1,350	1,183
SPS Faisalabad	Faisalabad, Punjab	STs	132	0**	0	0	0###	0
GTPS Faisalabad	Faisalabad, Punjab	GTs+CCPPs	244	144**	144**	144**	144###	117
TPS Nandipur	Gujranwala, Punjab	GTs+CCPPs	567	567	567	567	567	411
FBC Lakhra	Lakhra, Sindh	STs	150	150	150	150	150	31
Total Thermal (GENCOs: CPPA-G System)			**5,897**	**5,637**	**5,637**	**4,881**	**4,881**	**4,083**

Power Station	Plant Location	Type of Power Station	2017	2018*	2019*	2020*	2021*	Dep. Cap. as on 30-6-2021
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	349
Altern Energy	Fateh Jang, Punjab	GEs	31	31	31	31	31	27
Fauji Kabirwala	Kabirwala, Punjab	GTs+CCPP	157	170	170	170	170	151
Habibullah Coastal	Quetta, Balochistan	GTs+CCPP	140	155	155	155	155	129
Hub Power	Hub, Balochistan	STs	1,292	1,292	1,292	1,292	1,292	1,200
Japan Power	Raiwind, Punjab	DE	135	120	120	120	120	**107**
KAPCO	Kot Addu, Punjab	GTs+CCPPs	1,600	1,600	1,600	1,600	1,600	1,336
Kohinoor Energy	Raiwind, Punjab	DEs+ST	131	131	131	131	131	124
Rousch Power	Sidhnai, Punjab	GTs+ST	450	450	450	450	450	395
Saba Power	Farooqabad, Punjab	ST	134	136	136	136	136	126
Southern Electric	Raiwind, Punjab	DEs	136	117	117	117	117	**110**
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	551
Attock Gen.	Attock Morgah, Punjab	DGs+ST	165	165	165	165	165	156
Atlas Power	Sheikhupura, Punjab	REs+ST	219	224	224	224	224	214
Engro Power Gen. Qadirpur	Qadirpur, Sindh	GT+ST	217	227	227	227	227	213
Saif Power	Sahiwal, Punjab	GTs+ST	210	225	225	225	225	204
Orient Power	Balloki, Punjab	GTs+ST	225	225	225	225	225	213
Nishat Power	Qasur, Punjab	REs+ST	200	202	202	202	202	195
Nishat Chunian	Qasur, Punjab	DEs+ST	200	202	202	202	202	196
Sapphire Electric	Muridke, Punjab	GTs+ST	235	235	235	235	235	203
Halmore Power	Bhikki, Punjab	GTs+ST	225	225	225	225	225	199
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	185	179	179	179	179	171
Davis Energen.	Jhang, Punjab	GEs	14	12	12	12	12	10
Uch-II Power	Murad Jamali, Balochistan	GTs+ST	381	404	404	404	404	381
Sahiwal Imported Coal	Sahiwal, Punjab	STs	660	1,320	1,320	1,320	1,320	1,320
QATPL (Bhikki)	Bhikki, Punjab	GTs+HRSGs+ST	832	1,231	1,231	1,231	1,231	1,180
NPPMCL (Haveli Bahadur Shah)	HBS, Punjab	GTs+HRSGs+ST	428	1,277	1,277	1,277	1,277	1,230
NPPMCL (Balloki)	Balloki, Punjab	GTs+HRSGs+ST	0	1,276	1,276	1,276	1,276	1,320
Port Qasim Electric Power	Port Qasim, Sindh	ST+CB	-	1,320	1,320	1,320	1,320	1,320
Reshma Power	Raiwind, Punjab	Reciprocating Engine	-	97	97	97	97	97
Gulf Powergen	Gujranwala, Punjab	Reciprocating Engine	-	84	84	84	84	62
China Power Hub	Lasbella, Balochistan	ST+CB	-	-	1,320	1,320	1,320	1,220
Engro Powergen Thar	Tharparkar, Sindh	ST+CB	-	-	330	660	660	660
Total Thermal (IPPs: CPPA-G System)			**10,566**	**15,297**	**16,946**	**17,276**	**17,276**	**16,341**
Total Thermal in CPPA-G system (B1+B2)			**16,463**	**20,934**	**22,583**	**22,157**	**22,157**	**20,424**
C: Nuclear								
CHASNUPP-I	Chashma, Punjab	STs	325	325	325	325	325	300
CHASNUPP-II	Chashma, Punjab	STs	340	325	325	325	325	315
CHASNUPP-III	Chashma, Punjab	STs	340	340	340	340	340	340
CHASNUPP-IV	Chashma, Punjab	STs	-	340	340	340	340	340
KANUPP	Karachi, Sindh	STs	137	137	137	137	137	66
KANUPP-II	Karachi, Sindh	STs	-	-	-	-	1,145	1,100
Total Nuclear (C)			**1,142**	**1,467**	**1,467**	**1,467**	**2,612**	**2,461**
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	50	60	60	60	60	50

Power Station	Plant Location	Type of Power Station	2017	2018*	2019*	2020*	2021*	Dep. Cap. as on 30-6-2021
Foundation Wind Energy-I	Thatta, Sindh	WTs	50	50	50	50	50	49.5
Foundation Wind Energy-II	Thatta, Sindh	WTs	50	50	50	50	50	49.5
Sapphire Wind	Thatta, Sindh	WTs	50	53	53	53	53	50
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	30	50	50	50	50	50
Act Wind (formerly Tapal Wind Energy)	Thatta, Sindh	WTs	-	30	30	30	30	31
Hawa Energy	Thatta, Sindh	WTs	-	50	50	50	50	50
Jhimpir Power	Thatta, Sindh	WTs	-	50	50	50	50	50
Three Gorges Second Wind Farm	Thatta, Sindh	WTs	-	50	50	50	50	50
Three Gorges Third Wind Farm	Thatta, Sindh	WTs	-	50	50	50	50	50
Tricon Boston Consulting-A	Thatta, Sindh	WTs	-	-	50	50	50	50
Tricon Boston Consulting-B	Thatta, Sindh	WTs	-	-	50	50	50	50
Tricon Boston Consulting-C	Thatta, Sindh	WTs	-	-	50	50	50	50
Zephyr Power	Thatta, Sindh	WTs	-	-	50	50	50	50
Total Wind Power Projects			**785**	**1,048**	**1,248**	**1,248**	**1,248**	**1,235**
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	18
Harappa Solar	Sahiwal, Punjab	Solar	-	18	18	18	18	18
Total Solar Power Projects			**400**	**430**	**430**	**430**	**430**	**436**
D3: Bagasse/Biomass Power Projects								
Jamal Din Wali-II	Rahim Yar Khan, Punjab	Bagasse+Biomass	26	26	26	26	26	26
Jamal Din Wali-III	Rahim Yar Khan, Punjab	Bagasse+Biomass	27	27	27	27	27	26
RYK Mills	Rahim Yar Khan, Punjab	Bagasse	30	30	40	40	40	24
Chiniot Power	Chiniot, Punjab	Bagasse	63	63	63	63	63	62
Fatima Energy	Muzaffargarh, Punjab	Biomass/Coal	119	120	120	120	120	0
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	41
Almoiz Industries	Mianwali, Punjab	Bagasse	-	-	36	36	36	36
Chanar Energy	Faisalabad, Punjab	Bagasse+Biomass	-	-	22	22	22	22
Total Bagasse/Biomass Power Projects			**280**	**301**	**369**	**369**	**369**	**252**
Total Renewable Energy (D1+D2+D3) (CPPA-G system) (D)			**1,465**	**1,779**	**2,047**	**2,047**	**2,047**	**1,923**

Power Station	Plant Location	Type of Power Station	2017	2018*	2019*	2020*	2021*	Dep. Cap. as on 30-6-2021
E1: Thermal (KE Own)								
Bin Qasim TPS-I	Karachi, Sindh	STs	840	1,260	1,260	1,260	1,050‡	829
Bin Qasim TPS-II	Karachi, Sindh	GTs	572	572	572	572	572	526
Korangi Town GTPS-II	Karachi, Sindh	GTs	107	107	107	107	107	96
Site GTPS-II	Karachi, Sindh	GTs	107	107	107	107	107	96
Korangi CCPP	Karachi, Sindh	GTs	248	248	248	248	248	227
Total Thermal (KE Own)			**1,874**	**2,294**	**2,294**	**2,294**	**2,084**	**1,774**
E2: Thermal (IPPs connected with KE System)								
Gul Ahmed	Karachi, Sindh	DE+ST	128	136	136	136	136	128
Tapal Energy	Karachi, Sindh	DE+ST	124	126	126	126	126	124
SNPCL-I (IPP-2002)	Jamshoro, Sindh	GEs+STs	-	52	52	52	52	51
SNPCL-II (IPP-2002)	Jamshoro, Sindh	GEs+STs	-	52	52	52	52	51
Total Thermal (IPPs connected with KE System)			**252**	**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	14
Lucky Cement	Lakki Marwat, KPK	Waste Heat Recovery	--	--	--	--	16	5
Total Thermal (Others connected with KE System)			**87**	**87**	**87**	**87**	**151**	**106**
Total Thermal KE (E1+E2+E3)			**2,213**	**2,747**	**2,747**	**2,747**	**2,601**	**2,234**
E4: Renewable Energy (KE System)								
Oursun Pakistan	Thatta, Sindh	Solar	-	-	50	50	50	50
Gharo Solar	Thatta, Sindh	Solar	-	-	-	50	50	50
Total RE (KE System)			**0**	**0**	**50**	**100**	**100**	**100**
Total KE (KE own and others connected with KE System)			**2,213**	**2,747**	**2,797**	**2,847**	**2,701**	**2,334**
F: SPPs/CPPs/N-CPPs: CPPA-G System [Contract Capacity (MW)‡‡]								
Total SPPs/CPPs/N-CPPs: CPPA-G System (F)			**312.5**	**339.7**	**339.7**	**339.7**	**340.0**	**257.0**
Grand Total (A+B+C+D+E+F)			**28,712**	**35,979**	**38,995**	**38,719**	**39,772**	**37,271**

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

‡ Installed Capacity in line with latest Modification-X in KE's Generation Licence issued by NEPRA dated February 19, 2021.

‡‡ Contract Capacity as per Tariff Determination.

‡‡‡ GTPS Kotri, SPS Faisalabad, GTPS Faisalabad Unit 1-4 were retired.

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

TABLE 6

Installed Capacity by Systems and by Sectors (MW)

As on 30th June	2017	2018	2019	2020	2021
BY SYSTEM					
Total Installed Capacity: CPPA-G System	**26,362**	**33,095**	**36,061**	**35,735**	**36,934**
% Share (Installed Capacity: CPPA-G System)	91.82	91.98	92.48	92.29	92.86
Total Installed Capacity: KE System	**2,350**	**2,884**	**2,934**	**2,984**	**2,838**
% Share (Installed Capacity: KE System)	8.18	8.02	7.52	7.71	7.14
BY SECTOR					
Total Installed Capacity in Public Sector	**15,301**	**19,329**	**20,377**	**19,621**	**20,820**
% Share (Installed Capacity in Public Sector)	53.29	53.72	52.26	50.68	52.35
Total Installed Capacity in Private Sector	**13,411**	**16,650**	**18,618**	**19,098**	**18,952**
% Share (Installed Capacity in Private Sector)	46.71	46.28	47.74	49.32	47.65
Total Installed Capacity in the Country	**28,712**	**35,979**	**38,995**	**38,719**	**39,772**

Note: See tables 4 and 5 for breakup details.

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

Figure 6A: Share of Installed Generation Capacity by System (%)

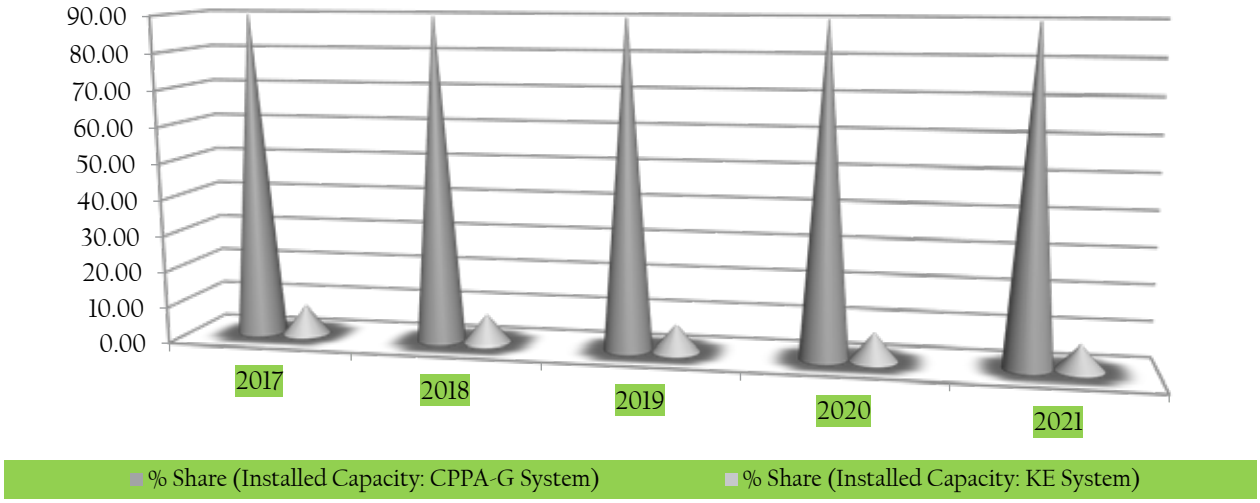


Figure 6B: Share of Installed Generation Capacity by Sector (%)

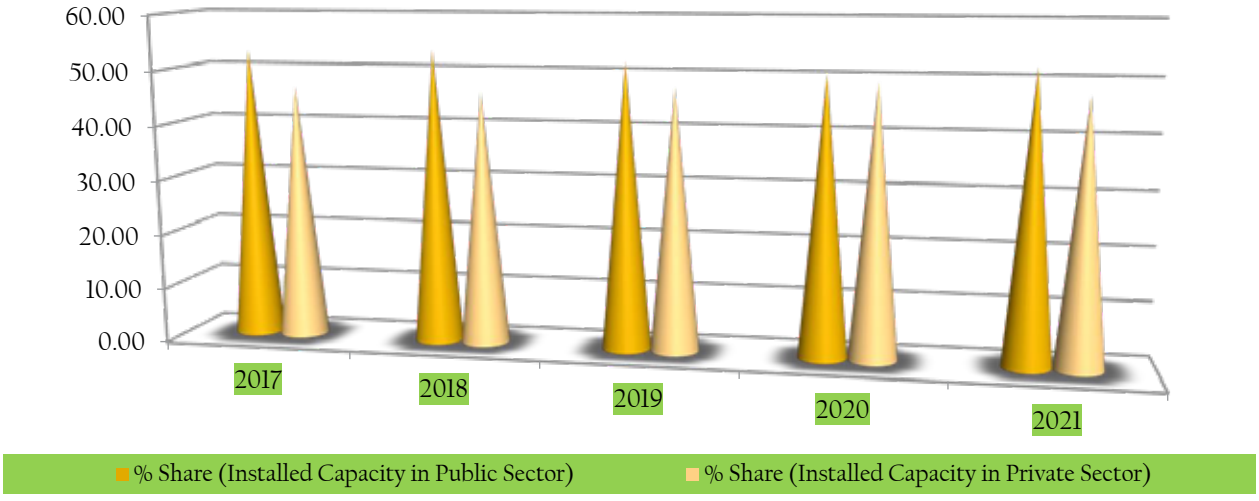


TABLE 7
Electricity Generation by Type (GWh)

As on 30th June	2016-17	2017-18	2018-19	2019-20	2020-21
HYDEL					
WAPDA Hydel	31,091.29	26,951.19	31,167.85	37,136.04	36,982.53
IPPs Hydel	988.00	1,118.24	1,928.04	1,562.55	1,818.01
Sub-Total	**32,079.29**	**28,069.43**	**33,095.89**	**38,698.59**	**38,800.54**
% Share (Hydel Electricity Generation)	26.59	21.01	24.16	28.83	27.02
THERMAL					
GENCOs: CPPA-G System	18,709.90	16,199.10	13,016.99	7,907.85	6,802.93
KE Own	10,147.00	10,337.75	10,727.68	9,629.00	10,186.00
IPPs: CPPA-G System	47,972.10	62,433.73	62,597.73	60,720.31	68,708.63
IPPs Connected with KE	1,531.00	1,819.04	2,118.31	1,863.60	2,184.57
SPPs/CPPs/N-CPPs: CPPA-G System	271.40	665.53	405.13	170.99	216.80
SPPs/CPPs/N-CPPs connected with KE	187.00	550.49	523.74	534.30	579.02
Sub-Total	**78,818.40**	**92,005.63**	**89,389.58**	**80,826.05**	**88,677.95**
% Share (Thermal Electricity Generation)	65.34	68.87	65.25	60.21	61.76
NUCLEAR					
CHASNUPP (I, II, III and IV)	5,868.00	8,719.87	9,005.68	9,704.89	9,172.09
KANUPP (I and II)	410.00	330.86	129.99	193.13	1,917.96
Sub-Total	**6,278.00**	**9,050.73**	**9,135.67**	**9,898.02**	**11,090.05**
% Share (Nuclear Electricity Generation)	5.20	6.78	6.67	7.37	7.72
IMPORT					
Import from Iran	496.00	554.74	486.80	513.74	498.37
Sub-Total	**496.00**	**554.74**	**486.80**	**513.74**	**498.37**
% Share (Imported Electricity Generation)	0.41	0.42	0.36	0.38	0.35
RENEWABLE ENERGY (WIND, SOLAR AND BAGASSE)					
RE Power Plants: CPPA-G System	2,950.00	3,907.12	4,840.59	4,151.91	4,322.13
RE Power Plants connected with KE	0.00	0.00	56.92	153.28	199.56
Sub-Total	**2,950.00**	**3,907.12**	**4,897.51**	**4,305.19**	**4,521.69**
% Share (RE Electricity Generation)	2.45	2.92	3.57	3.21	3.15
Total Electricity Generation of the Country	**120,621.69**	**133,587.65**	**137,005.45**	**134,241.59**	**143,588.60**

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

Figure 7: Share of Electricity Generation by Type (%)

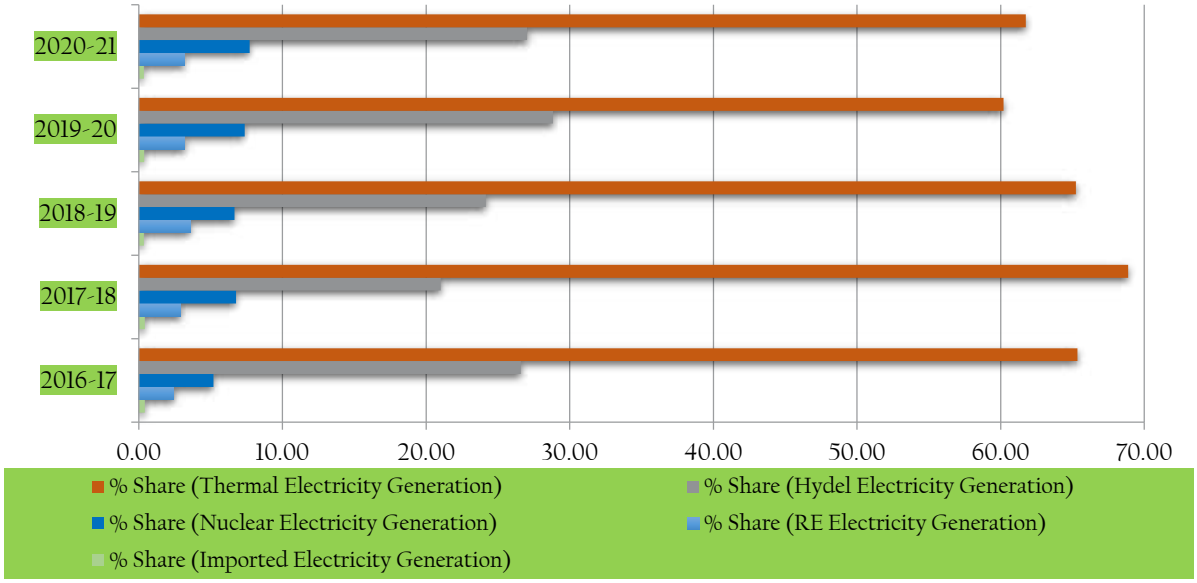


TABLE 8

Plant-wise Electricity Generation (GWh)

Power Station	Primary Fuel	Alternate Fuel	2016-17	2017-18*	2018-19*	2019-20*	2020-21*
A1: Hydel (WAPDA)							
Major Hydropower Units							
Tarbela	Hydel	Hydel	15,049.44	13,356.86	10,619.28	11,857.69	12,565.74
Tarbela 4th Ext.	Hydel	Hydel	-	-	2,318.06	5,485.66	3,418.78
Ghazi Barotha	Hydel	Hydel	6,885.76	6,020.89	6,552.14	6,482.21	6,810.91
Mangla	Hydel	Hydel	5,347.57	4,141.86	3,860.85	4,589.33	5,313.83
Warsak	Hydel	Hydel	985.44	916.53	1,002.27	1,095.46	1,064.99
Chashma	Hydel	Hydel	890.33	756.00	767.16	747.16	772.32
Khan Khwar	Hydel	Hydel	199.06	170.90	237.74	273.88	231.19
Allai Khwar	Hydel	Hydel	396.66	275.89	462.09	469.47	438.78
Jinnah Hydel	Hydel	Hydel	292.69	230.25	225.63	176.58	235.02
Duber Khwar	Hydel	Hydel	589.47	514.83	594.42	609.40	640.78
Neelum Jhelum	Hydel	Hydel	-	174.08	3,964.68	4,842.30	4,784.16
Golen Gol	Hydel	Hydel	-	-	99.31	86.13	82.40
Small Hydropower Units							
Dargai	Hydel	Hydel	104.80	95.72	109.35	98.42	108.72
Rasul	Hydel	Hydel	93.47	65.54	71.86	34.04	76.63
Shadiwal	Hydel	Hydel	31.05	25.93	28.39	13.68	31.90
Chichoki Mallian	Hydel	Hydel	34.23	31.43	29.05	29.54	27.38
Nandipur	Hydel	Hydel	43.15	45.73	36.97	33.82	32.48
Kurram Garhi	Hydel	Hydel	18.44	17.24	14.23	15.11	19.71
Renala	Hydel	Hydel	2.20	2.31	2.19	1.03	1.96
Chitral	Hydel	Hydel	4.20	3.45	3.51	3.04	2.65
Gomal Zam	Hydel	Hydel	6.17	0.36	32.68	54.42	62.09
Malakand/Jabban	Hydel	Hydel	117.16	105.39	135.99	137.67	134.46
Daral Khwar	Hydel	Hydel	-	-	-	-	91.84
Ranolia	Hydel	Hydel	-	-	-	-	33.81
Total Hydel (WAPDA)			**31,091.29**	**26,951.19**	**31,167.85**	**37,136.04**	**36,982.53**
A2: Hydel (IPPs)							
Jagran (AJ&K)	Hydel	Hydel	93.00	86.92	83.65	86.25	113.23
Malakand-III (PEDO)	Hydel	Hydel	426.00	362.11	399.25	408.53	321.57
Pehur (PEDO)	Hydel	Hydel	45.00	32.61	35.86	50.59	0.00
Laraib Energy (AJ&K)	Hydel	Hydel	424.00	389.66	354.38	384.43	465.29
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
Patrind Hydro (AJ&K)	Hydel	Hydel	-	246.20	527.45	566.25	624.45
Gulpur Hydropower Project	Hydel	Hydel	-	-	-	34.33	256.88
Total Hydel (IPPs)			**988.00**	**1,118.24**	**1,928.04**	**1,562.55**	**1,818.01**
Total Hydel (A1+A2)			**32,079.29**	**28,069.43**	**33,095.89**	**38,698.59**	**38,800.54**
B1: Thermal (GENCOs: CPPA-G System)							
TPS Jamshoro	RFO+Gas	RFO	3,253.56	1,792.06	880.09	209.90	199.55
GTPS Kotri	Gas	HSD	338.67	94.92	37.19	0.00	0.00
TPS Guddu (Units 1-4)	Gas	RFO	227.08	258.11	10.02	0.00	138.94
TPS Guddu (Units 5-10)	Gas	-	2,487.81	3,617.95	3,467.30	1,294.84	1,338.17
TPS Guddu (Units 11-13)	Gas	-	820.54	1,043.97	837.20	311.56	223.96
TPS Guddu (Units 14-16)	Gas	HSD	4,543.55	3,855.08	5,069.78	4,315.35	3,123.82
TPS Quetta	Gas	-	53.32	0.00	0.00	0.00	0.00
TPS Muzaffargarh	Gas	RFO	5,160.13	3,040.37	836.73	299.86	282.26
SPS Faisalabad	Gas	RFO	107.68	6.26	0.00	0.00	0.00
GTPS Faisalabad	Gas	HSD	214.62	105.29	149.53	0.00	14.26
TPS Nandipur	Gas	HSD	1,378.96	2,381.70	1,729.09	1,476.33	1,481.98
FBC Lakhra	Coal	Coal	123.97	3.39	0.06	0.00	0.00
Total Thermal (GENCOs: CPPA-G System)			**18,709.90**	**16,199.10**	**13,016.99**	**7,907.85**	**6,802.93**

Power Station	Primary Fuel	Alternate Fuel	2016-17	2017-18*	2018-19*	2019-20*	2020-21*
B2: Thermal (IPPs: CPPA-G System)							
Lal Pir Power	RFO	-	1,601.09	1,089.06	613.80	186.32	620.78
Pak Gen. Power	RFO	-	1,727.18	1,237.28	495.56	149.76	445.54
Altern Energy	Gas	-	198.30	145.12	22.03	3.73	12.40
Fauji Kabirwala	Gas	HSD	1,122.84	1,017.26	563.13	346.32	389.96
Habibullah Coastal	Gas	HSD	785.90	880.33	716.78	108.37	0.00
Hub Power	RFO	-	6,793.11	5,196.60	814.43	32.38	112.91
KAPCO	Gas	RFO+HSD	7,524.00	7,436.76	4,959.40	3,476.67	3,562.24
Kohinoor Energy	RFO	-	816.83	645.40	387.44	363.86	337.07
Rousch Power	Gas	HSD	2,459.69	2,591.64	1,035.85	217.53	284.36
Saba Power	RFO	-	510.46	465.88	225.41	50.83	121.65
TNB Liberty Power	Gas	HSD	1,430.23	1,041.56	1,307.61	896.74	983.33
Uch Power	Gas	HSD	4,406.44	4,442.99	3,895.85	4,087.33	4,088.44
Attock Gen.	RFO	-	1,135.41	912.45	532.18	320.96	384.03
Atlas Power	RFO	-	1,336.90	1,246.45	691.30	259.33	517.08
Engro Powergen. Qadirpur	Gas	HSD	1,731.00	1,668.42	1,385.13	700.74	648.50
Saif Power	Gas	HSD	905.44	841.56	828.20	476.28	639.40
Orient Power	Gas	HSD	944.68	841.39	877.80	338.00	597.92
Nishat Power	RFO	-	1,239.76	1,171.19	675.10	277.46	523.40
Nishat Chunian	RFO	-	1,350.33	1,099.67	599.74	351.23	537.57
Sapphire Electric	Gas	HSD	989.71	814.96	808.51	296.76	568.04
Halmore Power	Gas	HSD	553.00	871.01	612.91	347.69	509.79
Narowal Energy	RFO	-	1,334.18	1,199.68	636.13	338.08	496.06
Liberty Power Tech.	RFO	-	1,369.33	1,175.61	776.26	458.54	606.66
Foundation Power	Gas	-	1,382.85	1,392.39	1,330.60	777.30	1,000.37
Davis Energen.	Gas	-	61.05	8.82	0.00	0.00	0.00
Uch-II Power	Low BTU Gas	-	2,731.34	2,593.04	3,018.37	2,148.02	2,339.37
Huaneng Shandong Ruyi (Sahiwal Imported Coal)	Bituminous Coal		873.17	8,461.59	8,220.07	6,167.19	7,342.70
QATPL (Bhikki)	RLNG	HSD	502.77	3,655.62	6,149.75	5,192.50	7,118.80
NPPMCL (Haveli Bahadur Shah)	RLNG	HSD	155.11	2,856.73	7,027.24	7,050.34	7,682.35
NPPMCL (Balloki)	RLNG	HSD	0.00	2,050.62	5,284.19	5,911.84	6,032.81
Port Qasim Electric Power	Bituminous Coal	HSD	-	3,319.02	7,553.64	8,969.74	8,372.38
Reshma Power	RFO/HSFO	-	-	60.86	15.11	2.07	0.00
Gulf Powergen	RFO/HSFO	-	-	2.78	0.00	0.00	0.00
China Power Hub	Imported Coal		-	-	260.82	6,136.20	7,923.41
Engro Powergen Thar	Thar Coal		-	-	277.42	4,280.22	3,909.30
Total Thermal (IPPs/SPPs/CPPs: CPPA-G System)			**47,972.10**	**62,433.73**	**62,597.73**	**60,720.31**	**68,708.63**
Total Thermal: CPPA-G System (B1+B2)			**66,682.00**	**78,632.82**	**75,614.72**	**68,628.16**	**75,511.56**
C: Nuclear							
CHASNUPP-I	NUC	NUC	2,118.00	2,433.42	2,141.02	2,044.64	2,244.33
CHASNUPP-II	NUC	NUC	2,315.00	2,301.74	2,262.73	2,636.12	2,067.98
CHASNUPP-III	NUC	NUC	1,435.00	2,246.55	2,484.34	2,322.85	2,403.62
CHASNUPP-IV	NUC	NUC	-	1,738.16	2,117.59	2,701.28	2,456.15
KANUPP	NUC	NUC	410.00	330.86	129.99	193.13	219.04
KANUPP-II	NUC	NUC	-	-	-	-	1,698.92
Total Nuclear (C)			**6,278.00**	**9,050.73**	**9,135.67**	**9,898.02**	**11,090.05**
D: Import							
Import from Iran (Tavanir)			496.00	554.74	486.80	513.74	498.37
Total Import: CPPA-G System (D)			**496.00**	**554.74**	**486.80**	**513.74**	**498.37**
E: Renewable Energy (CPPA-G System)							
E1: Wind Power Projects							
Zorlu Enerji Pakistan	Wind	Wind	153.00	142.08	143.96	143.55	109.66
FFC Energy	Wind	Wind	123.00	120.08	115.74	118.40	90.90
Three Gorges First Wind Farm	Wind	Wind	138.00	126.06	129.21	135.62	99.14
Foundation Wind Energy-I	Wind	Wind	109.00	96.35	229.31	239.29	123.24
Foundation Wind Energy-II	Wind	Wind	120.00	112.30			73.18
Sapphire Wind	Wind	Wind	149.00	125.94	135.00	89.70	104.01
Yunus Energy	Wind	Wind	101.00	127.40	128.69	89.86	108.84

Power Station	Primary Fuel	Alternate Fuel	2016-17	2017-18*	2018-19*	2019-20*	2020-21*
Metro Power Company	Wind	Wind	77.00	136.31	138.46	153.06	120.11
Gul Ahmad Wind	Wind	Wind	82.00	121.80	127.74	91.15	110.38
Master Wind Energy	Wind	Wind	82.00	127.01	135.82	96.90	110.13
Tenaga Generasi	Wind	Wind	65.00	90.18	111.31	125.77	104.07
HydroChina Dawood Power	Wind	Wind	40.00	102.78	115.98	121.06	101.60
Sachal Energy Development	Wind	Wind	34.00	127.55	124.49	142.36	107.79
UEP Wind Power	Wind	Wind	18.00	227.83	243.99	179.13	203.64
Artistic Wind Power	Wind	Wind	96.00	90.30	192.37	132.16	166.05
Act Wind	Wind	Wind	-	86.38	89.60	64.76	74.68
Hawa Energy	Wind	Wind	-	68.31	167.41	115.45	140.96
Jhimpir Power	Wind	Wind	-	72.50	167.06	119.18	143.91
Three Gorges Second Wind Farm	Wind	Wind	-	16.48	131.12	92.77	108.43
Three Gorges Third Wind Farm	Wind	Wind	-	27.43	134.15	95.18	112.54
Tricon Boston Consulting-A	Wind	Wind	-	-	147.35	124.95	149.90
Tricon Boston Consulting-B	Wind	Wind	-	-	127.24	117.64	144.15
Tricon Boston Consulting-C	Wind	Wind	-	-	131.19	117.47	143.56
Zephyr Power	Wind	Wind	-	-	64.44	177.05	149.07
Total Wind Power Projects			**1,387.00**	**2,145.07**	**3,231.64**	**2,882.48**	**2,899.94**
E2: Solar Power Projects							
Quaid-e-Azam Solar Park	Solar	Solar	158.00	163.08	164.34	164.99	165.56
Appolo Solar Development	Solar	Solar	145.00	167.93	166.64	163.02	164.90
Best Green Energy	Solar	Solar	166.00	168.40	165.69	162.92	164.25
Crest Energy	Solar	Solar	166.00	169.80	167.56	165.31	166.97
AJ Power	Solar	Solar	-	11.52	18.66	18.03	18.50
Harappa Solar	Solar	Solar	-	21.43	31.63	30.69	31.45
Total Solar Power Projects			**635.00**	**702.17**	**714.52**	**704.97**	**711.63**
E3: Bagasse/Biomass Power Projects							
Jamal Din Wali-II	Bagasse + Biomass		178.00	180.96	187.80	161.88	177.17
Jamal Din Wali-III	Bagasse + Biomass		166.00	196.59	181.18	129.21	144.44
RYK Mills	Bagasse	Bagasse	122.00	155.61	141.31	73.67	73.94
Chiniot Power	Bagasse	Bagasse	296.00	346.02	194.67	80.45	160.56
Fatima Energy	Coal	Bagasse	143.00	20.87	0.00	0.00	0.00
Hamza Sugar Mills	Bagasse + Biomass		23.00	72.75	61.20	45.03	39.99
The Thal Industries Corporation	Bagasse	FO	-	87.08	65.75	36.79	46.37
Almoiz Industries	Bagasse	Bagasse	-	-	48.92	15.10	29.83
Chanar Energy	Bagasse	Bagasse	-	-	13.61	22.34	38.26
Total Bagasse/Biomass Power Projects			**928.00**	**1,059.88**	**894.43**	**564.46**	**710.56**
Total Renewable Energy (E1+E2+E3) (CPPA-G System) (E)			**2,950.00**	**3,907.12**	**4,840.59**	**4,151.91**	**4,322.13**
F1: Thermal (KE Own)							
Bin Qasim TPS-I	Dual	RLNG	4,329.00	4,764.70	4,646.94	3,825.00	4,730.00
Bin Qasim TPS-II	Dual	RLNG	3,921.00	3,750.79	4,065.71	4,030.00	3,926.00
Korangi Town GTPS-II	Gas	RLNG	389.00	323.11	390.33	300.00	365.00
Site GTPS-II	Gas	RLNG	384.00	498.14	368.02	397.00	216.00
Korangi CCPP	Gas	RLNG	1,124.00	1,001.01	1,256.68	1,077.00	949.00
Total Thermal (KE Own)			**10,147.00**	**10,337.75**	**10,727.68**	**9,629.00**	**10,186.00**
F2: Thermal (IPPs connected with KE System)							
Gul Ahmed	RFO	-	788.00	712.71	675.54	496.14	673.00
Tapal Energy	RFO	-	743.00	752.38	645.02	627.77	737.00
SNPCL-I (IPP-2002)	Gas	-	-	176.71	403.06	371.86	394.35
SNPCL-II (IPP-2002)	Gas	-	-	177.24	394.69	367.83	380.22
Total Thermal (IPPs connected with KE System)			**1,531.00**	**1,819.04**	**2,118.31**	**1,863.60**	**2,184.57**
F3: Thermal (Others connected with KE System)							
Anoud Power (IGC)	RFO/Gas	DO	55.00	44.00	51.58	59.52	12.00
Intl. Steel Limited (CPP)	Gas	-	57.00	56.00	46.00	51.21	43.00
Intl. Ind. Limited (CPP)	Gas	-	13.00	12.00	12.65	10.66	10.00
FFBL Power (Distributed Gen.)	Imported/Local Coal		62.00	438.49	413.51	412.91	453.00
Lotte Chemicals	Gas	Gas	-	-	-	-	61.00
Lucky Cement	Gas	Gas	-	-	-	-	0.02
Total Thermal (Others connected with KE System)			**187.00**	**550.49**	**523.74**	**534.30**	**579.02**

Power Station	Primary Fuel	Alternate Fuel	2016-17	2017-18*	2018-19*	2019-20*	2020-21*
Total Thermal KE (F1+F2+F3)			**11,865.00**	**12,707.28**	**13,369.73**	**12,026.90**	**12,949.59**
F4: Renewable Energy (connected with KE System)							
Oursun Pakistan	Solar	Solar	-	-	56.92	88.28	90.87
Gharo Solar	Solar	Solar	-	-	-	65.00	108.69
Total RE (connected with KE System)			**0.00**	**0.00**	**56.92**	**153.28**	**199.56**
Total KE (KE own and others connected with KE System)			**11,865.00**	**12,707.28**	**13,426.65**	**12,180.18**	**13,149.15**
G: SPPs/CPPs/N-CPPs: CPPA-G System							
Total SPPs/CPPs/N-CPPs: CPPA-G System (G)			**271.40**	**665.53**	**405.13**	**170.99**	**216.80**
Grand Total (A+B+C+D+E+F+G)			**120,621.69**	**133,587.65**	**137,005.45**	**134,241.59**	**143,588.60**

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

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

TABLE 9

Electricity Generation by Systems and by Sectors (GWh)

As on 30th June	2016-17	2017-18	2018-19	2019-20	2020-21
BY SYSTEM					
Total Electricity Generation: CPPA-G System*	**108,346.69**	**120,549.51**	**123,448.81**	**121,868.28**	**130,220.41**
% Share (Generation: CPPA-G System)	89.82	90.24	90.11	90.78	90.69
Total Electricity Generation: KE System	**12,275.00**	**13,038.14**	**13,556.64**	**12,373.31**	**13,368.19**
% Share (Generation: KE System)	10.18	9.76	9.89	9.22	9.31
BY SECTOR					
Total Electricity Generation in Public Sector	**56,895.07**	**60,927.08**	**71,946.02**	**73,261.58**	**75,875.03**
% Share (Generation in Public Sector)	47.17	45.61	52.51	54.57	52.84
Total Electricity Generation in Private Sector	**63,726.62**	**72,660.57**	**65,059.43**	**60,980.01**	**67,713.57**
% Share (Generation in Private Sector)	52.83	54.39	47.49	45.43	47.16
Total Electricity Generation of the Country	**120,621.69**	**133,587.65**	**137,005.45**	**134,241.59**	**143,588.60**

*Note: See tables 7 and 8 for details and explanations. * Include Import from Iran.*

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

Figure 9A: Share of Electricity Generation by System (%)

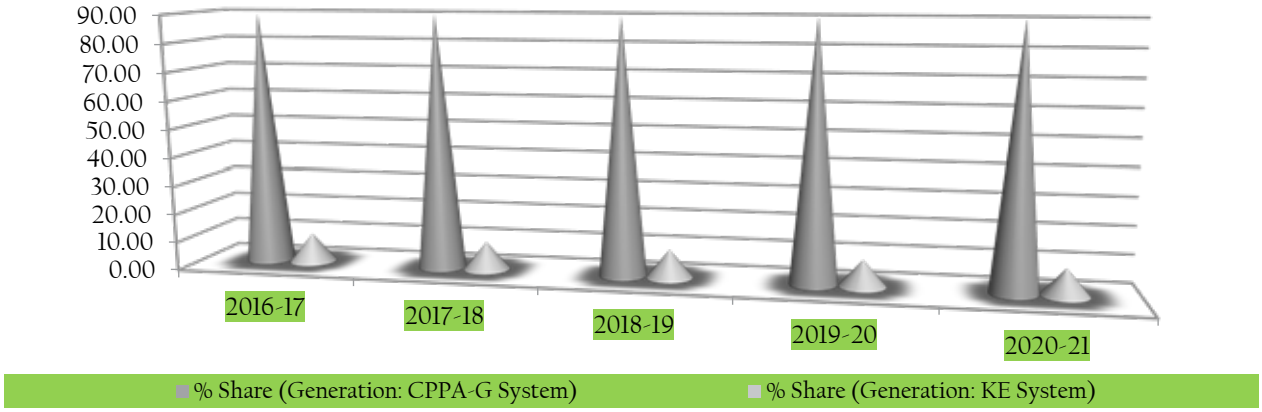


Figure 9B. Share of Electricity Generation by Sector (%)

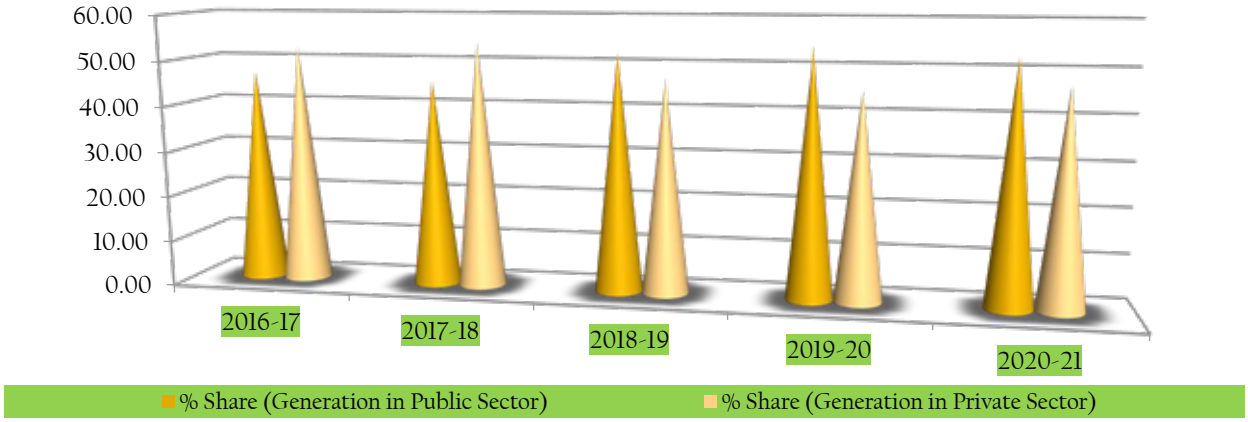


TABLE 10
Month-wise CPPA-G Electricity Generation Data (GWh) (2020-21)

Power Producer	July	August	September	October	November	December	January	February	March	April	May	June
WAPDA Hydro	3654.40	3705.96	3384.89	2414.22	2697.80	1591.39	513.90	1871.94	1255.68	1710.01	2478.28	3243.78
Tarbela 4th Ext.	818.83	900.55	856.98	477.53	96.82	0.00	399.79	0.00	0.00	0.00	0.00	0.00
Neelum Jhelum	716.53	659.85	433.24	165.32	109.47	120.03	100.02	73.16	341.98	664.60	707.03	695.91
Jagran	17.73	18.17	11.54	7.00	2.56	2.47	2.00	2.91	3.47	10.52	17.87	16.98
Pehur	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malakand-III	45.41	47.88	22.78	15.61	11.51	10.41	10.40	7.87	19.55	32.88	48.54	48.74
Laraib Energy	31.99	18.23	47.73	46.60	44.94	35.64	5.06	44.76	46.39	48.07	54.54	41.34
Marala Hydro	4.20	3.96	3.93	4.60	2.43	2.02	0.00	1.48	3.15	3.08	3.93	3.82
Patrind Hydro	89.96	81.45	55.42	29.88	20.79	19.51	15.68	16.39	30.09	54.94	104.48	105.87
Gulpur Hydropower	27.94	33.52	36.32	7.32	0.00	3.39	17.33	10.01	28.84	29.84	30.04	32.33
Daral Khwar	0.00	0.00	14.67	4.16	3.28	3.03	1.92	3.76	9.71	14.46	12.28	24.56
Ranolia	0.00	0.00	4.46	1.92	0.76	0.93	0.95	1.65	1.69	4.19	8.46	8.80
GENCO-I	64.25	17.60	51.39	5.78	0.00	0.00	0.00	0.00	0.00	0.00	20.94	39.34
GENCO-II	546.96	513.60	466.89	466.50	139.81	548.63	526.30	258.67	270.58	356.90	429.57	300.48
GENCO-III	453.48	258.49	210.57	110.95	7.92	6.14	2.33	0.80	27.14	185.99	231.93	282.76
Kot Addu Power	652.72	648.03	370.40	196.32	7.75	116.21	330.67	0.00	18.98	149.41	450.23	621.52
Hub Power	0.00	0.76	36.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.43	66.07
Kohinoor	50.24	52.46	47.29	14.96	0.00	17.93	51.12	5.81	13.91	9.08	28.83	45.44
Lalpir Power	31.26	94.27	50.17	37.17	6.82	60.53	111.06	4.63	6.84	17.70	98.12	102.22
Pak Gen Power	5.35	46.01	71.02	0.00	0.00	8.57	96.07	6.50	29.39	6.16	76.21	100.26
Fauji Kabirwala	83.22	82.89	76.72	11.83	0.00	0.00	0.00	0.00	0.00	19.12	60.86	55.31
Rousch Power	12.15	0.00	5.07	0.00	0.00	1.28	0.70	0.00	0.00	87.16	97.02	80.97
Saba Power	10.53	5.27	15.16	2.79	0.00	0.00	16.90	0.00	1.03	1.58	29.03	39.38
Uch-I Power	376.38	356.53	362.76	215.63	195.43	391.01	397.92	318.33	373.86	376.16	373.12	351.33
Altern Energy	5.72	5.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81
Liberty Power	99.98	106.70	125.03	88.69	63.39	0.00	0.00	11.48	90.00	139.95	128.93	129.19
CHASNUPP-I	220.91	203.63	211.32	223.65	215.56	223.91	202.94	202.65	224.16	107.12	0.11	208.39
CHASNUPP-II	225.20	198.97	28.52	30.83	206.91	134.19	213.78	200.70	227.13	220.04	160.47	221.26
CHASNUPP-III	230.39	230.12	217.53	228.69	26.26	158.04	213.40	185.56	233.26	225.51	232.24	222.63
CHASNUPP-IV	39.03	184.31	220.52	231.40	214.57	225.32	222.57	203.01	233.69	224.61	232.75	224.36
KANUPP-II & III	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.91	289.82	645.78	741.41
Tavanir Iran (Import)	50.25	52.09	46.66	40.56	33.45	33.23	31.65	29.65	38.70	44.84	47.39	49.91
Attock Gen.	60.15	59.36	51.53	22.89	4.56	35.63	57.84	1.44	2.68	3.54	25.45	58.97
Atlas Power	80.72	71.92	59.09	3.99	0.00	24.45	59.85	9.25	34.23	20.20	61.55	91.82
Nishat Power	75.33	84.45	66.71	8.95	4.18	7.05	71.74	13.84	28.14	19.14	48.83	95.04
Foundation Power	85.16	69.00	78.89	94.69	8.49	88.19	99.62	79.36	98.81	76.49	110.86	110.81
Orient Power	38.77	53.85	59.77	59.59	0.00	2.12	9.02	33.26	41.99	91.02	98.34	110.18
Nishat Chunian	72.41	83.89	88.68	18.36	4.74	1.80	68.77	15.27	38.82	20.17	54.08	70.58
Saif Power	123.93	111.45	22.33	38.35	0.00	0.00	7.38	21.72	26.06	85.84	94.50	107.83
Engro Energy	45.61	61.81	42.59	80.07	7.21	17.48	67.98	57.65	64.17	53.03	73.49	77.44
Sapphire Power	83.02	72.21	19.52	53.88	5.71	2.74	9.17	22.59	39.23	55.02	97.40	107.55
Narowal Energy	61.78	94.81	68.94	20.48	0.00	12.39	53.98	9.63	27.01	17.96	64.82	64.27
Liberty Power	94.52	102.77	93.37	14.67	0.00	9.36	56.28	10.93	42.06	24.47	77.19	81.03
Halmore Power	73.43	70.06	88.12	43.01	0.00	1.12	6.07	27.36	25.14	87.96	68.15	19.37
Uch-II Power	238.19	208.02	171.26	187.92	22.71	194.28	241.99	180.89	138.81	256.28	257.92	241.09
China Power Hub	490.09	713.63	709.39	768.79	399.81	555.89	614.72	295.81	797.53	878.07	888.66	811.01
Engro Power Gen.	437.39	348.65	341.74	241.61	221.60	266.17	383.67	357.78	248.12	267.91	441.72	352.95

Power Producer	July	August	September	October	November	December	January	February	March	April	May	June
QATPL	591.83	663.05	715.76	790.80	695.73	399.75	31.51	566.01	607.45	668.80	711.51	676.59
HBS	749.11	661.44	741.01	829.45	612.44	266.52	238.44	599.29	696.96	766.59	791.95	729.15
Balloki	617.92	694.03	706.13	739.72	591.91	414.43	657.76	0.00	420.84	401.63	404.50	383.93
Sahiwal Coal	774.19	696.19	431.67	439.61	111.94	706.72	780.58	527.22	792.27	746.11	729.04	607.16
Port Qasim	879.49	771.84	800.05	465.57	362.08	768.10	780.58	722.16	896.46	547.80	559.56	818.67
Zorlu Enerji Pakistan	14.26	12.32	7.00	4.61	6.26	7.64	5.12	3.63	6.55	7.69	15.31	19.27
FFC Energy	11.81	8.92	4.80	3.41	5.65	7.11	4.61	2.86	5.05	5.75	12.91	18.02
Three Gorges First Wind	13.45	10.27	5.71	4.23	5.97	7.08	4.42	3.18	5.60	6.50	13.77	18.96
Foundation Wind-I	24.59	22.19	13.87	3.90	5.11	5.34	3.19	3.57	4.99	5.97	13.75	16.77
Foundation Wind-II	0.00	0.00	0.00	4.80	7.11	7.99	4.29	3.69	5.47	6.45	14.88	18.50
Sapphire Wind Power	12.51	11.18	5.14	4.56	6.31	7.93	5.99	2.96	6.01	7.05	14.63	19.74
Younus Energy	12.27	11.10	5.19	4.96	7.44	9.26	6.98	3.43	6.51	7.46	14.56	19.68
Metro Power Company	14.44	11.92	5.61	5.67	9.46	12.08	7.79	4.17	7.21	7.72	14.88	19.16
Gul Ahmad Wind	12.30	11.06	5.25	5.25	7.43	9.33	7.27	3.71	7.00	7.76	14.67	19.35
Master Wind Energy	12.96	11.63	5.94	3.21	7.31	8.71	6.30	3.46	5.88	7.23	16.27	21.23
Tenaga Generasi	13.35	12.48	7.73	4.70	6.81	7.27	3.92	3.67	5.52	6.44	14.40	17.78
HydroChina Dawood	13.22	11.59	7.44	4.27	6.16	6.56	3.73	3.70	5.60	6.49	14.13	18.71
Sachal Energy	13.20	11.03	5.26	4.92	8.16	10.02	6.11	3.26	5.49	6.81	14.58	18.95
UEP Wind	24.29	22.75	11.59	9.04	12.27	13.45	9.72	6.55	11.60	14.13	29.51	38.74
Artistic Wind Power	16.64	16.60	12.06	9.53	9.57	13.27	10.10	6.51	11.08	12.70	22.80	25.19
Act Wind	8.52	8.23	5.26	3.68	4.52	4.76	3.37	2.48	4.07	4.89	11.17	13.73
Hawa Wind	16.05	13.69	7.41	7.23	10.13	12.67	10.61	4.82	7.90	8.97	18.10	23.38
Jhimpir Wind	16.74	14.81	8.35	6.83	8.93	11.49	8.86	4.85	8.37	9.67	19.97	25.04
Three Gorges Second	12.17	10.55	5.21	5.15	7.51	8.81	6.05	3.26	6.15	7.41	15.71	20.45
Three Gorges Third	13.08	11.66	4.82	5.21	8.04	9.37	6.65	3.44	6.39	7.69	15.80	20.39
Tricon Boston-A	17.17	16.45	10.50	7.17	8.15	8.83	6.62	5.37	10.49	12.20	21.62	25.33
Tricon Boston-B	16.10	15.73	9.46	7.03	8.41	9.59	7.11	4.79	9.45	11.02	20.90	24.56
Tricon Boston-C	16.06	15.45	8.96	7.00	8.42	10.37	7.72	5.00	9.38	10.61	20.39	24.20
Zephyr Power	19.30	18.53	12.52	7.72	9.78	10.81	6.04	5.76	7.76	8.70	18.52	23.63
Quid-e-Azam Solar Park	14.79	13.59	14.26	14.93	11.32	11.61	11.09	13.57	15.57	15.66	14.98	14.19
Appolo Solar	14.55	13.97	14.20	13.78	10.86	11.74	11.31	13.30	15.45	15.76	15.37	14.61
Best Green Energy	14.26	13.80	14.22	13.79	10.95	11.84	11.34	13.23	15.20	15.73	15.33	14.56
Crest Energy	14.66	14.06	14.60	13.87	10.98	11.96	11.48	13.48	15.59	15.96	15.57	14.76
AJ Power	1.70	1.61	1.63	1.61	1.21	1.21	1.19	1.36	1.69	1.72	1.83	1.74
Harappa Solar	3.27	3.01	2.83	2.66	1.70	1.60	1.51	2.12	2.86	3.20	3.45	3.24
Jamal Din Wali-II	17.18	10.92	12.89	17.95	11.27	14.13	14.49	13.22	12.58	17.40	17.93	17.20
Jamal Din Wali-III	17.78	9.12	0.00	1.82	14.07	13.12	12.32	12.73	17.84	11.09	17.48	17.07
RYK Mills	0.00	0.00	0.00	0.00	12.11	9.03	7.11	12.60	14.00	9.62	0.32	9.15
Chiniot Power	0.00	0.00	0.00	2.37	13.15	27.81	27.35	26.27	16.40	24.41	9.73	13.06
Hamza Sugar Mills	0.00	0.00	0.00	0.00	5.32	9.43	9.24	8.32	7.68	0.00	0.00	0.00
The Thal Industries	0.00	0.00	0.00	0.00	3.27	12.75	11.98	10.80	7.57	0.00	0.00	0.00
Al-Moiz Industries	0.00	0.00	0.00	0.00	0.81	4.81	3.42	4.23	7.91	8.66	0.00	0.00
Chanar Energy	0.00	0.00	0.00	0.00	0.00	11.08	9.98	11.10	6.10	0.00	0.00	0.00
SPPs (Mixed)	30.03	20.26	11.90	23.82	26.13	20.01	1.06	13.37	20.88	22.74	16.39	10.21

Source: CPPA-G

TABLE 11
Monthly Source-wise Actual and Projected Generation (GWh)

Months	July, 2020		August, 2020		September, 2020		October, 2020		November, 2020		December, 2020	
	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual
Hydel	5380	5407	5791	5470	5736	4872	3764	3174	3873	2990	2238	1789
Coal	1577	2581	1582	2530	1529	2283	1581	1916	1521	1095	1574	2297
HSD	0	113	0	98	0	72	0	7	0	0	0	0
FO	0	860	0	792	0	762	0	154	0	28	0	294
Gas	2041	1479	1980	1402	1943	1324	1776	1145	1426	437	1686	1240
RLNG	2685	3033	2232	3058	1680	2805	2281	2851	454	1914	2199	1094
Nuclear	850	716	847	817	824	678	853	715	740	663	628	741
Import Iran	46	50	45	52	42	47	41	41	35	33	32	33
Mixed	8	30	8	20	7	12	6	24	15	26	28	20
Wind	511	344	346	310	424	175	174	134	106	185	103	220
Bagasse	352	35	346	20	285	13	84	22	271	60	291	102
Solar	62	63	56	60	66	62	61	61	49	47	46	50
Total	13512	14711	13233	14630	12537	13104	10620	10243	8490	7479	8825	7880
Sale to IPPs		-22		-23		-15	0	-21		-25	0	-59
Transmission Losses	-351	-381	-397	-399	-213	-338	-212	-248	-110	-211	-265	-279
Net Delivered	13161	14434	12836	14207	12324	12751	10408	9974	8379	7243	8560	7564

Months	January, 2021		February, 2021		March, 2021		April, 2021		May, 2021		June, 2021	
	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual
Hydel	697	1067	2170	2034	1105	1741	1749	2573	3306	3465	3565	4222
Coal	1580	2560	1827	1903	1724	2734	1688	2440	2332	2619	2489	2590
HSD	0	46	0	0	0	0	0	0	0	20	0	61
FO	483	974	48	77	68	235	520	148	509	771	785	1174
Gas	2009	1334	1244	906	1816	1036	1751	1278	1946	1454	1791	1304
RLNG	2309	916	887	1271	1773	1893	2996	2572	3625	2829	3614	2701
Nuclear	817	853	754	792	878	940	745	1067	544	1271	636	1618
Import Iran	35	32	33	30	34	39	42	45	52	47	49	50
Mixed	32	1	20	13	34	21	29	23	15	16	12	10
Wind	181	153	122	98	187	170	267	197	413	403	393	511
Bagasse	289	96	168	99	95	90	66	71	54	45	35	56
Solar	43	48	60	57	67	66	67	68	69	67	64	63
Total	8475	8079	7332	7281	7781	8965	9920	10481	12866	13010	13431	14361
Sale to IPPs	0	-24	-6	-34	-11	-40	-14	-27	-18	-19	-19	-16
Transmission Losses	-331	-328	-201	-250	-209	-317	-184	-275	-279	-261	-322	-368
Net Delivered	8144	7728	7125	6997	7560	8615	9721	10194	12569	12729	13090	13978

Source: NEPRA

TABLE 12

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

Months	July, 2020		August, 2020		September, 2020		October, 2020		November, 2020		December, 2020	
	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual
Hydel	0	0	0	0	0	0	0	0	0	0	0	0
Coal	8988	16271	9011	15262	8711	13101	9010	11128	8674	6479	8975	14565
HSD	0	2090	0	1900	0	1343	0	131	0	0	0	0
FO	0	11782	0	3039	0	7411	0	1018	0	324	0	2944
Gas	8380	10375	7960	9867	7758	8589	7498	7675	5147	3493	6026	9402
RLNG	25657	20715	20626	21481	15441	19036	20732	18683	4085	12447	20116	8294
Nuclear	855	688	852	818	830	689	858	726	751	678	647	753
Import Iran	483	581	472	532	444	474	436	398	369	326	338	326
Mixed	83	197	80	100	72	57	61	129	148	149	283	100
Wind		0	0		0	0	0	0	0	0	0	0
Bagasse	2169	209	2132	120	1757	77	517	133	1671	359	1796	611
Solar	0	0	0	0	0	0	0	0	0	0	0	0
Total	46616	62910	41133	53119	35013	50776	39112	40021	20845	24256	38181	36996
Supplemental Charges	0	835	0	-175	0	0	0	855	0	10	0	9087
Sale to IPPs	0	-529	0	-557	0	-349	0	-478	0	-673	0	-728
Grand Total	46616	63216	41133	52387	35013	50427	39112	40398	20845	23594	38181	45354
Transmission Losses (Rs./KWh)	0	0	0	0	0	0	0	0	0	0	0	0
Net Total	46616	63216	41133	52387	35013	50427	39112	40398	20845	23594	38181	45354

Months	January, 2021		February, 2021		March, 2021		April, 2021		May, 2021		June, 2021	
	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual
Hydel	0	0	0	0	0	0	0	0	0	0	0	0
Coal	9003	16555	12466	13439	14602	19817	14156	19441	17500	20421	18075	21036
HSD	0	873	0	0	0	0	0	0	0	441	0	1243
FO	6612	11995	549	813	936	2666	6748	1617	7434	10707	11220	16721
Gas	6358	10162	6366	6993	14155	7927	14468	9533	15869	11418	14875	10582
RLNG	21617	7623	7839	11216	15539	17112	27315	25327	32492	28411	32369	28503
Nuclear	826	859	764	797	883	965	755	1179	587	1277	667	1618
Import Iran	365	310	368	287	396	363	491	422	607	527	565	568
Mixed	330	5	186	63	222	108	188	123	101	76	76	46
Wind	0	0	0	0	0	0	0	0	0	0	0	0
Bagasse	1780	574	1031	594	585	539	407	426	336	272	215	338
Solar	0	0	0	0		0		0		0		0
Total	46892	48956	29570	34203	47317	49495	64527	58067	74925	73552	78061	80655
Supplemental Charges	0	3100	0	68	0	-374	0	5605	0	-883	0	0
Sale to IPPs	0	-641	-62	805	-221	-999	-282	-763	-366	-523	-382	-405
Grand Total	46892	51416	29507	33466	47096	48122	64245	62909	74559	72146	77679	80250
Transmission Losses (Rs./KWh)	0	0	0	0	0	0	0	0	0	0	0	0
Net Total	46892	51416	29507	33466	47096	48122	64245	62909	74559	72146	77679	80250

Source: NEPRA

TABLE 13
Month-wise KE Electricity Generation Data (GWh) (2020-21)

	July	August	September	October	November	December	January	February	March	April	May	June
BQPS-I (RFO) Unit-1	94.037	90.185	98.38	100.936	24.632	11.456	65.288	74.151	81.139	40.677	31.968	102.152
BQPS-I (RFO) Unit-2	64.169	87.426	91.961	107.899	8.745	24.15	69.73	42.065	63.802	13.494	13.545	94.886
BQPS-I (RFO) Unit-3	70.172	31.286	84.639	2.302	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.556
BQPS-I (RFO) Unit-4	84.468	70.802	52.595	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
BQPS-I (RFO) Unit-5	32.74	65.39	65.199	79.955	47.832	70.408	8.995	30.668	84.178	41.813	20.08	70.375
BQPS-I (RFO) Unit-6	0.00	1.853	13.82	23.397	13.061	0.00	54.433	50.385	63.433	17.905	0.00	26.786
BQPS-I (Gas) Unit-1	9.568	3.084	1.369	0.119	0.118	0.00	0.00	0.00	0.339	16.253	19.338	0.160
BQPS-I (Gas) Unit-2	25.779	5.813	7.035	0.817	0.653	0.00	0.00	0.00	0.3	21.184	22.807	2.619
BQPS-I (Gas) Unit-3	0.785	0.508	0.031	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.519
BQPS-I (Gas) Unit-4	1.258	0.386	0.199	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
BQPS-I (Gas) Unit-5	46.945	29.225	35.71	15.133	8.163	0.00	0.00	0.00	3.726	20.09	25.533	13.255
BQPS-I (Gas) Unit-6	62.498	74.61	71.038	33.91	22.491	0.00	0.00	0.00	10.748	25.836	31.621	22.693
BQPS-I (LNG) Unit-1	9.172	1.71	0.729	0.202	0.167	1.849	0.924	1.283	0.724	49.232	53.643	0.471
BQPS-I (LNG) Unit-2	24.712	3.222	3.749	1.383	0.928	1.644	10.998	0.682	0.641	54.775	63.266	7.726
BQPS-I (LNG) Unit-3	0.752	0.282	0.016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.481
BQPS-I (LNG) Unit-4	1.206	0.214	0.106	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
BQPS-I (LNG) Unit-5	45.002	16.2	19.031	25.615	11.606	8.928	0.394	12.358	7.957	60.857	70.286	39.101
BQPS-I (LNG) Unit-6	59.912	41.358	37.858	57.398	31.977	0.00	42.905	35.649	22.95	78.262	87.714	66.941
BQPS-II (Gas)	181.037	215.71	232.276	131.709	160.06	0.00	0.00	0.00	93.123	95.042	91.096	74.593
BQPS-II (LNG)	165.673	122.286	112.502	221.733	200.823	318.635	133.859	329.642	270.711	248.158	259.768	259.621
KGTPS-II (Gas)	24.27	23.151	19.71	16.725	13.069	0.00	0.00		10.053	10.334	10.284	4.562
KGTPS-II (LNG)	22.188	13.118	10.067	28.267	18.239	1.826	19.716	25.827	29.572	26.971	29.217	14.333
SGTPS-II (Gas)	16.913	18.786	9.954	7.264	3.391	0.00	0.00	0.00	5.178	6.601	8.533	4.130
SGTPS-II (LNG)	15.522	10.725	5.462	12.241	4.994	0.001	10.521	10.301	16.622	17.022	24.164	13.015
Korangi CCPP (Gas)	66.122	69.849	54.804	42.455	37.714	0.00	0.00	0.00	17.167	24.245	25.001	15.830
Korangi CCPP (LNG)	60.726	39.634	27.001	72.135	49.717	22.519	29.952	23.798	60.688	62.322	71.211	49.693
Korangi CCPP (HSD)	-	-	-	-	-	-	-	-	-	2.481	11.507	19.989
KANUPP (Nuclear)	2.811	24.866	38.556	35.865	20.544	9.308	14.675	0	15.805	17.145	20.424	19.020
Tapal Energy (RFO)	66.373	64.794	76.103	57.419	29.005	53.559	60.263	61.926	70.936	62.76	59.03	76.622
Gul Ahmed (RFO)	67.86	58.645	74.897	50.42	21.655	37.999	55.105	51.696	63.407	55.51	56.01	80.024
CPPA-G (Mix)	511.104	452.519	499.28	485.56	357.313	364.321	350.907	235.412	421.762	597.902	711.686	776.622
Anoud Power (Mix-RFO/Gas)	4.796	3.87	3.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
ISL (Gas)	4.723	5.541	3.878	5.855	3.381	3.015	0.569	1.738	5.301	4.227	2.221	2.160
IIL (Gas)	0.726	1.012	0.488	1.134	0.992	0.835	0.074	0.649	1.054	1.082	1.232	0.653
FFBL (Coal)	40.393	40.339	38.722	40.297	36.41	40.107	20.471	36.674	40.611	39.3	40.723	39.284
SNPCL (I & II) (Gas)	63.689	66.508	62.912	69.605	62.301	63.747	53.102	53.036	64.528	68.87	71.014	61.098
Oursun Pakistan (Solar)	7.291	5.732	7.396	7.889	6.944	7.437	7.43	7.332	8.82	8.675	8.521	7.405
CPPA-G 150 MW (Wind)	45.826	42.545	27.634	16.552	22.593	24.511	13.533	12.998	18.768	21.554	47.02	60.107
Gharo Solar	9.306	7.634	9.412	9.204	7.507	7.735	8.033	8.316	10.561	10.976	10.94	9.002
Lotte Chemicals (RLNG)	0.931	4.076	3.498	5.761	4.045	5.719	6.062	5.179	4.067	7.45	7.336	6.778
Lucky Cement	-	-	-	-	-	-	-	-	-	-	-	0.014

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	Laraib	Patrind Hydro	Daral Khwar	Gulpur	Small Hydels	Total
July	2019	3,348	1,032	346	147	90	33	63	11	125	783	8	58	13	25	97	36	-	65	6,282
	2020	3,844	988	602	194	99	32	74	23	129	963	4	25	61	43	121	34	38	71	7,344
Aug.	2019	4,774	1,024	275	181	72	34	58	10	106	865	0	68	13	12	111	21	-	56	7,678
	2020	4,217	999	416	209	86	30	65	21	130	887	4	26	64	25	109	22	45	45	7,400
Sept.	2019	4,308	1,052	570	152	114	12	26	10	77	477	23	63	13	37	60	10	-	69	7,072
	2020	3,555	1,008	905	148	96	32	72	15	56	602	4	17	32	66	77	20	51	65	6,819
Oct.	2019	1,474	784	313	93	107	12	22	28	38	245	24	39	5	30	35	6	-	45	3,300
	2020	1,799	895	842	78	107	11	29	41	46	222	15	10	21	63	40	6	10	10	4,244
Nov.	2019	1,658	989	604	78	118	19	35	54	33	286	16	32	5	56	32	8	-	40	4,063
	2020	1,772	958	797	73	122	14	24	50	33	153	15	4	16	62	29	5	0	55	4,181
Dec.	2019	725	511	523	69	80	2	21	28	23	204	11	21	6	47	24	5	-	30	2,331
	2020	729	523	590	74	66	17	27	38	30	163	11	4	14	48	26	4	5	5	2,374
Jan.	2020	400	279	94	77	52	11	0	4	18	162	8	13	4	12	22	4	2	13	1,178
	2021	534	393	95	73	59	8	7	11	21	135	8	4	14	7	21	3	23	23	1,439
Feb.	2020	1,109	783	727	65	101	23	30	16	25	243	6	26	4	68	22	7	14	24	3,294
	2021	1,056	833	683	57	89	15	0	16	30	109	8	5	12	67	24	6	15	25	3,047
March	2020	234	176	492	104	47	61	72	26	47	494	6	47	7	45	38	13	64	54	2,027
	2021	397	343	592	87	47	41	56	18	57	460	6	4	25	63	40	13	39	39	2,327
April	2020	549	368	747	164	72	69	112	30	95	923	6	54	15	61	85	29	69	64	3,512
	2021	657	572	643	106	77	51	96	31	87	923	7	15	46	67	76	20	41	73	3,588
May	2020	2,217	993	893	205	88	64	118	15	117	964	7	66	27	69	121	35	54	67	6,119
	2021	1,073	947	654	180	112	44	92	37	128	950	18	25	65	73	140	16	40	40	4,636
June	2020	3,000	976	849	172	89	40	92	17	129	962	8	25	71	66	125	35	48	65	6,770
	2021	2,294	1,000	609	191	104	29	70	30	130	967	17	24	68	57	147	34	45	68	5,883

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	2016-17	16.16	0.11	3,539	48.41	101.75	49.40	91.61
	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
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
Ghazi Barotha	2016-17	9.64	0.14	1,450	54.21	100.00	59.61	90.63
	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
Mangla	2016-17	90.30	1.69	1,115	54.60	111.50	61.05	92.52
	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
Warsak	2016-17	4.73	0.48	213	52.67	87.67	52.67	74.64
	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
Chashma	2016-17	5.74	0.64	158	64.15	85.87	82.23	69.38
	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
Khan Khwar	2016-17	4.01	2.01	72	31.47	31.56	31.56	87.23
	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
Allai Khwar	2016-17	0.86	0.22	121	37.42	37.42	37.42	91.83
	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
Jinnah	2016-17	2.88	0.98	63	52.89	34.71	34.71	48.75
	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
Duber Khwar	2016-17	0.71	0.12	130	51.62	100.00	51.76	92.52
	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
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
Dargai	2016-17	0.28	0.27	18	67.03	81.50	59.82	89.60
	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
Rasul	2016-17	3.66	4.23	15	65.83	68.18	44.88	84.68
	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
Shadiwal	2016-17	0.46	1.60	6	62.01	34.79	27.81	94.74
	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

Power Station	Year	Auxiliary Consumption		Maximum Load (MW)	Load Factor (%)	Capacity Factor (%)	Utilization Factor (%)	Availability Factor (%)
		(GWh)	(%)					
Chichoki Malian	2016-17	0.35	0.78	8	48.71	60.61	29.63	60.00
	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
Nandipur	2016-17	0.54	1.25	11	46.35	61.86	38.89	84.00
	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
Kurram Garhi	2016-17	0.36	1.94	4	55.25	95.00	52.63	79.75
	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
Renala	2016-17	0.00	2.11	1	41.82	38.83	24.88	88.28
	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
Chitral	2016-17	0.01	0.20	1	59.83	47.99	69.96	98.83
	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
Gomal Zam	2016-17	0.05	0.91	17	4.04	9.75	4.13	54.29
	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
Malakand/ Jabban	2016-17	1.19	0.96	22	64.41	64.41	64.41	75.18
	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

Source: WAPDA

TABLE 16
Month-wise WAPDA Hydroelectric Invoice for Capacity Charges and Cost Data (2020-21)

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% (NEOxRatexGST Rate) (Mln. Rs.)
Mangla: (Installed Capacity: 1,000 MW) (Variable Energy Rate-Rs./kWh: 0.056) (Capacity Rate-Rs./kWh: 626.71) (Water Use/NHP Rate-Rs./kWh: 0.15) (IRSA Rate-Rs./kWh: 0.005)								
July	724.7570	282.2510	442.5060	24.7803	626.7100	66.3759	2.2125	4.2127
August	632.7140	327.4630	305.2510	17.0941	626.7100	45.7877	1.5263	2.9060
September	824.5200	190.1230	634.3970	35.5262	626.7100	95.1596	3.1720	6.0395
October	673.7190	56.8530	616.8660	34.5445	626.7100	92.5299	3.0843	5.8726
November	627.5980	64.3600	563.2380	31.5413	626.7100	84.4857	2.8162	5.3620
December	484.2800	51.0280	433.2520	24.2621	626.7100	64.9878	2.1663	4.1246
January	197.9150	127.7380	70.1770	3.9299	626.7100	10.5266	0.3509	0.6681
February	488.6320	38.0220	450.6100	25.2342	626.7100	67.5915	2.2531	4.2898
March	482.7310	51.3040	431.4270	24.1599	626.7100	64.7141	2.1571	4.1072
April	485.1320	31.5930	453.5390	25.3982	626.7100	68.0309	2.2677	4.3177
May	526.2510	45.8020	480.4490	26.9051	626.7100	72.0674	2.4022	4.5739
June	596.4550	164.3360	432.1190	24.1987	626.7100	64.8179	2.1606	4.1138
Gomal Zam: (Installed Capacity: 17 MW) (Variable Energy Rate-Rs./kWh: 1.384) (Capacity Rate-Rs./kWh: 6,393.383) (Water Use/NHP Rate-Rs./kWh: 0.15) (IRSA Rate-Rs./kWh: 0.005)								
July	5.7931	0.0020	5.7911	8.0149	111.2449	0.8687	0.0290	1.3625
August	5.8378	0.0020	5.8359	8.0768	111.2449	0.8754	0.0292	1.3731
September	5.7638	0.0008	5.7630	7.9760	111.2449	0.8644	0.0288	1.3559
October	5.5194	0.0063	5.5131	7.6301	111.2449	0.8270	0.0276	1.2971
November	5.2450	0.0032	5.2419	7.2547	111.2449	0.7863	0.0262	1.2333
December	5.4120	0.0056	5.4064	7.4825	111.2449	0.8110	0.0270	1.2720

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% (NEOxRatexGST Rate) (Mln. Rs.)
January	5.4619	0.0033	5.4586	7.5547	111.2449	0.8188	0.0273	1.2843
February	0.1836	0.0861	0.0975	0.1349	111.2449	0.0146	0.0005	0.0229
March	5.8623	0.0009	5.8614	8.1122	111.2449	0.8792	0.0293	1.3791
April	5.8205	0.0014	5.8191	8.0536	111.2449	0.8729	0.0291	1.3691
May	5.7733	0.0023	5.7710	7.9871	111.2449	0.8657	0.0289	1.3578
June	5.5358	0.0015	5.5343	7.6595	111.2449	0.8301	0.0277	1.3021
Tarbela (1-14): (Installed Capacity: 3,478 MW) (Variable Energy Rate-Rs./kWh: 0.30) (Capacity Rate-Rs./kWh: 307.035) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	--	--	2024.7033	48.2133	1067.8677	1856.2138	10.1235	10.3260
August	--	--	2216.8989	66.5070	1067.8677	2888.4300	11.0845	11.3062
September	--	--	1687.2474	50.6174	1067.8677	253.0871	8.4362	8.6050
October	--	--	854.0609	25.6218	1067.8677	128.1091	4.2703	4.3557
November	--	--	1175.5743	35.2672	1067.8677	176.3361	5.8779	5.9954
December	--	--	543.3228	16.2997	1067.8677	81.4984	2.7166	2.7709
January	--	--	399.7850	11.9936	1067.8677	59.9678	1.9989	2.0389
February	--	--	710.1009	21.3030	1067.8677	106.5151	3.5505	3.6215
March	--	--	297.2890	8.9187	1067.8677	44.5934	1.4864	1.5162
April	--	--	475.2930	14.2588	1067.8677	71.2940	2.3765	2.4240
May	--	--	801.5306	24.0459	1067.8677	120.2296	4.0077	4.0878
June	--	--	1379.9325	41.3980	1067.8677	206.9899	6.8997	7.0377
Tarbela 4th Extension: (Installed Capacity: 1,410 MW) (Variable Energy Rate-Rs./kWh: 0.152) (Capacity Rate-Rs./kWh: 322.654) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	--	--	818.8330	124.4626	454.9421	122.8250	4.0942	21.1586
August	--	--	0.0000	136.8834	454.9421	0.0000	0.0000	0.0000
September	--	--	856.9770	130.2605	454.9421	128.5466	4.2849	22.1443
October	--	--	477.5270	72.5841	454.9421	71.6291	2.3876	12.3393
November	--	--	96.8244	14.7173	454.9421	14.5237	0.4841	2.5019
December	--	--	0.0000	0.0000	454.9421	0.0000	0.0000	0.0000
January	--	--	0.0000	0.0000	454.9421	0.0000	0.0000	0.0000
February	--	--	0.0000	0.0000	454.9421	0.0000	0.0000	0.0000
March	--	--	0.0000	0.0000	454.9421	0.0000	0.0000	0.0000
April	--	--	0.0000	0.0000	454.9421	0.0000	0.0000	0.0000
May	--	--	0.0000	0.0000	454.9421	0.0000	0.0000	0.0000
June	--	--	268.0650	40.7459	454.9421	40.2097	1.3403	6.9268
Warsak: (Installed Capacity: 243 MW) (Variable Energy Rate-Rs./kWh: 0.072) (Capacity Rate-Rs./kWh: 572.424) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	142.7880	0.1110	142.6770	10.2727	139.0932	21.4016	0.7134	1.7464
August	154.3140	0.2250	154.0890	11.0944	139.0761	23.1134	0.7704	1.8860
September	105.4540	0.0150	105.4390	7.5916	139.0761	15.8159	0.5272	1.2906
October	58.4500	1.1240	57.3260	4.1275	139.0761	8.5989	0.2866	0.7017
November	53.1270	1.4960	51.6310	3.7174	139.0761	7.7447	0.2582	0.6320
December	57.3010	2.7980	54.5030	3.9242	139.0761	8.1755	0.2725	0.6671
January	54.5560	1.1790	53.3770	3.8431	139.0761	8.0066	0.2669	0.6533
February	37.5320	0.0010	37.5310	2.7022	139.0761	5.6297	0.1877	0.4594
March	63.8210	0.0760	63.7450	4.5896	139.0761	9.5618	0.3187	0.7802
April	75.4440	0.1220	75.3220	5.4232	139.0761	11.2983	0.3766	0.9219
May	132.8280	0.1680	132.6600	9.5515	139.0761	20.5623	0.6633	1.6238
June	136.8480	0.1520	136.6960	9.8421	139.0761	20.5044	0.6835	1.6732
Duber Khwar: (Installed Capacity: 130 MW) (Variable Energy Rate-Rs./kWh: 0.339) (Capacity Rate-Rs./kWh: 2,686.269) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	95.8228	0.1308	95.6920	32.4396	349.2150	14.3538	0.4785	5.5147
August	95.9778	0.0000	95.9778	32.5365	349.2150	14.3967	0.4799	5.5312
September	42.0864	2.0564	40.0300	13.5702	349.2150	6.0045	0.2001	2.3069
October	34.2903	0.0000	34.2903	11.6244	349.2150	5.1435	0.1715	1.9761
November	23.8145	0.1233	23.6912	8.0313	349.2150	3.5537	0.1185	1.3653
December	22.7447	0.3174	22.4273	7.6029	349.2150	3.3641	0.1121	1.2925
January	15.8813	0.0302	15.8511	5.3735	349.2150	2.3777	0.0793	0.9135

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% (NEOxRatexGST Rate) (Mln. Rs.)
February	20.0612	0.1707	19.8905	6.7429	349.2150	2.9836	0.0995	1.1463
March	42.6615	0.3294	42.3320	14.3506	349.2150	6.3498	0.2117	2.4396
April	62.1719	0.0003	62.1716	21.0762	349.2150	9.3257	0.3109	3.5829
May	95.1654	0.0000	95.1654	32.2611	349.2150	14.2748	0.4758	5.4844
June	93.3444	0.0794	93.2650	31.6168	349.2150	13.9897	0.4663	5.3749
Allai Khwar: (Installed Capacity: 121 MW) (Variable Energy Rate-Rs./kWh: 0.254) (Capacity Rate-Rs./kWh: 2,071.091) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	168.7989	114.7142	54.0848	13.7375	250.6020	8.1127	0.2704	2.3354
August	158.2896	111.1507	47.1389	11.9733	250.6020	7.0708	0.2357	2.0355
September	110.8286	59.9880	50.8406	12.9135	250.6020	7.6261	0.2542	2.1953
October	60.2614	39.2003	21.0611	5.3495	250.6020	3.1592	0.1053	0.9094
November	46.1489	29.4326	16.7163	4.2459	250.6020	2.5074	0.0836	0.7218
December	50.2971	31.0153	19.2818	4.8976	250.6020	2.8923	0.0964	0.8326
January	24.8991	19.9491	4.9501	1.2573	250.6020	0.7425	0.0248	0.2137
February	28.2420	28.5516	-0.3096	-0.0786	250.6020	-0.0464	-0.0015	-0.0134
March	109.6167	68.8984	40.7183	10.3425	250.6020	6.1077	0.2036	1.7582
April	164.9981	96.9589	68.0393	17.2820	250.6020	10.2059	0.3402	2.9379
May	196.4321	128.7840	67.6481	17.1826	250.6020	10.1472	0.3382	2.9210
June	164.5754	115.9687	48.6067	12.3461	250.6020	7.2910	0.2430	2.0988
Khan Khwar: (Installed Capacity: 72 MW) (Variable Energy Rate-Rs./kWh: 0.375) (Capacity Rate-Rs./kWh: 2,316.349) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	64.9909	41.5512	23.4397	8.7899	166.7771	3.5160	0.1172	1.4943
August	64.4685	42.8281	21.6404	8.1152	166.7771	3.2461	0.1082	1.3796
September	40.7462	18.3483	22.3979	8.3992	166.7771	3.3597	0.1120	1.4279
October	24.1620	16.5039	7.6581	2.8718	166.7771	1.1487	0.0383	0.4882
November	20.0543	10.5268	9.5275	3.5728	166.7771	1.4291	0.0476	0.6074
December	22.2811	9.8780	12.4031	4.6512	166.7771	1.8605	0.0620	0.7907
January	13.1102	7.1908	5.9195	2.2198	166.7771	0.8879	0.0296	0.3774
February	18.9472	9.3239	9.6233	3.6087	166.7771	1.4435	0.0481	0.6135
March	46.8015	16.4458	30.3557	11.3834	166.7771	4.5534	0.1518	1.9352
April	62.4548	26.1390	36.3158	13.6184	166.7771	5.4474	0.1816	2.3151
May	76.9270	45.0909	31.8362	11.9386	166.7771	4.7754	0.1592	2.0296
June	66.6291	46.5538	20.0754	7.5283	166.7771	3.0113	0.1004	1.2798
Golen Gol: (Installed Capacity: 108 MW) (Variable Energy Rate-Rs./kWh: 0.228) (Capacity Rate-Rs./kWh: 1,370.61) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	3.7827	0.7951	2.9875	0.6812	148.0259	0.4481	0.0149	0.1158
August	3.9572	1.3832	2.5740	0.5869	148.0259	0.3861	0.0129	0.0998
September	3.4188	0.5825	2.8363	0.6467	145.2847	0.4254	0.0142	0.1099
October	10.5817	0.0000	10.5817	2.4126	145.2847	1.5872	0.0529	0.4101
November	10.3224	0.0007	10.3218	2.3534	145.2847	1.5483	0.0516	0.4001
December	7.7012	0.0008	7.7004	1.7557	148.0259	1.1551	0.0385	0.2985
January	6.2555	0.2853	5.9702	1.3612	145.2847	0.8955	0.0299	0.2314
February	4.9519	0.0000	4.9519	1.1290	145.2847	0.7428	0.0248	0.1919
March	4.6026	0.0000	4.6026	1.0494	145.2847	0.6904	0.0230	0.1784
April	4.6966	0.0000	4.6966	1.0708	145.2847	0.7045	0.0235	0.1820
May	12.9468	0.0003	12.9466	2.9518	148.0259	1.9420	0.0647	0.5018
June	11.7886	0.0047	11.7839	2.6867	148.0259	1.7676	0.0589	0.4567
Jabban: (Installed Capacity: 22 MW) (Variable Energy Rate-Rs./kWh: 0.332) (Capacity Rate-Rs./kWh: 2,961.172) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	14.7632	0.0010	14.7622	4.9010	65.1458	2.2143	0.0738	0.8332
August	12.0936	0.0006	12.0930	4.0149	65.1458	1.8140	0.0605	0.6825
September	11.7331	0.0000	11.7331	3.8954	65.1458	1.7600	0.0587	0.6622
October	9.5779	0.0000	9.5779	3.1799	65.1458	1.4367	0.0479	0.5406
November	8.5034	0.0000	8.5034	2.8231	65.1458	1.2755	0.0425	0.4799
December	9.8677	0.0000	9.8677	3.2761	65.1458	1.4802	0.0493	0.5569
January	6.4676	0.0003	6.4673	2.1472	65.1458	0.9701	0.0323	0.3650

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% (NEOxRatexGST Rate) (Mln. Rs.)
February	5.0440	0.0158	5.0282	1.6693	65.1458	0.7542	0.0251	0.2838
March	12.0340	0.0000	12.0340	3.9953	65.1458	1.8051	0.0602	0.6792
April	14.6083	0.0000	14.6083	4.8499	65.1458	2.1912	0.0730	0.8245
May	15.1101	0.0000	15.1101	5.0165	65.1458	2.2665	0.0756	0.8528
June	14.6748	0.0000	14.6748	4.8720	65.1458	2.2012	0.0734	0.8282
Dargai: (Installed Capacity: 20 MW) (Variable Energy Rate-Rs./kWh: 0.094) (Capacity Rate-Rs./kWh: 836.555) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	11.8516	0.0030	11.8486	1.1138	16.7311	1.7773	0.0592	0.1893
August	11.0573	0.0020	11.0553	1.0392	16.7311	1.6583	0.0553	0.1767
September	10.2317	0.0000	10.2317	0.9618	16.7311	1.5348	0.0512	0.1635
October	8.1278	0.0000	8.1278	0.7640	16.7311	1.2192	0.0406	0.1299
November	7.1682	0.0000	7.1682	0.6738	16.7311	1.0752	0.0358	0.1145
December	7.6298	0.0000	7.6298	0.7172	16.7311	1.1445	0.0381	0.1219
January	4.6675	0.0000	4.6675	0.4387	16.7311	0.7001	0.0233	0.0746
February	3.5813	0.0410	3.5403	0.3328	16.7311	0.5310	0.0177	0.0566
March	9.9483	0.0000	9.9483	0.9351	16.7311	1.4922	0.0497	0.1590
April	11.7557	0.0000	11.7557	1.1050	16.7311	1.7634	0.0588	0.1879
May	11.9802	0.0000	11.9802	1.1261	16.7311	1.7970	0.0599	0.1914
June	10.7848	0.0140	10.7708	1.0125	16.7311	1.6156	0.0539	0.1721
Kurram Garhi: (Installed Capacity: 4 MW) (Variable Energy Rate-Rs./kWh: 0.273) (Capacity Rate-Rs./kWh: 1,823.76) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	5.2752	3.1828	2.0924	0.5712	7.2950	0.3139	0.0105	0.0971
August	5.2703	3.1642	2.1061	0.5750	7.2950	0.3159	0.0105	0.0977
September	4.6690	2.6202	2.0488	0.5593	7.2950	0.3073	0.0102	0.0951
October	3.7836	1.7980	1.9856	0.5421	7.2950	0.2978	0.0099	0.0922
November	4.2678	2.4312	1.8366	0.5014	7.2950	0.2755	0.0092	0.0852
December	5.0517	2.5722	2.4795	0.6769	7.2950	0.3719	0.0124	0.1151
January	4.1375	3.5124	0.6251	0.1707	7.2950	0.0938	0.0031	0.0290
February	3.5403	2.9042	0.6361	0.1737	7.2950	0.0954	0.0032	0.0295
March	3.2220	1.8146	1.4074	0.3842	7.2950	0.2111	0.0070	0.0653
April	3.4979	1.5446	1.9533	0.5333	7.2950	0.2930	0.0098	0.0907
May	4.3900	2.5658	1.8242	0.4980	7.2950	0.2736	0.0091	0.0847
June	3.4662	2.7492	0.7170	0.1958	7.2950	0.1076	0.0036	0.0333
Chitral: (Installed Capacity: 1 MW) (Variable Energy Rate-Rs./kWh: 0.655) (Capacity Rate-Rs./kWh: 4,240.658) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	0.2731	0.0000	0.2731	0.1789	4.2407	0.0410	0.0014	0.0304
August	0.2079	0.0000	0.2079	0.1362	4.2407	0.0312	0.0010	0.0231
September	0.2127	0.0000	0.2127	0.1393	4.2407	0.0319	0.0011	0.0237
October	0.1977	0.0000	0.1977	0.1295	4.2407	0.0297	0.0010	0.0220
November	0.2376	0.0000	0.2376	0.1556	4.2407	0.0356	0.0012	0.0265
December	0.1684	0.0000	0.1684	0.1103	4.2407	0.0253	0.0008	0.0188
January	0.2649	0.0000	0.2649	0.1735	4.2407	0.0397	0.0013	0.0295
February	0.2281	0.0000	0.2281	0.1494	4.2407	0.0342	0.0011	0.0254
March	0.2461	0.0000	0.2461	0.1612	4.2407	0.0369	0.0012	0.0274
April	0.2097	0.0000	0.2097	0.1373	4.2407	0.0315	0.0010	0.0233
May	0.2033	0.0000	0.2033	0.1332	4.2407	0.0305	0.0010	0.0226
June	0.2018	0.0000	0.2018	0.1321	4.2407	0.0303	0.0010	0.0225
Ghazi Barotha: (Installed Capacity: 1,450 MW) (Variable Energy Rate-Rs./kWh: 0.089) (Capacity Rate-Rs./kWh: 769.975) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	1571.7342	844.5470	727.1872	64.7197	1116.4638	109.0781	3.6359	11.0023
August	1746.9896	1011.2330	735.7566	65.4823	1116.4638	110.3635	3.6788	11.1320
September	1500.7303	783.3960	717.3343	63.8428	1116.4638	107.6001	3.5867	10.8533
October	891.5316	232.2950	659.2366	58.6721	1116.4638	98.8855	3.2962	9.9742
November	967.5896	282.0500	685.5396	61.0130	1116.4638	102.8309	3.4277	10.3722
December	592.7796	210.2910	382.4886	34.0415	1116.4638	57.3733	1.9124	5.7871
January	689.4570	401.7790	287.6780	25.6033	1116.4638	43.1517	1.4384	4.3526

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% (NEOxRatexGST Rate) (Mln. Rs.)
February	632.8983	79.1550	553.7433	49.2832	1116.4638	83.0615	2.7687	8.3781
March	451.4535	200.1420	251.3115	22.3667	1116.4638	37.6967	1.2566	3.8023
April	494.2919	87.8400	406.4519	36.1742	1116.4638	60.9678	2.0323	6.1496
May	742.0096	47.8290	694.1806	61.7821	1116.4638	104.1271	3.4709	10.5030
June	1069.0837	359.0770	710.0067	63.1906	1116.4638	106.5010	3.5500	10.7424
Chashma: (Installed Capacity: 184 MW) (Variable Energy Rate-Rs./kWh: 0.146) (Capacity Rate-Rs./kWh: 1,418.173) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	73.1320	0.0340	73.0980	10.6723	260.9438	10.9647	0.3655	1.8143
August	63.8740	0.0110	63.8630	9.3240	260.9438	9.5795	0.3193	1.5851
September	69.1530	0.5190	68.6340	10.0206	260.9438	10.2951	0.3432	1.7035
October	79.6380	0.4880	79.1500	11.5559	260.9438	11.8725	0.3958	1.9645
November	87.6370	0.0510	87.5860	12.7876	260.9438	13.1379	0.4379	2.1739
December	52.8790	3.5630	49.3160	7.2001	260.9438	7.3974	0.2466	1.2240
January	47.6620	3.7190	43.9430	6.4157	260.9438	6.5915	0.2197	1.0907
February	60.0950	0.6190	59.4760	8.6835	260.9438	8.9214	0.2974	1.4762
March	38.0840	3.5660	34.5180	5.0396	260.9438	5.1777	0.1726	0.8567
April	57.0450	1.6220	55.4230	8.0918	260.9438	8.3135	0.2771	1.3756
May	83.7070	0.7410	82.9660	12.1130	260.9438	12.4449	0.4148	1.2553
June	75.7510	14.0330	61.7180	9.0108	260.9438	9.2577	0.3086	0.9338
Jinnah: (Installed Capacity: 96 MW) (Variable Energy Rate-Rs./kWh: 0.229) (Capacity Rate-Rs./kWh: 1,841.312) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	16.7492	0.0000	16.7492	3.8356	176.7660	2.5124	0.0837	0.6520
August	15.2170	0.0000	15.2170	3.4847	176.7660	2.2825	0.0761	0.5924
September	10.4004	0.0070	10.3934	2.3801	176.7660	1.5590	0.0520	0.4046
October	29.8559	0.0004	29.8555	6.8369	176.7660	4.4783	0.1493	1.1623
November	35.4740	0.0003	35.4737	8.1235	176.7660	5.3211	0.1774	1.3810
December	27.7332	0.0000	27.7332	6.3509	176.7660	4.1600	0.1387	1.0797
January	7.8785	0.1506	7.7279	1.7697	176.7660	1.1592	0.0386	0.3008
February	10.1287	0.0480	10.0808	2.3085	176.7660	1.5121	0.0504	0.3924
March	12.8191	0.0001	12.8189	2.9355	176.7660	1.9228	0.0641	0.4990
April	21.4553	0.0001	21.4551	4.9132	176.7660	3.2183	0.1073	0.8352
May	26.5225	0.0003	26.5222	6.0736	176.7660	3.9783	0.1326	0.6583
June	20.9889	0.0003	20.9886	4.8064	176.7660	3.1483	0.1049	0.5209
Rasul: (Installed Capacity: 22 MW) (Variable Energy Rate-Rs./kWh: 0.079) (Capacity Rate-Rs./kWh: 791.065) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	7.3575	0.4680	6.8895	0.5443	17.4034	1.0334	0.0344	0.0925
August	7.1760	1.0790	6.0970	0.4817	17.4034	0.9146	0.0305	0.0819
September	6.2637	0.7930	5.4707	0.4322	17.4034	0.8206	0.0274	0.0735
October	7.4623	0.0440	7.4183	0.5860	17.4034	1.1127	0.0371	0.0996
November	8.2660	0.0000	8.2660	0.6530	17.4034	1.2399	0.0413	0.1110
December	7.0436	0.4330	6.6106	0.5222	17.4034	0.9916	0.0331	0.0888
January	1.8044	1.9730	-0.1686	-0.0133	17.4034	-0.0253	-0.0008	-0.0023
February	4.4813	0.9070	3.5743	0.2824	17.4034	0.5361	0.0179	0.0480
March	8.5682	0.0010	8.5672	0.6768	17.4034	1.2851	0.0428	0.1151
April	8.0289	0.0070	8.0219	0.6337	17.4034	1.2033	0.0401	0.1077
May	8.2493	0.0090	8.2403	0.6510	17.4034	1.2360	0.0412	0.3208
June	7.8356	0.1280	7.7076	0.6089	17.4034	1.1561	0.0385	0.3001
Nandipur: (Installed Capacity: 14 MW) (Variable Energy Rate-Rs./kWh: 0.228) (Capacity Rate-Rs./kWh: 1,126.76) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	4.6800	0.0000	4.6800	1.0670	15.7746	0.7020	0.0234	0.1814
August	4.5782	0.0000	4.5782	1.0438	15.5493	0.6867	0.0229	0.1775
September	4.1276	0.0000	4.1276	0.9411	15.5493	0.6191	0.0206	0.1600
October	4.0936	0.0010	4.0926	0.9331	15.5493	0.6139	0.0205	0.1586
November	1.6716	0.0090	1.6626	0.3791	15.5493	0.2494	0.0083	0.0644
December	1.2364	0.0240	1.2124	0.2764	15.5493	0.1819	0.0061	0.0470
January	0.0181	0.0580	-0.0399	-0.0091	15.5493	-0.0060	-0.0002	-0.0015

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% (NEOxRatexGST Rate) (Mln. Rs.)
February	1.0689	0.0160	1.0529	0.2401	15.5493	0.1579	0.0053	0.0408
March	2.3733	0.0030	2.3703	0.5404	15.5493	0.3555	0.0119	0.0919
April	2.7596	0.0000	2.7596	0.6292	15.5493	0.4139	0.0138	0.1070
May	3.0066	0.0000	3.0066	0.6855	15.5493	0.4510	0.0150	0.0404
June	2.9807	0.0000	2.9807	0.6796	15.5493	0.4471	0.0149	0.0400
Shadiwal: (Installed Capacity: 14 MW) (Variable Energy Rate-Rs./kWh: 0.234) (Capacity Rate-Rs./kWh: 993.012) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	1.8359	0.0000	1.8359	0.4296	13.4057	0.2754	0.0092	0.0730
August	1.8298	0.0010	1.8288	0.4279	13.4057	0.2743	0.0091	0.0728
September	2.3770	0.0000	2.3770	0.5562	13.4057	0.3566	0.0119	0.0946
October	3.0849	0.0000	3.0849	0.7219	13.4057	0.4627	0.0154	0.1227
November	3.4497	0.0000	3.4497	0.8072	13.4057	0.5175	0.0172	0.1372
December	3.8732	0.0000	3.8732	0.9063	13.4057	0.5810	0.0194	0.1541
January	1.1280	0.0280	1.1000	0.2574	13.4057	0.1650	0.0055	0.0438
February	1.2340	0.0190	1.2150	0.2843	13.4057	0.1823	0.0061	0.0483
March	3.8711	0.0000	3.8711	0.9058	13.4057	0.5807	0.0194	0.1540
April	3.2951	0.0000	3.2951	0.7711	13.4057	0.4943	0.0165	0.1311
May	3.3800	0.0000	3.3800	0.7909	13.4057	0.5070	0.0169	0.1310
June	2.6799	0.0000	2.6799	0.6271	13.4057	0.4020	0.0134	0.1039
Chichoki: (Installed Capacity: 13 MW) (Variable Energy Rate-Rs./kWh: 0.207) (Capacity Rate-Rs./kWh: 926.84) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	3.4123	0.5950	2.8173	0.5832	12.2343	0.4226	0.0141	0.0991
August	3.7485	0.2300	3.5185	0.7283	12.2343	0.5278	0.0176	0.1238
September	3.5372	0.3350	3.2022	0.6629	12.2343	0.4803	0.0160	0.1127
October	4.0311	0.0200	4.0111	0.8303	12.2343	0.6017	0.0201	0.1412
November	2.3720	0.3700	2.0020	0.4144	12.2343	0.3003	0.0100	0.0704
December	2.0733	0.8610	1.2123	0.2509	12.2343	0.1818	0.0061	0.0427
January	1.6870	1.7510	-0.0640	-0.0133	12.2343	-0.0096	-0.0003	-0.0023
February	1.7048	0.9520	0.7528	0.1558	12.2343	0.1129	0.0038	0.0265
March	2.4272	0.2830	2.1442	0.4439	12.2343	0.3216	0.0107	0.0755
April	2.8327	0.1520	2.6807	0.5549	12.2343	0.4021	0.0134	0.0943
May	2.8861	0.2420	2.6441	0.5473	12.2343	0.3966	0.0132	0.1052
June	3.3007	0.8410	2.4597	0.5092	12.2343	0.3690	0.0123	0.0978
Renala Khurd: (Installed Capacity: 1 MW) (Variable Energy Rate-Rs./kWh: 0.676) (Capacity Rate-Rs./kWh: 3,303.75) (Water Use/NHP Rate-Rs./kWh: 1.155) (IRSA Rate-Rs./kWh: 0.005)								
July	0.2835	0.0000	0.2835	0.1916	3.6341	0.0425	0.0014	0.0326
August	0.2914	0.0000	0.2914	0.1970	3.6341	0.0437	0.0015	0.0335
September	0.1708	0.0000	0.1708	0.1155	3.6341	0.0256	0.0009	0.0196
October	0.1254	0.0000	0.1254	0.0847	3.6341	0.0188	0.0006	0.0144
November	0.1311	0.0000	0.1311	0.0886	3.6341	0.0197	0.0007	0.0151
December	0.1230	0.0025	0.1205	0.0815	3.6341	0.0181	0.0006	0.0139
January	0.0223	0.0288	-0.0065	-0.0044	3.6341	-0.0010	0.0000	-0.0008
February	0.1137	0.0004	0.1133	0.0766	3.6341	0.0170	0.0006	0.0130
March	0.1329	0.0000	0.1329	0.0898	3.6341	0.0199	0.0007	0.0153
April	0.2028	0.0000	0.2028	0.1371	3.6341	0.0304	0.0010	0.0233
May	0.2258	0.0000	0.2258	0.1526	3.6341	0.0339	0.0011	0.0079
June	0.1665	0.0000	0.1665	0.1125	3.6341	0.0250	0.0008	0.0059

Source: WAPDA

TABLE 17

Thermal Electricity Generation by Sector and by Fuel (GWh)

			2016-17	2017-18*	2018-19*	2019-20*	2020-21*
Thermal Generation by:							
GENCOs (I, II, III and IV)			18,709.90	16,199.10	13,016.99	7,907.85	6,802.93
KE Own Power Plants			10,147.00	10,337.75	10,727.68	9,629.00	10,186.00
IPPs: CPPA-G System			47,972.10	62,436.23	62,597.73	60,720.31	68,708.63
IPPs: KE System			1,531.00	1,819.04	2,118.31	1,863.60	2,184.57
Others (SPPs/CPPs/N-CPPs): CPPA-G System			271.40	665.53	405.13	170.99	168.58
Others (SPPs/CPPs/N-CPPs): KE System			187.00	550.49	523.74	534.30	579.02
Total Thermal Generation			**78,818.40**	**92,008.13**	**89,389.58**	**80,826.05**	**88,629.72**
Thermal Generation using:							
Gas	CPPA-G System**	Generation on Gas (GWh)	31,520.14	23,291.97	22,439.40	15,236.30	14,448.21
		Share of Gas Generation (%)	39.99	25.32	25.10	18.85	16.30
	KE System‡	Generation on Gas (GWh)	6,768.50	6,369.15	5,557.74	5,087.56	3,420.59
		Share of Gas Generation (%)	8.59	6.92	6.22	6.29	3.86
	Total	**Generation on Gas (GWh)**	**38,288.64**	**29,661.12**	**27,997.14**	**20,323.86**	**17,868.80**
		Share of Gas Generation (%)	**48.58**	**32.24**	**31.32**	**25.15**	**20.16**
RLNG	CPPA-G System	Generation on RLNG (GWh)	657.88	20,678.32	28,148.92	23,830.59	26,983.81
		Share of RLNG Generation (%)	0.83	22.47	31.49	29.48	30.45
	KE System	Generation on RLNG (GWh)	0.00	496.34	2,664.40	2,795.00	4,778.00
		Share of RLNG Generation (%)	0.00	0.54	2.98	3.46	5.39
	Total	**Generation on RLNG (GWh)**	**657.88**	**21,174.66**	**30,813.32**	**26,625.59**	**31,761.81**
		Share of RLNG Generation (%)	**0.83**	**23.01**	**34.47**	**32.94**	**35.84**
RFO	CPPA-G System	Generation on RFO (GWh)	32,073.70	22,755.88	9,091.79	4,178.25	6,331.06
		Share of RFO Generation (%)	40.69	24.73	10.17	5.17	7.14
	KE System‡‡	Generation on RFO (GWh)	5,034.50	5,403.30	4,734.08	3,730.43	4,265.00
		Share of RFO Generation (%)	6.39	5.87	5.30	4.62	4.81
	Total	**Generation on RFO (GWh)**	**37,108.20**	**28,159.18**	**13,825.87**	**7,908.68**	**10,596.06**
		Share of RFO Generation (%)	**47.08**	**30.61**	**15.47**	**9.78**	**11.96**
HSD	CPPA-G System	Generation on HSD (GWh)	1,704.54	788.18	27.74	0.67	369.25
		Share of HSD Generation (%)	2.16	0.86	0.03	0.00	0.42
	KE System	Generation on HSD (GWh)	0.00	0.00	0.00	0.00	33.00
		Share of HSD Generation (%)	0.00	0.00	0.00	0.00	0.04
	Total	**Generation on HSD (GWh)**	**1,704.54**	**788.18**	**27.74**	**0.67**	**402.25**
		Share of HSD Generation (%)	**2.16**	**0.86**	**0.03**	**0.00**	**0.45**
Coal	CPPA-G System	Generation on Coal (GWh)	997.14	11,786.50	16,312.01	25,553.34	27,547.78
		Share of Coal Generation (%)	1.27	12.81	18.25	31.62	31.08
	KE System	Generation on Coal (GWh)	62.00	438.49	413.51	412.91	453.00
		Share of Coal Generation (%)	5.85	3.59	2.47	1.59	1.62
	Total	**Generation on Coal (GWh)**	**1,059.14**	**12,224.99**	**16,725.52**	**25,966.25**	**28,000.78**
		Share of Coal Generation (%)	**1.34**	**13.29**	**18.71**	**32.13**	**31.59**
Total Thermal Generation			**78,818.40**	**92,008.13**	**89,389.59**	**80,825.06**	**88,629.71**

** 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)											
2016-17	1,141.37	14,085.16	12.34	2,112.19	619.53	0.29				975.00	31,727.31
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
TPS Muzaffargarh (GENCO-III)											
2016-17	0.00	11.00	0.00	5,160.13	1,552.16	0.27				1,108.43	59,029.58
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

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)								
2016-17	214.62	2,718.97	12.04				772.21	1,371.20
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

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)								
2016-17	62.25	971.18	13.77	45.43	15.55	0.30	1,266.80	1,279.21
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
TPS Nandipur (GENCO-III)								
2016-17	550.59	4,822.60	8.47	828.37	181.92	0.21	831.00	11,919.62
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	9,620.00	14,813.81

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)	2016-17	338.67	4,203.28	12.41	730.00	2,473.40
	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
TPS Guddu (Units 1-4) (GENCO-II)	2016-17	227.08	3,395.32	14.95	837.55	1,901.92
	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
TPS Guddu (Units 5-10) (GENCO-II)	2016-17	2,487.81	29,803.46	11.98	536.72	13,352.60
	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
TPS Guddu (Units 11-13) (GENCO-II)	2016-17	820.54	11,919.67	14.53	716.82	5,881.82
	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
TPS Guddu (Units 14-16) (GENCO-II)	2016-17	4,543.55	40,375.55	17.53	446.01	20,264.78
	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
TPS Quetta (Isolated Generation) (GENCO-II)	2016-17	53.32	934.52	17.53	1,162.89	620.09
	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

Power Station Power Station	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)	2016-17	123.97	123.90	0.99	1,359.21	500.54
	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

*Note: Net Electricity Generation during FY 2017-18, 2018-19, 2019-20 and 2020-21. * TPS Nandipur Electricity Generation on RLNG.*
*** 150 MW Lakhra Power Plant is under shutdown mode from July, 2017 for want of Major Rehabilitation of which PC-II, for Feasibility Study is under consideration at GOP level, and also the Concept Clearance Paper for installation of a new 330 MW Power Plant is under process of approval.*
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)	2016-17	356.17	9.87	690	83.22	48.48	58.04	82.24
	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
GTPS Kotri (GENCO-I)	2016-17	13.63	3.87	105	38.30	27.93	33.51	92.00
	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
TPS Guddu (Units 1-4) (GENCO-II)	2016-17	16.06	7.07	150	17.28	60.61	12.34	43.08
	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	n.p.
	2020-21	0.00	0.00	0	0.00	0.00	0.00	n.p.
TPS Guddu (Units 5-10) (GENCO-II)	2016-17	55.41	2.23	608	46.71	100.00	47.33	74.32
	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
TPS Guddu (Units 11-13) (GENCO-II)	2016-17	4.41	0.54	272	34.44	65.54	36.03	64.80
	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	21.42
TPS Guddu (Units 14-16) (GENCO-II)	2016-17	103.93	2.29	765	67.80	100.00	69.43	86.51
	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
TPS Quetta (Isolated Generation) (GENCO-II)	2016-17	0.99	1.85	22	27.67	88.00	24.35	98.34
	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
TPS Muzaffargarh (GENCO-III)	2016-17	540.74	9.49	1,100	59.16	81.48	48.21	85.88
	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	0.43	700	5.11	51.85	3.02	77.48
SPS Faisalabad (GENCO-III)	2016-17	14.77	12.10	45	30.97	34.09	14.52	43.77
	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
GTPS Faisalabad (GENCO-III)	2016-17	13.10	5.80	160	16.11	65.57	12.27	96.00
	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	1.62	96.25
TPS Nandipur (GENCO-III)	2016-17	55.56	3.87	457	35.82	107.53	38.52	52.39
	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
FBC Lakhra (GENCO-IV)	2016-17	35.90	28.96	34	41.63	54.49	22.68	n.p.
	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	n.p.
	2020-21	0.00	0.00	0	0.00	0.00	0.00	n.p.

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)	2016-17	10,823.00	12,008.00	31.53	28.42
	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
GTPS Kotri (GENCO-I)	2016-17	12,124.00	12,612.00	28.15	27.06
	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
TPS Guddu (Units 1-4) (GENCO-II)	2016-17	12,357.00	13,297.00	27.62	25.67
	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
TPS Guddu (Units 5-10) (GENCO-II)	2016-17	9,262.00	9,473.00	36.85	36.03
	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	32.01
TPS Guddu (Units 11-13) (GENCO-II)	2016-17	11,281.00	11,342.00	30.25	30.09
	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	22.51	22.26
TPS Guddu (Units 14-16) (GENCO-II)	2016-17	6,848.00	7,008.00	49.84	48.70
	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
TPS Quetta (Isolated Generation) (GENCO-II)	2016-17	16,792.00	17,109.00	20.32	19.95
	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
TPS Muzaffargarh (GENCO-III)	2016-17	10,378.41	11,465.99	32.88	29.76
	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	10,181.59	10,496.14	33.52	32.51
SPS Faisalabad (GENCO-III)	2016-17	12,574.45	14,305.59	27.14	23.86
	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
GTPS Faisalabad (GENCO-III)	2016-17	11,320.61	12,018.19	30.15	28.40
	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	12,755.00	14,105.00	26.76	21.01
TPS Nandipur (GENCO-III)	2016-17	8,280.00	8,614.00	41.22	39.62
	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	7,060.00	7,334.00	48.34	46.53
FBC Lakhra (GENCO-IV)	2016-17	13,219.06	18,609.02	25.82	18.34
	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

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	2016-17	1,601.09	364.37	8.42	10.98
	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.
Pak Gen. Power	2016-17	1,727.18	394.61	8.33	10.72
	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.
Hub Power	2016-17	6,793.11	1,635.36	8.77	10.99
	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	112.91	47.59	17.32	19.50
Saba Power	2016-17	510.46	123.88	10.63	11.85
	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			
Kohinoor Energy	2016-17	816.83	153.15	7.70	9.09
	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
Attock Gen.	2016-17	1,135.41	209.54	6.92	10.95
	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
Atlas Power	2016-17	1,336.90	262.56	n.p.	n.p.
	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.
Nishat Power	2016-17	1,239.76	243.87	7.55	7.55
	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
Nishat Chunian	2016-17	1,350.33	265.61	8.71	9.76
	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
Liberty Power Tech.	2016-17	1,369.33	255.20	n.p.	n.p.
	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.
Narowal Energy	2016-17	1,334.18	262.33	7.96	12.78
	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

(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	2016-17	198.30	1868543	5.91	6.99
	2017-18	145.12	n.p.	n.p.	n.p.
	2018-19	22.03			
	2019-20	3.73	36259	14.30	57.28
	2020-21	12.40	126054	10.66	23.37
Fauji Kabirwala	2016-17	1,122.84	709502	8.34	9.09
	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
Habibullah Coastal	2016-17	785.90	6533436	n.p.	n.p.
	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	0.00			
Rousch Power	2016-17	2,459.69	19781549	7.61	9.53
	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
TNB Liberty Power	2016-17	1,430.23	11611024	4.79	5.81
	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
Engro Power Gen. Qadirpur	2016-17	1,731.00	13923051	5.04	10.66
	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
Davis Energen.	2016-17	61.05	516629	8.04	9.11
	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)			

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)										
2016-17	2,571.00	22502701	21,906.00	4,713.00	918	240.00	68653	3,813.00	8.46	9.23
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

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	2016-17	--	--	--	394.07	83161	4,933.68	595.64	4414191	4,149.17	9.18	9.49
	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
Saif Power	2016-17	370.65	2828966	2,010.49	405.81	88445	5,407.48	128.98	976898	1,352.97	11.82	13.13
	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
Orient Power	2016-17	294.00	2112945	1,519.00	376.11	84061	5,025.00	275.00	2253308	3,102.00	10.21	11.62
	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	5,670.00	540.74	4334139	1,618.00	11.69	14.58
Foundation Power	2016-17	1,382.65	9830259	--	0.20	88	--	--	--	--	4.69	7.25
	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.
Halmore Power	2016-17	273.81	2172844	1,716.56	278.64	62444	3,731.25	--	--	--	13.80	5.53
	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
Uch Power	2016-17	4,404.46	33657865	14,839.00	1.98	--	--	--	--	--	--	4.04
	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	--	--	--	--	--	--	
Uch-II Power	2016-17	2,724.06	20340852	12,926.00	7.28	--	--	--	--	--	3.88	5.22
	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	--	--	--	--	--	--	--

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

** 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	2016-17	107.17	6.69	350	63.27	49.40	n.p.	86.59
	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
Pak Gen. Power	2016-17	111.56	6.46	350	63.92	53.43	n.p.	87.52
	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
Altern Energy	2016-17	10.46	5.27	30	95.30	96.70	94.70	n.p.
	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.
Fauji Kabirwala	2016-17	29.72	2.65	155	94.30	83.80	89.71	94.07
	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
Habibullah Coastal	2016-17	19.69	2.51	125	82.19	79.41	84.51	98.28
	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
Hub Power	2016-17	484.77	6.66	1,200	64.45	64.45	81.81	n.p.
	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.
KAPCO	2016-17	189.00	2.50	1,520	62.40	84.30	74.00	84.30
	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
Kohinoor Energy	2016-17	24.68	3.02	124	92.60	72.93	78.10	92.27
	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
Rousch Power	2016-17	46.93	1.91	451	83.75	88.86	94.25	82.00
	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
Saba Power	2016-17	34.39	6.74	134	48.30	43.29	43.29	89.61
	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							87.43
TNB Liberty Power	2016-17	25.15	1.72	224	79.48	76.76	93.32	84.27
	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
Uch Power	2016-17	70.57	1.57	548	91.77	93.26	97.30	94.54
	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

Power Station	Year	Auxiliary Consumption		Maximum Load (MW)	Load Factor (%)	Capacity Factor (%)	Utilization Factor (%)	Availability Factor (%)
		(GWh)	(%)					
Attock Gen.	2016-17	31.98	2.74	158	82.06	82.99	99.85	92.31
	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
Atlas Power	2016-17	51.06	3.82	214	71.36	71.36	77.76	n.p.
	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.
Engro Power Gen. Qadirpur	2016-17	47.00	3.00	220	96.00	96.00	100.00	95.00
	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
Saif Power	2016-17	28.95	3.10	220	52.45	48.87	50.36	94.28
	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
Orient Power	2016-17	26.79	2.84	221	48.69	50.70	63.92	94.00
	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
Nishat Power	2016-17	35.57	2.79	195	80.51	70.76	80.51	89.98
	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
Nishat Chunian	2016-17	34.46	2.55	196	95.70	76.60	80.20	92.99
	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
Sapphire Electric Power	2016-17	29.61	2.99	228	55.02	51.00	53.51	95.54
	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
Halmore Power	2016-17	20.43	3.57	213	39.05	33.06	37.11	73.89
	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
Narowal Energy	2016-17	25.70	1.93	216	71.23	71.15	79.21	n.p.
	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.
Liberty Power Tech.	2016-17	29.60	2.16	196	98.64	77.97	80.80	96.22
	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
Foundation Power	2016-17	36.10	2.46	195	85.97	89.38	88.11	85.97
	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
Davis Energen.	2016-17	1.64	2.68	11	76.50	51.24	67.00	86.80
	2017-18	0.54	6.00	8	15.10	11.30	59.30	n.p.

Power Station	Year	Auxiliary Consumption		Maximum Load (MW)	Load Factor (%)	Capacity Factor (%)	Utilization Factor (%)	Availability Factor (%)
		(GWh)	(%)					
Uch-II Power	2016-17	63.62	2.27	375	83.04	84.62	87.46	95.37
	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
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		96.00
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
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
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
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
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
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	n.p.	90.00	81.40

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	2016-17	8,760.34	9,388.78	38.95	36.35
	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
Pak Gen. Power	2016-17	8,794.96	9,402.24	38.80	36.29
	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
Altern Energy	2016-17	9,422.80	9,947.30	36.20	34.30
	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
Fauji Kabirwala	2016-17	7,613.45	7,821.97	44.82	43.62
	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
Habibullah Coastal	2016-17	8,039.25	8,410.80	42.47	40.59
	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				
Hub Power	2016-17	8,466.82	9,053.14	40.30	37.69
	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

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
KAPCO	2016-17	8,028.00	8,236.00	44.80	43.70
	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
Kohinoor Energy	2016-17	7,745.53	7,986.85	44.05	42.72
	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
Rousch Power	2016-17	7,109.65	7,245.30	48.04	47.14
	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
Saba Power	2016-17	9,737.00	10,441.00	35.04	32.68
	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	n.p.	n.p.	n.p.	n.p.
TNB Liberty Power	2016-17	7,956.73	8,118.30	42.88	42.03
	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
Uch Power	2016-17	6,754.82	6,891.14	50.51	49.51
	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
Attock Gen.	2016-17	7,368.00	7,582.00	46.32	45.00
	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
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
Engro Power Gen. Qadirpur	2016-17	7,260.00	7,625.00	47.00	45.00
	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
Nishat Power	2016-17	7,371.00	7,582.00	46.26	45.00
	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
Nishat Chunian	2016-17	n.p.	7,582.00	n.p.	45.00
	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
Narowal Energy	2016-17	7,344.00	7,584.00	46.46	45.00
	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
Liberty Power Tech.	2016-17	7,417.70	7,582.54	46.00	45.00
	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
Foundation Power	2016-17	6,819.95	7,011.71	49.92	48.66
	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

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
Davis Energen.	2016-17	8,462.10	9,210.95	25.30	25.00
	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)			
Uch-II Power	2016-17	6,554.25	6,739.34	52.06	50.63
	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				
Huaneng Shandong Ruyi	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.
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
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
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
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
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

Source: IPPs

TABLE 24
Monthly Source-wise Power Sent Out and Fuel Cost (2020-21)

			July	August	September	October	November	December	January	February	March	April	May	June
Hydel	Generation	GWh	5406.99	5469.55	4871.96	3174.15	2990.35	1788.83	1067.04	2033.93	1740.58	2572.58	3465.46	4222.15
		%	36.76	37.39	37.18	30.99	39.98	22.70	13.21	27.93	19.42	24.55	26.64	29.40
	Fuel Cost	Mln. Rs.	-	-	-	-	-	-	-	-	-	-	-	-
		Rs./kWh	-	-	-	-	-	-	-	-	-	-	-	-
Coal	Generation	GWh	2581.16	2530.30	2282.85	1915.58	1095.43	2296.89	2559.56	1902.98	2734.39	2439.88	2618.97	2589.79
		%	17.55	17.30	17.42	18.70	14.65	29.15	31.68	26.14	30.50	23.28	20.13	18.03
	Fuel Cost	Mln. Rs.	16271.36	15262.10	13101.03	11128.50	6479.37	14565.04	16554.96	13438.99	19816.86	19441.18	20421.24	21035.99
		Rs./kWh	6.30	6.03	5.74	5.81	5.91	6.34	6.47	7.06	7.25	7.97	7.80	8.12
HSD	Generation	GWh	113.09	97.76	71.70	6.60	-	-	46.20	-	-	-	20.32	61.35
		%	0.77	0.67	0.55	0.06	-	-	0.57	-	-	-	0.16	0.43
	Fuel Cost	Mln. Rs.	2090.34	1899.55	1343.32	131.01	-	-	872.94	-	-	-	440.71	1243.30
		Rs./kWh	-	-	-	-	-	-	18.89	-	-	-	-	-
RFO	Generation	GWh	859.81	792.38	762.42	154.47	27.77	293.92	974.03	77.31	235.12	147.85	771.49	1174.20
		%	5.84	5.42	5.82	1.51	0.37	3.73	12.06	1.06	2.62	1.41	5.93	8.18
	Fuel Cost	Mln. Rs.	11781.69	3039.30	7410.57	1017.61	324.43	2944.34	11994.66	813.22	2666.52	1616.84	10707.51	16721.35
		Rs./kWh	13.70	3.84	9.72	6.59	-	10.02	12.31	10.52	11.34	10.94	13.88	14.24
Gas	Generation	GWh	1478.55	1402.45	1324.13	1145.33	437.04	1239.59	1333.80	906.37	1036.22	1277.92	1454.39	1303.84
		%	10.05	9.59	10.10	11.18	5.84	15.73	16.51	12.45	11.56	12.19	11.18	9.08
	Fuel Cost	Mln. Rs.	10375.31	9867.29	8588.71	7674.80	3493.28	9402.25	10162.37	6993.20	7926.01	9533.16	11417.91	10582.13
		Rs./kWh	7.02	7.04	6.49	6.70	7.99	7.58	7.62	7.72	7.65	7.46	7.85	8.12
RLNG	Generation	GWh	3032.69	3058.02	2804.56	2851.04	1913.99	1094.10	916.42	1271.04	1892.77	2571.55	2828.55	2701.34
		%	20.62	20.90	21.40	27.83	25.59	13.88	11.34	17.46	21.11	24.54	21.74	18.81
	Fuel Cost	Mln. Rs.	20714.66	21481.26	19035.66	18682.56	12446.69	8294.19	7623.15	11216.45	17111.59	25327.03	28411.43	28503.26
		Rs./kWh	6.83	7.02	6.79	6.55	6.50	7.58	8.32	8.82	9.04	9.85	10.04	10.55
Nuclear	Generation	GWh	715.53	817.03	677.89	714.56	663.30	741.46	852.69	791.91	940.16	1067.09	1271.35	1618.06
		%	4.86	5.58	5.17	6.98	8.87	9.41	10.55	10.88	10.49	10.18	9.77	11.27
	Fuel Cost	Mln. Rs.	688.13	817.99	688.94	726.05	677.98	752.73	859.07	797.54	964.68	1179.37	1277.54	1618.16
		Rs./kWh	0.96	1.00	1.02	1.02	1.02	1.02	1.01	1.01	1.03	1.11	1.00	1.00
Import Iran	Generation	GWh	50.25	52.09	46.66	40.56	33.45	33.23	31.65	29.65	38.70	44.84	47.39	49.91
		%	0.34	0.36	0.36	0.40	0.45	0.42	0.39	0.41	0.43	0.43	0.36	0.35
	Fuel Cost	Mln. Rs.	581.46	532.21	473.63	398.29	326.38	325.95	310.41	287.48	362.62	421.92	527.32	567.55
		Rs./kWh	11.57	10.22	10.15	9.82	9.76	9.81	9.81	9.70	9.37	9.41	11.13	11.37
Mixed	Generation	GWh	30.03	20.26	11.90	23.82	26.13	20.01	1.06	13.37	20.88	22.74	16.39	10.21
		%	0.20	0.14	0.09	0.23	0.35	0.25	0.01	0.18	0.23	0.22	0.13	0.07
	Fuel Cost	Mln. Rs.	197.42	99.86	57.04	129.36	149.32	99.85	5.37	62.65	108.14	122.57	76.14	45.58
		Rs./kWh	6.57	4.93	4.79	5.43	5.71	4.99	5.05	4.69	5.18	5.39	4.65	4.46
Wind Power	Generation	GWh	344.46	310.13	175.09	134.08	184.92	219.72	152.57	98.11	169.52	197.30	403.21	510.76
		%	2.34	2.12	1.34	1.31	2.47	2.79	1.89	1.35	1.89	1.88	3.10	3.56
	Fuel Cost	Mln. Rs.	-	-	-	-	-	-	-	-	-	-	-	-
		Rs./kWh	-	-	-	-	-	-	-	-	-	-	-	-
Solar Power	Generation	GWh	63.23	60.04	61.75	60.64	47.02	49.95	47.92	57.06	66.37	68.03	66.54	63.09
		%	0.43	0.41	0.47	0.59	0.63	0.63	0.59	0.78	0.74	0.65	0.51	0.44
	Fuel Cost	Mln. Rs.	-	-	-	-	-	-	-	-	-	-	-	-
		Rs./kWh	-	-	-	-	-	-	-	-	-	-	-	-
Bagasse	Generation	GWh	34.96	20.04	12.89	22.14	59.99	102.17	95.89	99.27	90.08	71.18	45.45	56.48
		%	0.24	0.14	0.10	0.22	0.80	1.30	1.19	1.36	1.00	0.68	0.35	0.39
	Fuel Cost	Mln. Rs.	209.16	119.88	77.09	132.42	358.89	611.21	573.63	593.88	538.89	425.82	271.91	337.90
		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**	**14710.76**	**14630.06**	**13103.80**	**10242.98**	**7479.40**	**7879.86**	**8078.82**	**7281.01**	**8964.80**	**10480.97**	**13009.51**	**14361.17**
		%	**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.**	**62909.53**	**53119.44**	**50775.99**	**40020.61**	**24256.32**	**36995.57**	**48956.55**	**34203.41**	**49495.31**	**58067.90**	**73551.72**	**80655.23**
		Rs./kWh	**4.28**	**3.63**	**3.87**	**3.91**	**3.24**	**4.69**	**6.06**	**4.70**	**5.52**	**5.54**	**5.65**	**5.62**

Note: As per data provided by 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)	2016-17	4,329.00	412.00	9.52	3,917.00
		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
1.2	Bin Qasim Thermal Power Station-II (BQTPS-II)	2016-17	3,921.00	243.00	6.20	3,678.00
		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
1.3	Korangi Town Gas Turbine Power Station-II (KTGTPS-II)	2016-17	389.00	14.00	3.60	375.00
		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
1.4	Site Gas Turbine Power Station-II (SGTPS-II)	2016-17	384.00	13.00	3.39	371.00
		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
1.5	Korangi Combined Cycle Power Plant	2016-17	1,124.00	91.00	8.10	1,033.00
		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
1.6	Total Units Generated from KE's Own Power Plants	2016-17	10,147.00	773.00	7.62	9,374.00
		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
2	**Units Purchased by KE (GWh)**					
		2016-17	**2017-18**	**2018-19**	**2019-20**	**2020-21**
2.1	KANUPP	410.00	330.86	129.99	193.00	219.00
2.2	Gul Ahmed	788.00	712.71	675.54	496.00	673.00
2.3	Tapal Energy	743.00	752.38	645.02	627.00	737.00
2.4	NTDC (Mixed Generation)	5,077.00	5,128.20	4,936.71	5,003.14	5,764.40
2.6	Anoud Power	55.00	43.73	51.58	59.52	12.00
2.7	International Steel Limited	57.00	56.00	46.00	51.21	43.00
2.8	International Industries Limited	13.00	12.00	12.65	10.66	10.00
2.9	FFBL Power	62.00	438.49	413.51	413.00	452.88
2.10	SNPCL-I	0.00	176.71	403.06	371.86	394.35
2.11	SNPCL-II	0.00	177.24	394.69	367.83	380.22
2.12	Oursun Pakistan	0.00	0.00	57.00	88.28	90.87
2.13	NTDC - 150 MW (Wind)	0.00	0.00	20.00	423.00	353.64
2.14	Gharo Solar	0.00	0.00	0.00	65.00	108.69
2.15	Lotte Chemicals	--	--	--	--	61.00
2.16	Lucky Cement	--	--	--	--	0.02
2.17	**Total**	**7,205.00**	**7,828.32**	**7,785.75**	**8,169.50**	**9,300.07**
3	**Total Units Purchased by KE including Own Generation (GWh)**	**17,352.00**	**18,166.07**	**18,513.42**	**18,527.50**	**20,238.07**
4	**Units Available for Distribution (GWh)**	**16,579.00**	**17,385.31**	**17,714.66**	**17,798.40**	**19,485.67**
5	**Units Sold (GWh)**	**12,981.00**	**13,860.32**	**14,318.11**	**14,276.96**	**16,068.85**
6	**T&D Losses (excluding Auxiliary Consumption)** — **GWh**	**3,598.00**	**3,524.99**	**3,396.55**	**3,521.44**	**3,416.82**
	T&D Losses (excluding Auxiliary Consumption) — **%**	**21.70**	**20.28**	**19.17**	**19.79**	**17.54**
7	**Average Fuel Price**					
7.1	Gas (Rs./MMBtu)	511.00*	400.00*	559.00*	824.00*	846.00*
7.2	RLNG (Rs./MMBtu)	--	1,401.30	1,605.70	1,561.00	1,358.00
7.3	Furnace Oil (Rs./M. Ton.)	35,067.00	45,591.00	69,641.62	62,130.00	60,285.00
7.4	HSD (Rs./Liters)	0.00	0.00	0.00	0.00	98.00
8	**Cost of Fuel in KE Own System**					
8.1	Cost of Fuel (Rs. in Million)	61,466.00	71,870.00	120,614.57	116,186.00	126,409.00
8.2	Cost of Fuel (Paisa/kWh)**	656.00	752.00	1,214.88	1,207.00*	1,241.00*

** 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)

(Gas+RFO+RLNG based Power Plant)									
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)	
Bin Qasim TPS-I									
2016-17	880.50	8,867.00	10.07	3,448.50	913.00				9.43
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

(Gas+RLNG based Power Plant)								
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	2016-17	3,921.00	30,153.00	7.69				4.38
	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
Korangi Town GTPS-II	2016-17	389.00	3,631.00	9.33				5.01
	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
Site GTPS-II	2016-17	384.00	3,517.00	9.16				4.97
	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
Korangi CCPP	2016-17	1,124.00	8,848.00	7.87				4.55
	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	565.00 +33.00 (Gen. on HSD)	4,677.00	8.28	10.08

** 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	2016-17	788.00	186	7.86	10.38
	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
Tapal Energy	2016-17	743.00	165	7.57	8.91
	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

(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	2017-18	176.71	1412024	3.91	4.61
	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
Sindh Nooriabad-II	2017-18	177.24	1426212	3.91	4.61
	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

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	2016-17	412.00	9.52	960	51.00	64.00	76.00	76.18
	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
Bin Qasim TPS-II	2016-17	243.00	6.20	563	82.00	94.00	98.00	92.27
	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
Korangi Town GTPS-II	2016-17	14.00	3.60	97	48.00	50.00	91.00	88.64
	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
Site GTPS-II	2016-17	13.00	3.39	97	57.00	49.00	91.00	93.82
	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
Korangi CCPP	2016-17	91.00	8.10	233	64.00	69.00	94.00	80.67
	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
Gul Ahmed Energy	2016-17	22.92	1.99	128	97.06	70.89	88.71	n.p.
	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	n.p.
Tapal Energy	2016-17	12.37	1.64	124	69.84	70.02	66.94	94.70
	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
Sindh Nooriabad-I	2017-18	2.88	1.60	51	91.64	88.85	100.00	n.p.
	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
Sindh Nooriabad-II	2017-18	2.89	1.60	51	91.92	91.92	100.00	n.p.
	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

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	2016-17	10,675.00	11,799.00	31.96	28.92
	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
Bin Qasim TPS-II	2016-17	8,130.00	8,668.00	41.97	39.37
	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
Korangi Town GTPS-II	2016-17	9,301.00	9,638.00	36.69	35.40
	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
Site GTPS-II	2016-17	9,370.00	9,701.00	36.42	35.17
	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
Korangi CCPP	2016-17	8,108.00	8,821.00	42.08	38.68
	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
Gul Ahmed Energy	2016-17	9,289.62	9,606.68	36.72	35.51
	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
Tapal Energy	2016-17	8,802.15	8,948.70	38.76	38.13
	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
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
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

Source: KE/IPPs

TABLE 29

K-Electric (Source-wise Own Generation and Fuel Cost Adjustments) (2020-21)

Description	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June
Fuel Cost - Gas (Rs./MMBTU)	824	824	857	857	857	857	857	857	857	857	857	857
Fuel Cost - FO (Rs./M.ton)	54694	53396	52627	52213	53711	54463	58864	63777	72507	75791	75710	72587
Fuel Cost - FO (Rs./MMBTU)	1355	1323	1304	1294	1331	1350	1459	1581	1797	1878	1876.29	1799
Fuel Cost - RLNG (Rs./MMBTU)	1118	1122	1112	1170	1183	1312	1362	1496	1461	1457	1534	1577
Fuel Cost - HSD (Rs./MMBTU)	--	--	--	--	--	--	--	--	--	2720	2712	2710
Bin Qasim Thermal Power Station - I												
Units Sent Out (Mln kWh)	633.18	523.55	583.47	449.07	170.37	118.44	253.67	247.24	339.94	440.38	439.80	504.72
Fuel Cost (Rs./kWh)	12.55	12.62	12.70	12.83	12.51	14.04	15.13	16.41	18.06	16.03	15.05	17.65
Fuel Cost (Mln Rs.)	7943.33	6607.61	7408.05	5763.65	2131.84	1663.28	3838.58	4058.27	6140.57	7061.22	6617.10	8909.14
Bin Qasim Thermal Power Station - II												
Units Sent Out (GWh)	346.71	338.00	344.78	353.44	360.88	318.64	133.86	329.64	363.83	343.20	350.86	334.21
Fuel Cost (Rs./kWh)	8.08	7.81	7.88	8.83	8.70	11.00	11.41	12.54	10.95	10.82	11.38	11.87
Fuel Cost (Mln Rs.)	2801.88	2640.01	2716.42	3119.95	3139.92	3504.44	1527.59	4132.39	3982.61	3712.80	3992.91	3965.93
Korangi Town Gas Turbine Power Station - II												
Units Sent Out (GWh)	46.46	36.27	29.78	44.99	31.31	1.83	19.72	25.83	39.63	37.31	39.50	18.90
Fuel Cost (Rs./kWh)	8.43	8.14	8.24	9.21	9.15	11.47	11.90	0.00	11.42	11.28	11.86	12.26
Fuel Cost (Mln Rs.)	391.42	295.36	245.38	414.20	286.34	20.94	234.59	337.57	452.70	420.74	468.53	231.61
Site Gas Turbine Power Station - II												
Units Sent Out (GWh)	32.44	29.51	15.42	19.51	8.39	0.00	10.52	10.30	21.80	23.62	32.70	17.15
Fuel Cost (Rs./kWh)	8.44	8.16	8.28	9.21	9.19	13.00	11.91	13.08	11.52	11.28	11.87	12.27
Fuel Cost (Mln Rs.)	273.60	240.68	127.72	179.70	77.07	0.01	125.30	134.76	251.14	266.38	388.06	210.41
Korangi Combined Cycle Power Plant												
Units Sent Out (GWh)	126.85	109.48	81.81	114.59	87.43	22.52	29.95	23.80	77.86	86.57	96.21	85.51
Fuel Cost (Rs./kWh)	8.20	7.92	8.00	8.96	8.86	11.15	0.00	12.71	11.28	10.95	11.54	14.47
Fuel Cost (Mln Rs.)	1039.60	867.07	654.13	1026.21	774.20	251.11	346.55	302.47	878.19	948.07	1109.98	1237.18
Total												
Units Sent Out (GWh)	1185.63	1036.81	1055.24	981.60	658.38	461.42	447.72	636.81	843.05	931.07	959.08	960.49
Fuel Cost (Rs./kWh)	10.50	10.27	10.57	10.70	9.74	11.79	13.56	14.08	13.88	13.33	13.11	15.15
Fuel Cost (Mln Rs.)	12449.83	10650.72	11151.70	10503.71	6409.37	5439.78	6072.60	8965.46	11705.22	12409.21	12576.58	14554.26

Source: KE

TABLE 30

K-Electric (Source-wise Power Purchase and Fuel Costs) (2020-21)

		July	August	September	October	November	December	January	February	March	April	May	June
CPPA-G													
Generation	GWh	511.10	452.52	499.28	485.56	357.31	364.32	350.91	235.41	421.76	597.90	711.69	776.62
	%	61.89	58.16	58.97	61.81	62.39	58.92	59.45	49.57	58.12	66.77	68.69	68.32
Fuel Cost	Mil Rs.	2072.53	1834.97	1974.55	1966.76	1163.88	1186.70	2104.07	1566.26	2017.29	2859.77	4392.17	4792.92
	Rs./kWh	4.06	4.06	3.95	4.05	3.26	3.26	6.00	6.65	4.78	4.78	6.17	6.17
Gul Ahmed Energy Limited													
Generation	GWh	67.86	58.65	74.90	50.42	21.66	38.00	55.11	51.70	63.41	55.51	56.01	80.02
	%	8.22	7.54	8.85	6.42	3.78	6.15	9.34	10.88	8.74	6.20	5.41	7.04
Fuel Cost	Mil Rs.	834.92	741.30	964.30	644.59	278.14	489.24	679.90	685.68	952.48	809.27	913.49	1300.29
	Rs./kWh	12.30	12.64	12.88	12.78	12.84	12.88	12.34	13.26	15.02	14.58	16.31	16.25
Tapal Energy (Pvt.) Limited													
Generation	GWh	66.37	64.79	76.10	57.42	29.01	53.56	60.26	61.93	70.94	62.76	59.03	74.62
	%	8.04	8.33	8.99	7.31	5.06	8.6	10.21	13.04	9.78	7.01	5.70	6.56
Fuel Cost	Mil Rs.	796.20	809.18	965.62	728.81	368.20	662.33	741.51	826.90	1068.07	1006.87	948.11	1195.75
	Rs./kWh	12.00	12.49	12.69	12.69	12.69	12.37	12.30	13.35	15.06	16.04	16.06	16.02
KANUPP													
Generation	GWh	2.81	24.87	38.56	35.87	20.54	9.31	14.68	0.00	15.81	17.15	20.42	19.02
	%	0.34	3.20	4.55	4.57	3.59	1.51	2.49	0.00	2.18	1.91	1.97	1.67
Fuel Cost	Mil Rs.	30.96	266.84	427.93	375.57	204.57	112.67	205.50	0.00	221.83	277.56	271.08	297.30
	Rs./kWh	11.01	0.00	0.00	0.00	9.96	12.11	14.00	#DIV/0!	14.04	16.19	13.27	15.63
Anoud Power Generation Limited													
Generation	GWh	4.80	3.87	3.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	%	0.58	0.50	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fuel Cost	Mil Rs.	53.95	44.90	45.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Rs./kWh	11.25	11.60	11.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
International Industries Limited & International Steel Limited													
Generation	GWh	5.45	6.53	4.37	6.99	4.37	3.85	0.64	2.39	6.36	5.31	3.45	2.81
	%	0.66	0.84	0.52	0.89	0.76	0.62	0.11	0.50	0.88	0.59	0.33	0.25
Fuel Cost	Mil Rs.	54.55	65.61	46.52	74.50	46.62	41.04	6.85	25.46	67.74	56.60	36.83	30.00
	Rs./kWh	10.01	10.04	10.66	10.66	10.66	10.66	10.65	10.67	10.66	10.66	10.67	10.66
Sindh Nooriabad Power Company Limited (I & II)													
Generation	GWh	63.69	66.51	62.91	69.61	62.30	63.75	53.10	53.04	64.53	68.87	71.01	61.10
	%	7.71	8.55	7.43	8.86	10.88	10.31	9.00	11.17	8.89	7.69	6.85	5.37
Fuel Cost	Mil Rs.	469.15	437.15	429.55	475.83	425.40	434.14	360.83	360.92	441.12	467.39	485.46	417.68
	Rs./kWh	7.37	6.57	6.83	6.84	6.83	6.81	6.79	6.81	6.84	6.79	6.84	6.84
FFBL Power Company Limited													
Generation	GWh	40.39	40.34	38.72	40.30	36.41	40.11	20.47	36.67	40.61	39.30	40.72	39.28
	%	4.89	5.18	4.57	5.13	6.36	6.49	3.47	7.72	5.60	4.39	3.93	3.46
Fuel Cost	Mil Rs.	342.10	230.42	221.58	266.75	241.02	265.49	135.51	345.24	382.30	369.96	377.72	368.45
	Rs./kWh	8.47	5.71	5.72	6.62	6.62	6.62	6.62	9.41	9.41	9.41	9.28	9.38
Oursun Pakistan Limited													
Generation	GWh	7.29	5.73	7.40	7.89	6.94	7.44	7.43	7.33	8.82	8.68	8.52	7.41
	%	0.88	0.74	0.87	1.00	1.21	1.20	1.26	1.54	1.22	0.97	0.82	0.65
Fuel Cost	Mil Rs.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Rs./kWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		July	August	September	October	November	December	January	February	March	April	May	June
CPPA-G 150 MW													
Generation	GWh	45.83	42.55	27.63	16.55	22.59	24.51	13.53	13.00	18.77	21.55	47.02	60.11
	%	5.55	5.47	3.26	2.11	3.95	3.96	2.29	2.74	2.59	2.41	4.54	5.29
Fuel Cost	Mil Rs.	185.83	172.52	109.29	67.04	73.59	79.84	81.15	86.48	89.77	103.09	290.18	370.95
	Rs./kWh	4.06	4.06	3.95	4.05	3.26	3.26	6.00	6.65	4.78	4.78	6.17	6.17
Gharo Solar													
Generation	GWh	9.31	7.63	9.41	9.20	7.51	7.74	8.03	8.32	10.56	10.98	10.94	9.00
	%	1.13	0.98	1.11	1.17	1.31	1.25	1.36	1.75	1.46	1.23	1.06	0.79
Fuel Cost	Mil Rs.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Rs./kWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lotte Chemicals													
Generation	GWh	0.93	4.08	3.50	5.76	4.05	5.72	6.06	5.18	4.07	7.45	7.34	6.78
	%	0.11	0.52	0.41	0.73	0.71	0.92	1.03	1.09	0.56	0.83	0.71	0.60
Fuel Cost	Mil Rs.	10.35	45.50	38.68	67.03	47.57	74.64	82.08	77.05	59.08	109.26	111.89	106.27
	Rs./kWh	11.11	11.16	11.06	11.63	11.76	13.05	13.54	14.88	14.53	14.67	15.25	15.68
Total Generation													
Generation	GWh	825.83	778.06	846.62	785.56	572.69	618.29	590.22	474.96	725.62	895.45	1036.16	1136.78
	%	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	Mil Rs.	4850.52	4648.38	5223.65	4666.87	2848.98	3346.10	4397.40	3973.97	5299.68	6059.75	7826.95	8879.61
	Rs./kWh	5.87	5.97	6.17	5.94	4.97	5.41	7.45	8.37	7.30	6.77	7.55	7.81

Source: KE

TABLE 31

K-Electric (Fuel-wise Own Generation and Fuel Costs) (2020-21)

		July	August	September	October	November	December	January	February	March	April	May	June
Gas													
Generation	GWh	435.18	441.12	432.13	248.13	245.66	0.00	0.00	0.00	140.63	219.59	234.21	139.36
	%	36.70	42.55	40.95	25.28	37.31	0.00	0.00	0.00	16.68	23.33	24.42	14.82
Fuel Cost	Mil Rs.	3265.97	3245.52	3307.88	1874.86	1824.20	0.00	0.00	0.00	1041.13	1736.00	1867.87	1072.22
	Rs./kWh	7.50	7.36	7.65	7.56	7.43	0.00	0.00	0.00	7.40	7.91	7.98	7.69
RFO													
Generation	GWh	345.57	346.94	406.59	314.49	94.27	106.01	198.45	197.27	292.55	123.89	65.59	345.76
	%	29.15	33.46	38.53	32.04	14.32	22.98	44.32	30.98	34.70	13.16	6.84	36.76
Fuel Cost	Mil Rs.	5053.94	4914.34	5685.76	4306.85	1312.35	1493.37	3061.19	3289.71	5522.68	2449.22	1306.79	6620.879
	Rs./kWh	14.62	14.16	13.98	13.69	13.92	14.09	15.43	16.68	18.88	19.77	19.92	19.15
RLNG													
Generation	GWh	404.87	248.75	216.52	418.97	318.45	355.40	249.27	439.54	409.87	597.60	659.27	455.38
	%	34.15	23.99	20.52	42.68	48.37	77.02	55.68	69.02	48.62	63.50	68.74	48.42
Fuel Cost	Mil Rs.	4129.92	2490.87	2158.06	4322.00	3272.82	3946.41	3011.42	5675.75	5141.41	8224.09	9401.92	6861.164
	Rs./kWh	10.20	10.01	9.97	10.32	10.28	11.10	12.08	12.91	12.54	13.76	14.26	15.07
Total Generation													
Generation	GWh	1185.61	1036.81	1055.24	981.60	658.38	461.42	447.71	636.81	843.05	941.07	959.08	940.50
	%	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	Mil Rs.	12449.83	10650.72	11151.70	10503.71	6409.37	5439.78	6072.60	8965.46	11705.22	12409.31	12576.58	14554.26
	Rs./kWh	10.50	10.27	10.57	10.70	9.74	11.79	13.56	14.08	13.88	13.19	13.11	15.48

Source: KE

TABLE 32

K-Electric (Fuel-wise Power Purchase and Fuel Costs) (2020-21)

		July	August	September	October	November	December	January	February	March	April	June
CPPA-G												
Generation	GWh	511.10	452.52	499.28	485.56	357.31	364.32	350.91	235.41	421.76	597.90	776.62
	%	61.89	58.16	58.97	61.81	62.39	58.92	59.45	49.56	58.12	66.77	68.32
Fuel Cost	Mil Rs.	2072.53	1834.97	1974.55	1966.76	1163.88	1186.70	2104.07	1566.26	2017.29	2859.77	4792.92
	Rs./kWh	4.06	4.06	3.95	4.05	3.26	3.26	6.00	6.65	4.78	4.78	6.17
Coal												
Generation	GWh	40.39	40.34	38.72	40.30	36.41	40.11	20.47	36.67	40.61	39.30	39.28
	%	4.89	5.18	4.57	5.13	6.36	6.49	3.47	7.72	5.60	4.39	3.46
Fuel Cost	Mil Rs.	342.10	230.42	221.58	266.75	241.02	265.49	135.51	345.24	382.30	369.96	368.45
	Rs./kWh	8.47	5.71	5.72	6.62	6.62	6.62	6.62	9.41	9.41	9.41	9.38
RFO												
Generation	GWh	144.48	133.84	159.21	114.83	55.04	95.41	116.01	116.02	140.71	123.58	157.45
	%	17.50	17.20	18.81	14.62	9.61	15.43	19.66	24.43	19.39	13.80	13.85
Fuel Cost	Mil Rs.	1739.62	1660.99	2022.07	1447.90	692.96	1192.61	1428.26	1538.04	2088.29	1872.74	2526.04
	Rs./kWh	12.04	12.41	12.70	12.61	12.59	12.50	12.31	13.26	14.84	15.15	16.04
Gas												
Generation	GWh	63.69	66.51	62.91	69.61	62.30	63.75	53.10	53.04	64.53	68.87	61.10
	%	7.71	8.55	7.43	8.86	10.88	10.31	9.00	11.17	8.89	7.69	5.37
Fuel Cost	Mil Rs.	469.15	437.15	429.55	475.83	425.40	434.14	360.83	360.92	441.12	467.39	417.68
	Rs./kWh	7.37	6.57	6.83	6.84	6.83	6.81	6.80	6.80	6.84	6.79	6.84
Nuclear												
Generation	GWh	2.81	24.87	38.56	35.87	20.54	9.31	14.68	0.00	15.81	17.15	19.02
	%	0.34	3.20	4.55	4.57	3.59	1.51	2.49	0.00	2.18	1.92	1.67
Fuel Cost	Mil Rs.	30.96	266.84	427.93	375.57	204.57	112.67	205.50	0.00	221.83	277.56	297.30
	Rs./kWh	11.02	10.73	11.10	10.47	9.96	12.10	14.00	0.00	14.03	16.18	15.63
CPPA-G (150 MW)												
Generation	GWh	45.83	42.55	27.63	16.55	22.59	24.51	13.53	13.00	18.77	21.55	60.11
	%	5.55	5.47	3.26	2.11	3.94	3.96	2.29	2.74	2.59	2.41	5.29
Fuel Cost	Mil Rs.	185.83	172.52	109.29	67.04	73.59	79.84	81.15	86.48	89.77	103.09	370.95
	Rs./kWh	4.05	4.05	3.96	4.05	3.26	3.26	6.00	6.65	4.78	4.78	6.17
Solar												
Generation	GWh	16.60	13.36	16.81	17.09	14.45	15.18	15.46	15.65	19.38	19.66	19.46
	%	2.01	1.72	1.99	2.18	2.52	2.46	2.62	3.29	2.67	2.20	1.88
Fuel Cost	Mil Rs.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Rs./kWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RLNG												
Generation	GWh	0.93	4.08	3.50	5.76	4.05	5.72	6.06	5.18	4.07	7.45	7.34
	%	0.11	0.52	0.41	0.73	0.71	0.93	1.03	1.09	0.56	0.83	0.71
Fuel Cost	Mil Rs.	10.35	45.50	38.68	67.03	47.57	74.64	82.08	77.05	59.08	109.26	111.89
	Rs./kWh	11.13	11.15	11.05	11.64	11.75	13.05	13.54	14.87	14.52	14.67	15.24
Total												
Generation	Rs./kWh	825.83	778.07	846.62	785.57	572.69	618.31	590.22	474.97	725.64	895.46	1036.15
	GWh	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Fuel Cost	%	4850.54	4648.39	5223.65	4666.88	2848.99	3346.09	4397.40	3973.99	5299.68	6059.77	7826.93
	Mil Rs.	5.87	5.97	6.17	5.94	4.97	5.41	7.45	8.37	7.30	6.77	7.55

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)	
		Capacity Charges [1]	Energy Charges [1]	Capacity Charges [1]	Energy Charges [1]	Capacity Charges [2]	Energy Charges [2]	Capacity Charges	Energy Charges
1	WAPDA Hydel	125,596	2,349	160,710	2,282	107,546	2,858	95,826	2,650
2	Thermal	57,942	219,465	60,470	165,001	40,113	77,841	31,661	58,582
3	Coal	37,369	73,916	81,675	112,031	199,489	180,522	205,636	201,925
4	Nuclear	67,351	9,135	70,929	9,037	94,984	9,842	91,329	11,264
5	IPP Hydel *	10,642	533	14,461	535	89,406	1,380	47,814	721
6	RFO	50,332	159,998	58,669	94,477	84,834	54,237	93,977	84,242
7	RLNG/Gas/HSD	62,679	208,798	109,305	297,672	132,494	302,169	126,091	304,278
8	Baggasse	3,100	7,908	1,345	5,752	2,283	3,878	5,718	4,989
9	Wind	793	40,313	5,012	59,046	85,815	0	75,975	0
10	Solar	29	12,900	595	15,249	18,505	0	18,150	0
11	Import	0	0	0	0	0	5,507	0	4,960
12	Mixed	1,815	10,885	5,123	5,471	625	1,142	753	1,260
	Total	**417,648**	**746,200**	**568,294**	**766,553**	**856,095**	**639,375**	**792,930**	**674,870**

[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		
	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	2023.70	55169.24	28654.17	2135.57	57421.72
Tarbella 4th Ext.	--	--	--	2489.40	378.39	5513.08	5485.66	833.82	5459.31	3417.40	514.59	7611.05
Neelum Jhelum	--	--	--	3928.26	--	35819.46	4843.09	44161.25	--	1809.62	16500.87	--
Jagran	--	--	--	31.67	82.03	--	86.25	223.38	--	113.23	293.27	--
Pehur	--	--	--	4.80	18.83	--	--	--	--	--	--	--
Malakand-III	362.11	2865.02	--	399.25	2689.83	--	408.53	176.77	1577.50	321.57	101.84	1263.47
Laraib Energy	380.9	148.95	4712.24	354.38	178.03	5409.85	384.43	6247.69	179.10	465.29	6216.27	223.76
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
Gulpur Hydropower	--	--	--	--	--	--	183.18	35.56	1898.62	256.89	49.86	8664.38
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
GENCO-II	8783.73	42534.97	16094.29	9379.88	50950.76	17123.41	5921.76	45246.00	24321.00	4825.00	34180.00	18836.00
GENCO-III	5529.28	79916.62	17471.59	2714.38	35892.63	13866.42	1776.19	23492.00	14305.00	1777.00	21012.00	10546.00
GENCO-IV	3.39	16.36	23.88	--	--	--	--	--	--	--	--	--
Lalpir Power	1089.06	12032.96	3984.30	613.8	9124.00	4646.44	186.32	2894.08	5820.04	620.78	9079.76	4601.98
Pak Gen Power	1237.28	13600.54	4006.64	495.56	7590.60	4678.33	149.76	2358.61	5850.60	445.54	6828.03	5297.96
Altern Energy	145.12	1301.61	274.45	22.03	358.02	43.84	3.73	70.69	9.60	11.60	164.84	32.87
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
Habibullah Coastal	880.33	3284.81	1746.10	716.48	3718.31	2076.26	108.37	807.74	493.02	--	--	68.84
Hub Power	5196.60	55963.11	14823.06	813.26	12682.21	17153.53	33.25	679.73	20973.24	174.51	3587.31	22938.88
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
Kohinoor Energy	645.4	6852.41	1164.93	387.44	5592.34	1356.14	363.86	5020.78	1651.45	342.85	4634.70	1752.83
Rousch Power	2663.01	24335.16	6434.05	1035.85	12693.73	5559.70	209.35	2844.62	6079.49	283.64	3535.18	7876.64
Saba Power	465.88	5100.14	1572.85	225.41	3465.50	1829.46	50.83	758.63	2243.95	121.63	1835.42	2353.45
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
Uch Power	4442.99	16788.13	8581.90	3895.85	17893.55	9852.13	4087.33	21388.35	7486.68	4090.44	30533.43	6987.60
Davis Enerqen.	8.82	78.74	51.78	--	--	--	--	--	--	--	--	--
Attock Gen.	912.45	9382.54	3174.41	519.02	7263.88	2941.10	314.38	3584.05	1936.41	383.98	4934.20	1929.71
Atlas Power	1246.45	12979.30	4789.80	668.01	9379.30	5396.42	259.57	3803.49	4405.91	418.57	5768.60	3033.20
Engro Powergen. Qadirpur	1668.42	7704.87	3911.61	1384.11	8601.26	4448.13	821.94	7163.08	4148.62	680.06	5904.60	2504.34
Saif Power	841.56	8968.98	4353.02	828.2	9678.59	4871.37	476.28	5483.57	4883.63	624.32	6796.30	3103.27
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
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
Nishat Chunian	1099.67	11444.57	4637.47	599.74	8869.10	5229.58	351.23	5494.46	5465.65	537.46	7318.53	2640.65
Sapphire Electric	814.96	8619.89	4059.93	808.51	9347.40	5043.12	289.59	3759.40	5244.52	550.54	7234.66	3454.73
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
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
Liberty Power Tech.	392.96	5764.66	4613.50	676.18	9529.90	4831.53	458.52	6604.90	6060.39	606.59	8563.92	4529.22
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
Uch-II Power	2593.04	13718.34	8410.13	3016.91	18629.75	10296.42	2146.98	16512.87	11649.43	2339.30	17905.61	11640.03
Sahiwal Imported Coal	6558.18	41033.37	28868.60	8210.76	63218.34	48253.68	6156.54	55091.58	57721.81	7341.83	72193.83	51641.54
Quaid-e-Azam Thermal	983.3	10974.41	1839.12	6149.75	57579.63	15896.34	5192.50	50670.29	25996.48	7118.80	62720.36	19160.78
NPPMCL – HBS	1295.24	13218.62	1940.64	7127.24	68069.83	13200.39	7050.30	65400.36	20974.53	7682.35	64123.73	16545.69
NPPMCL – Balloki	--	--	--	4914.95	46992.17	9224.68	5911.84	55888.67	21062.20	6032.81	49527.77	13627.66
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

Power Plant	FY 2017-18			FY 2018-19			FY 2019-20			FY 2020-21		
	Energy Delivered (GWh)	EPP	CPP	Energy Delivered (GWh)	EPP	CPP	Energy Delivered (GWh)	EPP	CPP	Energy Delivered (GWh)	EPP	CPP
China Power Hub	--	--	--	--	--	--	5641.50	39814.01	38028.36	7923.40	55406.50	62849.94
Engro Powergen. Thar	--	--	--	--	--	--	4170.15	51853.17	28814.68	3902.65	53533.38	31073.58
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
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
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
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
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	--
Zorlu Enerji Pakistan	156.05	2500.15	--	158.98	3124.00	--	145.33	3421.91	--	109.20	2293.30	--
FFC Energy	115.37	2430.03	34.84	115.75	2702.80	55.25	141.23	3054.14	--	123.77	2503.28	--
Three Gorges First	127.66	2948.59	--	129.21	2654.73	--	138.69	3689.87	--	138.69	3607.42	--
Foundation Wind-I	144	2427.00	--	145	3138.00	--	144.60	3651.65	--	144.60	3494.83	--
Foundation Wind-II	141.89	2398.16	--	143.41	2758.29	--	143.60	3618.98	--	143.59	3481.41	--
Sapphire Wind	131.23	2409.04	--	138.62	3085.83	--	132.11	3449.65	--	110.68	2739.76	--
Yunus Energy	127.4	2590.75	49.91	128.69	2863.99	87.25	125.03	3333.32	--	119.00	2862.04	--
Metro Power	140.12	2061.83	3.63	138.46	2654.48	29.52	141.14	3891.81	--	140.32	3380.62	--
Gul Ahmed Wind	129.71	2438.28	--	130.66	2938.05	--	128.75	3472.88	--	116.69	2885.80	--
Master Wind	127.01	2530.39	--	135.82	2881.43	--	133.90	3614.53	--	118.61	2931.90	--
Tenaga Generasi	105.08	1954.61	--	115.67	2610.31	--	126.00	3401.00	--	105.00	2632.00	--
HydroChina Dawood	110.09	2036.78	--	119.65	2702.24	--	121.51	3285.35	--	102.26	2611.83	--
Sachal Energy	134.44	2421.47	--	136.28	3245.90	--	136.28	3727.29	--	134.62	3404.26	--
UEP Wind	273.51	4880.00	--	249.21	5609.65	--	256.95	6951.39	--	215.94	5511.32	--
Artistic Wind	77.82	1217.63	--	198.55	3086.96	--	175.03	3040.58	--	172.40	2778.08	--
Act Wind	90.15	1496.80	--	91.35	1875.22	--	85.07	2275.96	--	77.97	1865.04	--
Hawa Energy	61.75	789.88	--	170.1	3007.71	--	149.66	3079.26	--	154.77	3005.84	--
Jhimpir Wind	65.16	823.95	--	169.73	3061.77	--	155.72	3186.51	--	157.84	3069.46	--
Three Gorges Second	16.49	125.5	--	137.96	1633.86	--	135.00	2656.00	--	116.00	2290.00	--
Three Gorges Third	27.44	248.2	--	140.99	1669.79	--	138.19	2709.00	--	120.00	2372.00	--
Tricon Bostan-A	--	--	--	133.95	2467.95	23.81	159.78	2992.92	--	164.63	3191.79	--
Tricon Bostan-B	--	--	--	106.93	2000.55	24.69	158.93	2969.00	--	151.19	2951.09	--
Tricon Bostan-C	--	--	--	109.52	2050.28	24.09	152.91	3837.50	--	159.07	3068.26	--
Zephyr Wind	--	--	--	57.48	722.57	--	179.96	4037.69	--	149.34	2821.61	--
Quaid-e-Azam Solar	162.2	3061.84	--	164.47	3623.15	--	165.05	4280.54	--	165.74	3691.30	--
Appolo Solar	167.31	2719.60	--	166.83	3619.26	--	163.13	4197.30	--	164.91	4141.89	--
Best Green Energy	167.68	2864.45	--	165.87	3747.02	--	162.97	4367.55	--	164.45	4228.00	--
Crest Solar	233.34	3883.96	--	181.50	4110.32	--	165.41	4463.19	--	167.12	4337.42	--
AJ Power	10.27	161.84	--	18.66	352.62	--	18.12	356.80	--	18.59	350.44	--
Harappa Solar	20.66	332.09	--	31.75	564.26	--	30.76	620.72	--	28.37	613.24	--
Jamal Din Wali-II	180.96	1746.95	--	187.8	1731.48	--	161.88	1088.29	668.29	177.17	1193.04	588.27
Jamal Din Wali-III	196.59	2087.90	--	181.18	1726.18	--	129.21	869.00	732.35	144.44	972.10	733.19
RYK Mills	155.60	1490.35	--	141.31	1148.84	--	73.67	494.84	510.87	73.94	498.14	446.64
Chiniot Power	346.02	4154.33	--	194.67	1639.33	--	80.45	539.49	566.71	160.56	1081.53	965.99
Hamza Sugar Mills	--	--	--	--	--	--	45.22	303.71	318.79	39.99	269.68	238.79
The Thal Industries	55.99	638.58	--	65.84	795.66	--	36.79	255.36	291.62	46.37	217.82	191.98
Almoiz Industries	--	--	--	48.92	636.45	--	15.10	114.30	147.04	29.83	200.91	176.04
Chanar Energy	--	--	--	8.47	108.16	--	22.34	143.87	126.08	38.26	318.05	268.46

Source: CPPA-G

TABLE 35

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

(Based on the revised fuel prices effective from 16-06-2021)

Order in Merit	Plant Groups	Fuel Type	As on 16th June, 2021		
			Fuel Cost (Rs./kWh)	O&M Cost (Rs./kWh)	Specific Cost (Rs./kWh)
1	Liberty Power (Upto 61,904 MWh)	Gas	1.26897	0.55701	1.82598
2	Uch (upto 152,375 MWh)	Gas	1.42866	0.40140	1.90717
3	Engro Power Thar	Coal	2.48940	1.07110	3.56050
4	747 MW Guddu (CCP)	Gas	5.94510	0.51430	6.45940
5	China Power Hub	Coal	6.35720	0.50250	6.85970
6	Liberty Power (Above 61,904 MWh)	Gas	6.34485	0.55701	6.90186
7	Port Qasim	Coal	7.01210	0.18520	7.19730
8	KAPCO B-I	Gas	6.80852	0.39781	7.20633
9	Guddu (CCP) B-I (Unit 11-13)	Gas	7.31270	0.06890	7.38160
10	Uch-II Power	Gas	7.06479	0.33580	7.40059
11	Foundation Power	Gas	6.90815	0.57920	7.48735
12	Uch (above 152,375 MWh)	Gas	7.15318	0.40140	7.63169
13	Engro PowerGen.	Gas	7.35909	0.51160	7.87069
14	GTPS Faisalabad B-IV (Unit 5-9)	Gas	7.76900	0.16250	7.93150
15	KAPCO B-II	Gas	7.46781	0.46533	7.93314
16	Guddu (CCP) B-II (Unit 5-10)	Gas	8.12500	0.06890	8.19390
17	KAPCO B-III	Gas	7.72358	0.89692	8.62050
18	747 MW Guddu (OC)	Gas	8.87260	0.51430	9.38690
19	Habibullah Coastal	Gas	6.71361	0.83750	9.43771
20	NPPMC - HBS (CC)	RLNG	9.39803	0.18360	9.58163
21	Sahiwal Power	Coal	9.43130	0.18240	9.61370
22	Muzaffargarh B-II (Unit-4)	Gas	9.46890	0.16250	9.63140
23	Muzaffargarh B-I (Unit-3)	Gas	9.48230	0.16250	9.64480
24	Altern Energy (Ph-I)	RLNG	9.47188	0.20480	9.67668
25	Jamshoro B-II (Unit-4)	Gas	9.65670	0.09250	9.74920
26	Muzaffargarh B-I (Unit-1)	Gas	9.68440	0.16250	9.84690
27	Jamshoro B-II (Unit-3)	Gas	9.86160	0.09250	9.95410
28	Muzaffargarh B-I (Unit-2)	Gas	9.81200	0.16250	9.97450
29	Altern Energy (Ph-II)	RLNG	9.48875	0.51420	10.00295
30	Jamshoro B-II (Unit-2)	Gas	10.12630	0.09250	10.21880
31	Muzaffargarh B-III (Unit-5)	Gas	10.06360	0.16250	10.22610
32	Muzaffargarh B-III (Unit-6)	Gas	10.32980	0.16250	10.49230
33	KAPCO B-I (S/Cycl)	Gas	10.21278	0.39781	10.61059
34	KAPCO B-II (S/Cycl)	Gas	11.20172	0.46533	11.66704
35	Davis Energen	RLNG	11.58175	0.34420	11.92595
36	Fauji Kabirwala	RLNG	11.57389	0.57910	12.15299
37	Jamshoro B-II (Unit-4)	Mix [5]	12.06450	0.09250	12.15700
38	GTPS Faisalabad B-IV (Unit 5-9)	RLNG	11.57457	0.58830	12.16287
39	Halmore Power	RLNG	11.58281	0.58560	12.16841
40	Jamshoro B-II (Unit-4)	RLNG	11.73680	0.58130	12.31810
41	Jamshoro B-II (Unit-3)	Mix [5]	12.32950	0.09250	12.42200
42	KAPCO B-III (S/Cycl)	Gas	11.58537	0.89692	12.48229
43	Jamshoro B-II (Unit-3)	RLNG	12.09055	0.39781	12.48836
44	Jamshoro B-II (Unit-2)	Mix [5]	12.66550	0.09250	12.75800
45	Atlas Power	RFO	11.50940	1.40800	12.91740
46	Jamshoro B-II (Unit-2)	RLNG	12.74966	0.41887	13.16853
47	Jamshoro B-II (Unit-4)	Mix [2]	13.57425	0.09250	13.66675
48	KAPCO B-I	RLNG	13.26130	0.46533	13.72663
49	Jamshoro B-II (Unit-3)	Mix [2]	13.86485	0.09250	13.95735
50	KAPCO B-II	RLNG	13.79610	0.16250	13.95860
51	Nishat Power	RFO	12.65440	1.40800	14.06240
52	Engro PowerGen.	Mix [3]	13.60580	0.51685	14.12265
53	KAPCO B-III	RLNG	13.09022	1.15244	14.24266
54	Jamshoro B-II (Unit-2)	Mix [2]	14.24460	0.09250	14.33710
55	KAPCO B-I (S/Cycl)	RLNG	13.24980	1.12478	14.37458
56	KAPCO B-II (S/Cycl)	RLNG	13.71550	0.89692	14.61242
57	KAPCO B-I	RFO	14.10391	0.69005	14.79396
58	Attock Gen.	RFO	13.60580	1.42840	15.03420
59	Muzaffargarh B-II (Unit-4)	Mix [2]	14.92820	0.16250	15.09070

Order in Merit	Plant Groups	Fuel Type	As on 16th June, 2021		
			Fuel Cost (Rs./kWh)	O&M Cost (Rs./kWh)	Specific Cost (Rs./kWh)
60	Muzaffargarh B-I (Unit-3)	Mix [2]	14.95045	0.16250	15.11295
61	Muzaffargarh B-I (Unit-1)	Mix [2]	15.27895	0.16250	15.44145
62	Muzaffargarh B-I (Unit-2)	Mix [2]	15.48595	0.16250	15.64845
63	KAPCO B-III (S/Cycl)	RLNG	15.12261	0.86433	15.98694
64	Muzaffargarh B-III (Unit-5)	Mix [2]	15.89550	0.16250	16.05800
65	Liberty Power Tech.	RFO	14.87824	1.55250	16.43074
66	Jamshoro B-I (Unit-1)	RFO	16.35100	0.09250	16.44350
67	KAPCO B-II	RFO	15.47928	0.97134	16.45062
68	Muzaffargarh B-III (Unit-6)	Mix [2]	16.33030	0.16250	16.49280
69	Muzaffargarh B-II (Unit-4)	RLNG	16.81500	0.16250	16.97750
70	Muzaffargarh B-I (Unit-3)	RLNG	16.83880	0.16250	17.00130
71	Kohinoor Energy	RFO	16.13305	0.89487	17.02792
72	Muzaffargarh B-I (Unit-1)	RLNG	17.19750	0.16250	17.36000
73	Jamshoro B-II (Unit-4)	RFO	17.49180	0.09250	17.58430
74	Muzaffargarh B-I (Unit-2)	RLNG	17.42420	0.16250	17.58670
75	Jamshoro B-II (Unit-4)	Mix [4]	17.58970	0.09250	17.68220
76	Muzaffargarh B-III (Unit-5)	RLNG	17.68760	0.09250	17.78010
77	HUBCO	RFO	17.54270	0.27410	17.81680
78	Nishat Chunian	RFO	16.54400	1.40960	17.95360
79	Jamshoro B-II (Unit-3)	RFO	17.86810	0.09250	17.96060
80	Muzaffargarh B-III (Unit-6)	RLNG	16.81963	1.15244	17.97207
81	Nandipur (CC)	RLNG	17.87090	0.16250	18.03340
82	Jamshoro B-II (Unit-3)	Mix [4]	17.96540	0.09250	18.05790
83	NPPMC - Balloki (CC)	RLNG	18.06270	0.09250	18.15520
84	Jamshoro B-II (Unit-2)	RFO	18.36290	0.09250	18.45540
85	Orient Power	RLNG	18.34360	0.16250	18.50610
86	Saba Power	RFO	18.25660	0.25641	18.51301
87	QATPL - Bhikki (CC)	RLNG	18.13583	0.39781	18.53364
88	Jamshoro B-II (Unit-2)	Mix [4]	18.45530	0.09250	18.54780
89	Muzaffargarh B-II (Unit-4)	Mix [4]	18.45875	0.16250	18.62125
90	Rousch Power	RLNG	18.54770	0.09250	18.64020
91	Muzaffargarh B-I (Unit-3)	Mix [4]	18.48560	0.16250	18.64810
92	Pakgen Power	RFO	18.39621	0.25634	18.65255
93	Narowal Energy	RFO	17.29110	1.65250	18.94360
94	Lalpir Power	RFO	18.73304	0.25634	18.98938
95	Muzaffargarh B-I (Unit-1)	Mix [4]	18.88615	0.16250	19.04865
96	Muzaffargarh B-I (Unit-2)	Mix [4]	19.13885	0.16250	19.30135
97	KAPCO B-I	HSD	19.11291	0.40002	19.51293
98	Muzaffargarh B-III (Unit-5)	Mix [4]	19.63800	0.16250	19.80050
99	Muzaffargarh B-II (Unit-4)	RFO	20.10250	0.16250	20.26500
100	Muzaffargarh B-I (Unit-3)	RFO	20.13240	0.16250	20.29490
101	Muzaffargarh B-III (Unit-6)	Mix [4]	20.16710	0.16250	20.32960
102	Saif Power	RLNG	19.89195	0.46533	20.35728
103	Muzaffargarh B-I (Unit-1)	RFO	20.57480	0.16250	20.73730
104	Orient Power	HSD	20.37080	0.56440	20.93520
105	Sapphire Electric	HSD	20.16170	0.83590	20.99760
106	Muzaffargarh B-I (Unit-2)	RFO	20.85350	0.16250	21.01600
107	NPPMC - HBS (CC)	HSD	20.98115	0.23820	21.21935
108	Saif Power	HSD	20.47670	0.84530	21.32200
109	NPPMC - Balloki (CC)	HSD	21.14197	0.25990	21.40187
110	QATPL - Bhikki (CC)	HSD	20.65729	0.75050	21.40779
111	Sapphire Electric	RLNG	20.57325	0.89692	21.47017
112	KAPCO B-II	HSD	20.97665	0.53782	21.51447
113	Muzaffargarh B-III (Unit-5)	RFO	21.40510	0.16250	21.56760
114	KAPCO B-I (S/Cycl)	RFO	21.15587	0.69005	21.84592
115	Halmore Power	HSD	21.25810	0.84920	22.10730
116	Muzaffargarh B-III (Unit-6)	RFO	21.99060	0.16250	22.15310
117	KAPCO B-III	HSD	21.69432	1.35812	23.05244
118	Engro PowerGen.	HSD	22.99799	0.52210	23.52009
119	KAPCO B-II (S/Cycl)	RFO	23.21892	0.97134	24.19026
120	KAPCO B-I (S/Cycl)	HSD	28.66937	0.40002	29.06938
121	KAPCO B-II (S/Cycl)	HSD	31.46498	0.53782	32.00279
122	KAPCO B-III (S/Cycl)	HSD	32.54148	1.35812	33.89960

([2]) Mixed [50% RFO & 50% Gas] ([3]) Mixed [50% HSD & 50% Gas] ([4]) Mixed [50% RFO & 50% RLNG] ([5]) Mixed [Gas & RLNG]

Source: National Power Control Centre, Islamabad

TABLE 36

Economic Merit Order Ranking of Generation Plants (FY 2020-21)

Plant Groups	Fuel Type	July to December, 2020						January to June, 2021					
		22 July	25 Aug.	22 Sept.	22 Oct.	20 Nov.	22 Dec.	21 Jan.	16 Feb.	16 Mar.	16 Apr.	16 May	16 June
Uch (upto 152,375 MWh)	Gas	1	1	1	1	1	1	1	1	1	44	43	2
Liberty Power (Upto 61,904 MWh)	Gas	2	2	2	2	2	2	2	2	29	2	1	1
Engro Power Thar	Coal	3	3	3	3	3	3	3	3	3	3	3	3
Port Qasim	Coal	7	4	4	4	4	4	4	4	4	4	5	7
China Power Hub	Coal	9	8	7	6	5	5	5	5	5	5	4	4
747 MW Guddu (CCP)	Gas	10	11	11	10	8	6	6	6	2	1	2	5
Sahiwal Imported Coal	Coal	11	10	9	11	10	7	7	11	12	20	20	21
Uch (above 152,375 MWh)	Gas	4	5	5	5	13	8	8	7	43	41	40	12
KAPCO B-I	Gas	19	13	14	13	11	9	9	8	21	22	21	8
NPPMC - HBS (CC)	RLNG	5	6	6	7	6	10	16	17	19	18	18	20
Guddu (CCP) B-I (Unit 11-13)	Gas	20	15	15	15	12	11	10	9	10	11	9	9
Altern Energy (Ph-I)	RLNG	62	7	8	8	7	12	79	18	20	19	19	22
Foundation Power	Gas	21	16	17	18	15	13	11	10	8	9	8	11
Uch-II	Gas	12	12	12	29	18	14	12	12	46	46	46	10
Altern Energy (Ph-II)	RLNG	33	9	10	9	9	15	45	20	23	21	22	27
Engro PowerGen.	Gas	23	22	22	21	16	16	13	13	7	8	7	13
GTPS Faisalabad B-IV (Unit 5-9)	Gas	26	23	23	23	17	17	14	14	9	10	10	14
KAPCO B-II	Gas	27	24	24	24	19	18	15	15	22	23	23	15
Guddu (CCP) B-II (Unit 5-10)	Gas	28	26	26	25	25	19	18	16	13	12	11	16
KAPCO B-III	Gas	31	30	30	30	27	20	20	19	24	24	24	17
Liberty Power (Above 61,904 MWh)	Gas	36	27	29	28	30	21	21	21	28	28	28	6
Davis Energen.	RLNG	41	14	13	12	14	22	62	32	35	34	35	36
Habibullah Coastal	Gas	32	31	31	31	36	23	23	23	15	14	14	19
KAPCO B-III	RLNG	30	32	32	32	29	43	52	44	55	52	53	57
Fauji Kabirwala	RLNG	29	17	16	14	38	24	49	34	36	36	36	37
GTPS Faisalabad B-IV (Unit 5-9)	RLNG	24	18	18	16	20	25	44	36	37	37	37	38
Halmore Power	RLNG	14	19	19	17	21	26	34	37	38	38	38	39
Jamshoro B-II (Unit 4)	RLNG	35	20	20	19	22	27	74	38	39	39	39	41
Muzaffargarh B-I (Unit 3)	Gas	46	37	38	37	32	29	25	25	31	30	30	24
Jamshoro B-II (Unit 3)	RLNG	37	21	21	20	23	30	78	39	41	40	41	43
Jamshoro B-II (Unit 4)	Gas	49	40	39	36	33	31	26	26	16	15	15	25
Muzaffargarh B-II (Unit 4)	Gas	45	36	37	41	31	28	24	24	30	29	29	23
Muzaffargarh B-I (Unit 1)	Gas	51	41	43	38	37	32	27	27	32	31	31	26
Jamshoro B-II (Unit 3)	Gas	53	44	45	46	39	33	28	28	17	16	16	28
Jamshoro B-II (Unit 2)	RLNG	38	25	25	22	24	36	83	30	45	42	44	48
Jamshoro B-II (Unit 2)	Gas	57	50	51	50	41	35	31	48	18	17	17	30
Muzaffargarh B-III (Unit 5)	Gas	58	51	52	44	42	37	32	31	34	33	33	31
Engro PowerGen.	Mix [3]	34	38	49	35	51	44	47	59	61	65	59	61
Muzaffargarh B-II (Unit 4)	RLNG	39	39	42	42	58	57	68	79	75	70	73	74
Muzaffargarh B-III (Unit 6)	Gas	61	54	56	48	43	38	37	33	40	35	34	32
KAPCO B-I (S/Cycl)	Gas	60	52	53	51	44	40	39	35	25	25	25	33
KAPCO B-II (S/Cycl)	Gas	69	65	67	64	53	47	43	42	26	26	26	35
KAPCO B-I	RLNG	18	28	27	26	26	39	38	41	50	47	48	49

Plant Groups	Fuel Type	July to December, 2020						January to June, 2021					
		22 July	25 Aug.	22 Sept.	22 Oct.	20 Nov.	22 Dec.	21 Jan.	16 Feb.	16 Mar.	16 Apr.	16 May	16 June
KAPCO B-II	RLNG	25	29	28	27	47	41	42	43	51	48	50	52
Guddu (W/o CCP) B-I (Unit 11-13)	Gas	63	58	58	54	48	42	40	40	11	7	12	
Attock Gen.	RFO	48	55	63	49	57	50	51	64	49	51	64	68
KAPCO B-I (S/Cycl)	RLNG	59	33	33	33	28	45	84	50	58	56	56	59
KAPCO B-II (S/Cycl)	RLNG	68	34	34	34	34	46	93	62	60	57	61	60
Orient Power Company	RLNG	13	60	35	62	66	76	30	82	86	84	86	90
Jamshoro B-II (Unit 4)	Mix [5]	66	61	62	58	62	48	46	45	42	43	42	40
Guddu (W/o CCP) B-II (Unit 5-10)	Gas	73	71	72	69	56	49	48	46	14	13	13	
Jamshoro B-II (Unit 3)	Mix [5]	67	63	65	61	64	52	50	47	44	45	45	44
KAPCO B-I	RFO	84	57	61	63	65	53	55	65	63	94	67	55
KAPCO B-III (S/Cycl)	Gas	79	75	74	73	61	54	53	49	27	27	27	45
Lalpir Power	RFO	65	48	96	94	91	55	80	77	80	83	90	78
Jamshoro B-II (Unit 2)	Mix [5]	71	67	69	66	68	56	54	51	47	49	47	46
Muzaffargarh B-I (Unit 3)	RLNG	40	42	44	43	45	58	69	67	76	71	74	75
Muzaffargarh B-I (Unit 1)	RLNG	43	43	47	45	46	60	72	68	77	73	77	77
Jamshoro B-II (Unit 3)	Mix [2]	85	81	80	77	70	62	60	63	62	60	62	54
Jamshoro B-II (Unit 4)	Mix [2]	81	78	77	75	69	59	57	61	59	58	57	50
Liberty Power Tech.	RFO	82	69	86	76	71	61	91	53	91	89	91	76
Muzaffargarh B-I (Unit 2)	RLNG	47	45	48	47	49	63	73	69	79	76	79	79
Nishat Power	RFO	50	77	76	70	81	70	117	56	116	116	115	56
Atlas Power	RFO	89	80	78	80	77	65	61	55	48	50	49	47
Muzaffargarh B-III (Unit 6)	RLNG	55	49	57	53	60	69	82	73	81	79	82	84
Kohinoor Energy	RFO	42	86	55	56	59	66	71	60	73	75	63	69
Jamshoro B-II (Unit 2)	Mix [2]	87	85	85	81	72	68	65	66	64	62	65	58
Muzaffargarh B-III (Unit 5)	RLNG	52	47	54	52	50	64	77	72	82	78	81	80
Nandipur (CC)	RLNG	17	53	60	55	63	67	36	76	83	81	83	85
Narowal Energy	RFO	88	68	70	74	75	71	111	57	109	109	106	51
Saba Power	RFO	90	87	84	72	80	79	119	85	120	120	120	62
NPPMC - Baloki (CC)	RLNG	6	56	66	59	52	74	17	78	84	82	84	87
KAPCO B-II	RFO	80	72	75	78	76	73	63	80	68	61	60	66
Nishat Chunian	RFO	74	70	82	71	78	77	112	54	111	111	108	53
QATPL - Bhikki (CC)	RLNG	8	62	36	65	54	75	19	84	87	86	87	91
Rousch Power	RLNG	22	64	40	67	55	78	41	83	88	87	88	92
Saif Power	RLNG	16	74	71	68	67	87	35	95	100	99	99	101
Pakgen Power	RFO	86	83	64	60	74	72	113	58	118	118	117	83
Jamshoro B-II (Unit 4)	Mix [4]	72	76	73	82	79	80	86	87	85	85	85	81
Muzaffargarh B-II (Unit 4)	Mix [2]	94	89	88	86	83	81	75	70	66	66	69	63
Muzaffargarh B-I (Unit 3)	Mix [2]	95	90	89	87	84	82	76	71	67	67	70	64
Jamshoro B-II (Unit 3)	Mix [4]	78	79	79	83	82	83	87	89	89	88	89	88
Jamshoro B-I (Unit 1)	RFO	93	88	87	85	89	84	66	88	53	54	51	72
Muzaffargarh B-I (Unit 1)	Mix [2]	97	93	92	90	86	85	81	74	71	69	71	65
Muzaffargarh B-I (Unit 2)	Mix [2]	100	95	94	92	90	86	85	75	72	72	72	67
Sapphire Electric Power	RLNG	15	84	83	79	73	94	33	101	106	103	103	112
Jamshoro B-II (Unit 2)	Mix [4]	83	82	81	84	85	88	89	90	92	90	92	93
Muzaffargarh B-III (Unit 5)	Mix [2]	102	97	97	95	93	89	88	81	74	77	76	71

Plant Groups	Fuel Type	July to December, 2020						January to June, 2021					
		22 July	25 Aug.	22 Sept.	22 Oct.	20 Nov.	22 Dec.	21 Jan.	16 Feb.	16 Mar.	16 Apr.	16 May	16 June
Muzaffargarh B-III (Unit 6)	Mix [2]	106	101	101	99	95	90	90	86	78	80	80	73
Jamshoro B-II (Unit 4)	RFO	103	98	98	96	97	91	67	94	54	55	54	82
Muzaffargarh B-II (Unit 4)	Mix [4]	91	91	90	88	87	92	94	91	94	91	94	95
Muzaffargarh B-I (Unit 3)	Mix [4]	92	92	91	89	88	93	95	92	93	92	95	96
KAPCO B-III (S/Cycl)	RLNG	77	35	41	40	35	51	100	52	69	63	68	70
Jamshoro B-II (Unit 3)	RFO	105	100	100	98	99	95	56	97	56	59	66	89
Muzaffargarh B-I (Unit 1)	Mix [4]	96	94	93	91	92	96	98	96	96	96	97	97
Muzaffargarh B-I (Unit 2)	Mix [4]	98	96	95	93	94	97	99	98	98	97	98	98
Jamshoro B-II (Unit 2)	RFO	107	103	103	101	100	98	59	99	57	64	55	94
HUBCO	RFO	108	105	104	102	101	99	64	93	52	53	52	86
Muzaffargarh B-III (Unit 5)	Mix [4]	101	99	99	97	96	100	101	100	99	100	100	100
Muzaffargarh B-III (Unit 6)	Mix [4]	104	102	102	100	98	101	102	102	102	101	102	102
KAPCO B-I (S/Cycl)	RFO	109	104	105	103	102	102	58	112	70	68	75	105
Orient Power Company	HSD	126	123	110	105	103	103	105	103	108	108	107	107
KAPCO B-I	HSD	110	106	106	104	104	104	104	104	101	102	101	99
Halmore Power	HSD	112	108	107	109	105	105	106	105	103	104	118	117
Saif Power	HSD	115	112	116	113	106	106	107	106	113	113	112	111
Muzaffargarh B-II (Unit 4)	RFO	113	110	111	106	107	107	92	107	90	93	93	103
Muzaffargarh B-I (Unit 3)	RFO	114	111	112	107	108	108	96	108	95	95	96	104
KAPCO B-II (S/Cycl)	RFO	111	107	108	110	110	109	70	120	65	74	78	119
Sapphire Electric Power	HSD	76	73	113	108	109	110	110	109	110	110	109	108
Muzaffargarh B-I (Unit 1)	RFO	116	113	114	111	111	111	97	110	97	98	58	106
Muzaffargarh B-I (Unit 2)	RFO	119	116	117	114	112	112	103	111	104	105	104	109
NPPMC - HBS (CC)	HSD	120	117	118	115	113	113	114	113	112	112	111	110
NPPMC - Baloki (CC)	HSD	121	118	119	116	114	114	115	114	114	115	114	113
QATPL - Bhikki (CC)	HSD	122	119	120	117	115	115	116	115	115	114	113	114
Muzaffargarh B-III (Unit 5)	RFO	123	120	121	118	116	116	108	116	105	106	105	115
KAPCO B-II	HSD	124	109	109	119	117	117	118	117	117	117	116	116
Muzaffargarh B-III (Unit 6)	RFO	125	122	123	120	118	118	109	118	107	107	110	118
KAPCO B-III	HSD	127	121	122	121	119	119	120	119	119	119	119	120
Engro PowerGen	HSD	118	115	50	122	120	120	121	121	121	121	121	121
KAPCO B-I (S/Cycl)	HSD	128	124	124	123	121	121	122	122	122	122	122	122
KAPCO B-II (S/Cycl)	HSD	129	125	125	124	122	122	123	123	123	123	123	123
KAPCO B-III (S/Cycl)	HSD	130	126	126	125	123	123	124	124	124	124	124	124
747 MW Guddu (OC)	Gas							22	22	6	6	6	18
Muzaffargarh B-I (Unit 2)	Gas	54	46	46	39	40	34	29	29	33	32	32	29
Guddu B-III (Unit 3-4)	Mix [2]	75											
Reshma Powergen	RFO	117	114	115	112								
Guddu B-IV (Unit 1-2)	Gas	56								.			
Gulf Powergen	RFO	64	59	59	57								
GTPS Faisalabad B-IV(S/Cycl.)	Gas	70	66	68									
Guddu B-III (Unit 3-4)	Gas	44											
Guddu (CCP) B-III (Unit 3-4)	RFO	99											

[2] Mixed [50% RFO & 50% Gas] [3] Mixed [50% HSD & 50% Gas] [4] Mixed [50% RFO & 50% RLNG] [5] Mixed [Gas & RLNG]

TABLE 37
Monthly Utilization Factor of Power Plants (%)

Power Producers	Fuel	Dep. Cap. (MW)	July to December, 2020 (%)						January to June, 2021 (%)						FY 2020-21 (GWh)		Annual Utiliza. Factor (%)
			Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Max. Possible Gen.	Actual Gen.	
Uch Power	Gas	551	91.81	86.97	91.44	52.60	49.26	95.38	97.07	85.97	91.20	94.82	91.02	88.56	4826.76	4088.44	84.70
China Power	Coal	1220	53.99	78.62	80.76	84.70	45.52	61.24	67.72	36.08	87.86	99.96	97.90	92.33	10687.20	7923.41	74.14
Port Qasim	Coal	1320	89.55	78.59	84.18	47.41	38.10	78.21	79.48	81.41	91.28	57.64	56.98	86.14	11563.20	8372.38	72.41
HBS	RLNG	1230	81.86	72.28	83.67	90.64	69.16	29.12	26.04	72.50	76.16	86.56	86.54	82.33	10774.80	7682.23	71.30
Uch-II	Gas	381	84.03	73.39	62.43	66.29	8.28	68.54	85.37	70.65	48.97	93.42	90.99	87.89	3337.56	2339.37	70.09
Bhikki	RLNG	1180	67.41	75.53	84.25	90.08	81.89	45.53	2.68	71.38	69.19	78.72	81.04	79.54	10336.80	7110.03	68.78
Engro Thar	Coal	660	89.07	71.00	71.91	49.20	46.63	54.20	78.13	80.67	50.53	56.38	89.96	74.27	5781.60	3909.30	67.62
Foundation	Gas	171	66.94	54.24	64.08	74.43	6.90	69.32	78.30	69.06	77.67	62.12	87.14	90.00	1497.96	1000.37	66.78
Sahiwal Coal	Coal	1320	78.83	70.89	45.42	44.76	11.78	71.96	79.48	59.44	80.67	78.50	74.23	63.88	11563.20	7342.70	63.50
Liberty Power	Gas	212	63.39	67.65	81.91	56.23	41.53	0.00	0.00	8.06	57.06	91.69	81.74	84.64	1857.12	983.33	52.95
Balloki	RLNG	1320	58.43	70.67	74.30	75.32	62.28	42.20	66.07	0.00	42.85	42.26	41.19	40.40	11563.20	5979.85	51.71
Guddu 747	Gas	721	57.27	61.62	61.45	76.98	24.27	75.19	51.86	35.86	26.27	44.78	43.62	31.87	6315.96	3123.82	49.46
Nandipur	RLNG	411	96.73	71.35	71.16	36.28	2.68	2.01	0.76	0.29	8.43	62.85	60.66	78.41	3600.36	1481.98	41.16
Liberty Power	RFO	196	64.82	70.48	66.16	10.06	0.00	6.42	38.60	8.30	28.84	17.34	52.94	57.42	1716.96	606.66	35.33
Engro Energy	Gas	213	28.78	39.00	27.77	50.53	4.70	11.03	42.90	40.27	40.49	34.58	46.37	50.49	1865.88	648.50	34.76
Saif Power	RLNG	204	81.65	73.43	11.94	24.75	0.00	0.00	0.00	15.85	17.17	58.44	58.44	63.18	1787.04	605.62	33.89
Nishat Chunian	RFO	196	49.66	57.53	62.84	12.59	3.36	1.23	47.16	11.59	26.62	14.29	37.08	50.02	1716.96	537.57	31.31
Kohinoor Energy	RFO	124	54.46	56.86	52.96	16.22	0.00	19.43	55.41	6.98	15.08	10.17	31.25	50.90	1086.24	337.07	31.03
Nishat Power	RFO	195	51.92	58.21	47.51	6.17	2.98	4.86	49.45	10.56	19.40	13.64	33.66	67.69	1708.20	523.40	30.64
Fauji Kabirwala	Gas	151	74.08	73.79	70.57	10.53	0.00	0.00	0.00	0.00	0.00	17.59	54.17	50.88	1322.76	389.96	29.48
Orient Power	RLNG	213	24.47	33.98	34.39	37.16	0.00	1.34	0.72	23.24	26.49	59.35	52.89	54.21	1865.88	540.74	28.98
Attock Gen.	RFO	156	51.83	51.14	45.87	19.72	4.06	30.70	49.83	1.37	2.31	3.15	21.93	52.50	1366.56	384.03	28.10
Atlas Power	RFO	214	50.70	45.17	38.35	2.51	0.00	15.36	37.59	6.43	21.50	13.11	38.66	59.59	1874.64	517.08	27.58
KAPCO Block-1	RLNG	325	58.68	75.59	42.93	16.43	0.12	0.00	0.03	0.00	3.13	38.81	65.51	22.55	2847.00	774.74	27.21
Halmore Power	RLNG	199	49.60	36.26	52.92	28.20	0.00	0.76	0.00	20.46	16.98	61.39	46.03	12.04	1743.24	471.67	27.06
Narowal Energy	RFO	214	38.80	59.55	44.74	12.86	0.00	7.78	33.90	6.70	16.96	11.66	40.71	41.71	1874.64	496.06	26.46
Sapphire Power	RLNG	203	30.04	12.01	13.36	35.67	3.91	1.81	0.82	16.56	25.98	37.64	64.49	62.42	1778.28	452.07	25.42
KAPCO Block-1	RFO	325	27.90	12.05	21.36	1.83	3.19	33.55	73.68	0.00	1.67	2.98	29.53	64.53	2847.00	651.20	22.87
KAPCO Block-2	RLNG	762	64.54	64.77	29.15	26.16	0.00	0.00	0.03	0.00	0.07	8.80	18.74	37.70	6675.12	1403.23	21.02
Lalpir Power	RFO	350	12.00	36.20	19.91	14.28	2.71	23.24	42.65	1.97	2.63	7.02	37.68	40.56	3066.00	620.78	20.25
Pak Gen Power	RFO	349	2.06	17.72	28.26	0.00	0.00	3.30	37.00	2.77	11.32	2.45	29.35	39.90	3057.24	445.54	14.57
Saba Power	RFO	126	11.23	5.62	16.71	2.98	0.00	0.00	18.03	0.00	1.10	1.74	30.97	43.40	1103.76	121.65	11.02
Rousch Power	RLNG	395	4.14	0.00	1.78	0.00	0.00	0.43	0.24	0.00	0.00	30.65	33.02	28.47	3460.20	284.36	8.22
KAPCO Block-2	RFO	762	4.50	1.30	2.27	0.00	0.00	6.19	26.86	0.00	1.23	0.16	13.90	30.69	6675.12	487.73	7.31
Sapphire Electric	HSD	203	24.92	35.80	0.00	0.00	0.00	0.00	5.25	0.00	0.00	0.00	0.00	11.17	1778.28	115.97	6.52
KAPCO Block-3	RLNG	249	11.15	18.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.36	19.08	23.74	2181.24	135.23	6.20
Altern Energy	Gas	27	28.49	29.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.14	236.52	12.40	5.24
KAPCO Block-1	HSD	325	12.88	11.29	20.34	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2847.00	109.89	3.86
Orient Power	HSD	213	0.00	0.00	4.58	0.44	0.00	0.00	4.97	0.00	0.00	0.00	9.16	17.64	1865.88	57.18	3.06
Halmore Power	HSD	199	0.00	11.07	8.58	0.85	0.00	0.00	4.10	0.00	0.00	0.00	0.00	1.48	1743.24	38.12	2.19
Saif Power	HSD	204	0.00	0.00	3.26	0.51	0.00	0.00	4.86	0.00	0.00	0.00	3.82	10.23	1787.04	33.79	1.89
HUBCO	RFO	1200	0.00	0.85	4.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06	7.65	10512.00	112.91	1.07
Balloki	HSD	1320	4.49	0.00	0.00	0.00	0.00	0.00	0.90	0.00	0.00	0.00	0.00	0.00	11563.20	52.96	0.46
Bhikki	HSD	1180	0.00	0.00	0.00	0.00	0.00	0.00	0.91	0.00	0.00	0.00	0.00	0.10	10336.80	8.78	0.08
KAPCO Block-2	HSD	762	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6675.12	0.22	0.00
HBS	HSD	1230	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	10774.80	0.12	0.00
Engro Energy	HSD	213	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1865.88	0.00	0.00
Gulf Power	RFO	62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	543.12	0.00	0.00
Reshma Power	RFO	97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	849.72	0.00	0.00

Source: NEPRA

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
1	Laraib Energy (AJ&K)	---	---	---	276.28
2	Gulpur Hydropower ($)	---	---	1.02	0.07
3	GENCO-I	213.75	749.18	323.49	---
4	GENCO-II	4,043.01	2,199.70	604.00	---
5	GENCO-III	1,599.81	2,842.79	2,510.00	---
6	Lalpir Power	---	---	0.12	23.05
7	Pak Gen. Power	---	---	0.36	27.71
8	Fauji Kabirwala	---	---	581.86	---
9	Habibullah Coastal	---	---	3,494.10	314.16
10	Hub Power	107.60	1.46	---	2.05
11	Japan Power	---	---	214.32	1,228.80
12	KAPCO	0.54	---	---	---
13	Kohinoor Energy	---	---	109.10	0.02
14	Rousch Power	857.00	---	---	0.01
15	Saba Power			14.32	---
16	TNB Liberty Power	1.24	1,777.86	3.19	2.70
17	Uch Power	---	---	237.86	2.20
18	Engro Power Gen. Qadirpur ($)	---	---	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	---	---
	Total	**6,822.95**	**7,598.19**	**9,522.60**	**1,876.98**

Source: CPPA-G

TABLE 39

Claimed 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
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
1	GENCO-I	1,418.12	894.87	177.74	41.73
2	GENCO-III	1,582.59	431.23	192.00	---
3	KAPCO	23.00	77.25	188.88	262.20
4	Hub Power	747.36	578.02	70.13	224.98
5	Attock Gen.	408.71	161.74	41.84	58.13
6	Atlas Power	---	---	99.56	1,337.38
7	Engro Powergen. Qadirpur	-4.83	43.64	453.89	674.48
8	Saif Power	---	---	419.62	489.50
9	Orient Power	---	---	444.99	538.67
10	Nishat Power	---	---	70.38	72.99
11	Nishat Chunian	---	---	96.83	92.84
12	Sapphire Electric	---	---	339.18	686.00
13	Halmore Power	---	---	388.91	442.17
14	Narowal Energy	90.36	100.46	79.11	68.00
15	Liberty Power Tech.	100.01	75.96	54.77	55.25
16	Foundation Power	19.63	151.70	764.15	678.99
17	Uch-II Power	159.56	90.55	715.67	557.25
18	Sahiwal Imported Coal	---	---	937.77	773.56
19	Quaid-e-Azam Thermal	378.94	3,681.59	3,774.47	4,172.34
20	NPPMCL – Haveli Bahadur Shah	381.67	3,863.69	4,387.76	4,007.62
21	NPPMCL – Balloki	---	2,812.61	4,432.36	3,074.56
22	Port Qasim Electric Power	---	---	573.44	406.08
	Total	**5,305.12**	**12,963.31**	**18,703.45**	**18,714.72**

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
1	Zorlu Enerji Pakistan	73.48	13.57	30.94	--
2	FFC Energy	58.63	10.53	21.25	45.50
3	Three Gorges First Wind	80.09	13.67	13.75	56.90
4	Foundation Wind Energy-I	7.00	4.00	21.32	62.26
5	Foundation Wind Energy-II	98.77	69.57	4.67	66.63
6	Sapphire Wind	91.80	63.98	1,050.27	169.26
7	Yunus Energy	167.43	65.55	940.26	244.54
8	Metro Power Company	71.18	71.91	8.11	33.10
9	Gul Ahmed Wind	142.57	49.33	1,001.57	158.71
10	Master Wind Energy	166.38	31.54	169.73	986.84
11	Tenaga Generasi	209.80	88.85	12.50	12.93
12	HydroChina Dawood	204.73	79.45	12.45	17.38
13	Sachal Energy Development	136.43	76.80	1.24	0.83
14	UEP Wind Power	364.43	111.86	2,046.97	321.95
15	Artistic Wind Power	0.58	77.93	692.59	106.20
16	Act Wind	43.35	21.22	548.87	79.03
17	Hawa Energy	0.42	42.89	671.16	274.84
18	Jhampir Power	0.56	43.07	700.53	280.43
19	Three Gorges Second Wind	0.12	105.58	813.89	135.55*
20	Three Gorges Third Wind	1.31	104.60	819.38	136.91*
21	Tricon Bostan Consulting-A	--	93.95	727.48	276.86
22	Tricon Bostan Consulting-B	--	68.29	841.31	148.23
23	Tricon Bostan Consulting-C	--	77.18	729.72	302.63
24	Zephyr Power	--	4.24	10.72	4.98
25	Quaid-e-Azam Solar Park	6.39	3.07	4.17	3.72
26	Appolo Solar Development	4.58	4.42	--	--
27	Best Green Energy	7.05	4.38	1.31	5.06*
28	Crest Energy	6.24	5.09	2.72	4.13
29	AJ Power	--	0.75	1.62	1.81
30	Harappa Solar	1.76	2.13	1.51	2.30
	Total	**1,945.08**	**1,409.40**	**11,902.01**	**3,939.51**

Note: June, 2021 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 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
1	Due for Payments against verified invoices of Power Generation Companies	288,053	441,412	694,261	1,038,115	1,244,835
2	Payable to GENCOs (Invoices based)	--	16,419	17,464	48,040	105,314
3	Payables to Fuel Suppliers by GENCOs	90,975	86,067	100,677	105,092	--
	Total (Payables to IPPs/GENCOs)	**379,028**	**543,898**	**812,402**	**1,143,207**	**1,350,149**
4	Energy Payable Swap by GOP through Loan from Commercial Banks by Power Holding (Pvt.) Limited	438,961	582,863	805,787	1,007,218	930,000
	Grand Total (Circular Debt)	**817,989**	**1,126,761**	**1,618,189**	**2,150,425**	**2,280,149**

Source: CPPA-G

TABLE 43
Investment Plan for Private Sector Power Generation Projects

S. No.	Name of the Project	Capacity (MW)	Estimated Investment (Million US$)	Achieved/ Expected COD	Latest Status of the Project
A:	**HYDEL**				
1	Karot Hydropower Project	720.00	1698.26	December, 2021	Plant is under construction.
2	Suki Kinari Hydropower Project	870.00	1707.00	December, 2022	Plant is under construction.
3	Rialli-II Hydropower Project	7.08	18.00	June, 2023	LOS issued. Financial Closing in progress. Also under construction.
4	Kathi-II Hydropower Project	8.00	20.00	May, 2024	LOS issued. Financial Closing in progress.
5	Azad Pattan Hydel Project	700.00	1357.16	September, 2026	LOS issued. Financial Closing in progress.
6	Kohala Hydropower Project	1124.00	2364.05	December, 2026	LOS issued. Financial Closing in progress.
7	Athmuqam Hydropower Project	350.00	900.00	December, 2028	LOI issued. Feasibility Study completed and approved by POE. Sponsors have initiated Tariff determination process through CPPA-G.
8	Turtonas-Uzghor Hydropower Project	58.00	165.00	December, 2028	LOI issued. Financial Study completed and approved by POE. Tariff determined by NEPRA. Company filed Review Motion which is in progress.
9	Mahl Hydropower Project	640.00	1472.00	June, 2029	LOI issued. LOS will be issued after approval of IGCEP by NEPRA. Tariff determined by NEPRA.
10	Ashkot Hydel Project	300	450.00	December, 2030	The project has been transferred by Govt. of AJ&K to PPIB for further processing. The project is currently under evaluation.
11	Kaigah Hydel Project	548	1260.40	COD will be assessed after issuance of LOI.	Projects will be advertised.
12	Chakothi-Hattian Project	500	1150.00		
13	Rajdhani Hydropower Project	132	303.60		
14	Neckeherdm-Paur Hydropower Project	80	184.00		
B:	**COAL**				
1	Lucky Electric Thar Coal Power Project	660.00	1080.90	June, 2021	Financial Close achieved. Plant is under construction.
2	Thar Energy Limited (HUBCO Project)	330.00	497.70	March, 2022	Financial Close achieved. Plant is under construction.
3	Thal Nova Power Thar Coal Power Project	330.00	497.70	June, 2022	Financial Close achieved. Plant is under construction.
4	Shanghai Electric Thar Coal Power Project	1320.00	1912.20	1st Unit (660 MW) expected by May, 2022. Complete project (1320 MW) expected by August, 2022.	LOS issued. Financial Closing in progress.
5	Gwadar Imported Coal Power Project	300.00	435.00	June, 2023	LOS issued. Financial Closing in progress.
6	Siddiqsons Energy Thar Coal Power Project	330.00	410.19	July, 2023	LOS issued. Financial Closing in progress.
7	Oracle Thar Coal Power Project	1320.00	1640.76	December, 2026	Project proposal is under evaluation/ consideration.

S. No.	Name of the Project	Capacity (MW)	Estimated Investment (Million US$)	Achieved/ Expected COD	Latest Status of the Project
C:	**PIPELINE QUALITY GAS/DUAL FUEL/RLNG**				
1	Punjab Thermal Power Project	1263.00	707.75	Open Cycle by October, 2021 and Combined Cycle by June, 2022.	Financial Close achieved. Construction work in progress.
D:	**TRANSMISSION LINE PROJECT**				
1	660 kV HVDC Matiari-Lahore Transmission Line Project	4000 MW Load Carrying Capacity	1658.00	September, 2021	Financial Close achieved. Project is under construction.

Note: Due to COVID-19 Pandemic, the COD and completion schedule of some projects is likely to be affected.
Source: Private Power and Infrastructure Board, Islamabad

TABLE 44
Investment Plan for Power Generation Projects (K-Electric Limited) (2021-22 to 2025-26)*

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-I)	Bin Qasim	450	2021-22	625.00**
2	Addition of BQPS-III 900 MW RLNG Plant (Phase-II)	Bin Qasim	450	2021-22	
Plan to induct IPPs/Additional Supply from National Grid in KE system [1]					
1	Additional supply from National Grid	--	300	2021-22	--
2	Additional supply from National Grid	--	650	2022-23	--
3	Solar Projects at Uthal and Vindar	--	100	2022-23	60.00 [2]
4	Solar Projects at Bela	--	50	2023-24	30.00 [2]
5	Other Solar Projects	--	200	2023-24	120.00 [2]
6	225 MW WPPs	--	225	2023-24	229.00 [3]
7	Base load IPP (+/- 50 MW based on technology selection)	--	400	2024-25	435.00

** These are estimates and are subject to change. ** Including simultaneous investment in the associated transmission projects.*
**** Total supply from existing interconnections will be increased to 1,100 MW for a temporary period of 18 months, which will be reverted to existing power withdrawal subsequent to energization of Dhabeji interconnection.*
[1] These are indicatives and subject to relevant government/regulatory approvals along with finalization of contractual modalities.
[2] Based on latest NEPRA Determination for Asia Energy Limited dated September 07, 2020 with adjustments for certain factors.
[3] Based on NEPRA Tariff Determination of Iran Pak Wind Power Limited dated January 21, 2021.
Source: KE

TABLE 45

Status of Renewable Energy Projects

A:	Existing Projects (In-Operation and Under Construction)				
S. No.	Name of Project	Capacity (MW)	COD/ Expected COD	Estimated Cost (US$ Million)	Latest Status of the Project
Wind Power Projects:					
1	FFC Energy Limited	49.50	May, 2013	133.56	In Operation
2	Zorlu Energy Pakistan Limited	56.40	July, 2013	143.74	
3	Three Gorges First Wind Farm Pakistan (Pvt.) Limited	49.50	November, 2014	124.82	
4	Foundation Wind Energy-II Limited	50.00	December, 2014	124.91	
5	Foundation Wind Energy-I Limited	50.00	April, 2015	125.89	
6	Sapphire Wind Power Company (Pvt.) Limited	52.80	November, 2015	129.36	
7	Metro Power Company (Pvt.) Limited	50.00	September, 2016	125.24	
8	Yunus Energy Limited	50.00	September, 2016	131.00	
9	Tapal Wind Energy (Pvt.) Limited	30.00	October, 2016	78.60	
10	Tenega Generasi Limited	49.50	October, 2016	123.13	
11	Master Wind Energy (Pvt.) Limited	52.80	October, 2016	125.48	
12	Gul Ahmed Wind Power Limited	50.00	October, 2016	131.00	
13	HydroChina Dawood Power (Pvt.) Limited	49.50	April, 2017	121.75	
14	Sachal Energy Development (Pvt.) Limited	49.50	April, 2017	133.92	
15	United Energy Pakistan Limited	99.00	June, 2017	242.55	
16	Hawa Energy (Pvt.) Limited	49.74	March, 2018	107.50	
17	Jhampir Wind Power (Pvt.) Limited	49.74	March, 2018	106.64	
18	Artistic Energy (Pvt.) Limited	49.30	March, 2018	129.16	
19	Three Gorges Second Wind Farm Pakistan (Pvt.) Limited	49.50	June, 2018	106.42	
20	Three Gorges Third Wind Farm Pakistan (Pvt.) Limited	49.50	July, 2018	106.42	
21	Tricon Boston Consulting Corporation (Pvt.) Limited (A)	49.60	September, 2018	106.64	
22	Tricon Boston Consulting Corporation (Pvt.) Limited (B)	49.60	September, 2018	106.64	
23	Tricon Boston Consulting Corporation (Pvt.) Limited (C)	49.60	September, 2018	106.64	
24	Zephyr Power (Pvt.) Limited	48.30	November, 2018	106.50	
25	Master Green Energy Limited	50.00	November, 2020	63.91	Under Construction
26	Tricom Wind Power (Pvt.) Limited	50.00	February, 2021	63.91	
27	Lakeside Energy (Pvt.) Limited	50.00	December, 2021	63.91	
28	Artistic Wind Power (Pvt.) Limited	50.00	December, 2021	62.95	
29	Liberty Wind Power-1 (Pvt.) Limited	50.00	December, 2021	63.91	
30	Indus Wind Energy Limited	50.00	December, 2021	64.07	
31	Act 2 Wind (Pvt.) Limited	50.00	December, 2021	62.95	
32	Liberty Wind Power-2 (Pvt.) Limited	50.00	December, 2021	63.91	
33	Metro Wind Power Limited	50.00	December, 2021	73.93	
34	NASDA Green Energy (Pvt.) Limited	50.00	December, 2021	63.91	
35	Din Energy Limited	50.00	December, 2021	63.91	
36	Gul Ahmed Electric Limited	50.00	December, 2021	62.95	
Solar Power Projects:					
37	Quaid-e-Azam Solar Power (Pvt.) Limited	100.00	July, 2015	151.40	In Operation
38	Appolo Solar Development Pakistan Limited	100.00	May, 2016	151.40	
39	Best Green Energy Pakistan (Pvt.) Limited	100.00	July, 2016	151.40	
40	Crest Energy Pakistan Limited	100.00	July, 2016	151.40	
41	Harappa Solar (Pvt.) Limited	18.00	October, 2017	19.21	
42	AJ Power (Pvt.) Limited	12.00	December, 2017	12.80	
43	Zhenfa Pakistan New Energy Company (Pvt.) Limited	100	March, 2022	57.39	Under Construction
44	Meridian Energy (Pvt.) Ltd	50	March, 2022	30.34	
45	HND Energy (Pvt.) Limited	50	March, 2022	30.34	
46	Helios Power (Pvt.) Limited	50	March, 2022	30.34	
Bagasse/Biomass Co-Generation Projects:					
47	JDW Sugar Mills Limited (Unit-II)	26.35	June, 2014	26.24	In Operation
48	JDW Sugar Mills Limited (Unit-III)	26.35	October, 2014	26.24	
49	RYK Mills Limited	30.00	March, 2015	29.88	
50	Chiniot Power Limited	62.40	November, 2015	62.15	
51	Hamza Sugar Mills Limited	15.00	March, 2017	14.94	
52	Layyah Sugar Mills	41.00	December, 2017	40.84	
53	Almoiz Industries Limited	36.00	February, 2019	35.86	
54	Chanar Energy Limited	22.00	February, 2019	21.91	

S. No.	Name of Project	Capacity (MW)	COD/ Expected COD	Estimated Cost (US$ Million)	Latest Status of the Project
B:	**Future Upcoming Projects**				
Wind Power Projects:					
1	Western Energy (Pvt.) Limited	50.00	2023	63.12	Generation Licence Acquired. Tariff in Review.
2	Trans Atlantic Energy (Pvt.) Limited	50.00	2023	62.87	
Solar PV Power Projects:					
3	Access Solar (Pvt.) Limited	11.52	2023	7.04	LOS Stage. Financial Close by December, 2021.
4	Safe Solar Power (Pvt.) Limited	10.28	2022	6.40	
5	Access Electric (Pvt.) Limited	11.52	2022	6.12	LOS Stage. Financial Close January, 2022.
6	Zorlu Solar Pakistan (Pvt.) Limited	100.00	2023	53.11	Generation Licence Acquired. Tariff Petion under Review.
7	Siachen Energy Limited	100.00	2023	77.51	
Bagasse/Biomass Co-Generation Projects:					
8	Shahtaj Sugar Mills Limited	32.00	2023	31.87	LOS Stage
9	Hunza Power (Pvt.) Limited	49.80	2023	49.60	
10	Bahawalpur Energy Limited	31.20	2023	31.08	
11	Indus Energy Limited	31.00	2023	30.88	
12	Ittefaq Power (Pvt.) Limited	31.20	2023	31.08	
13	Kashmir Power (Pvt.) Limited	40.00	2023	39.84	
14	Alliance Sugar Mills Limited	30.00	2023	29.88	
15	RYK Energy Limited	25.00	2023	24.90	
16	Two Star Industries (Pvt.) Limited	48.90	2023	48.70	
17	TAY Powergen Company (Pvt.) Limited	30.00	2023	29.88	
18	Hamza Sugar Mill Limited (Unit-II)	30.00	2023	29.88	
19	Faran Power (Pvt.) Limited	26.50	2023	26.39	
20	Sheikhoo Power Limited	30.00	2023	29.88	
21	Mehran Energy Limited	26.50	2023	26.39	
22	Habib Sugar Mills Limited	26.50	2023	26.39	

** 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, Islamabad

TABLE 46

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

	Unit	2016-17	2017-18	2018-19	2019-20	2020-21
Unit Received by NTDC	GWh	106,798.00	120,062.00	122,302.00	125,941.00	132,299.00
Unit Delivered by NTDC	GWh	104,331.00	117,139.00	118,838.00	122,471.00	128,620.00
Unit Losses (Transmission)	GWh	2,467.00	2,923.00	3,464.00	3,470.00	3,679.00
	%	2.31	2.43	2.83	2.76	2.78

Note: June, 2021 is pending reconciliation, which will be carried out with CPPA-G next week.

Source: NTDC

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**	
	2020	**2021**	**2020**	**2021**
Number of Grid Stations	16	16	45	46
Total No. of Power Transformers (500/220 kV)	43	44	0	0
Total Capacity (MVA)	23,400	24,000	0	0
Total No. of Power Transformers (220/132 kV)	33	34	127	129
Total Capacity (MVA)	6,450	6,610	25,450	25,770

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
2017	36	5,127	111	10,063	147	15,190
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

Source: NTDC

TABLE 48
Loading Position of Transmission Lines and Power Transformers in NTDC System

A: Loading Position of Transmission Lines						
		2016-17	2017-18	2018-19	2019-20	2020-21
Overloaded Transmission Lines/Circuits (Nos.) (>80%)	500 kV	2	9	16	12	14
	220 kV	19	43	54	36	35
Underutilized Transmission Lines/Circuits (Nos.) (<30%)	500 kV	34	39	32	40	37
	220 kV	95	120	92	101	56
B: Loading Position of Power Transformers						
		2016-17	2017-18	2018-19	2019-20	2020-21
Overloaded Power Transformers (Nos.) (>80%)	500 kV	14	22	16	19	26
	220 kV	63	60	57	82	115
Underutilized Power Transformers (Nos.) (<30%)	500 kV	18	17	18	17	16
	220 kV	69	64	68	46	36

Source: NTDC

TABLE 49
Grid Stations and Transmission Lines with K-Electric Limited

		2016-17		2017-18		2018-19		2019-20		2020-21	
Number of Grid Stations in KE Transmission System											
		2016-17		2017-18		2018-19		2019-20		2020-21	
		No.	MVA	No.	MVA	No.	MVA	No.	MVA	No.	MVA
KE's Owned Grid Stations	220 kV	7	3000	7	3000	9	3500	10	4500	10	4500
	132 kV	54	5196	54	5550	56	6109	57	6373	58	6557
	66 kV	3	69	3	69	3	69	3	79	3	79
Consumers Owned Grid Stations	220 kV	1	80	1	80	1	80	1	80	1	80
	132 kV	9	452	9	512	10	538	11	578	11	578
	66 kV	0	0	0	0	0	0	0	0	0	0
Total No. of Grid Stations		**74**	**8797**	**74**	**9211**	**79**	**10296**	**82**	**11610**	**83**	**11794**
Length of Transmission Lines in KE System (km)											
Overhead Lines	220 kV	323		323		322		323		323	
	132 kV	613		614		640		650		651	
	66 kV	149		149		149		152		152	
Underground Lines	220 kV	15		15		14		42		42	
	132 kV	153		153		158		151		182	
	66 kV	1		1		1		1		1	
Total Length		**1254**		**1255**		**1284**		**1319**		**1351**	

Source: KE

TABLE 50
Investment Details in Transmission System of K-Electric Limited

A. Amount Injected to Reinforce/Expand 220 kV and 132 kV Transmission System of K-Electric Limited (Million Rs.)

Description	During FY 2019-20 [1]			During FY 2020-21 [2] & [3]		
	FC	LC	Total	FC	LC	Total
Grid Stations	2,133.26	2,619.26	4,752.52	2,069.68	2,308.86	4,379 [3]
Transmission	2,624.60	4,611.07	7,235.67	243.60	285.63	529.23
SCADA	174.53	106.47	281.00	61.33	40.89	102.22
Reinforcement	1,927.41	2,249.91	4,177.32	942.19	1,033.81	1,976.00
Total	**6,859.80**	**9,586.71**	**16,446.51**	**3,316.80**	**3,669.19**	**6,986.45**

B. Investment Plan in Transmission Line (500 kV, 220 kV and 132 kV) of K-Electric Limited (Million US$)*

Description	2021-22			2022-23		
	FC	LC	Total	FC	LC	Total
Grid Stations	54	53	107	115	50	165
Transmission	59	40	99	33	30	63
SCADA	4	3	7	6	2	8
Reinforcement	14	13	27	30	17	47
Total	**131**	**109**	**240**	**184**	**99**	**283**

[1] Restated as per Financial Statements 2020. [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 157.78 (FY 2021-22) and as 162.11 (FY 2022-23).

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)**
2017	19,020	25,117		-6,097
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
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)**
2022	29,761	5.50	25,101	4,660
2023	31,868	2.40	25,715	6,153
2024	34,151	6.20	27,311	6,840
2025	34,885	3.70	28,322	6,563
2026	38,574	3.80	29,398	9,176

** Generation Capability is the maximum Generation Capability of any day recorded during the year and Demand is the Maximum Demand of any day recorded during the year.*

Source: NTDC

TABLE 52

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

A: Actual Figures				
Financial Year ending 30th June	**Generation Capability (MW)***	**Demand During KE's System Peak Hours (MW)**		**Surplus/(Deficit) (MW)*** **
2017	2,920 (including IPPs+NTDC)	3,270		(350)
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)
B: Projected Figures				
Financial Year ending 30th June	**Planned Generation Capability as per KE (MW) [1] & [2]**	**KE's Projected Demand Growth Rate (%) [3]**	**KE's Projected Demand during Peak hours (MW) [4]**	**Surplus/ (Deficit) (MW)**
2022	4,317	6.50	4,110	207
2023	4,737		4,422	315
2024	4,878		4,588	290
2025	5,002		4,759	243
2026	5,002		4,935	67

Source: KE

** 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] Subject to necessary approval/confirmation of revision in USD indexation and cost of interconnection.

[3] Growth in base load assumed 4.3%, taken into account captive power of 200 MW in FY 2021-22, 150 MW in FY 2022-23 and 150 MW additional demand due to heat wave contingency.

[4] Subject to change.

Table 53

Overloading (above 80% load) of 500 kV and 220 kV Power Transformers installed at 500 kV Grid Stations (2020-21)

Region	Name of Grid Station	Auto and Power T/F	Voltage Level	Capacity (MVA)	Capacity (Ampere)	Load (Ampere)	Overload (above 80%)
Islamabad	Sheikh Muhammadi Peshawar	T-1	500/220	450	1180	1120	94.92
		T-2	500/220	450	1180	1120	94.92
		T-3	500/220	450	1180	1120	94.92
		T-5	220/132	250	1093	940	86.00
		T-6	220/132	250	1093	940	86.00
		T-7	220/132	250	1093	940	86.00
		T-8	220/132	250	1093	940	86.00
	Rawat	T-1	500/220	450	1125	1100	97.78
		T-2	500/220	450	1125	1100	97.78
		T-3	500/220	450	1125	1100	97.78
		T-4	500/220	750	1971	1790	90.82
		T-5	220/132	250	1093	1060	96.98
		T-6	220/132	250	1093	1060	96.98
		T-7	220/132	250	1093	1060	96.98
		T-8	220/132	160	700	675	96.43
Lahore	Sheikhupura	T-1	500/220	600	1575	1530	97.14
		T-2	500/220	600	1575	1530	97.14
		T-3	500/220	600	1575	1530	97.14
		T-4	500/220	600	1575	1530	97.14
		T-5	220/132	160	700	645	92.14
		T-6	220/132	160	700	675	96.43
		T-7	220/132	160	700	735	105.00
		T-8	220/132	160	700	720	102.86
	Gatti	T-1	500/220	450	1181	1075	91.02
		T-2	500/220	450	1181	1100	93.14
		T-3	500/220	450	1181	1054	89.25
		T-4	500/220	450	1181	1054	89.25
		T-5	500/220	600	1575	1530	97.14
	New Gakkhar (Nokhar)	T-1	500/220	600	1575	1450	92.06
		T-2	500/220	600	1575	1450	92.06
		T-4	220/132	160	700	700	100.00
		T-5	220/132	160	700	700	100.00
		T-6	220/132	160	700	700	100.00
	Yousafwala	T-3	220/132	160	700	650	92.86
		T-4	220/132	160	700	650	92.86
		T-5	220/132	160	700	650	92.86
		T-6	220/132	160	700	650	92.86
Multan	Muzaffargarh	T-1	500/220	600	1499	1500	100.07
		T-2	500/220	600	1499	1500	100.07
	Multan	T-1	500/220	450	1125	1140	101.33
		T-2	500/220	450	1125	1140	101.33
		T-3	220/132	160	700	674	96.29
		T-4	220/132	160	700	674	96.29
		T-5	220/132	160	700	674	96.29
Hyderabad	Jamshoro	T-1	500/220	450	1125	1080	96.00
		T-2	500/220	450	1125	1080	96.00
		T-8	500/220	450	1125	1040	92.44
	Dadu	T-2	500/220	450	1125	1066	94.76
		T-4	500/220	450	1125	990	88.00
	NKI	T-1	500/220	600	1594	1300	81.56
		T-2	500/220	600	1594	1300	81.56

Source: NTDC

Table 54

Overloading (above 80% load) of 220 kV Power Transformers installed at 220 kV Grid Stations (2020-21)

Region	Name of Grid Station	Auto and Power T/F	Voltage Level	Capacity (MVA)	Capacity (Ampere)	Load (Ampere)	Overload (above 80%)
Islamabad	Mardan	T-1	220/132	250	1093	1040	95.15
		T-2	220/132	250	1093	1040	95.15
		T-3	220/132	250	1093	1040	95.15
	Burhan	T-1	220/132	250	1093	1050	96.07
		T-2	220/132	250	1093	1050	96.07
		T-3	220/132	250	1093	1050	96.07
		T-4	220/132	250	1093	920	84.17
	Daudkhel	T-1	220/132	160	700	680	97.14
		T-2	220/132	160	700	680	97.14
	Bannu	T-1	220/132	160	700	680	97.14
		T-2	220/132	160	700	680	97.14
		T-5	220/132	250	1093	1010	92.41
	Sangjani	T-1	220/132	160	700	630	90.00
		T-2	220/132	160	700	630	90.00
		T-3	220/132	160	700	670	95.71
		T-4	220/132	160	700	670	95.71
	University Islamabad	T-1	220/132	250	1093	1050	96.07
		T-2	220/132	250	1093	1005	91.95
	Mansehra	T-1	220/132	250	1093	900	82.34
	Chakdara	T-1	220/132	250	1093	875	80.05
		T-2	220/132	250	1093	875	80.05
	DI Khan	T-1	220/132	250	1093	905	82.80
Lahore	Nishatabad	T-2	220/132	160	700	600	85.71
		T-3	220/132	160	700	660	94.29
		T-4	220/132	160	700	560	80.00
		T-5	220/132	160	700	560	80.00
	Jaranwala	T-1	220/132	160	700	632	90.29
		T-2	220/132	160	700	625	89.29
		T-3	220/132	160	700	610	87.14
		T-4	220/132	160	700	657	93.86
	Samundri Road	T-1	220/132	250	1093	1015	92.86
		T-2	220/132	160	700	680	97.14
		T-3	220/132	160	700	640	91.43
	Ludewala	T-1	220/132	160	700	700	100.00
		T-2	220/132	250	1093	1075	98.35
		T-3	220/132	250	1093	1075	98.35
	Bandala	T-2	220/132	160	700	625	89.29
		T-3	220/132	160	700	625	89.29
		T-4	220/132	250	1093	920	84.17
	Bund Road	T-1	220/132	250	1093	885	80.97
		T-3	220/132	250	1093	885	80.97
	Gakkhar	T-1	220/132	160	700	635	90.71
		T-3	220/132	160	700	635	90.71
		T-4	220/132	160	700	635	90.71
	Kala Shah Kaku	T-1	220/132	160	700	660	94.29
		T-2	220/132	160	700	660	94.29
		T-3	220/132	160	700	660	94.29
		T-4	220/132	160	700	660	94.29
	NKLP	T-1	220/132	250	1093	1065	97.44
		T-2	220/132	250	1093	1065	97.44
		T-3	220/132	250	1093	1065	97.44
	Safraz Nagar	T-1	220/132	160	700	650	92.86
		T-2	220/132	160	700	650	92.86
		T-3	220/132	160	700	650	92.86
		T-6	220/132	160	700	650	92.86
	WAPDA Town	T-1	220/132	160	700	670	95.71
		T-2	220/132	160	700	670	95.71
		T-3	220/132	160	700	670	95.71
	Ghazi	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
	Kassowal	T-1	220/132	160	700	690	98.57
		T-2	220/132	160	700	690	98.57
	Okara	T-1	220/132	250	1093	1020	93.32
		T-2	220/132	250	1093	1020	93.32

Region	Name of Grid Station	Auto and Power T/F	Voltage Level	Capacity (MVA)	Capacity (Ampere)	Load (Ampere)	Overload (above 80%)
Multan	Vehari	T-1	220/132	160	700	691	98.71
		T-2	220/132	160	700	691	98.71
		T-3	220/132	250	1093	1055	96.52
	Bahawalpur	T-1	220/132	160	700	650	92.86
		T-2	220/132	250	1093	1015	92.86
		T-3	220/132	250	1093	1015	92.86
	Muzaffargarh	T-1	220/132	160	700	650	92.86
		T-2	220/132	160	700	650	92.86
	Chishtian	T-1	220/132	160	700	661	94.43
		T-2	220/132	160	700	661	94.43
	NGPS Multan	T-1	220/132	160	700	672	96.00
		T-5	220/132	160	700	672	96.00
Hyderabad	Jamshoro	T-3	220/132	160	700	670	95.71
		T-7	220/132	160	700	1080	154.29
	Dadu	T-3	220/132	160	700	625	89.29
		T-5	220/132	250	1094	925	84.59
	Hala Road	T-1	220/132	160	700	630	90.00
		T-2	220/132	160	700	700	100.00
		T-3	220/132	250	1094	1093.5	100.00
	T. M. Khan	T-1	220/132	160	700	628	89.71
		T-2	220/132	160	700	628	89.71
	Jhampir	T-1	220/132	250	1093	892	81.61
		T-2	220/132	250	1093	892	81.61
		T-3	132/11	250	1093	892	81.61
	Shikarpur	T-1	220/132	160	700	660	94.29
		T-2	220/132	250	1093	1020	92.73
		T-3	220/132	160	700	640	91.43
Quetta	Quetta	T-1	220/132	160	700	590	84.00
		T-2	220/132	160	700	590	84.00
		T-3	220/132	250	1095	970	88.00
	Khuzdar	T-1	220/132	160	700	590	84.00
		T-2	220/132	160	700	590	84.00
	Loralai	T-1	220/132	250	1095	1040	95.00
		T-2	220/132	250	1095	900	82.19

Source: NTDC

TABLE 55

Outages of NTDC's 500 kV and 220 kV Network

S. No.	Name of Circuit	June, 2021	Jan.-June, 2021	S. No.	Name of Circuit	June, 2021	Jan.-June, 2021
500 kV Transmission Lines (North Region)							
1	Tarbela - Sheikh Muhammadi	1	2	10	CFPP - LHR South	0	1
2	Tarbela - Rawat	0	3	11	Multan - Muzaffar Garh-I	0	4
3	Brotha - Rawat-I	0	4	12	Multan - Muzaffar Garh-II	0	2
4	Rawat - Nokhar	1	3	13	Multan - Rahim Yar Khan	0	4
5	Rawat - Neelum Jhelum	0	2	14	Muzaffar Garh - Guddu Old	1	4
6	Tarbela - Barotha-2	0	1	15	Muzaffar Garh - Guddu 747 MW	0	1
7	HBS - Gatti-2	0	2	16	Dera Ghazi Khan - Guddu Old	0	1
8	Muzafargarh - HBS	1	1	17	Rahim Yar Khan - Guddu 747 MW	0	1
9	Gatti - Rousch	0	1				
220 kV Transmission Lines (North Region)							
1	KSK - Bandala-1	0	3	35	Tarbela - Mardan-I	0	1
2	KSK - Bandala-2	0	2	36	Tarbela - Mardan-II	0	1
3	Gatti - Nishatabad-1	2	2	37	Daudkhel - CHASNUPP-II	0	1
4	Gatti - Nishatabad-2	1	2	38	Daudkhel - Bannu-I	0	2
5	Gatti - JWR-1	0	1	39	Daudkhel - Bannu-II	0	1
6	Gatti - JWR-2	0	1	40	DI Khan - CHASNUPP-2	0	1
7	Gatti - Yousaf Wala-1	0	1	41	Mardan - Chakdara	1	2
8	Gatti - Yousaf Wala-2	0	1	42	ISPR - Mansehra-I	1	2
9	Gatti - Lilan Wala-1	0	1	43	ISPR - Mansehra-II [ISPR-Allai Khwar-II]	0	1
10	Multan - TT Singh-1	2	2	44	Mansehra - Alai Khawar-I	0	2
11	Multan - TT Singh-2	0	1	45	Mansehra - Alai Khawar-II	1	2
12	TT Singh - SRD-1	2	3	46	Tarbela - Burhan-I	0	1
13	TT Singh - SRD-2	1	1	47	Tarbela - Burhan-III	0	1
14	SRD - Nishatabad-1	2	4	48	Burhan - ISPR	4	4
15	SRD - Nishatabad-2	1	4	49	Tarbela - ISPR	1	1
16	PTPL - TT Singh-4	0	1	50	Rawat - ISPR	0	1
17	GKR - Gujrat	0	1	51	Bahria Town - ISPR	1	3
18	New GKR - Gujrat	0	1	52	Rawat - University-I	0	3
19	New GKR - Gakkhar	0	1	53	Rawat - University-II	0	1
20	Kala Shah Kaku - Bund Road-1	1	4	54	Mangla - Rawat-II	2	2

S. No.	Name of Circuit	June, 2021	Jan.-June, 2021	S. No.	Name of Circuit	June, 2021	Jan.-June, 2021
21	Kala Shah Kaku - Bund Road-2	0	2	55	Mardan - Nowsehra	0	1
22	New KLP - Bund Road-1	0	3	56	Multan - NGPS-I	0	1
23	New KLP - Bund Road-2	0	3	57	Multan - NGPS-II	0	1
24	New KLP - Sarfraz Nagar	0	1	58	Multan - TT Singh (upto Head Sidhnai)-I	2	3
25	New KLP - New LHR (South)-I	0	2	59	Multan - TT Singh (upto Head Sidhnai)-II	1	2
26	New KLP - New LHR (South)-II	0	2	60	TPS M/Garh (Ph-1) - B/Pur-I	4	4
27	SNR - Okara-2	0	1	61	TPS M/Garh (Ph-1) - Multan-I	0	2
28	New KLP - Sheikhupura	0	2	62	TPS M/Garh (Ph-2) - Multan-III	0	2
29	Ravi - Sheikhupura	0	1	63	KAPCO - Multan-III	0	1
30	Altas P/H - Ravi	0	1	64	KAPCO - Multan-IV	0	3
31	Kala Shah Kaku - Ravi	0	1	65	KAPCO - Multan-VI	0	2
32	Ravi - Shalamar	0	1	66	KAPCO - TPS M/Garh (Ph-1)-I	0	1
33	Yousafwala - Okara-1	0	1	67	Vehari - Multan-II	0	2
34	Yousafwala - Okara-2	0	1				
500 kV Transmission Lines (South Region)							
1	Dadu - Jamshoro-I	0	3	5	Hub - Jamshoro-II	0	1
2	Guddu - Shikarpur-I (in & out)	0	2	6	Dadu - Matiari	0	1
3	Guddu - Shikarpur-II (in & out)	1	2	7	Port Qasim - Matiari-I	0	1
4	NKI - Jamshoro	0	3	8	Port Qasim - Matiari-II	0	1
220 kV Transmission Lines (South Region)							
1	Jamshoro - Hala Road-II	0	2	10	DM Jamali - Sibbi	0	2
2	Jamshoro - TM Khan Road-I	0	2	11	Sibbi - Quetta Industrial-I	0	2
3	Jamshoro - TM Khan Road-II	0	1	12	Sibbi - Quetta Industrial-II	0	3
4	Jhampir - TM Khan-II	0	2	13	Daharki (FPCDL) - Engro	0	1
5	Guddu - Sibbi (Direct Ckt)	2	7	14	Shikarpur - Rohri-I	0	1
6	Guddu - Shikarpur-I	1	1	15	Shikarpur - Rohri-II	0	1
7	Guddu - Shikarpur-II	3	8	16	Dadu - Khuzdar-I	0	2
8	Shikarpur - Uch-II	0	4	17	Dadu - Khuzdar-II	0	3
9	Uch - Sibbi-I	0	6	18	DG Khan - Loralai-I	1	1

Source: NTDC

TABLE 56

Main Electricity Statistics of the Country

	2016-17	2017-18	2018-19	2019-20	2020-21
1: Maximum Energy Demand (MW)					
CPPA-G System*	24,290	25,303	24,839	24,790	26,349
KE System	3,270	3,527	3,530	3,604	3,604
2: Auxiliary Consumption and System Losses (in percentage)					
CPPA-G System					
Auxiliary Consumption	n.p.	n.p.	n.p.	0.05	0.05
Transmission Losses	2.31	2.43	2.83	2.76	2.78
Distribution Losses	17.93	18.32	17.61	18.86	17.95
KE System					
Auxiliary Consumption (KE Own)	7.62	7.55	7.45	7.04	6.88
T&D Losses (excluding Auxiliary Consumption)	21.70	20.28	19.17	19.79	17.54
3: Average Sales Price (Rs./kWh)					
CPPA-G System	12.20	13.06	15.54		
KE System	12.84	15.90	15.88 [1]	18.13 [1] [2]	19.64 [3]
4: Per Capita Electricity Consumption					
CPPA-G System					
Population (Million)	184.44	186.05	188.71	191.50	191.63
Energy Sale (GWh)	86,634.70	97,030.39	98,824.06	97,793.89	105,136.95
Per Capita Electricity Consumption (kWh)	474.00	527.00	528.00	516.00	548.64
Average Sale/ Consumer (kWh)	3,189.36	3,404.22	3,297.41	3,097.43	3,147.73
KE System					
Population (Million)	16.05	16.39	16.85	17.35	16.05
Energy Sale (GWh)	12,981.00	13,860.32	14,318.11	14,276.96	16,068.85
Per Capita Electricity Consumption (kWh)	871.00	863.00	892.00	889.00	1,001.00
Average Sale/ Consumer (kWh)	5,350.79	5,365.07	5,098.92	4,824.77	5,044.64

** Based on un-diversified power demand indicated by DISCOs in Table 64.*

[1] Billed to consumers including taxes.

[2] This includes impact of FCA for the July, 2016 to June, 2019 allowed through SRO 1621(I)/2019 December 27, 2019 and withdrawal of ISPA relief of PkRs. 3/kWh on off-peak and normal hours through SRO 810(I)/2019 dated July 12, 2019.

[3] This includes applicable uniform quarterly adjustment notified vide SRO 1037(1)2020 dated October 12, 2020 and impact of SRO 192(1)/2021 dated February 12, 2021. Further, this also includes impact of monthly FCA as per SRO 1621(1)/2019 dated December 27, 2019, SRO 293(1)/2021 dated March 09, 2021 and SRO 707(1)/2021 dated June 04, 2021 and subsidy given to industrial consumers (peak rates abolishment and subsidized rates on incremental consumption) through SRO 1291(1)/2020 dated December 03, 2020. Additionally the above price is inclusive of special relief provided to Zero rated industrial consumers notified vide SRO 12(1)2019 dated January 01, 2019 (read with Ministry of Energy's letter No.PF-05(02-ZRI)2020 dated September 30, 2020).

Source: NTDC/DISCOs/KE

TABLE 57

Hourly System Demand (MW) (January - December, 2020)

Hours of the day	Maximum Demand (MW)		System Demand for a Typical day in Summer		System Demand for a Typical Day in Winter	
	Summer (17-08-2020)	Winter (29-12-2020)	Working day (20-07-2020)	Non-working day (19-07-2020)	Working day (20-01-2020)	Non-working day (19-01-2020)
1	25,254	11,847	21,989	**24,623**	10,972	11,398
2	25,125	11,390	21,495	24,387	10,714	11,026
3	24,606	11,199	20,916	23,770	10,599	10,900
4	24,435	11,030	20,686	23,599	10,546	10,968
5	24,270	11,243	20,928	23,617	10,671	11,078
6	24,166	12,365	20,805	23,324	11,987	11,952
7	24,530	13,442	20,981	23,266	13,446	12,892
8	24,520	14,200	21,840	23,160	14,110	13,243
9	25,541	15,213	23,158	23,957	14,438	13,843
10	25,276	15,175	23,465	24,331	14,089	14,158
11	26,393	15,124	23,418	24,318	13,939	14,356
12	26,755	14,996	23,730	24,162	13,888	14,436
13	26,978	14,833	24,079	24,164	13,805	14,168
14	27,617	14,902	24,094	24,265	13,991	13,669
15	**28,179**	15,306	**24,287**	23,790	14,487	13,710
16	27,927	15,764	23,309	21,947	14,464	13,819
17	27,748	16,160	21,028	21,217	**14,757**	13,861
18	26,894	**16,774**	20,265	20,242	15,753	**15,083**
19	26,090	16,489	19,597	19,464	15,162	14,869
20	26,421	15,765	20,103	20,725	14,645	14,440
21	26,545	14,749	20,413	21,571	14,299	13,978
22	26,400	13,885	20,383	22,059	13,109	13,240
23	26,222	13,062	20,283	22,551	12,303	12,401
24	26,149	12,502	20,324	22,373	11,778	11,875

** Highlighted area indicates maximum demand of the day.*

Source: National Power Control Centre, Islamabad

TABLE 58

Monthly System Peak Load Demand (MW)

Month	2016-17	2017-18	2018-19	2019-20	2020-21
July	22,460	24,128	25,575	24,927	26,085
August	22,733	25,810	25,627	25,198	26,781
September	22,293	22,001	24,838	25,753	23,931
October	21,832	20,592	20,395	19,328	20,857
November	15,575	16,410	15,760	16,704	15,962
December	15,736	16,081	15,859	15,973	17,177
January	15,058	16,022	17,320	15,938	17,012
February	14,499	15,567	15,230	15,489	16,433
March	17,914	18,246	16,480	14,746	17,617
April	19,895	21,019	19,885	18,516	21,322
May	24,481	25,315	24,233	21,191	23,847
June	25,717	26,741	24,827	24,349	26,682

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	2017	8	39	172	946	84	183	218	485	51.27
	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
TESCO	2017	1	7	20	199	14	185	0	199	100.00
	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	9	18	275	0	0	144	144	52.36
IESCO	2017	5	19	108	1,058	11	12	4	27	2.55
	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	5	20	109	1,211	6	9	11	26	2.15
GEPCO	2017	5	24	118	805	49	32	7	88	10.93
	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
LESCO	2017	7	33	192	1,650	133	315	100	548	33.21
	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
FESCO	2017	4	24	130	998	94	63	2	159	15.93
	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
MEPCO	2017	9	37	174	1,241	210	142	81	433	34.89
	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
HESCO	2017	4	15	68	479	33	54	34	121	25.26
	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
SEPCO	2017	7	29	96	462	47	41	79	167	36.15
	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
QESCOz	2017	6	14	55	628	51	71	111	233	37.10
	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
Total in CPPA-G System	2017	56	241	1,133	8,466	726	1098	636	2,460	29.06
	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	58	255	1,175	10,188	1,158	612	472	2,242	22.01

KE	As on 30th June	IBCs	11 kV Feeders	Loading Position of 11 kV Feeders (Nos.)				%age
				80-90%	91-100%	Above 100%	Total	
	2017	29	1,653	70	15	6	91	5.51
	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

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	2017	2,245	802	312	35,751	39,110	44,574
	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
TESCO	2017	359	402	0	7,768	8,529	6,532
	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	10,567	11,515	6,285
IESCO	2017	2,897	581	69	24,833	28,380	26,499
	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
GEPCO	2017	2,354	447	0	22,718	25,519	18,446
	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
LESCO	2017	2,554	410	0	28,079	31,043	14,819
	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	410	0	30,055	33,516	15,000
FESCO	2017	2,242	1,280	0	42,083	45,605	29,702
	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
MEPCO	2017	3,538	977	0	72,899	77,414	47,723
	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
HESCO	2017	2,445	899	0	28,055	31,399	14,892
	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	-	28,471	31,929	15,057
SEPCO	2017	2,135	733	0	24,449	27,317	13,497
	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	25,682	28,631	13,352
QESCO	2017	4,963	472	1,981	36,088	43,504	15,577
	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
Total in CPPA-G System	2017	25,732	7,003	2,362	322,723	357,820	232,261
	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	5,018	2,223	349,197	385,933	240,931
KE	2017	766	149	0	9,363	10,278	19,962
	2018	767	149	0	9,549	10,465	19,098
	2019	798	149	0	9,876	10,823	19,751
	2020	801	153	0	10,204	11,158	18,367
	2021	833	153	0	10,283	11,269	18,509

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	2017	69	9	78	16	0	16	7	0	7	101
	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
TESCO	2017	8	0	8	8	0	8	0	0	0	16
	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
IESCO	2017	77	24	101	4	1	5	3	0	3	109
	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
GEPCO	2017	55	0	55	4	0	4	0	0	0	59
	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
LESCO	2017	98	38	136	5	0	5	0	0	0	141
	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
FESCO	2017	67	18	85	21	0	21	0	0	0	106
	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
MEPCO	2017	104	9	113	16	0	16	0	0	0	129
	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
HESCO	2017	59	6	65	15	0	15	0	0	0	80
	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
SEPCO	2017	54	1	55	12	1	13	0	0	0	68
	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
QESCO	2017	65	0	65	9	0	9	30	0	30	104
	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	72	1	73	3	0	3	32	0	32	108
Total in CPPA-G System	2017	656	105	761	110	2	112	40	0	40	913
	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	750	132	882	68	3	71	36	0	36	989
KE	2017	54	9	63	3	0	3	0	0	0	66
	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

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	2017	2805422	321802	32023	23289	1088	904	48	3184576
	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
TESCO	2017	402521	28382	4236	6741	0	61	0	441941
	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	442072	29061	4276	6234	5	68	1464	483180
IESCO	2017	2270874	374610	15979	8436	1742	892	149	2672682
	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
GEPCO	2017	2726893	334915	66845	43594	549	157	16	3172969
	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
LESCO	2017	3556800	576691	81640	59664	2424	496	246	4277961
	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
FESCO	2017	3280658	368321	49350	40580	1640	229	128	3740906
	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
MEPCO	2017	5050877	514327	54176	79965	1470	451	124	5701390
	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
HESCO	2017	861184	156200	15313	17286	540	335	98	1050956
	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
SEPCO	2017	593355	117824	12606	12145	412	507	19	736868
	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
QESCO	2017	442895	112445	3877	31824	254	253	4	591552
	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
Total in CPPA-G System	2017	21991479	2905517	336045	323524	10119	4285	832	25571801
	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	27265045	3353195	357282	359120	11374	4182	219391	31569589
KE	2017	1945721	456517	20868	2619	73	199	1	2425998
	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

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	2017	3870.45	726.79	1460.72	169.04	52.90	256.27	3.62	6539.79
	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
TESCO	2017	795.00	45.00	132.00	100.00	0.00	5.00	0.00	1077.00
	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	0.00	10.00	20.00	1170.00
IESCO	2017	4083.11	1115.34	1034.46	93.29	100.01	554.40	290.27	7270.88
	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
GEPCO	2017	3968.27	717.26	1685.37	305.40	32.40	91.26	1.22	6801.18
	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
LESCO	2017	5525.57	1638.61	4294.52	615.92	113.11	217.88	42.25	12447.86
	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
FESCO	2017	8024.00	856.00	2118.00	462.00	10.00	204.00	7.00	11681.00
	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
MEPCO	2017	7124.70	1003.99	2291.82	1210.08	14.20	117.80	23.69	11786.28
	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
HESCO	2017	1161.14	298.80	854.15	236.85	24.02	47.29	8.46	2630.71
	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
SEPCO	2017	667.88	200.42	409.58	167.65	12.56	61.40	2.24	1521.73
	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
QESCO	2017	656.20	184.81	171.74	885.65	5.54	54.49	0.02	1958.46
	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
Total in CPPA-G System	2017	35876.32	6787.02	14452.37	4245.88	364.75	1609.79	378.77	63714.89
	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	356.65	1895.78	3163.81	82095.66
KE	2017	5047.00	1709.00	1847.00	43.00	1.00	189.00	0.00	8836.00
	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

Source: Distribution Companies / KE

TABLE 64

Peak Demand of Distribution Companies (MW)

DISCO	2016-17	2017-18	2018-19	2019-20	2020-21
PESCO	3,110	3,242	3,296	2,967	3,307
Peak Demand Growth Rate over Last Year	10.72	4.24	1.67	(9.98)	11.46
TESCO	609	772	799	805	857
Peak Demand Growth Rate over Last Year	6.84	26.77	3.50	0.75	6.46
IESCO	2,314	2,452	2,512	2,671	2,406
Peak Demand Growth Rate over Last Year	0.74	5.96	2.45	6.33	(9.92)
GEPCO	2,413	2,429	2,309	2,429	2,948
Peak Demand Growth Rate over Last Year	3.96	0.66	(4.94)	5.20	21.37
LESCO	4,765	4,980	4,616	5,004	4,835
Peak Demand Growth Rate over Last Year	8.20	4.51	(7.31)	8.41	(3.38)
FESCO	3,053	3,036	2,904	2,925	3,342
Peak Demand Growth Rate over Last Year	(0.10)	(0.56)	(4.35)	0.72	14.26
MEPCO	3,663	4,018	4,115	4,115	4,635
Peak Demand Growth Rate over Last Year	4.81	9.69	2.41	0.00	12.64
HESCO	1,234	1,256	1,209	1,228	1,399
Peak Demand Growth Rate over Last Year	5.29	1.78	(3.74)	1.57	13.93
SEPCO	1,359	1,318	1,279	1,124	1,191
Peak Demand Growth Rate over Last Year	(1.38)	(3.02)	(2.96)	(12.12)	5.96
QESCO	1,770	1,800	1,800	1,522	1,429
Peak Demand Growth Rate over Last Year	0.28	1.69	0.00	-15.44	-6.11
Peak Demand in CPPA-G System	**24,290**	**25,303**	**24,839**	**24,790**	**26,349**
Peak Demand Growth Rate over Last Year	**4.40**	**4.17**	**(1.83)**	**(0.20)**	**6.29**
KE	3,270	3,527	3,530	3,604	3,604
Peak Demand Growth Rate over Last Year	2.35	7.86	0.09	2.10	0.00

Source: Distribution Companies / KE

TABLE 65

Energy Volume Consumed by Demand

S. No.	DISCO	FY 2016-17		FY 2017-18		FY 2018-19		FY 2019-20		FY 2020-21	
		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	12,511.00	11.96	14,209.00	12.06	14,427.00	12.10	14,792.33	12.48	15,542.00	12.28
2	TESCO	1,451.00	1.39	1,696.00	1.44	1,821.00	1.53	2,001.22	1.69	2,227.00	1.76
3	IESCO	10,583.00	10.12	11,672.00	9.91	11,838.00	9.93	11,435.47	9.65	11,965.00	9.45
4	GEPCO	9,779.00	9.35	10,987.00	9.33	11,100.00	9.31	10,991.33	9.27	12,032.00	9.50
5	LESCO	20,622.00	19.71	23,731.00	20.14	24,338.00	20.41	23,528.33	19.85	25,388.00	20.05
6	FESCO	12,858.00	12.29	14,446.00	12.26	14,970.00	12.55	14,510.32	12.24	15,985.00	12.63
7	MEPCO	15,952.00	15.25	19,006.00	16.13	19,367.00	16.24	19,324.88	16.30	20,541.00	16.23
8	HESCO	5,359.00	5.12	5,743.00	4.88	5,557.00	4.66	5,470.78	4.62	5,591.00	4.42
9	SEPCO	4,489.00	4.29	4,679.00	3.97	4,412.00	3.70	4,252.76	3.59	4,291.00	3.39
10	QESCO	5,789.00	5.53	6,339.00	5.38	6,257.00	5.25	6,603.99	5.57	6,629.00	5.24
11	KE	5,077.00	4.85	5,128.00	4.35	4,957.00	4.16	5,426.00	4.58	6,118.00	4.83
12	IPPs	135.00	0.13	167.09	0.14	201.54	0.17	193.00	0.16	289.00	0.23
	Total	**104,605.00**	**100.00**	**117,803.09**	**100.00**	**119,245.54**	**100.00**	**118,530.41**	**100.00**	**126,598.00**	**100.00**

Source: CPPA-G

TABLE 66
Maximum Demand and Energy Data of all DISCOs (FY 2020-21)

	FESCO		GEPCO		HESCO	
Month	**Energy (kWh)**	**MDI (kW)**	**Energy (kWh)**	**MDI (kW)**	**Energy (kWh)**	**MDI (kW)**
July, 2020	1,823,548,453	3,650,609	1,522,852,652	2,867,853	658,537,531	1,682,701
August, 2020	1,831,924,220	3,604,065	1,407,193,733	2,822,945	578,397,830	1,466,126
September, 2020	1,669,400,376	3,410,624	1,358,692,861	3,127,544	539,150,094	1,533,928
October, 2020	1,287,844,808	3,402,092	963,601,781	2,579,918	478,471,035	1,562,843
November, 2020	881,318,064	2,941,319	649,664,902	1,773,808	314,284,168	1,078,216
December, 2020	897,529,832	2,671,492	666,487,988	2,208,069	293,362,235	1,175,360
January, 2021	922,677,967	2,745,510	644,757,947	1,886,979	288,621,935	972,371
February, 2021	900,552,652	2,913,540	603,291,540	1,796,667	282,883,497	1,162,437
March, 2021	1,120,258,989	2,907,632	782,859,265	2,414,767	402,865,832	1,472,555
April, 2021	1,290,788,726	3,098,207	900,945,598	2,427,408	525,361,252	1,613,919
May, 2021	1,597,446,993	3,358,455	1,153,911,340	2,418,215	622,145,677	1,526,444
June, 2021	1,761,243,447	3,711,295	1,378,220,057	2,420,263	606,873,463	1,490,981

	SEPCO		IESCO		LESCO	
Month	**Energy (kWh)**	**MDI (kW)**	**Energy (kWh)**	**MDI (kW)**	**Energy (kWh)**	**MDI (kW)**
July, 2020	527,400,075	1,087,858	1,443,066,345	2,558,652	2,827,259,941	5,800,943
August, 2020	514,316,321	1,112,808	1,384,024,074	2,668,426	2,786,014,335	5,496,174
September, 2020	468,489,679	1,076,693	1,184,278,700	2,098,255	2,698,300,065	5,811,736
October, 2020	331,344,802	919,594	908,850,328	2,036,463	2,075,463,894	5,361,381
November, 2020	220,063,050	1,077,303	690,065,881	1,851,454	1,441,372,204	4,303,986
December, 2020	214,225,205	798,782	780,725,345	2,203,747	1,532,067,219	5,047,218
January, 2021	211,581,134	999,037	802,456,433	2,416,850	1,614,986,755	4,096,026
February, 2021	187,128,983	796,616	672,550,188	2,005,202	1,445,020,627	4,604,142
March, 2021	250,841,553	771,025	739,110,571	2,169,088	1,765,441,752	5,090,244
April, 2021	375,505,824	920,827	828,632,264	1,882,337	1,980,238,807	5,011,848
May, 2021	516,296,834	1,048,665	1,141,284,275	2,479,758	2,373,707,600	5,456,457
June, 2021	473,766,833	901,168	1,390,242,935	2,848,118	2,847,994,650	5,955,098

	MEPCO		PESCO		TESCO	
Month	**Energy (kWh)**	**MDI (kW)**	**Energy (kWh)**	**MDI (kW)**	**Energy (kWh)**	**MDI (kW)**
July, 2020	2,483,146,305	5,057,348	1,748,183,578	3,789,905	174,092,593	228,192
August, 2020	2,648,286,295	4,836,743	1,761,868,923	3,700,123	178,246,453	236,861
September, 2020	2,181,692,994	4,704,798	1,374,497,701	3,445,554	174,576,784	245,000
October, 2020	1,599,007,556	4,198,005	1,106,331,746	2,878,899	194,586,141	304,502
November, 2020	1,003,178,226	3,406,028	964,866,947	2,730,771	189,817,217	314,568
December, 2020	972,076,142	3,644,573	1,109,539,610	2,929,634	196,874,057	325,753
January, 2021	1,031,049,282	3,504,266	1,161,576,905	3,348,816	199,087,458	342,441
February, 2021	1,025,800,138	3,611,483	988,922,154	3,117,738	178,242,321	305,617
March, 2021	1,409,711,189	4,055,580	1,005,214,244	2,841,251	190,938,423	308,342
April, 2021	1,730,065,916	4,161,581	1,178,333,609	3,286,124	190,483,837	332,572
May, 2021	2,233,821,188	4,793,665	1,489,411,097	3,432,941	180,776,466	296,710
June, 2021	2,223,569,241	4,813,290	1,653,547,657	3,444,558	179,589,717	278,432

	QESCO		KE (Settlement Summary from NTDC)	
Month	**Energy (kWh)**	**MDI (kW)**	**Energy (kWh)**	**MDI (kW)**
July, 2020	668,984,661	1,270,923	556,930,176	1,021,630
August, 2020	613,857,810	1,332,220	495,064,335	1,195,050
September, 2020	546,971,764	1,361,422	526,914,018	958,580
October, 2020	524,503,273	1,397,693	502,111,508	957,000
November, 2020	500,862,726	1,468,855	379,906,016	934,930
December, 2020	512,164,715	1,443,197	388,831,884	821,580
January, 2021	487,020,135	1,454,849	364,440,300	804,530
February, 2021	463,559,371	1,389,483	248,419,911	716,080
March, 2021	506,776,887	1,466,214	440,530,321	1,009,730
April, 2021	573,746,835	1,186,310	619,455,713	1,389,580
May, 2021	610,992,934	1,207,188	758,705,752	1,352,030
June, 2021	619,580,425	1,456,522	836,728,944	1,487,780

Source: CPPA-G

TABLE 67

Total Units Purchased, Sold and Losses

DISCO	Year	Unit Purchased (GWh)			Unit Sold (GWh)	Losses	
		Through NTDC	Through CPPs, SPPs etc.	Total Unit Purchased		GWh	%age
PESCO	2016-17	12510.96	0.00	12510.96	8432.03	4078.93	32.60
	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
TESCO	2016-17	1450.58	0.00	1450.58	1227.13	223.45	15.40
	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
IESCO	2016-17	10582.64	0.00	10582.64	9627.55	955.09	9.03
	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
GEPCO	2016-17	9778.56	0.00	9778.56	8777.78	1000.78	10.23
	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
LESCO	2016-17	20621.54	0.00	20621.54	17782.81	2838.73	13.77
	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
FESCO	2016-17	12857.80	0.00	12857.80	11498.76	1359.04	10.57
	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
MEPCO	2016-17	12156.93	3794.65	15951.58	13253.20	2698.38	16.92
	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
HESCO	2016-17	3298.98	2057.46	5356.44	3718.13	1638.31	30.59
	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
SEPCO	2016-17	4457.32	25.33	4482.65	2787.73	1694.92	37.81
	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
QESCO	2016-17	5788.76	0.00	5788.76	4452.58	1336.18	23.08
	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
Total in CPPA-G System	2016-17	93504.07	5877.44	99381.51	81557.70	17823.81	17.93
	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

KE	As on 30th June	Unit Purchased (GWh)				Unit Sold (GWh)	Losses	
		KE Own	Through NTDC	Through CPPs + Others	Total Unit Purchased		GWh	%age
	2016-17	10147.00	5077.00	2128.00	17352.00	12981.00	4371.00	25.19
	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

Source: Distribution Companies / KE

TABLE 68

Units Billed, Amount of Units Billed and Amount Realized in all DISCOs (2020-21)

DISCO		Unit	Domestic	Commercial	Industrial	Agricultural	Public Lighting	Bulk Supply	Others	Total
PESCO	Units Billed	GWh	5372.61	801.62	2274.06	78.97	46.37	641.42	392.49	9607.54
	Amount of Units Billed	Rs. Mln.	74795.37	23926.36	50419.68	1020.76	370.72	15087.38	11095.58	176715.85
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	66867.29	22385.36	49920.05	1010.88	334.20	28574.67	10923.50	180015.95
		%	89.40	93.56	99.01	99.03	90.15	189.39	98.45	101.87
TESCO	Units Billed	GWh	1401.58	5.01	553.82	30.99	0.00	12.48	8.77	2012.65
	Amount of Units Billed	Rs. Mln.	17480.29	97.09	12290.73	340.06	0.02	256.12	161.14	30625.45
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	16428.01	76.06	8394.42	224.32	0.02	256.68	122.84	25502.35
		%	93.98	78.34	68.30	65.96	100.00	100.22	76.23	83.27
IESCO	Units Billed	GWh	5325.00	1166.00	1521.00	35.00	81.00	918.00	1898.00	10944.00
	Amount of Units Billed	Rs. Mln.	80229.00	36376.00	34114.00	474.00	2388.00	30564.00	36397.00	220542.00
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	82665.00	35597.00	34247.00	461.00	1647.00	24679.00	78445.00	257741.00
		%	103.04	97.86	100.39	97.26	68.97	80.75	215.53	116.87
GEPCO	Units Billed	GWh	6372.55	671.74	2775.92	542.03	9.71	160.05	390.10	10922.10
	Amount of Units Billed	Rs. Mln.	89805.25	20983.48	61529.61	6303.35	283.52	4221.55	9262.27	192389.03
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	93243.33	20460.77	62185.62	5833.85	255.25	4604.67	15611.29	202194.78
		%	103.83	97.51	101.07	92.55	90.03	109.08	168.55	105.10
LESCO	Units Billed	GWh	9663.64	1662.38	8351.36	1187.71	139.70	654.33	693.03	22352.15
	Amount of Units Billed	Rs. Mln.	152491.58	52593.95	174340.44	12247.17	3853.27	17362.11	18713.69	431602.21
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	156475.60	50704.35	171726.53	10960.98	2683.41	16495.82	17025.59	426072.28
		%	102.61	96.41	98.50	89.50	69.64	95.01	90.98	98.72
FESCO	Units Billed	GWh	7061.51	769.75	4937.35	1267.71	13.42	237.80	213.66	14501.20
	Amount of Units Billed	Rs. Mln.	98015.08	23918.22	109598.33	15110.49	414.27	6082.02	5857.07	258995.48
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	102202.57	23303.90	101952.59	12902.83	375.01	6135.49	4882.13	251754.52
		%	104.27	97.43	93.02	85.39	90.52	100.88	83.35	97.20
MEPCO	Units Billed	GWh	9825.38	980.72	2860.58	3201.47	20.20	275.51	302.24	17466.10
	Amount of Units Billed	Rs. Mln.	132608.54	30448.23	64351.57	37326.52	580.23	7072.30	8103.85	280491.24
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	144878.5	29893.11	64788.91	31955.01	574.41	7057.03	7378.17	286525.14
		%	109.25	98.18	100.68	85.61	99.00	99.78	91.05	102.15
HESCO	Units Billed	GWh	2408.50	265.05	823.94	200.58	4.96	105.86	205.29	4014.18
	Amount of Units Billed	Rs. Mln.	33240.29	8331.00	18885.86	3051.65	157.24	2906.90	5454.01	72026.95
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	18201.51	8062.36	18161.12	2533.53	73.21	2754.48	4689.12	54475.33
		%	54.76	96.78	96.16	83.02	46.56	94.76	85.98	75.63
SEPCO	Units Billed	GWh	1795.88	227.32	375.13	84.90	165.92	22.85	105.63	2777.63
	Amount of Units Billed	Rs. Mln.	25248.33	7003.89	9166.54	1218.59	4259.02	614.69	2788.91	50299.97
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	9485.15	6880.35	9062.10	1177.28	3923.70	24.21	1881.44	32434.23
		%	37.57	98.24	98.86	96.61	92.13	3.94	67.46	64.48
QESCO	Units Billed	GWh	587.89	138.38	191.79	3485.96	10.57	130.47	229.94	4775.00
	Amount of Units Billed	Rs. Mln.	8138.36	4334.98	4530.72	58465.96	311.56	3511.94	6385.83	85679.35
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	5745.16	4194.91	4451.37	10421.58	151.38	3790.48	5344.26	34099.14
		%	70.59	96.77	98.25	17.83	48.59	107.93	83.69	39.80
Total in CPPA-G System	Units Billed	GWh	49814.54	6687.97	24664.95	10115.32	491.85	3158.77	4439.15	99372.55
	Amount of Units Billed	Rs. Mln.	712052.09	208013.20	539227.48	135558.55	12617.85	87679.01	104219.35	1799367.53
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	696192.12	201558.17	524889.71	77481.26	10017.59	94372.53	146303.34	1750814.72
		%	97.77	96.90	97.34	57.16	79.39	107.63	140.38	97.30
KE	Units Billed	GWh	8041.32	1708.58	5220.99	121.70	98.04	454.31	423.91	16068.85
	Amount of Units Billed	Rs. Mln.	133515.60	49511.32	107778.33	1361.47	2399.50	11051.50	10255.13	315872.85
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	120138.34	48131.04	108337.18	312.29	1446.59	11792.57	9514.40	299672.41
		%	89.98	97.21	100.52	22.94	60.29	106.71	92.78	94.87

Source: Distribution Companies / KE

TABLE 69

Category-wise Electricity Sold (GWh)

DISCO	Year	Domestic	Commercial	Industrial	Agricultural	Public Lighting	Bulk Supply	Others	Total
PESCO	2016-17	4882.80	739.50	2131.50	83.10	13.24	579.70	2.19	8432.03
	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
TESCO	2016-17	1017.69	6.86	145.26	49.72	0.00	7.60	0.00	1227.13
	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
IESCO	2016-17	4557.10	1073.10	1744.10	106.10	72.10	951.05	1124.00	9627.55
	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
GEPCO	2016-17	5081.33	544.74	2424.36	363.50	7.50	355.46	0.89	8777.78
	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
LESCO	2016-17	8159.96	1578.03	6173.45	1196.52	95.18	572.30	7.37	17782.81
	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
FESCO	2016-17	5709.59	657.89	3844.79	929.97	11.09	341.21	4.22	11498.76
	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
MEPCO	2016-17	7567.44	846.06	2289.66	2271.17	19.72	252.38	6.77	13253.20
	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
HESCO	2016-17	2155.02	307.88	721.33	400.33	35.31	94.45	3.81	3718.13
	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
SEPCO	2016-17	1650.48	235.63	439.06	245.32	39.24	176.65	1.35	2787.73
	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
QESCO	2016-17	637.07	124.94	153.09	3417.43	4.92	115.02	0.11	4452.58
	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
Total in CPPA-G System	2016-17	41418.48	6114.63	20066.60	9063.16	298.30	3445.82	1150.71	81557.70
	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
KE	2016-17	6643.00	1655.00	3885.00	159.00	187.00	433.00	19.00	12981.00
	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

Source: Distribution Companies / KE

TABLE 70

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

		2016-17	2017-18	2018-19	2019-20	2020-21
CPPA-G System						
Domestic	GWh	41,418.48	46,163.80	45,590.34	47,643.43	49,814.54
Percentage share	%	47.81	47.58	46.13	48.72	47.38
Commercial	GWh	6,114.63	6,753.33	6,601.50	6,259.48	6,687.97
Percentage share	%	7.06	6.96	6.68	6.40	6.36
Industrial	GWh	20,066.60	23,274.17	24,284.57	21,489.04	24,664.95
Percentage share	%	23.16	23.99	24.57	21.97	23.46
Agricultural	GWh	9,063.16	9,983.68	9,675.51	9,642.17	10,115.32
Percentage share	%	10.46	10.29	9.79	9.86	9.62
Public Lighting	GWh	298.30	318.95	289.38	272.58	491.85
Percentage share	%	0.34	0.33	0.29	0.28	0.47
Bulk Supply	GWh	3,445.82	5,014.14	3,711.75	3,289.83	3,158.77
Percentage share	%	3.98	5.17	3.76	3.36	3.00
Others	GWh	1,150.71	394.12	3,734.30	4,194.24	4,439.15
Percentage share	%	1.33	0.41	3.78	4.29	4.22
Supplied to KE	GWh	5,077.00	5,128.20	4,936.71	5,003.14	5,764.40
Percentage share	%	5.86	5.29	5.00	5.12	5.48
Total in CPPA-G area	**GWh**	**86,634.70**	**97,030.39**	**98,824.06**	**97,793.89**	**105,136.95**
Percentage share	**%**	**86.97**	**87.50**	**87.35**	**87.26**	**86.74**
KE System						
Domestic	GWh	6,643.00	7,169.68	7,298.83	7,489.18	8,041.32
Percentage share	%	51.17	51.73	50.98	52.46	50.04
Commercial	GWh	1,655.00	1,758.22	1,780.58	1,615.20	1,708.58
Percentage share	%	12.75	12.69	12.44	11.31	10.63
Industrial	GWh	3,885.00	4,123.85	4,402.12	4,158.29	5,220.99
Percentage share	%	29.93	29.75	30.75	29.13	32.49
Agricultural	GWh	159.00	151.49	134.30	116.11	121.70
Percentage share	%	1.22	1.09	0.94	0.81	0.76
Public Lighting	GWh	187.00	156.54	160.48	112.03	98.04
Percentage share	%	1.44	1.13	1.12	0.78	0.61
Bulk Supply	GWh	433.00	471.10	477.22	467.74	454.31
Percentage share	%	3.34	3.40	3.33	3.28	2.83
Others	GWh	19.00	29.44	64.58	318.41	423.91
Percentage share	%	0.15	0.21	0.45	2.23	2.64
Total in KE area	**GWh**	**12,981.00**	**13,860.32**	**14,318.11**	**14,276.96**	**16,068.85**
Percentage share	**%**	**13.03**	**12.50**	**12.65**	**12.74**	**13.26**
Country						
Domestic	GWh	48,061.48	53,333.48	52,889.17	55,132.61	57,855.86
Percentage share	%	48.25	48.10	46.75	49.19	47.73
Commercial	GWh	7,769.63	8,511.55	8,382.08	7,874.68	8,396.55
Percentage share	%	7.80	7.68	7.41	7.03	6.93
Industrial	GWh	23,951.60	27,398.02	28,686.69	25,647.33	29,885.94
Percentage share	%	24.04	24.71	25.35	22.88	24.66
Agricultural	GWh	9,222.16	10,135.17	9,809.81	9,758.28	10,237.02
Percentage share	%	9.26	9.14	8.67	8.71	8.45
Public Lighting	GWh	485.30	475.49	449.86	384.61	589.89
Percentage share	%	0.49	0.43	0.40	0.34	0.49
Bulk Supply	GWh	3,878.82	5,485.24	4,188.97	3,757.57	3,613.08
Percentage share	%	3.89	4.95	3.70	3.35	2.98
Others	GWh	1,169.71	423.56	3,798.88	4,512.65	4,863.06
Percentage share	%	1.17	0.38	3.36	4.03	4.01
Supplied to KE by CPPA-G	GWh	5,077.00	5,128.20	4,936.71	5,003.14	5,764.40
Percentage share	%	5.10	4.62	4.36	4.46	4.76
Total in the Country	**GWh**	**99,615.70**	**110,890.71**	**113,142.17**	**112,070.85**	**121,205.80**
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 (%)

		2016-17	2017-18	2018-19	2019-20	2020-21
CPPA-G Area (Consumers and Consumption in percentage to the total)						
Domestic	Consumers	86.00	85.94	85.92	86.13	86.36
	Consumption	47.81	47.58	46.13	48.72	47.38
Commercial	Consumers	11.36	11.22	11.04	10.83	10.62
	Consumption	7.06	6.96	6.68	6.40	6.36
Industrial	Consumers	1.31	1.26	1.20	1.16	1.13
	Consumption	23.16	23.99	24.57	21.97	23.46
Agricultural	Consumers	1.27	1.17	1.15	1.15	1.14
	Consumption	10.46	10.29	9.79	9.86	9.62
Public Lighting	Consumers	0.04	0.04	0.04	0.04	0.04
	Consumption	0.34	0.33	0.29	0.28	0.47
Bulk Supply	Consumers	0.02	0.02	0.02	0.01	0.01
	Consumption	3.98	5.17	3.76	3.36	3.00
Others	Consumers	0.00	0.36	0.63	0.67	0.69
	Consumption	1.33	0.41	3.78	4.29	4.22
Supplied to KE	Consumption	5.86	5.29	5.00	5.12	5.48
KE Area (Consumers and Consumption in percentage to the total)						
Domestic	Consumers	80.20	81.15	81.86	82.70	83.24
	Consumption	51.17	51.73	50.98	52.46	50.04
Commercial	Consumers	18.82	17.95	16.90	15.91	15.40
	Consumption	12.75	12.69	12.44	11.31	10.63
Industrial	Consumers	0.86	0.80	0.74	0.76	0.73
	Consumption	29.93	29.75	30.75	29.13	32.49
Agricultural	Consumers	0.11	0.09	0.08	0.08	0.07
	Consumption	1.22	1.09	0.94	0.81	0.76
Public Lighting	Consumers	0.00	0.00	0.00	0.00	0.00
	Consumption	1.44	1.13	1.12	0.78	0.61
Bulk Supply	Consumers	0.01	0.01	0.01	0.01	0.01
	Consumption	3.34	3.40	3.33	3.28	2.83
Others	Consumers	0.00	0.00	0.41	0.54	0.55
	Consumption	0.15	0.21	0.45	2.23	2.64
Country (Consumers and Consumption in percentage to the total)						
Domestic	Consumers	85.50	85.52	85.56	85.83	86.08
	Consumption	48.25	48.10	46.75	49.19	47.73
Commercial	Consumers	12.01	11.80	11.57	11.29	11.06
	Consumption	7.80	7.68	7.41	7.03	6.93
Industrial	Consumers	1.27	1.22	1.16	1.13	1.09
	Consumption	24.04	24.71	25.35	22.88	24.66
Agricultural	Consumers	1.16	1.08	1.05	1.05	1.04
	Consumption	9.26	9.14	8.67	8.71	8.45
Public Lighting	Consumers	0.04	0.04	0.03	0.03	0.03
	Consumption	0.49	0.43	0.40	0.34	0.49
Bulk Supply	Consumers	0.02	0.02	0.01	0.01	0.01
	Consumption	3.89	4.95	3.70	3.35	2.98
Others	Consumers	0.00	0.33	0.61	0.66	0.68
	Consumption	1.17	0.38	3.36	4.03	4.01
Supplied to KE by CPPA-G	Consumption	5.10	4.62	4.36	4.46	4.76

Source: Distribution Companies / KE

TABLE 72

Annual Growth Rate of Electricity Consumption

		2016-17	2017-18	2018-19	2019-20	2020-21
CPPA-G Area						
Domestic	GWh	41,418.48	46,163.80	45,590.34	47,643.43	49,814.54
	%	12.12	11.46	-1.24	4.50	4.56
Commercial	GWh	6,114.63	6,753.33	6,601.50	6,259.48	6,687.97
	%	12.99	10.45	-2.25	-5.18	6.85
Industrial	GWh	20,066.60	23,274.17	24,284.57	21,489.04	24,664.95
	%	-5.11	15.98	4.34	-11.51	14.78
Agricultural	GWh	9,063.16	9,983.68	9,675.51	9,642.17	10,115.32
	%	8.38	10.16	-3.09	-0.34	4.91
Public Lighting	GWh	298.30	318.95	289.38	272.58	491.85
	%	1.24	6.92	-9.27	-5.81	80.44
Bulk Supply	GWh	3,445.82	5,014.14	3,711.75	3,289.83	3,158.77
	%	9.78	45.51	-25.97	-11.37	-3.98
Others	GWh	1,150.71	394.12	3,734.30	4,194.24	4,439.15
	%	1.43	-65.75	847.50	12.32	5.84
Supplied to KE	GWh	5,077.00	5,128.20	4,936.71	5,003.14	5,764.40
	%	0.36	1.01	-3.73	1.35	15.22
Total	**GWh**	**86,634.70**	**97,030.39**	**98,824.06**	**97,793.89**	**105,136.95**
Percentage change	**%**	**6.31**	**12.00**	**1.85**	**-1.04**	**7.51**
KE Area						
Domestic	GWh	6,643.00	7,169.68	7,298.83	7,489.18	8,041.32
	%	0.71	7.93	1.80	2.61	7.37
Commercial	GWh	1,655.00	1,758.22	1,780.58	1,615.20	1,708.58
	%	-1.78	6.24	1.27	-9.29	5.78
Industrial	GWh	3,885.00	4,123.85	4,402.12	4,158.29	5,220.99
	%	1.44	6.15	6.75	-5.54	25.56
Agricultural	GWh	159.00	151.49	134.30	116.11	121.70
	%	-2.45	-4.72	-11.35	-13.54	4.81
Public Lighting	GWh	187.00	156.54	160.48	112.03	98.04
	%	14.72	-16.29	2.52	-30.19	-12.49
Bulk Supply	GWh	433.00	471.10	477.22	467.74	454.31
	%	5.10	8.80	1.30	-1.99	-2.87
Others	GWh	19.00	29.44	64.58	318.41	423.91
	%	26.67	54.95	119.36	393.05	33.13
Total	**GWh**	**12,981.00**	**13,860.32**	**14,318.11**	**14,276.96**	**16,068.85**
Percentage change	**%**	**0.91**	**6.77**	**3.30**	**-0.29**	**12.55**
Country						
Domestic	GWh	48,061.48	53,333.48	52,889.17	55,132.61	57,855.86
	%	10.39	10.97	-0.83	4.24	4.94
Commercial	GWh	7,769.63	8,511.55	8,382.08	7,874.68	8,396.55
	%	9.49	9.55	-1.52	-6.05	6.63
Industrial	GWh	23,951.60	27,398.02	28,686.69	25,647.33	29,885.94
	%	-4.11	14.39	4.70	-10.60	16.53
Agricultural	GWh	9,222.16	10,135.17	9,809.81	9,758.28	10,237.02
	%	8.17	9.90	-3.21	-0.53	4.91
Public Lighting	GWh	485.30	475.49	449.86	384.61	589.89
	%	6.04	-2.02	-5.39	-14.50	53.37
Bulk Supply	GWh	3,878.82	5,485.24	4,188.97	3,757.57	3,613.08
	%	9.23	41.42	-23.63	-10.30	-3.85
Others	GWh	1,169.71	423.56	3,798.88	4,512.65	4,863.06
	%	1.76	-63.79	796.89	18.79	7.76
Supplied to KE by CPPA-G	GWh	5,077.00	5,128.20	**4,936.71**	**5,003.14**	**5,764.40**
	%	0.36	1.01	**-3.73**	**1.35**	**15.22**
Total	**GWh**	**99,615.70**	**110,890.71**	**113,142.17**	**112,070.85**	**121,205.80**
Percentage change	**%**	**5.58**	**11.32**	**2.03**	**-0.95**	**8.15**

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	2016-17	1740.49	2298.00	66561.53	3568.21	12169.12	641261.06	45625.00	2647.77
	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
TESCO	2016-17	2528.29	241.70	34291.78	7375.76	0.00	124590.16	0.00	2776.68
	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	3170.48	172.40	129518.24	4971.13	0.00	183529.41	5990.44	4165.42
IESCO	2016-17	2006.76	2864.58	109149.51	12577.05	41389.21	1066199.55	7543624.16	3602.21
	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
GEPCO	2016-17	1863.41	1626.50	36268.38	8338.30	13661.20	2264076.43	55625.00	2766.42
	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
LESCO	2016-17	2294.19	2736.35	75617.96	20054.30	39265.68	1153830.65	29959.35	4156.84
	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
FESCO	2016-17	1740.38	1786.19	77908.61	22916.95	6762.20	1490000.00	32968.75	3073.79
	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
MEPCO	2016-17	1498.24	1644.98	42263.36	28402.05	13414.97	559600.89	54596.77	2324.56
	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
HESCO	2016-17	2502.39	1971.06	47105.73	23159.20	65388.89	281940.30	38877.55	3537.86
	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
SEPCO	2016-17	2781.61	1999.85	34829.45	20199.26	95242.72	348422.09	71052.63	3783.21
	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
QESCO	2016-17	1438.42	1111.12	39486.72	107385.31	19370.08	454624.51	27500.00	7526.95
	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
Total in CPPA-G System	2016-17	1883.39	2104.49	59714.03	28013.87	29479.20	804158.69	1383064.90	3189.36
	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	1827.05	1994.51	69034.96	28166.96	43243.36	755325.20	20233.97	3147.73
KE	2016-17	3414.16	3625.28	186170.21	60710.19	2561643.84	2175879.40	19000000.00	5350.79
	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

Source: Distribution Companies / KE

TABLE 74

Distribution Losses (voltage category-wise)

DISCO	Losses of	2016-17		2017-18		2018-19		2019-20		2020-21	
		GWh	%	GWh	%	GWh	%	GWh	%	GWh	%
PESCO	132 kV system (including 66 & 33 kV)	385.00	3.10	393.00	2.80	221.80	1.60	273.70	1.90	235.60	1.50
	11 kV and below system	3693.50	30.50	5031.80	36.40	5006.40	35.60	5433.50	37.50	5697.60	37.20
	Overall system	4078.93	32.60	5424.77	38.15	5228.24	36.56	5707.25	38.69	5933.36	38.18
TESCO	132 kV system (including 66 & 33 kV)	44.95	3.10	45.00	2.66	40.79	2.24	87.76	4.08	39.85	1.79
	11 kV and below system	177.92	12.27	166.03	10.07	177.21	9.96	260.24	12.61	173.50	7.94
	Overall system	223.45	15.40	210.97	12.46	217.94	11.97	348.24	16.19	213.35	9.58
IESCO	132 kV system (including 66 & 33 kV)	201.00	1.90	215.00	1.84	212.00	1.79	199.00	1.74	137.00	1.15
	11 kV and below system	754.00	7.26	850.00	7.42	837.00	7.20	795.00	7.07	885.00	7.48
	Overall system	955.09	9.03	1067.03	9.14	1048.74	8.86	993.49	8.69	1022.00	8.54
GEPCO	132 kV system (including 66 & 33 kV)	147.55	1.51	142.10	1.29	138.17	1.24	120.87	1.10	115.16	0.96
	11 kV and below system	853.38	8.86	957.50	8.83	957.50	8.73	924.71	8.51	995.21	8.35
	Overall system	1000.78	10.23	1099.61	10.01	1095.62	9.87	1045.56	9.51	1110.38	9.23
LESCO	132 kV system (including 66 & 33 kV)	233.93	1.10	236.66	1.00	228.67	0.90	114.91	0.50	74.91	0.30
	11 kV and below system	2604.85	12.80	3046.04	13.00	2977.77	12.40	2802.65	12.00	2960.83	11.70
	Overall system	2838.73	13.77	3282.74	13.83	3206.45	13.17	2918.33	12.40	3035.72	11.96
FESCO	132 kV system (including 66 & 33 kV)	244.28	1.90	285.83	1.98	254.47	1.70	218.42	1.50	225.36	1.40
	11 kV and below system	1109.92	8.80	1235.87	8.73	1214.76	8.26	1168.66	8.20	1257.81	8.00
	Overall system	1359.04	10.57	1521.84	10.53	1469.07	9.81	1387.09	9.56	1483.28	9.28
MEPCO	132 kV system (including 66 & 33 kV)	433.15	2.70	443.91	2.30	352.88	1.80	292.07	1.51	321.38	1.57
	11 kV and below system	2265.24	14.60	2708.85	14.60	2704.17	14.20	2650.66	13.90	2744.74	13.60
	Overall system	2698.38	16.92	3152.75	16.59	3057.04	15.79	2942.75	15.23	3066.11	14.93
HESCO	132 kV system (including 66 & 33 kV)	206.10	3.70	213.00	3.71	212.90	3.83	157.64	2.88	145.60	2.61
	11 kV and below system	1448.90	27.20	1502.90	27.18	1425.90	25.67	1423.22	26.04	1414.70	26.06
	Overall system	1638.31	30.59	1716.06	29.88	1638.47	29.49	2921.64	42.89	2518.40	38.55
SEPCO	132 kV system (including 66 & 33 kV)	147.64	3.29	115.21	2.46	104.89	2.38	76.03	1.79	75.32	1.76
	11 kV and below system	1518.95	35.27	1518.95	35.27	1485.99	34.83	1423.40	34.44	1412.9	33.73
	Overall system	1694.92	37.81	1715.92	36.67	1631.02	36.97	1542.38	36.27	1513.33	35.27
QESCO	132 kV system (including 66 & 33 kV)	114.96	1.99	117.09	1.85	99.54	1.60	127.10	1.90	114.91	1.70
	11 kV and below system	1220.70	21.50	1301.21	20.90	1373.18	22.30	1634.91	25.20	1734.4	26.60
	Overall system	1336.18	23.08	1422.43	22.44	1472.64	23.56	1762.00	26.68	1849.56	27.92
Total Distribution Losses in CPPA-G System		**17823.81**	**17.93**	**20614.12**	**18.32**	**20065.23**	**17.61**	**21568.72**	**18.86**	**21745.49**	**17.95**
KE	132 kV system (including 66 kV)	250.00	1.51	159.48	0.92	214.93	1.21	198.16	1.11	208.00	1.07
	11 kV and below system	3349.00	20.51	3398.88	19.69	3163.78	18.10	3311.38	18.83	3210.00	16.65
	Overall system	4371.00	25.19	4305.75	23.70	4195.31	22.66	4250.54	22.94	4169.22	20.60

Source: Distribution Companies / KE

TABLE 75

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

DISCO	FY 2019-20									FY 2020-21								
	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	25655.13	134829.74	160484.87	21838.78	118959.50	140798.28	85.12	88.23	87.73	26085.99	149987.73	176073.72	39300.85	141973.17	181274.02	150.65884	94.66	102.95348
TESCO	940.60	26847.10	27787.70	727.96	5051.32	5779.28	77.39	18.82	20.80	715.43	29468.12	30183.55	652.17	8475.67	9127.84	91.16	28.76	30.24
IESCO	58096.00	143613.00	201709.00	42364.00	139041.00	181405.00	72.92	96.82	89.93	62450.00	155904.00	218354.00	97902.00	159841.00	257743.00	156.76861	102.52527	118.03906
GEPCO	11422.67	155525.30	166947.97	9382.33	149261.88	158644.21	82.14	95.97	95.03	12638.14	177724.79	190362.93	19149.48	183045.64	202195.12	151.52	102.99	106.22
LESCO	26270.56	356035.93	382306.49	23939.14	342529.91	366469.05	91.13	96.21	95.86	29356.20	397310.87	426667.07	26575.26	399496.97	426072.23	90.53	100.55022	99.86
FESCO	12513.30	246482.21	258995.51	11449.36	240305.21	251754.57	91.50	97.49	97.20	12001.26	217296.26	229297.52	11243.82	204715.18	215959.00	93.69	94.210172	94.18
MEPCO	15391.32	224018.62	239409.94	14601.86	210938.55	225540.41	94.87	94.16	94.21	16415.69	256160.34	272576.03	15465.82	266938.30	282404.12	94.21	104.20751	103.60563
HESCO	8948.73	57176.51	66125.24	4680.62	43718.77	48399.39	52.30	76.46	73.19	9719.55	62307.38	72026.93	8097.82	46377.55	54475.37	83.31	74.43	75.63
SEPCO	9086.48	38780.76	47867.24	4175.64	23156.53	27332.17	45.95	59.71	57.10	9105.61	40992.00	50097.61	6847.01	25587.24	32434.25	75.20	62.42	64.74
QESCO	10489.18	60175.97	70665.15	5340.74	13548.81	18889.55	50.92	22.52	26.73	10525.65	57714.92	68240.57	9482.33	15537.55	25019.88	90.09	26.92	36.66
Total in CPPA-G System	178813.97	1443485.14	1622299.11	138500.43	1286511.48	1425011.91	77.46	89.13	87.84	189013.52	1544866.41	1733879.93	234716.56	1451988.27	1686704.83	124.18	93.99	97.28
KE	25826.00	229060.00	254886.00	22769.00	212087.00	234856.00	88.16	92.590151	92.14	28154.00	287719.00	315873.00	27617.00	272056.00	299673.00	98.09	94.56	94.87

Source: Distribution Companies / KE

TABLE 76

DISCOs' Technical and Commercial Losses

DISCO	FY 2019-20							FY 2020-21						
	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	14791.90	9043.10	38.86	160627.34	140798.28	12.34	46.41	15540.95	9607.69	38.18	176816.03	181273.88	-2.52	36.62
TESCO	2001.32	1802.77	9.92	30625.54	18745.13	38.79	39.20	2226.2	2012.67	9.59	27499.78	25501.88	7.27	23.60
IESCO	11436.00	10442.00	8.69	201709.00	181405.00	10.07	17.88	11966.00	10943.00	8.55	218353.00	257742.00	-18.04	-7.95
GEPCO	10991.19	9945.62	9.51	166947.97	158644.21	4.97	14.49	12032.48	10922.11	9.23	190363.93	202195.12	-6.22	3.01
LESCO	23528.32	20610.77	12.40	382306.49	366469.05	4.14	16.03	25387.87	22352.13	11.96	426667.07	426072.23	0.14	12.12
FESCO	14510.33	13123.23	9.56	229297.52	215959.00	5.82	14.82	15984.48	14501.28	9.28	258995.51	251754.57	2.80	11.82
MEPCO	19324.68	16381.95	15.23	239409.94	225540.41	5.79	20.14	20532.21	17466.09	14.93	272576.03	282404.12	-3.61	11.87
HESCO	5470.77	3890.01	28.89	65357.05	45707.20	30.07	50.29	5574.40	4014.10	27.99	70839.90	54302.40	23.34	44.79
SEPCO	4252.50	2710.08	36.27	47867.24	27049.55	43.49	63.60	4290.96	2775.76	35.31	50097.61	32434.25	35.26	58.10
QESCO	6594.90	4841.95	26.58	70665.20	18889.50	73.27	80.00	6615.8	4775.37	27.82	68240.57	25019.88	63.34	74.00
Total in CPPA-G System	112901.91	92791.48	17.81	1594813.29	1399207.33	12.27		120151.35	99370.20	17.30	1760449.43	1738700.33	1.24	
KE	17786.51	14277.42	19.73	254886.00	234855.00	7.86	26.00	19487.42	16068.83	17.54	315873.00	299672.00	5.13	218.00

Source: Distribution Companies / KE

TABLE 77

Receivables of Distribution Companies

DISCO	Category	June, 2020 (Rs. in Million)				June, 2021 (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.	29,189.24	1,187.97	885.98	29,491.23	21,372.18	1,160.56	6,511.56	16,021.18
	Provincial Govt.	1,399.68	793.33	1,206.12	988.49	1,743.24	868.26	1,392.62	1,218.88
	Private	118,042.43	12,388.31	9,960.69	120,468.44	127,941.86	14,804.73	13,374.32	129,371.53
	Total	**148,631.35**	**14,369.61**	**12,052.79**	**150,948.16**	**151,057.28**	**16,833.55**	**21,278.50**	**146,611.59**
TESCO	Federal Govt.	1,304.55	68.18	149.56	1,223.17	1,297.40	74.70	112.55	1,259.55
	Provincial Govt.	1,003.75	18.37	44.45	977.67	1,031.25	19.00	44.27	1,005.98
	Private	54,148.67	2,116.76	2,269.33	53,996.10	72,039.07	2,495.93	15,480.02	59,054.98
	Total	**56,456.97**	**2,203.31**	**2,463.34**	**56,196.94**	**74,367.72**	**2,589.63**	**15,636.84**	**61,320.51**
IESCO	Federal Govt.	103,515.00	4,213.00	3,190.00	104,541.00	87,098.00	5,802.00	24,438.00	68,458.00
	Provincial Govt.	379.00	209.00	671.00	(83.00)	733.00	330.00	386.00	679.00
	Private	12,434.00	14,057.00	11,927.00	14,652.00	11,557.00	19,203.00	17,589.00	12,934.00
	Total	**116,328.00**	**18,479.00**	**15,788.00**	**119,110.00**	**99,388.00**	**25,335.00**	**42,413.00**	**82,071.00**
GEPCO	Federal Govt.	17,405.38	859.59	661.37	17,603.60	14,179.79	907.00	3,937.00	11,149.79
	Provincial Govt.	1,134.11	268.78	386.95	1,015.94	1,641.29	339.00	494.00	1,486.29
	Private	21,816.51	17,133.36	15,795.41	23,154.46	18,651.92	20,404.00	18,786.00	20,269.92
	Total	**40,356.00**	**18,261.73**	**16,843.73**	**41,774.00**	**34,473.00**	**21,650.00**	**23,217.00**	**32,906.00**
LESCO	Federal Govt.	2,689.41	798.56	1,436.14	2,052.97	3,344.27	962.47	1,453.45	2,855.81
	Provincial Govt.	5,384.37	1,428.47	1,785.08	5,028.19	8,711.98	1,559.29	2,668.28	7,603.19
	Private	97,697.06	36,687.24	32,468.97	102,742.72	114,833.59	42,121.25	38,781.19	119,101.77
	Total	**105,770.84**	**38,914.27**	**35,690.19**	**109,823.88**	**126,889.84**	**44,643.01**	**42,902.92**	**129,560.77**
FESCO	Federal Govt.	463.22	708.44	635.33	536.34	421.87	519.35	485.31	455.92
	Provincial Govt.	1,068.26	534.22	993.06	607.45	2,359.56	680.17	1,273.29	1,767.96
	Private	41,975.99	23,006.00	19,189.97	45,800.42	53,107.90	26,763.17	27,874.11	51,998.62
	Total	**43,507.47**	**24,248.66**	**20,818.36**	**46,944.21**	**55,889.33**	**27,962.69**	**29,632.71**	**54,222.50**
MEPCO	Federal Govt.	708.62	394.61	784.19	318.81	611.80	612.52	796.05	428.62
	Provincial Govt.	2,299.69	545.72	1,285.01	1,560.91	2,882.54	1,060.46	1,440.69	2,503.26
	Private	69,019.49	26,849.41	22,328.59	73,487.44	66,140.15	28,919.27	28,650.02	66,411.62
	Total	**72,027.81**	**27,789.74**	**24,397.79**	**75,367.17**	**69,634.49**	**30,592.25**	**30,886.77**	**69,343.49**
HESCO	Federal Govt.	4,171.20	299.33	325.10	4,145.43	4,534.47	348.04	444.33	4,438.17
	Provincial Govt.	8,130.77	590.24	19.91	8,701.10	9,979.89	639.92	537.43	10,082.38
	Private	84,199.56	6,398.88	4,434.61	86,163.83	99,802.89	7,108.73	4,864.85	102,047.24
	Total	**96,501.53**	**7,288.45**	**4,779.62**	**99,010.36**	**114,317.25**	**8,096.69**	**5,846.61**	**116,567.79**
SEPCO	Federal Govt.	1,429.88	307.38	331.08	1,411.86	1,911.84	220.76	587.97	1,525.15
	Provincial Govt.	10,361.98	627.25	37.18	10,934.68	13,035.50	318.96	234.57	13,061.70
	Private	113,141.37	4,848.15	2,734.41	115,003.05	128,718.34	5,104.33	2,749.38	130,793.71
	Total	**124,933.23**	**5,782.78**	**3,102.67**	**127,349.59**	**143,665.68**	**5,644.05**	**3,571.92**	**145,380.56**
QESCO	Federal Govt.	1,857.65	325.83	940.12	1,243.36	1,893.05	261.98	842.64	1,312.39
	Provincial Govt.	26,192.08	561.31	4,025.64	22,727.75	21,664.48	586.75	622.97	21,628.26
	Private	375,622.49	5,611.98	6,719.82	374,514.65	321,784.35	7,203.49	5,023.08	323,964.76
	Total	**403,672.22**	**6,499.12**	**11,685.58**	**398,485.76**	**345,341.88**	**8,052.22**	**6,488.69**	**346,905.41**

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	2016-17	31075.42	3805.50	5900.49	637.07	6643.00	48061.48
	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
Commercial	2016-17	4699.82	543.51	746.36	124.94	1655.00	7769.63
	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
Industrial	2016-17	16476.36	1160.39	2276.76	153.09	3885.00	23951.60
	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
Agricultural	2016-17	4867.26	645.65	132.82	3417.43	159.00	9222.16
	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
Public Lighting	2016-17	205.59	74.55	13.24	4.92	187.00	485.30
	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
Bulk Supply	2016-17	2472.40	271.10	587.30	115.02	433.00	3878.82
	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
Others	2016-17	1143.25	5.16	2.19	0.11	19.00	1169.71
	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
Total	2016-17	60940.10	6505.86	9659.16	4452.58	12981.00	94538.70
	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

** 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 Pakhtunkhwa#	Balochistan##	K-Electric Limited	Total
Domestic	2016-17	50.99	58.49	61.09	14.31	51.17	50.84
	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
Commercial	2016-17	7.71	8.35	7.73	2.81	12.75	8.22
	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
Industrial	2016-17	27.04	17.84	23.57	3.44	29.93	25.34
	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
Agricultural	2016-17	7.99	9.92	1.38	76.75	1.22	9.75
	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
Public Lighting	2016-17	0.34	1.15	0.14	0.11	1.44	0.51
	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
Bulk Supply	2016-17	4.06	4.17	6.08	2.58	3.34	4.10
	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
Others	2016-17	1.88	0.08	0.02	0.00	0.15	1.24
	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
Total	2016-17	100.00	100.00	100.00	100.00	100.00	100.00
	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

** 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	2016-17	2017-18	2018-19	2019-20	2020-21
PESCO	20	10	16	31	23
TESCO	00	00	00	06	08
IESCO	15	20	29	18	22
GEPCO	16	29	12	08	07
LESCO	29	21	09	07	09
FESCO	15	07	08	13	09
MEPCO	10	17	14	15	13
HESCO	03	15	12	08	32
SEPCO	20	17	12	13	14
QESCO	11	06	09	06	06
KE	08	10	54	43	46
Total	**147**	**152**	**175**	**168**	**189**

Source: Distribution Companies / KE

TABLE 81

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

		TDS	ISP	AQTA	ZRIR	Others	Total
PESCO							
2016-17	Accrued	29,466.56	1,759.67				**31,226.23**
	Paid	35,611.49	1,172.00				**36,783.49**
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			554.55		**47,471.63**
IESCO							
2016-17	Accrued	(11,640.26)	1,465.12				**(10,175.14)**
	Paid	(14,067.71)	1,046.00				**(13,021.71)**
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)**
GEPCO							
2016-17	Accrued	26,148.49	2,135.25				**28,283.74**
	Paid	31,601.46	1,444.00				**33,045.46**
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**
LESCO							
2016-17	Accrued	(17,517.36)	5,532.03				**(11,985.33)**
	Paid	(21,170.41)	4,001.00				**(17,169.41)**
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)**

		TDS	ISP	AQTA	ZRIR	Others	Total
FESCO							
2016-17	Accrued	(489.48)	3,255.30				**2,765.82**
	Paid	(591.55)	2,300.00				**1,708.45**
2017-18	Accrued	3,215.71	4,714.36				**7,930.07**
	Paid	(88.00)	13,411.00				**13,323.00**
2018-19	Accrued	28,741.62	10,904.45		5,437.47		**45,083.54**
	Paid	19,597.64					**19,597.64**
2019-20	Accrued	40,996.56	1,074.90	4,295.44	7,598.96		**53,965.86**
	Paid	27,763.50	795.44				**28,558.94**
2020-21	Accrued	24,055.00	5,425.22	177.32	9,529.53		**39,187.07**
	Paid	19,214.74			12,427.64		**31,642.38**
MEPCO							
2016-17	Accrued	22,181.23	2,126.91				**24,308.14**
	Paid	26,806.88	1,602.00				**28,408.88**
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**
HESCO							
2016-17	Accrued	1,521.89	771.15				**2,293.04**
	Paid	1,839.26	556.00				**2,395.26**
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**
SEPCO							
2016-17	Accrued	5,578.62	476.98				**6,055.60**
	Paid	6,741.98	317.00				**7,058.98**
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**
TESCO						**FATA (Receivables)**	
2016-17	Accrued	6,252.72	152.13			11,193.61	**17,598.46**
	Paid	7,556.65	105.00			9,900.00	**17,561.65**
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)**

		TDS	ISP	AQTA	ZRIR	Others	Total
QESCO						**QESCO (40%)**	
2016-17	Accrued	13,863.82	139.18			7,216.78	**21,219.78**
	Paid	16,754.96	95.70			1,680.00	**18,530.66**
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**
KE						**KE (40%)**	
2016-17	Accrued	10,510.98	11,469.52			362.41	**22,342.91**
	Paid	10,924.36	4,655.00			600.00	**16,179.36**
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**
		Total TDS	**Total ISP**	**Total AQTA**	**Total ZRIR**	**Total Others (FATA Receivable, QESCO 40% and KE 40%)**	**Grand Total**
2016-17	**Accrued**	**85,877.21**	**29,283.24**	**-**	**-**	**18,772.80**	**133,933.25**
	Paid	**102,007.37**	**17,293.70**	**-**	**-**	**12,180.00**	**131,481.07**
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**

Source: Ministry of Energy

TABLE 82

Pending Applications of New Connections

DISCO	Year	Connection		Applications Pending (Nos.)
		Sanctioned (Nos.)	Load (kW)	
PESCO	2016-17	113,460	286,783	19,155
	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
TESCO	2016-17	24	702	298
	2017-18	685	7,520	0
	2018-19	601	8,025	100
	2019-20	112	23,340	0
	2020-21	123	26,795	0
IESCO	2016-17	109,675	266,940	29,990
	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
GEPCO	2016-17	119,443	265,263	38,298
	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
LESCO	2016-17	175,820	535,978	93,276
	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	1,063,820	107,866
FESCO	2016-17	136,309	474,474	101,239
	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
MEPCO	2016-17	297,447	682,824	5,681
	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
HESCO	2016-17	28,504	115,520	91
	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
SEPCO	2016-17	7,511	25,982	1,805
	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
QESCO	2016-17	13,739	1,952	3,582
	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
KE	2016-17	25,497	319,913	1,035
	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

Source: Distribution Companies / KE

TABLE 83

DISCOs' 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	2017	189	31	10	230	5,449.50	286.25	37.50	5,773.25	93	16	4	113	49.13
	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
TESCO	2017	17	18	1	36	391.00	208.00	6.90	605.90	10	3	1	14	38.89
	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
IESCO	2017	185	9	8	202	4,663.10	91.30	33.00	4,787.40	24	0	0	24	11.88
	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	6,609.00	46.00	24.00	6,679.00	8	0	1	9	3.37
GEPCO	2017	150	10	0	160	4,330.80	103.00	0.00	4,433.80	26	8	0	34	21.25
	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
LESCO	2017	337	14	0	351	9,673.00	176.30	0.00	9,849.30	117	10	0	14	3.99
	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
FESCO	2017	160	35	0	195	4,506.00	401.10	0.00	4,907.10	82	18	0	100	51.28
	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
MEPCO	2017	253	29	0	282	7,179.30	292.84	0.00	7,472.14	65	10	0	75	26.60
	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
HESCO	2017	102	17	0	119	2,264.90	146.10	0.00	2,411.00	54	5	0	59	49.58
	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

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	2017	90	27	1	118	2,073.80	269.80	6.30	2,349.90	41	12	0	53	44.92
	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
QESCO	2017	110	14	36	160	2,631.00	122.00	144.00	2,897.00	65	10	0	75	46.88
	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
Total in CPPA-G System	2017	1,593	204	56	1,853	43,162.40	2,096.69	227.70	45,486.79	577	92	5	561	30.28
	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	55,063.10	1,400.45	207.00	56,670.55	354	26	4	384	17.76
KE	2017	135	3	0	138	5,195.50	69.00	0.00	5,264.50	56	1	0	57	41.30
	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

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
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	18,903	2,093,400	3,491	0	0	3,491	18.47
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
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

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
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
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
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
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
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
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
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	803,882	51,555,295	24,796	13,289	5,516	43,601	5.42
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

Source: Distribution Companies / KE

TABLE 85

Feeders Outages Statistics of DISCOs (2020-21)

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	384	148641	38	12043	9	4923	10677	2499214	11108	2664821
	Forced	485	88157	132	17920	3	1230	32904	2033460	33524	2140767
	Total	869	236798	170	29963	12	6153	43581	4532674	44632	4805588
TESCO	Planned	10	4765	7	2745	5	685	11690	103300	11712	111495
	Forced	164	31983	173	32569	0	0	5802	115623	6139	180175
	Total	174	36748	180	35314	5	685	17492	218923	17851	291670
IESCO	Planned	760	281400	6	2520	3	900	31331	4341355	32100	4626175
	Forced	0	0	0	0	0	0	0	0	0	0
	Total	760	281400	6	2520	3	900	31331	4341355	32100	4626175
GEPCO	Planned	23	6964	2	780	0	0	5185	716326	5210	724070
	Forced	55	19264	12	1359	0	0	10267	194849	10334	215472
	Total	78	26228	14	2139	0	0	15452	911175	15544	939542
LESCO	Planned	440	138197	0	0	0	0	20843	5585392	21283	5723589
	Forced	3377	142880	0	0	0	0	22789	689101	26166	831981
	Total	3817	281077	0	0	0	0	43632	6274493	47449	6555570
FESCO	Planned	235	58830	96	25254	0	0	10317	1679312	10648	1763396
	Forced	55	2986	29	1303	0	0	58092	695729	58176	700018
	Total	290	61816	125	26557	0	0	68409	2375041	68824	2463414
MEPCO	Planned	1185	318963	33	6750	0	0	16182	1558826	17400	1884539
	Forced	471	50536	23	1354	0	0	36676	4846813	37170	4898703
	Total	1656	369499	56	8104	0	0	52858	6405639	54570	6783242
HESCO	Planned	154	47402	37	10399	0	0	0	0	191	57801
	Forced	441	86078	47	14377	0	0	57377	557887	57865	658342
	Total	595	133480	84	24776	0	0	57377	557887	58056	716143
SEPCO	Planned	486	168416	82	34860	0	0	2592	782130	3160	985406
	Forced	468	189203	71	31689	0	0	54837	18360464	55376	18581356
	Total	954	357619	153	66549	0	0	57429	19142594	58536	19566762
QESCO	Planned	122	43920	8	2400	13	12150	1175	176250	1318	234720
	Forced	175	18690	12	900	825	123750	36217	329530	37229	472870
	Total	297	62610	20	3300	838	135900	37392	505780	38547	707590
KE	Planned	4	2050	0	0	0	0	127708	7267603	127712	7269653
	Forced	16	1101	0	0	0	0	38657	3628876	38673	3629977
	Total	20	3151	0	0	0	0	166365	10896479	166385	10899630

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	2017	30,098	23,664	6,434	78.62
	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
TESCO	2017	452	200	252	44.25
	2018	452	250	202	55.31
	2019	463	257	206	55.51
	2020	483	277	206	57.35
	2021	483	277	206	57.35
IESCO	2017	586	271	315	46.25
	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
GEPCO	2017	7,070	7,013	57	99.19
	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
LESCO	2017	4,159	2,976	1,183	71.56
	2018	246	195	51	79.27
	2019	246	207	39	84.15
	2020	246	212	34	86.18
	2021	246	215	31	87.40
FESCO	2017	26,069	22,890	3,179	87.81
	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
MEPCO	2017	31,651	26,315	5,336	83.14
	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
HESCO	2017	23,803	18,147	5,656	76.24
	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
SEPCO	2017	23,263	17,365	5,898	74.65
	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
QESCO	2017	23,819	21,586	2,233	90.63
	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
Total in CPPA-G System	2017	170,970	140,427	30,543	82.14
	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	193,900	162,686	31,214	83.90
KE	2017	889	821	68	92.35
	2018	889	883	6	99.33
	2019	913	912	1	99.89
	2020	954	913	41	95.70
	2021	954	938	16	98.32

Source: Distribution Companies / KE

TABLE 87

WAPDA Hydroelectric Tariff (2020-21)

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	10,800	0.043	421.940	(425.917)	63.837	1.1000		-	0.005
2	Warsak	KPK	243	774	0.107	748.198	64.332	63.837	1.1000		-	0.005
3	Duber Khwar	KPK	130	595	0.215	1,768.284	369.329	63.837	1.1000		-	0.005
4	Allai Khwar	KPK	121	463	0.215	1,508.871	523.789	63.837	1.1000		-	0.005
5	Khan Khwar	KPK	72	299	0.211	1,592.305	213.254	63.837	1.1000		-	0.005
6	Jabban	KPK	22	135	0.275	2,881.467	3,505.165	63.837	1.1000		-	0.005
7	Dargai	KPK	20	89	0.088	826.772	(587.876)	63.837	1.1000		-	0.005
8	Kuram Garhi	KPK	4	17	0.255	1,924.961	343.330	63.837	1.1000		-	0.005
9	Chitral	KPK	1	4	0.343	2,164.941	(4,020.787)	63.837	1.1000		-	0.005
10	Tarbela 4th Ext.	KPK	1,410	3,825	0.134	781.992	876.992	-	1.1000		-	0.005
11	Golen Gol	KPK	108	444	0.344	2,446.539	3,225.457	-	1.1000		-	0.005
12	Gomal Zam	KPK	17	50	0.634	3,092.300	(470.671)	-	1.1000		454.646	0.005
13	Ghazi Barotha	Pujnab	1,450	6,600	0.079	777.899	434.090	366.499	1.1000		-	0.005
14	Chashma	Punjab	184	800	0.191	1,524.435	1,403.294	366.499	1.1000		-	0.005
15	Jinnah HPP	Punjab	96	298	0.267	1,521.280	1,113.603	366.499	1.1000		-	0.005
16	Rasul	Punjab	22	61	0.157	895.550	(34.025)	366.499	1.1000		-	0.005
17	Nandipur	Punjab	14	42	0.132	833.858	(1,222.819)	366.499	1.1000		-	0.005
18	Shadiwal	Punjab	14	31	0.178	833.830	(790.848)	366.499	1.1000		-	0.005
19	Chichoki	Punjab	13	31	0.176	866.551	(870.862)	366.499	1.1000		-	0.005
20	Renala Khurd	Punjab	1	3	0.342	1,831.918	(3,455.565)	366.499	1.1000		-	0.005
21	Mangla	AJK	1,000	4,744	0.067	715.090	41.611	-	-	0.150	-	0.005

Source: WAPDA Invoices

TABLE 88 (A)

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

Sr. #	Power Plant	Year	Fuel	July			October			January			April		
				FCC Rs./kWh	VOM Rs./kWh	CPP Rs./kW/ month	FCC Rs./kWh	VOM Rs./kWh	CPP Rs./kW/ month	FCC Rs./kWh	VOM Rs./kWh	CPP Rs./kW/ month	FCC Rs./kWh	VOM Rs./kWh	CPP Rs./kW/ month
Jamshoro Power Company Limited	Block-1 Unit-1	2018-19	RFO	17.633	0.093	438.38	17.633	0.093	438.38	17.703	0.093	438.38	8.967	0.093	438.38
		2019-20		19.753	0.093	438.38	22.550	0.093	438.38	13.874	0.093	438.38	13.874	0.093	438.38
		2020-21		13.874	0.093	438.38	13.874	0.093	438.38	13.874	0.093	438.38	19.039	0.093	438.38
	Block-2 Unit-2	2018-19	RLNG	20.181	0.093	438.38	19.912	0.093	438.38	19.912	0.093	438.38	19.912	0.093	438.38
		2019-20		19.912	0.093	438.38	19.912	0.093	438.38	19.912	0.093	438.38	19.912	0.093	438.38
		2020-21		19.912	0.093	438.38	19.912	0.093	438.38	19.912	0.093	438.38	19.912	0.093	438.38
		2018-19	RFO	19.802	0.093	438.38	19.802	0.093	438.38	19.881	0.093	438.38	21.301	0.093	438.38
		2019-20		22.184	0.093	438.38	25.325	0.093	438.38	15.582	0.093	438.38	15.582	0.093	438.38
		2020-21		15.582	0.093	438.38	15.582	0.093	438.38	15.582	0.093	438.38	21.382	0.093	438.38
		2018-19	GAS	N/A	0.093	438.38	8.614	0.093	438.38	8.614	0.093	438.38	8.614	0.093	438.38
		2019-20		10.918	0.093	438.38	10.918	0.093	438.38	10.918	0.093	438.38	10.918	0.093	438.38
		2020-21		10.918	0.093	438.38	10.126	0.093	438.38	10.126	0.093	438.38	10.126	0.093	438.38
	Block-2 Unit-3	2018-19	RLNG	19.645	0.093	438.38	19.392	0.093	438.38	19.392	0.093	438.38	19.392	0.093	438.38
		2019-20		19.392	0.093	438.38	19.392	0.093	438.38	19.392	0.093	438.38	19.392	0.093	438.38
		2020-21		19.392	0.093	438.38	19.392	0.093	438.38	19.392	0.093	438.38	19.392	0.093	438.38
		2018-19	RFO	19.268	0.093	438.38	19.268	0.093	438.38	19.346	0.093	438.38	20.727	0.093	438.38
		2019-20		21.596	0.093	438.38	24.642	0.093	438.38	15.162	0.093	438.38	15.162	0.093	438.38
		2020-21		15.162	0.093	438.38	15.162	0.093	438.38	15.162	0.093	438.38	20.806	0.093	438.38
		2018-19	GAS	N/A	0.093	438.38	8.389	0.093	438.38	8.389	0.093	438.38	8.389	0.093	438.38
		2019-20		10.633	0.093	438.38	10.633	0.093	438.38	10.633	0.093	438.38	10.633	0.093	438.38
		2020-21		10.633	0.093	438.38	9.862	0.093	438.38	9.862	0.093	438.38	9.862	0.093	438.38
	Block-2 Unit-4	2018-19	RLNG	19.223	0.093	438.38	18.989	0.093	438.38	18.989	0.093	438.38	18.989	0.093	438.38
		2019-20		18.989	0.093	438.38	18.989	0.093	438.38	18.989	0.093	438.38	18.989	0.093	438.38
		2020-21		18.989	0.093	438.38	18.989	0.093	438.38	18.989	0.093	438.38	18.989	0.093	438.38
		2018-19	RFO	18.863	0.093	438.38	18.863	0.093	438.38	18.938	0.093	438.38	20.290	0.093	438.38
		2019-20		21.13	0.093	438.38	24.123	0.093	438.38	14.842	0.093	438.38	14.842	0.093	438.38
		2020-21		14.842	0.093	438.38	14.842	0.093	438.38	14.842	0.093	438.38	20.368	0.093	438.38
		2018-19	GAS	N/A	0.093	438.38	8.214	0.093	438.38	8.214	0.093	438.38	8.214	0.093	438.38
		2019-20		10.412	0.093	438.38	10.412	0.093	438.38	10.412	0.093	438.38	10.412	0.093	438.38
		2020-21		10.412	0.093	438.38	9.657	0.093	438.38	9.657	0.093	438.38	9.657	0.093	438.38
	Kotri (Unit 3-7)	2018-19	RLNG	16.946	0.093	438.38	16.946	0.093	438.38	16.946	0.093	438.38	16.946	0.093	438.38
		2019-20		16.946	0.093	438.38	16.946	0.093	438.38	16.946	0.093	438.38	16.946	0.093	438.38
		2020-21		16.946	0.093	438.38	16.946	0.093	438.38	16.946	0.093	438.38	16.946	0.093	438.38
		2018-19	RFO	N/A	0.093	438.38	21.803	0.093	438.38	21.803	0.093	438.38	20.435	0.093	438.38
		2019-20		20.435	0.093	438.38	20.435	0.093	438.38	20.435	0.093	438.38	20.435	0.093	438.38
		2020-21		20.435	0.093	438.38	20.435	0.093	438.38	20.435	0.093	438.38	20.435	0.093	438.38
		2018-19	GAS	N/A	0.093	438.38	7.463	0.093	438.38	7.463	0.093	438.38	7.463	0.093	438.38
		2019-20		9.459	0.093	438.38	9.459	0.093	438.38	9.459	0.093	438.38	N/A	N/A	N/A
Central Power Generation Company	CPGCL (Guddu 747) Block-I	2018-19	GAS	4.748	0.069	233.83	6.221	0.069	233.83	6.221	0.069	239.463	6.221	0.069	239.463
		2019-20		7.884	0.069	246.383	7.884	0.069	246.383	7.884	0.069	258.327	7.884	0.069	258.327
		2020-21			0.069	261.375		0.069	261.375		0.069	261.375		0.069	261.375
	CPGCL (Guddu 747) Block-II	2018-19	GAS	5.275	0.069	233.83	6.911	0.069	233.83	6.911	0.069	239.463	6.911	0.069	239.463
		2019-20		8.760	0.069	246.383	8.760	0.069	246.383	8.760	0.069	258.327	8.760	0.069	258.327
		2020-21			0.069	261.375		0.069	261.375		0.069	261.375		0.069	261.375
	CPGCL (Guddu 747) Block-III	2018-19	GAS	6.330	0.069	233.83	8.294	0.069	233.83	8.294	0.069	239.463	8.294	0.069	239.463
		2019-20		10.512	0.069	246.383	10.512	0.069	246.383	10.512	0.069	258.327	10.512	0.069	258.327
		2020-21			0.069	261.375		0.069	261.375		0.069	261.375		0.069	261.375
	CPGCL (Guddu 747) Block-IV	2018-19	GAS	6.782	0.069	233.83	8.886	0.069	233.83	8.886	0.069	239.463	8.886	0.069	239.463
		2019-20		11.263	0.069	246.383	11.263	0.069	246.383	11.263	0.069	258.327	11.263	0.069	258.327
		2020-21			0.069	261.375		0.069	261.375		0.069	261.375		0.069	261.375

Sr. #	Power Plant	Year	Fuel	July			October			January			April		
				FCC	VOM	CPP	FCC	VOM	CPP	FCC	VOM	CPP	FCC	VOM	CPP
				Rs./kWh	Rs./kWh	Rs./kW/Hr	Rs./kWh	Rs./kWh	Rs./kW/ month	Rs./kWh	Rs./kWh	Rs./kW/ month	Rs./kWh	Rs./kWh	Rs./kW/ month
Northern Power Generation Company	NPGCL (Nandipur)	2018-19	RLNG	10.084	0.440	2.421	10.084	0.451	2.427	10.084	0.504	2.447	8.968	0.512	2.451
		2019-20		11.255	0.606	2.487	11.641	0.579	2.481	11.641	0.575	2.483	11.163	0.621	2.500
		2020-21		7.544	0.623	2.502	8.843	0.622	2.502	9.795	0.602 1	2.495	10.874	0.581	2.488
	NPGCL (Muzaffargarh Units 1)	2018-19	RFO	18.664	0.137	0.462	18.664	0.137	0.462	16.510	0.142	0.471	19.520	0.142	0.471
		2019-20		20.575	0.149	0.482	20.575	0.149	0.482	20.575	0.160	0.498	20.575	0.160	0.498
		2020-21		20.575	0.173	0.503	20.575	0.173	0.503	20.575	0.173	0.503	20.575	0.173	0.503
	NPGCL (Muzaffargarh Units 1)	2018-19	Gas	N/A	0.137	0.462	8.238	0.137	0.462	8.238	0.142	0.471	8.238	0.142	0.471
		2019-20		10.442	0.149	0.482	10.442	0.149	0.482	10.442	0.160	0.498	10.442	0.160	0.498
		2020-21		10.442	0.173	0.503	10.442	0.173	0.503	10.442	0.173	0.503	10.442	0.173	0.503
	NPGCL (Muzaffargarh Units 2)	2018-19	RFO	18.917	0.137	0.462	18.917	0.137	0.462	16.733	0.142	0.471	19.785	0.142	0.471
		2019-20		20.854	0.149	0.482	20.854	0.149	0.482	20.854	0.160	0.498	20.854	0.160	0.498
		2020-21		20.854	0.173	0.503	20.854	0.173	0.503	20.854	0.173	0.503	20.854	0.173	0.503
	NPGCL (Muzaffargarh Units 2)	2018-19	GAS	N/A	0.137	0.462	8.347	0.137	0.462	8.347	0.142	0.471	8.347	0.142	0.471
		2019-20		10.579	0.149	0.482	10.579	0.149	0.482	10.579	0.160	0.498	10.579	0.160	0.498
		2020-21		10.579	0.173	0.503	10.579	0.173	0.503	10.579	0.173	0.503	10.579	0.173	0.503
	NPGCL (Muzaffargarh Units 3)	2018-19	RFO	18.263	0.137	0.462	18.263	0.137	0.462	16.155	0.142	0.471	19.100	0.142	0.471
		2019-20		20.132	0.149	0.482	20.132	0.149	0.482	20.132	0.160	0.498	20.132	0.160	0.498
		2020-21		20.132	0.173	0.503	20.132	0.173	0.503	20.132	0.173	0.503	20.132	0.173	0.503
	NPGCL (Muzaffargarh Units 3)	2018-19	Gas	N/A	0.137	0.462	8.066	0.137	0.462	8.066	0.142	0.471	8.066	0.142	0.471
		2019-20		10.224	0.149	0.482	10.224	0.149	0.482	10.224	0.160	0.498	10.224	0.160	0.498
		2020-21		10.224	0.173	0.503	10.224	0.173	0.503	10.224	0.173	0.503	10.224	0.173	0.503
	NPGCL (Muzaffargarh Units 4)	2018-19	RFO	18.236	0.137	0.462	18.236	0.137	0.462	16.131	0.142	0.471	19.072	0.142	0.471
		2019-20		20.103	0.149	0.482	20.103	0.149	0.482	20.103	0.160	0.498	20.103	0.160	0.498
		2020-21		20.103	0.173	0.503	20.103	0.173	0.503	20.103	0.173	0.503	20.103	0.173	0.503
	NPGCL (Muzaffargarh Units 4)	2018-19	Gas	N/A	0.137	0.462	8.055	0.137	0.462	8.055	0.142	0.471	8.055	0.142	0.471
		2019-20		10.209	0.149	0.482	10.209	0.149	0.482	10.209	0.160	0.498	10.209	0.160	0.498
		2020-21		10.209	0.173	0.503	10.209	0.173	0.503	10.209	0.173	0.503	10.209	0.173	0.503
	NPGCL (Muzaffargarh Units 5)	2018-19	RFO	19.417	0.137	0.462	19.417	0.137	0.462	17.176	0.142	0.471	20.308	0.142	0.471
		2019-20		21.405	0.149	0.482	21.405	0.149	0.482	21.405	0.160	0.498	21.405	0.160	0.498
		2020-21		21.405	0.173	0.503	21.405	0.173	0.503	21.405	0.173	0.503	21.405	0.173	0.503
	NPGCL (Muzaffargarh Units 5)	2018-19	Gas	N/A	0.137	0.462	8.561	0.137	0.462	8.561	0.142	0.471	8.561	0.142	0.471
		2019-20		10.850	0.149	0.482	10.850	0.149	0.482	10.850	0.160	0.498	10.850	0.160	0.498
		2020-21		10.850	0.173	0.503	10.850	0.173	0.503	10.850	0.173	0.503	10.850	0.173	0.503
	NPGCL (Muzaffargarh Units 6)	2018-19	RFO	19.948	0.137	0.462	19.948	0.137	0.462	17.646	0.142	0.471	20.863	0.142	0.471
		2019-20		21.991	0.149	0.482	21.991	0.149	0.482	21.991	0.160	0.498	21.991	0.160	0.498
		2020-21		21.991	0.173	0.503	21.991	0.173	0.503	21.991	0.173	0.503	21.991	0.173	0.503
	NPGCL (Muzaffargarh Units 6)	2018-19	Gas	N/A	0.137	0.462	8.787	0.137	0.462	8.787	0.142	0.471	8.787	0.142	0.471
		2019-20		11.137	0.149	0.482	11.137	0.149	0.482	11.137	0.160	0.498	11.137	0.160	0.498
		2020-21		11.137	0.173	0.503	11.137	0.173	0.503	11.137	0.173	0.503	11.137	0.173	0.503
	NPGCL (GTPS Faisalabad Units (5-9)	2018-19	Gas	N/A	0.137	0.462	N/A	0.137	0.462	N/A	0.142	0.471	N/A	0.142	0.471
		2019-20		N/A	0.149	0.482	6.609	0.149	0.482	6.609	0.160	0.498	6.609	0.160	0.498
		2020-21		8.376	0.173	0.503	8.376	0.173	0.503	8.376	0.173	0.503	8.376	0.173	0.503

** 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	2018-19		1.2000	1.3900	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	Pehur Hydro	2018-19	0.1500	0.1350	3.7331	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3	Mal-akand-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
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
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	N/A	N/A	N/A
6	Marala Hydro	2018-19	0.1500	0.3378	8.3119									
7	Neelum Jhelum	2018-19	N/A	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									

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	7.4680	0.3315	3.4049	7.4676	0.3540	3.6116
		2020-21	7.8425	0.3553	3.5848	7.2256	0.3553	3.5854	6.9423	0.3457	3.5633	6.8471	0.3358	3.3638
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	6.3744	0.6127	2.9241	6.6297	0.6130	2.9109	6.6297	0.5963	2.8993	6.6297	0.5792	1.3985
3	Engro PowerGen. Qadirpur	2018-19	4.1563	0.3944	2.0542	6.0599	0.4034	2.0988	6.0599	0.4430	2.3277	6.0599	0.4505	2.3460
		2019-20	7.6810	0.5221	2.6944	6.8497	0.5052	2.5895	6.8497	0.5051	2.5720	6.8497	0.5393	1.3125
		2020-21	6.8497	0.5414	1.3114	7.1240	0.5415	1.2995	7.1240	0.5268	1.2673	7.1240	0.5116	1.2277

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
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	N/A	1.3884	2.9841	11.5178	1.3897	1.4986	12.7734	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
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	12.6071	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
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	N/A	1.4448	1.3535	11.7334	1.4046	1.3146
5	Narow-al 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	13.0712	1.3309	3.4858
		2020-21	10.7477	1.4831	2.6956	11.8764	1.4838	1.3896	10.9044	1.4448	1.3535	11.7334	1.6525	3.3727
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	11.1225	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

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	N/A	0.6401	2.3316	N/A	0.6558	2.4022	N/A	0.7335	2.5712	N/A	0.7442	2.5989
		2019-20	N/A	0.8814	2.8155	N/A	0.8412	2.7733	N/A	0.8360	2.7604	N/A	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
2	Sapphire Electric	2018-19	N/A	0.6330	2.2431	N/A	0.6485	2.3186	N/A	0.7254	2.4977	N/A	0.7359	2.5278
		2019-20	N/A	0.8716	2.7568	N/A	0.8318	2.7197	N/A	0.8267	2.7060	N/A	0.8925	2.7603
		2020-21	18.9038	0.8952	2.7399	N/A	0.8949	2.7751	19.5726 20.0947	0.8658	1.3868	19.6652	0.8359	1.3380
3	Orient Power	2018-19	19.0052	0.4274	2.0939	18.9266	0.4378	2.1581	19.0285	0.4897	2.3224	N/A	0.4968	2.3511
		2019-20	N/A	0.5885	2.5722	N/A	0.5616	2.5336	22.6785	0.5582	2.5270	N/A	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
4	Halmore Power	2018-19	N/A	0.6431	2.6352	N/A	0.6588	2.7379	18.9778	0.7370	2.9701	N/A	0.7476	3.0122
		2019-20	N/A	0.8856	3.3030	N/A	0.8451	3.2702	N/A	0.8400	3.2528	N/A	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
5	Engro PowerGen. Qadirpur	2018-19	N/A	0.4025	2.0970	N/A	0.4118	2.1427	N/A	0.4535	2.3764	N/A	0.4599	2.3948
		2019-20	N/A	0.5330	2.7505	N/A	0.5156	2.6436	N/A	0.5156	2.6258	N/A	0.5505	1.3399
		2020-21	N/A	0.5526	1.3387	N/A	0.5527	1.3265	N/A	0.5376	1.2935	N/A	0.5221	1.2531

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
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
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
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
5	QATPL (Bhikki)	2018-19	8.887	0.389	1.938	8.843	0.399	2.080	8.705	0.446	2.352	8.259	0.453	2.358
		2019-20	9.874	0.536	2.643	9.262	0.512	2.679	8.980	0.509	2.646	8.882	0.549	2.547
		2020-21	6.002	0.551	2.233	7.036	0.551	2.204	8.099	0.533	2.197	8.652	0.514	1.999
6	NPPMCL (HBS)	2018-19	8.802	0.180	1.717	8.758	0.185	1.841	8.622	0.207	2.052	8.180	0.210	2.072
		2019-20	9.779	0.248	2.363	9.173	0.237	2.357	8.894	0.236	2.330	8.797	0.254	2.201
		2020-21	5.945	0.255	1.995	6.987	0.255	1.976	9.749	0.247	1.761	8.569	0.238	1.756
7	NPPMCL (Balloki)	2018-19	9.067	0.155	1.452	8.827	0.202	1.717	8.690	0.226	1.905	8.245	0.229	1.545
		2019-20	9.856	0.271	2.220	9.246	0.259	2.232	8.964	0.257	2.150	8.866	0.278	2.067
		2020-21	5.992	0.278	1.870	7.024	0.278	1.854	8.084	0.269	1.657	8.637	0.260	1.644

Source: NEPRA

TABLE 88 (G)

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

S. No.	Power Plant	Year	July	October	January	April
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
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
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
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

Source: NEPRA

TABLE 88 (H)

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 Park	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
2	Appollo Solar Park	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
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
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
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
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

Source: NEPRA

TABLE 88 (I)

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
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
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
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
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
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
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	

Note: FCC was issued for the period October, 2017 to September, 2018.

Source: NEPRA

TABLE 89
Insurance Cost Component

S. No.	Company Name	Insurance Premium (Rs.)		Insurance Component (Rs./kWh)		Period
		Reference	Revised	Reference	Revised	
1	Attock Gen.	67,500,000	101,610,230	0.0494	0.0743	April 01, 2020 to March 31, 2021
2	Atlas Power	235,724,802	249,554,477	0.1258	0.1331	Dec. 18, 2020 to Dec. 17, 2021
3	Orient Power	74,544,969	171,693,256	0.0400	0.0921	May 24, 2020 to May 23, 2021
4	Nishat Power	208,757,119	285,708,309	0.1220	0.1670	July 01, 2020 to June 30, 2021
5	Nishat Chunian	158,990,519	236,045,861	0.0927	0.1377	July 01, 2020 to June 30, 2021
6	Sapphire Electric	162,781,000	167,773,270	0.0876	0.0903	Oct. 05, 2019 to Oct. 04, 2020
7	Halmore Power	179,889,000	243,951,700	0.0983	0.1333	June 15, 2020 to June 14, 2021
8	Narowal Energy	153,870,314	32,688,812	0.0821	0.1775	July 01, 2020 to June 30, 2021
9	Liberty Power Tech.	137,879,149	260,434,922	0.0802	0.1515	January 13, 2021 to January 12, 2022
10	Foundation Power	107,954,000	100,926,998	0.0684	0.0640	July 01, 2020 to June 2021
11	Port Qasim	759,999,292	948,393,889	0.0698	0.0871	March 30, 2020 to March 29, 2021
12	Zorlu Enerji	759,999,292	948,393,889	0.0698	0.0871	March 30, 2020 to March 29, 2021
13	FFC Energy (Gas)	56789698	49,527,900	0.3571	0.2747	Dec 02, 2018 to Jan 2019
	FFC Energy (HSD)	60,172,672	55261086	0.5677	0.3849	Jan 01, 2020 to Dec 31, 2020
14	Three Gorges First	74,157,085	77,403,100	0.5347	0.5581	Nov. 26, 2019 to Nov. 25, 2020
15	Foundation Wind-I	107954000	55,125,810	0.0684	0.3815	July 01, 2020 to June 30, 2021
16	Foundation Wind-II	47,555,000	55,125,810	0.3309	0.3836	July 01, 2020 to June 30, 2021
17	Metro Power		71,236,390	0.4317	0.5006	Sept. 16, 2020 to Sept. 15, 2021
18	Artistic Energy		64,059,299	0.6349	0.4238	March 16, 2020 to March 15, 2021
19	Hawa Energy		57,328,759	0.6349	0.3759	March 15, 2020 to March 14, 2021
20	Jhampir Power		62,404,615	0.6349	0.3409	March 16, 2020 to March 15, 2021
21	Three Gorges Second		48,425,028	0.6349	0.3191	June 20, 2019 to June 19, 2020
22	Three Gorges Third		48,547,331	0.6349	0.3199	June 09, 2019 to June 08, 2020
23	Tricon Boston-A		36,927,490	0.6349	0.2422	Nov. 22, 2019 to Nov. 21, 2020
24	Tricon Boston-B		36,849,341	0.6349	0.2416	Nov. 22, 2019 to Nov. 21, 2020
25	Tricon Boston-C		36,927,334	0.6349	0.2422	Nov. 22, 2019 to Nov. 21, 2020
26	Zephyr Power		67,702,137	0.6349	0.4416	March 28, 2020 to March 27, 2021
27	Appolo Solar		68,520,226	0.4351	0.4469	May 31, 2018 to May 30, 2019
28	Best Green Energy	18,518,492	20,255,006	0.1338	0.1321	Aug 01, 2018 to July 31, 2019
29	Crest Energy	17,619,457	19,307,196	0.1277	0.1259	Aug 01, 2018 to July 31, 2019
30	AJ Power		6,195,934	0.3467	0.3467	Dec. 14, 2019 to Dec. 13, 2020
31	Harappa Solar		15,646,010	0.4808	0.5837	Oct. 14, 2020 to Oct. 13, 2021
32	Oursun		23,057,721	0.7277	0.3501	Nov 30, 2018 to Nov 29, 2019
			25,849,080	0.7277	0.3934	Nov 30, 2019 to Nov 29, 2020
33	HSR	976,067,995	1,028,915,474	0.0896	0.0942	Oct 28, 2019 to Oct 27, 2020
34	HBS (RLNG)		675,345,528	0.0578	0.0634	May 09, 2018 to May 08, 2019
			825,941,160	0.0578	0.0774	May 09, 2019 to May 08, 2020
			936,844,920	0.0578	0.0880	May 09, 2020 to May 08, 2021
	HBS (HSD)		675,345,528	0.0659	0.0724	May 09, 2018 to May 08, 2019
			825,941,160	0.0659	0.0883	May 09, 2019 to May 08, 2020
			936,844,920	0.0659	0.1004	May 09, 2020 to May 08, 2021
35	Balloki (RLNG)		685,102,082	0.0539	0.0649	July 29, 2018 to July 28, 2020
			859,316,808	0.0539	0.0812	July 29, 2020 to July 28, 2021
	Balloki (HSD)		685,102,082	0.0594	0.0715	July 29, 2018 to July 28, 2020
			859,316,808	0.0594	0.0895	July 29, 2020 to July 28, 2021
36	Engro Powergen Qadirpur Limited (Gas)	119908673	249042231	0.0643	0.1308	April 23, 2020 to April 23, 2021
	Engro Powergen Qadirpur Limited (HSD)	119908673	249042231	0.0643	0.1336	April 23, 2020 to April 23, 2021

Source: NEPRA

TABLE 90
NTDC Use of System Charges

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 Use of System Charges for FY 2019-20 and 2020-21 Petition is under process with NEPRA and the tariff is expected to be finalized during first quarter of the FY 2021-22.
Source: NEPRA

TABLE 91

Consumer-end Applicable Tariff from February 12, 2021 and onwards

Description	Fixed Charges (Rs./kW/M)	Notified Tariff w.e.f. 12th February, 2021	Qur. Uni. Tariff 2nd & 3rd Qur. of FY 2019-20 w.e.f. Oct., 2020	Surcharges	Total Applicable Tariff
		Variable Charges (Rs./kWh)			
A1-Residential					
Up to 50 Units		3.95			3.95
For peak load requirement less than 5 kW					
01-100 Units		7.74			7.74
101-200 Units		10.06			10.06
201-300 Units		12.15			12.15
301-700 Units		19.55	1.58	0.30	21.43
Above 700 Units		22.65	1.58	0.30	24.53
For peak load requirement exceeding 5 kW)					
Time of Use (TOU) - Peak		22.65	1.58	0.33	24.56
Time of Use (TOU) - Off-Peak		16.33	1.58	0.33	18.24
Temporary Supply		22.79	1.62	1.27	25.68
A2-Commercial					
For peak load requirement less than 5 kW		19.95	0.83	0.44	21.22
For peak load requirement exceeding 5 kW					
Regular	440	21.63	1.62	1.15	24.4
Time of Use (TOU) - Peak		23.55	1.62	1.27	26.44
Time of Use (TOU) - Off-Peak	440	17.58	1.62	1.27	20.47
Temporary Supply		20.34	1.62	1.27	23.23
A3-General Services		**19.51**	**1.62**	**1.27**	**22.40**
B-Industrial					
B1 (upto 25 kW)		17.23	1.62	1.27	20.12
B1 - TOU (Peak)		20.79	1.62	1.27	23.68
B1 Off Peak		15.23	1.62	1.27	18.12
B2 (25-500 kW)	440	16.73	1.62	1.27	19.62
B2 - TOU (Peak)		20.73	1.62	1.27	23.62
B2 - TOU (Off-peak)	440	15.02	1.62	1.27	17.91
B3 - TOU (Peak)		20.73	1.62	1.27	23.62
B3 - TOU (Off-peak)	420	14.93	1.62	1.27	17.82
B4 - TOU (Peak)		20.73	1.62	1.27	23.62
B4 - TOU (Off-peak)	400	14.83	1.62	1.27	17.72
Temporary Supply		18.31	1.62	1.27	21.20
C-Single Point Supply					
C1(a) Supply at 400 Volts-less than 5 kW		20.63	1.62	1.27	23.52
C1(b) Supply at 400 Volts-exceeding 5 kW	440	20.13	1.62	1.27	23.02
Time of Use (TOU) - Peak		23.55	1.62	1.27	26.44
Time of Use (TOU) - Off-Peak	440	16.95	1.62	1.27	19.84
C2 Supply at 11 kV	420	19.93	1.62	1.27	22.82
Time of Use (TOU) - Peak		23.55	1.62	1.27	26.44
Time of Use (TOU) - Off-Peak	420	16.75	1.62	1.27	19.64
C3 Supply above 11 kV	400	19.83	1.62	1.27	22.72
Time of Use (TOU) - Peak		23.55	1.62	1.27	26.44
Time of Use (TOU) - Off-Peak	400	16.65	1.62	1.27	19.54

Description	Fixed Charges (Rs./kW/M)	Notified Tariff w.e.f. 12th February, 2021	Qur. Uni. Tariff 2nd & 3rd Qur. of FY 2019-20 w.e.f. Oct., 2020	Surcharges	Total Applicable Tariff
		Variable Charges (Rs./kWh)			
D-Agricultural					
SCARP		17.63	1.62	1.27	20.52
Time of Use (TOU) - Peak		20.55	1.62	1.27	23.44
Time of Use (TOU) - Off-Peak	200	13.30	1.62	1.27	16.19
Agricultual Tube-wells	200	7.30	1.62	0.96	9.88
Time of Use (TOU) - Peak		7.30	1.62	0.96	9.88
Time of Use (TOU) - Off-Peak	200	7.30	1.62	0.96	9.88
Public Lighting - Tariff G		20.63	1.62	1.27	23.52
Residential Colonies - Tariff H		20.63	1.62	1.27	23.52
Railway Traction Tariff I		20.63	1.62	1.27	23.52
Tariff K - AJK	400	17.85	1.62	1.27	20.74
Time of Use (TOU) - Peak		23.55	1.62	1.27	26.44
Time of Use (TOU) - Off-Peak	400	16.65	1.62	1.27	19.54

TABLE 92

National Average Uniform Tariff with PYA 2019

Description	Fixed Charges	GEPCO	HESCO	TESCO	SEPCO	QESCO	IESCO	LESCO	FESCO	MEPCO	PESCO	Uniform Tariff	
		Variable Charges										Fixed Charges	Variable Rate
	Rs./kW/M	Rs./kWh										Rs./kW/M	Rs./kWh
Residential													
Up to 50 Units		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00		4.00
For peak load requirement less than 5 kW													
01-100 Units		12.72	19.30	12.06	17.28	20.69	12.00	13.75	13.72	15.83	13.88		14.59
101-200 Units		14.65	20.95	14.21	20.31	23.14	15.13	15.20	17.09	16.36	17.06		16.41
201-300 Units		15.90	22.34	15.17	23.00	23.59	16.71	16.94	17.83	17.43	17.57		17.53
301-700 Units		18.85	23.38	15.59	24.61	24.46	17.72	18.37	18.14	19.92	18.81		19.07
Above 700 Units		19.46	25.03	16.47	26.99	27.70	19.82	20.70	19.59	20.90	20.58		20.61
For peak load requirement exceeding 5 kW													
Time of Use (TOU) - Peak		19.39	25.03	16.47	27.00	27.91	18.46	20.27	19.19	20.85	19.84		20.27
Time of Use (TOU) - Off-Peak		12.90	19.08	11.97	21.05	21.51	10.98	13.97	13.38	15.16	12.41		13.10
Temporary Supply		19.46	24.93	16.47	24.65	23.54	23.55	19.62	20.24	20.27	19.85		21.73
Commercial - A2													
For peak load requirement less than 5 kW		18.16	23.79	16.57	26.93	18.64	17.83	20.35	18.23	19.39	19.84		19.56
For peak load requirement exceeding 5 kW													
Regular	440.00	14.49	21.62	14.54	24.83	18.29	14.68	17.91	17.85	17.55	15.17	440.00	19.22
Time of Use (TOU) - Peak		18.99	24.72	16.54	26.84	22.34	18.58	20.28	19.10	20.38	20.71		21.02
Time of Use (TOU) - Off-Peak	440.00	12.49	19.22	12.04	20.89	15.94	11.18	13.36	13.30	14.45	14.47	440.00	13.49
Temporary Supply		18.13	23.79	16.57	26.93	18.14	17.83	19.74	19.23	20.23	19.86		19.23
General Services - A3		15.02	21.43	14.10	22.55	18.24	13.79	15.45	14.24	17.73	14.39		17.05
Industrial													
B1		13.66	21.29	12.50	28.41	19.34	16.82	18.58	18.02	19.20	17.36		18.31
B1 Peak		19.16	24.89	16.50	27.01	22.54	18.72	20.87	19.52	20.30	19.85		21.19
B1 Off Peak		12.66	19.39	12.00	21.06	16.09	11.02	13.02	11.91	14.60	14.30		13.41
B2	440.00	12.99	20.62	11.97	23.74	17.29	14.17	15.77	14.39	16.52	14.72	440.00	17.87
B2 - TOU (Peak)		18.99	24.72	16.47	26.84	22.29	18.57	20.17	19.32	20.12	19.71		20.98

Description	Fixed Charges	GEPCO	HESCO	TESCO	SEPCO	QESCO	IESCO	LESCO	FESCO	MEPCO	PESCO	Uniform Tariff	
		Variable Charges										Fixed Charges	Variable Rate
	Rs./kW/M	Rs./kWh										Rs./kW/M	Rs./kWh
B2 - TOU (Off-peak)	440.00	12.29	19.02	11.77	20.69	15.74	10.97	13.47	12.95	14.22	13.96	440.00	13.50
B3 - TOU (Peak)		18.99	24.72	16.47	26.84	22.34	18.57	21.41	19.08	20.59	19.27		21.11
B3 - TOU (Off-peak)	420.00	12.19	18.82	11.67	18.59	15.64	10.77	12.44	12.87	13.12	13.86	420.00	12.63
B4 - TOU (Peak)		18.99	24.72	16.47	26.84	22.34	18.87	21.08	18.87	20.12	19.71		20.93
B4 - TOU (Off-peak)	400.00	12.09	18.72	11.57	20.49	15.54	11.17	12.83	12.77	14.02	14.23	400.00	12.97
Temporary Supply		17.11	29.29	12.50	24.41	18.14	23.22	15.52	17.48	17.05	15.35		18.38
Single Point Supply													
C1(a) Supply at 400 Volts-less than 5 kW		14.16	22.62	13.00	29.71	19.54	18.33	17.47	18.25	18.73	17.86		24.36
C1(b) Supply at 400 Volts-exceeding 5 kW	440.00	13.49	22.12	12.47	26.94	18.84	17.68	16.80	17.62	18.05	17.22	440.00	21.31
Time of Use (TOU) - Peak		18.99	24.72	16.47	26.84	23.34	20.66	20.10	20.60	21.10	19.71		22.43
Time of Use (TOU) - Off-Peak	440.00	12.49	19.22	11.97	20.89	15.94	11.18	13.60	14.70	12.89	16.47	440.00	15.00
C2 Supply at 11 kV	420.00	13.29	20.92	12.27	24.04	17.64	14.51	16.31	16.42	16.00	15.02	420.00	17.03
Time of Use (TOU) - Peak		18.99	24.72	16.47	26.84	22.34	18.72	20.10	20.60	18.13	20.65		20.40
Time of Use (TOU) - Off-Peak	420.00	12.29	19.02	11.77	20.69	15.74	8.95	13.20	14.60	14.10	13.96	420.00	12.89
C3 Supply above 11 kV	400.00	13.19	20.82	12.17	23.94	17.54	14.38	15.07	16.32	15.95	14.92	400.00	15.11
Time of Use (TOU) - Peak		18.99	24.72	16.47	26.84	22.34	18.89	20.10	18.22	20.15	19.71		19.51
Time of Use (TOU) - Off-Peak	400.00	12.19	18.82	11.67	20.59	15.64	11.06	13.10	12.47	14.05	13.86	400.00	11.68
Agricultural Tube-wells - Tariff D													
SCARP		14.66	25.48	12.50	28.54	18.29	18.73	20.36	16.00	18.28	13.91		22.92
Time of Use (TOU) - Peak		19.16	24.89	16.50	26.86	23.10	23.09	23.26	20.18	20.83	19.85		23.76
Time of Use (TOU) - Off-Peak	200.00	12.36	18.99	11.70	20.61	16.34	13.93	13.28	14.38	15.00	13.15	200.00	14.25
Agricultural Tube-wells	200.00	13.66	20.79	12.00	22.91	17.64	16.68	20.36	16.00	13.83	14.01	200.00	17.63
Time of Use (TOU) - Peak		19.16	24.89	16.50	26.86	22.54	18.73	21.75	20.23	19.91	19.85		21.44
Time of Use (TOU) - Off-Peak	200.00	12.36	18.99	11.70	18.41	16.14	13.93	14.73	13.32	12.38	13.15	200.00	13.04
Public Lighting		13.53	22.74	12.50	24.01	17.64	16.78	21.05	15.43	17.63	15.66		19.02
Residential Colonies attached to Industries		13.66	22.74	12.50	24.01	17.64	16.01	21.66	15.58	18.06	15.66		21.02
Railway Traction								19.17					19.17
Special Contracts - AJK	400.00	14.18					14.23				15.00	400.00	14.23
Time of Use (TOU) - Peak		18.97					17.95				19.75		18.63
Time of Use (TOU) - Off-Peak	400.00	13.72					10.52				13.95	400.00	11.95
Special Contracts - Rawat Lab.							17.07						17.07

Source: NEPRA

TABLE 93

Monthly Fuel Price Adjustment in respect of all DISCOs and K-Electric

Monthly Fuel Price Adjustment of CPPA System															
Year	FY 2016-17			FY 2017-18			FY 2018-19			FY 2019-20			FY 2020-21		
	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	3.9999	6.4933	-2.4934	4.7839	6.4933	-1.7094	5.5011	4.9927	0.5084	5.3219	3.5420	1.7799	4.3796	3.5420	0.8376
Aug.	3.8913	6.4562	-2.5648	4.6363	6.4562	-1.8198	5.9186	4.7552	1.1635	4.8660	3.2045	1.6615	3.6873	3.2045	0.4828
Sep.	3.6592	6.4326	-2.7734	3.9548	2.8410	1.1138	5.3216	5.1217	0.1999	4.6676	2.8410	1.8266	3.9548	2.8410	1.1138
Oct.	4.7273	7.3369	-2.6096	5.0821	7.3369	-2.2548	5.7107	5.2366	0.4741	5.3235	3.7579	1.5656	4.0505	-3.7579	0.2925
Nov.	3.6956	7.3040	-3.6084	4.1897	7.3040	-3.1143	4.7269	5.0497	-0.3228	3.4701	2.4877	0.9824	3.5273	-2.4877	0.7696
Dec.	5.8842	8.1037	-2.2195	5.1193	8.1037	-2.9844	6.4303	5.8619	0.5685	6.3381	4.4602	1.8779	5.9961	4.4602	1.5359
Jan.	6.5585	9.8670	-3.3086	6.6249	9.8670	-3.2421	7.5633	5.7576	1.8056	6.8684	5.7576	1.1108	6.6530	5.7576	0.8954
Feb.	5.1102	7.2603	-2.1501	4.9737	7.2603	-2.2866	4.7800	3.9710	0.8090	5.1760	3.9710	1.2051	4.7830	4.1414	0.6416
Mar.	5.9501	8.0985	-2.1484	6.2134	8.0985	-1.8851	4.9638	5.0010	-0.0372	5.1079	5.0010	0.1069	5.5861	6.2295	-0.6434
April	5.6650	7.6273	-1.9624	6.0329	6.7227	-0.6898	5.7876	5.2359	0.5508	4.5319	5.2359	-0.7040	6.1715	6.6087	-0.4371
May	5.0242	6.7764	-1.7522	6.5120	5.2908	1.2212	5.1456	5.0457	0.0999	3.7939	5.0457	-1.2517	5.6678	5.9322	-0.2644
June	4.5924	6.8283	-2.2359	5.5011	4.9927	0.5084	5.3129	3.5420	1.7990	4.0550	5.1150	-1.0581	5.7414	5.9344	-0.1930
Monthly Fuel Price Adjustment of K-Electric System															
Year	FY 2016-17			FY 2017-18			FY 2018-19			FY 2019-20			FY 2020-21		
	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	5.5816	5.1887	0.2629	5.6406	5.8618	-0.2122	9.0450	8.4302	0.6148	11.3069	10.0958	1.2110	8.6177	7.8921	-0.7478
Aug.	5.5374	5.1887	0.2287	5.8984	5.8618	0.0366	8.9818	8.4302	0.5516	10.8542	10.0958	0.7584	8.1999	7.8921	0.7526
Sep.	5.3922	5.1887	0.1935	5.5726	5.8618	-0.2892	9.1813	8.4302	0.7511	10.4028	10.0958	0.3070	8.6022	7.8921	0.3078
Oct.	5.8235	5.3922	-0.0387	6.0075	5.5726	0.4349	10.7689	9.1813	1.5876	10.5052	10.4028	0.1024	8.5734	8.6022	0.7101
Nov.	5.4572	5.3922	-0.1850	5.4526	5.5726	0.1200	9.7614	9.1813	0.5801	8.2763	10.4028	-2.1265	7.5005	8.6022	-0.0288
Dec.	6.3904	5.3922	0.9982	5.3327	5.5726	-0.2399	9.8396	9.1813	0.6583	8.6436	10.4028	-1.7591	9.1009	8.6022	-0.1017
Jan.	6.3066	6.3904	-0.0838	6.4802	5.3327	1.1475	9.8017	9.8396	-0.0379	9.5863	8.6436	0.9426	10.3514	9.1009	1.2505
Feb.	5.5545	6.3904	-0.8359	6.3000	5.3327	0.9673	8.9077	9.8396	-0.9319	9.1529	8.6436	0.5093	11.1992	9.1009	2.0983
Mar.	6.2816	6.3904	-0.1088	7.4222	5.3327	2.0895	8.6210	9.8396	-1.2186	8.6399	8.6436	-0.0038	11.0428	9.1009	1.9419
April	6.0333	6.2816	-0.2483	7.7873	7.4222	0.3651	9.2779	8.6210	0.6569	7.8526	8.6399	-0.7873	10.4929	11.0428	-0.5499
May	5.9047	6.2816	-0.3769	8.6174	7.4222	1.1952	10.0537	8.6210	1.4327	7.2860	8.6399	-1.3538	10.0930	11.0428	-0.9498
June	5.8618	6.2816	-0.4198	8.4302	7.4222	1.0080	10.0598	8.6210	1.4748	7.8921	8.6399	-0.7478	10.8921	11.0428	0.1507

Source: NEPRA

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 – September, 2020	269.270	256.394	168.75	7.26%	0.30%
October – December, 2020	269.270	259.918	166.40	7.25%	0.23%
January – March, 2021	269.270	260.229	160.80	7.29%	0.24%
April – June, 2021	269.270	263.014	153.60	7.59%	0.19%

** For the purpose of indexation of Fixed O&M (Local) component for the whole year of 2020-21, 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 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Revenue Requirement (Rs. in Million)	581.70	451.87	391.92	236.90	458.00
Average Monthly MDI (MW)	19,243.00	22,695.00	23,507.00	23,640	23,693.00
Market Operation Fee (Rs./kW/Month)	2.52	1.66	1.39	0.84	1.61

Source: NEPRA

TABLE 96

Import by K-Electric from CPPA-G Basket (GWh)

	Jul, 2020		Aug, 2020		Sep, 2020		Oct, 2020		Nov, 2020		Dec, 2020		Jan, 2021		Feb, 2021		Mar, 2021		Apr, 2021		May, 2021		June, 2021	
	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	15.90	0.00	15.92	0.00	14.45	0.00	16.29	0.00	12.93	0.20	12.35	0.07	11.94	0.66	11.26	0.22	12.24	0.08	17.37	0.61	21.69	1.32	25.97	1.84
2	17.37	0.00	16.16	0.00	15.23	0.00	16.79	0.00	15.15	0.34	12.61	0.06	12.04	0.30	10.73	0.24	12.35	0.27	17.78	0.28	20.94	1.17	25.65	1.19
3	17.59	0.00	16.13	0.00	16.50	0.00	17.00	17.00	15.24	0.47	12.32	0.27	10.06	0.47	10.71	0.37	12.98	0.97	16.94	0.25	21.71	1.22	26.84	0.71
4	17.30	0.00	16.94	0.00	17.39	0.00	16.44	17.00	14.92	1.08	11.67	0.59	10.87	0.47	10.93	0.75	14.53	0.34	15.70	0.47	23.81	1.74	25.92	0.43
5	16.55	0.00	16.95	0.00	16.67	0.00	16.91	0.32	15.67	0.53	12.50	0.22	12.00	0.35	5.24	0.35	14.20	0.24	18.15	1.17	23.39	1.98	26.04	0.53
6	15.51	0.00	14.32	0.00	14.02	0.00	17.39	0.40	15.06	0.16	11.20	0.37	12.34	0.23	3.31	0.13	12.99	0.83	17.92	1.17	24.40	1.33	24.40	1.33
7	17.19	0.00	12.60	0.00	16.35	0.00	17.02	0.79	12.01	0.12	12.67	0.22	12.37	0.29	2.47	0.16	8.75	1.39	18.86	0.33	24.13	0.85	25.61	1.48
8	15.84	0.00	13.73	0.00	16.68	0.00	17.33	0.81	10.37	0.05	12.72	0.01	11.54	0.73	3.39	0.39	12.25	0.55	18.84	0.36	22.97	1.10	26.44	3.02
9	16.99	0.00	15.22	0.00	17.02	0.00	17.01	0.38	11.72	0.25	12.64	0.70	10.22	1.81	3.64	0.52	12.28	0.35	19.94	0.56	22.55	1.72	25.54	3.21
10	17.05	0.00	16.39	0.00	16.96	0.00	16.11	0.31	13.45	0.03	12.34	1.40	0.41	0.41	4.02	0.41	12.24	0.69	19.38	0.66	22.38	2.30	25.39	2.90
11	16.56	0.00	16.86	0.00	15.32	0.00	15.99	0.32	12.45	0.74	12.34	0.62	5.17	0.85	3.97	0.04	12.32	0.70	19.44	0.76	22.61	2.34	25.56	3.08
12	16.10	0.00	16.85	0.00	16.78	0.00	17.13	0.23	12.06	1.24	11.80	0.95	9.98	0.13	5.03	0.22	12.62	0.22	19.54	0.98	19.93	2.63	26.20	3.22
13	17.30	0.00	17.32	0.00	16.22	0.00	15.41	0.67	14.08	0.63	8.45	0.88	10.76	0.11	3.76	0.29	12.17	0.94	20.43	0.93	19.19	2.18	25.19	2.64
14	17.87	0.00	15.87	0.00	17.47	0.00	15.29	1.25	12.57	0.09	10.62	0.32	11.44	0.02	1.90	0.65	10.19	0.32	19.22	1.24	22.15	0.74	27.99	1.81
15	18.40	0.00	17.06	0.00	17.39	0.00	15.88	0.91	11.59	0.18	11.21	0.92	11.27	0.05	7.92	0.45	12.68	0.61	19.10	1.28	18.56	0.36	28.65	2.00
16	17.35	0.00	15.43	0.00	17.42	0.00	14.34	2.38	11.10	1.47	9.98	2.65	11.21	0.56	11.71	0.36	15.25	0.61	20.34	0.76	19.97	1.59	28.22	1.02
17	14.76	0.00	14.70	0.00	17.53	0.91	16.15	1.61	10.75	1.89	11.95	2.00	10.74	0.11	7.89	0.23	15.61	0.70	20.03	0.51	22.41	2.33	27.22	0.39
18	17.20	0.00	16.52	0.00	17.31	1.29	12.47	0.56	12.46	0.20	12.27	0.64	11.51	0.84	11.58	0.16	15.00	0.43	18.03	0.66	22.32	0.93	25.88	0.59
19	17.62	0.00	16.97	0.00	16.95	0.33	17.29	0.26	12.93	0.11	11.91	0.86	11.92	0.69	11.27	0.58	15.29	0.34	19.48	1.31	25.01	0.49	26.81	1.71
20	17.21	0.00	17.19	0.00	16.22	0.10	17.38	0.36	11.33	0.69	11.45	0.75	13.04	0.07	12.08	0.21	14.90	0.46	16.09	1.23	24.80	0.98	25.39	2.46
21	17.17	0.00	14.53	0.00	17.22	0.37	15.93	0.14	10.24	0.23	11.96	0.04	11.29	0.59	8.32	0.23	8.38	0.50	22.29	0.41	24.32	1.12	27.22	2.65
22	14.01	0.00	15.58	0.00	18.05	0.70	15.26	0.15	6.39	0.06	11.85	0.09	11.77	1.68	11.79	0.44	15.34	0.66	21.37	1.19	23.17	0.80	26.86	2.02
23	17.10	0.00	15.40	0.00	16.83	0.58	14.38	0.49	9.83	0.13	12.60	0.14	12.47	0.20	12.21	1.28	13.14	0.29	22.02	1.23	22.40	0.63	26.69	2.55
24	16.84	0.00	15.35	0.00	17.49	0.59	15.93	0.21	10.42	1.43	12.39	0.91	12.47	0.47	12.13	1.14	14.72	0.18	22.05	0.29	24.71	1.55	27.44	2.70
25	17.26	0.00	10.77	0.00	17.44	1.45	11.21	0.06	8.70	1.79	10.74	1.84	12.57	0.06	12.04	0.98	15.38	0.39	20.38	0.45	24.20	2.42	24.89	3.06
26	12.70	0.00	12.98	0.00	17.06	2.62	13.89	0.03	9.66	2.73	12.56	0.38	12.94	0.15	12.16	1.33	15.21	0.39	22.21	0.59	25.09	2.30	25.42	2.86
27	15.17	0.00	6.11	0.00	15.78	1.62	15.27	0.11	10.73	3.18	11.42	0.54	13.33	0.17	12.21	0.57	15.29	0.71	21.17	0.37	24.28	1.43	24.14	2.14
28	15.03	0.00	10.15	0.00	16.69	0.95	14.83	0.43	13.17	1.76	11.36	1.05	12.90	0.13	10.16	0.45	14.72	1.21	23.31	0.32	24.47	1.28	26.55	2.47
29	16.46	0.00	10.15	0.00	16.57	1.17	15.85	0.03	10.28	0.77	11.84	1.49	12.63	0.15			15.63	1.64	22.70	0.00	25.36	1.34	25.84	2.13
30	16.86	0.00	10.61	0.00	16.98	0.88	13.76	0.17	11.49	0.19	10.96	1.91	12.60	0.26			15.91	0.63	22.57	0.86	22.87	2.23	25.92	2.78
31	16.23	0.00	16.16	0.00			15.98	0.22			13.43	1.78	12.61	0.70			17.65	1.20			28.35	2.67		
Total	**512.44**	**0.00**	**456.89**	**0.00**	**499.97**	**13.56**	**487.90**	**47.58**	**358.71**	**22.76**	**366.10**	**24.64**	**348.41**	**13.71**	**233.84**	**13.13**	**422.18**	**18.83**	**592.65**	**21.21**	**714.14**	**47.07**	**785.86**	**60.90**

Source: KE

TABLE 97

Technology-wise Generation Capacity (MW) and Daily Energy Generation (GWh)

July, 2020

Day	Hydel								Wind							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	9874	9871	7700	8065	6306	177.22	74.80	95.90	1235	1085	359	617	0	3.69	14.17	42.83
2	9874	9871	8114	8114	6659	176.61	74.55	90.69	1235	1085	682	765	116	10.72	41.16	65.47
3	9874	9871	8345	8353	6549	175.75	74.18	87.75	1235	1085	691	795	309	13.51	51.87	81.45
4	9874	9871	7775	8179	3879	172.33	72.74	92.35	1235	1085	7	791	7	9.60	36.88	5715.9
5	9874	9871	8224	8224	6767	179.87	75.92	91.13	1235	1085	318	958	6	7.13	27.39	93.47
6	9874	9871	7586	8066	6285	178.69	75.43	98.15	1235	1085	15	347	0	2.67	10.26	741.94
7	9874	9871	7726	7934	6410	176.33	74.43	95.10	1235	1085	324	604	52	6.00	23.04	77.16
8	9874	9871	7823	8017	6241	174.15	73.51	92.76	1235	1085	204	639	14	5.78	22.20	118.08
9	9874	9871	7970	7970	6201	176.51	74.50	92.28	1235	1085	396	422	10	2.87	11.02	30.21
10	9874	9871	8138	8349	6402	179.19	75.63	91.74	1235	1085	939	939	0	6.16	23.66	27.34
11	9874	9871	7042	8369	6637	181.10	76.44	107.16	1235	1085	1045	1047	7	18.85	72.38	75.15
12	9874	9871	8272	8334	6524	185.64	78.36	93.51	1235	1085	870	1046	296	16.87	64.80	80.82
13	9874	9871	7853	8282	6345	180.57	76.22	95.81	1235	1085	390	871	221	11.73	45.06	125.35
14	9874	9871	7978	8019	6655	179.88	75.93	93.95	1235	1085	699	699	53	8.57	32.92	51.10
15	9874	9871	8299	8299	6341	178.89	75.51	89.81	1235	1085	515	587	42	6.03	23.16	48.79
16	9874	9871	8041	8278	6573	178.94	75.53	92.72	1235	1085	287	540	18	5.30	20.36	76.96
17	9874	9871	8197	8304	6063	180.79	76.31	91.90	1235	1085	34	889	7	8.71	33.44	1067.27
18	9874	9871	8017	8257	6531	179.10	75.60	93.09	1235	1085	14	304	7	3.31	12.69	983.69
19	9874	9871	8251	8287	6362	177.14	74.77	89.45	1235	1085	230	521	7	3.71	14.27	67.30
20	9874	9871	8244	8244	6558	179.11	75.60	90.53	1235	1085	584	1060	382	17.47	67.08	124.63
21	9874	9871	7976	8034	6258	174.38	73.60	91.10	1235	1085	5	577	0	7.23	27.78	6028.20
22	9874	9871	7999	8051	5854	173.54	73.25	90.40	1235	1085	666	769	3	8.46	32.49	52.93
23	9874	9871	8097	8097	6427	173.91	73.41	89.49	1235	1085	788	1025	606	19.62	75.33	103.73
24	9874	9871	8369	8429	6327	176.83	74.64	88.04	1235	1085	652	964	523	18.43	70.79	117.81
25	9874	9871	7948	8143	7022	184.01	77.67	96.46	1235	1085	148	553	37	6.07	23.31	170.88
26	9874	9871	8069	8267	7038	185.70	78.38	95.89	1235	1085	53	466	0	4.20	16.15	330.55
27	9874	9871	6991	7951	5801	175.86	74.23	104.81	1235	1085	658	665	0	7.73	29.67	48.92
28	9874	9871	8049	8080	5915	169.19	71.41	87.58	1235	1085	955	1046	676	22.10	84.85	96.40
29	9874	9871	6994	8266	5483	166.15	70.13	98.98	1235	1085	754	1028	567	22.17	85.15	122.53
30	9874	9871	7023	7489	5390	156.56	66.08	92.88	1235	1085	381	568	159	8.23	31.60	89.98
31	9874	9871	7224	7665	5363	160.35	67.68	92.49	1235	1085	360	516	87	5.70	21.89	65.96

July, 2020

Day	Solar								Bagasse							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	400	400	0	255	0	1.95	20.36		364	233	48	48	48	1.15	20.50	99.51
2	400	400	0	265	0	1.98	20.66		364	233	48	48	48	1.15	20.56	99.80
3	400	400	0	270	0	2.03	21.13		364	233	48	48	48	1.15	20.56	99.78
4	400	400	0	273	0	2.07	21.54		364	233	48	48	48	1.15	20.58	99.92
5	400	400	0	221	0	1.61	16.75		364	233	48	48	48	1.15	20.64	100.19
6	400	400	0	262	0	1.90	19.82		364	233	48	48	48	1.15	20.61	100.04
7	400	400	0	267	0	1.74	18.09		364	233	48	48	48	1.15	20.61	100.03
8	400	400	0	272	0	2.05	21.31		364	233	48	48	48	1.15	20.61	100.02
9	400	400	0	236	0	1.69	17.61		364	233	48	48	48	1.15	20.58	99.90
10	400	400	0	267	0	2.01	20.92		364	353	48	48	48	1.15	13.57	99.79
11	400	400	12	271	0	1.99	20.71		364	233	48	48	48	1.15	20.57	99.85
12	400	400	0	256	0	1.89	19.68		364	233	48	48	31	1.12	20.08	97.47

Day	Solar								Bagasse							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
13	400	400	0	239	0	1.79	18.69		364	233	48	48	30	1.14	20.42	99.12
14	400	400	0	250	0	1.86	19.38		364	233	48	48	48	1.15	20.55	99.77
15	400	400	0	252	0	1.89	19.73		364	233	48	48	33	1.14	20.38	98.93
16	400	400	0	250	0	1.37	14.29		364	233	48	49	48	1.15	20.53	99.66
17	400	400	0	266	0	1.94	20.18		364	233	48	48	48	1.15	20.52	99.63
18	400	400	0	272	0	1.96	20.46		364	233	48	48	48	1.15	20.53	99.64
19	400	400	0	257	0	1.93	20.07		364	233	48	48	48	1.15	20.57	99.84
20	400	400	0	269	0	1.92	20.04		364	233	48	48	48	1.15	20.57	99.87
21	400	400	0	238	0	1.02	10.65		364	233	41	48	24	1.11	19.85	112.83
22	400	400	0	226	0	1.66	17.28		364	233	48	48	48	1.15	20.62	100.08
23	400	400	0	284	0	2.06	21.42		364	233	48	48	48	1.15	20.57	99.87
24	400	400	0	275	0	1.83	19.04		364	233	24	24	24	0.58	10.36	100.57
25	400	400	0	293	0	2.07	21.58		364	233	48	48	48	1.14	20.41	99.06
26	400	400	0	270	0	1.71	17.83		364	233	48	48	48	1.15	20.65	100.23
27	400	400	0	285	0	2.15	22.37		364	233	48	48	48	1.15	20.60	99.99
28	400	400	0	282	0	2.13	22.16		364	233	48	48	48	1.14	20.33	98.69
29	400	400	0	280	0	2.06	21.51		364	233	48	48	48	1.15	20.54	99.70
30	400	400	0	276	0	2.05	21.39		364	233	48	48	28	1.12	20.10	97.59
31	400	400	0	283	0	2.01	20.96		364	233	48	48	48	1.16	20.69	100.43

August, 2020

Day	Hydel								Wind							
	Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	9874	9871	7558	7558	5804	162.15	68.44	89.39	1235	1085	230	384	125	6.20	23.81	112.32
2	9874	9871	7659	8049	4828	164.51	69.44	89.50	1235	1085	545	655	111	7.01	26.92	53.58
3	9874	9871	7891	8465	6058	173.89	73.40	91.82	1235	1085	849	980	345	17.22	66.11	84.49
4	9874	9871	8141	8236	5688	170.93	72.15	87.48	1235	1085	559	955	292	18.18	69.80	135.48
5	9874	9871	7159	8088	5431	172.44	72.79	100.36	1235	1085	317	361	22	3.69	14.15	48.45
6	9874	9871	8186	8186	5593	168.02	70.92	85.52	1235	1085	865	951	35	10.22	39.23	49.21
7	9874	9871	7690	7761	5797	163.82	69.15	88.76	1235	1085	29	634	8	6.11	23.45	877.20
8	9874	9871	7672	8027	4914	152.81	64.50	82.99	1235	1085	2	358	2	3.77	14.49	7859.64
9	9874	9871	7613	7767	5981	170.10	71.80	93.10	1235	1085	262	576	17	6.13	23.55	97.52
10	9874	9871	8185	8216	5548	164.51	69.44	83.74	1235	1085	417	579	188	8.13	31.21	81.20
11	9874	9871	7751	7751	5755	167.07	70.52	89.81	1235	1085	516	764	132	8.60	33.02	69.43
12	9874	9871	8050	8050	5502	162.75	68.69	84.24	1235	1085	997	1049	551	22.57	86.68	94.33
13	9874	9871	7525	7525	5925	164.88	69.60	91.30	1235	1085	749	1042	663	22.63	86.89	125.87
14	9874	9871	8459	8461	5665	167.42	70.67	82.47	1235	1085	347	829	92	11.60	44.53	139.25
15	9874	9871	7618	8158	6085	172.20	72.69	94.19	1235	1085	508	569	9	5.16	19.82	42.33
16	9874	9871	8041	8041	4855	162.49	68.59	84.20	1235	1085	530	836	220	10.14	38.93	79.70
17	9874	9871	8310	8426	5927	179.30	75.68	89.90	1235	1085	593	955	253	13.29	51.02	93.36
18	9874	9871	8498	8710	6921	190.35	80.34	93.33	1235	1085	761	906	277	13.16	50.53	72.05
19	9874	9871	8178	8739	6646	188.93	79.75	96.26	1235	1085	864	964	455	16.51	63.41	79.63
20	9874	9871	8682	8783	7057	189.16	79.85	90.78	1235	1085	211	513	57	6.64	25.49	131.07
21	9874	9871	8550	8550	7106	188.44	79.54	91.83	1235	1085	0	809	0	1.57	6.03	
22	9874	9871	8364	8492	6990	186.19	78.59	92.76	1235	1085	51	322	0	0.71	2.72	57.91
23	9874	9871	8116	8169	6121	172.07	72.63	88.34	1235	1085	769	872	39	7.63	29.30	41.34
24	9874	9871	7842	8120	6019	170.90	72.14	90.81	1235	1085	726	917	202	15.41	59.18	88.44
25	9874	9871	7741	7886	6328	173.42	73.20	93.35	1235	1085	373	851	0	8.49	32.61	94.85
26	9874	9871	9121	9121	6923	193.62	81.73	88.45	1235	1085	49	410	0	5.69	21.86	484.01
27	9874	9871	8949	9045	7033	203.21	85.77	94.62	1235	1085	3	456	0	0.92	3.55	1284.13
28	9874	9871	9325	9326	7594	209.74	88.53	93.72	1235	1085	91	172	0	1.05	4.03	48.05
29	9874	9871	9162	9318	7804	209.49	88.42	95.27	1235	1085	234	318	25	3.98	15.27	70.81
30	9874	9871	8948	9161	7692	207.23	87.47	96.50	1235	1085	0	365	0	2.75	10.55	
31	9874	9871	9028	9028	7142	199.20	84.08	91.94	1235	1085	0	356	0	2.49	9.55	

August, 2020

Day	Solar								Bagasse							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	400	400	0	278	0	2.10	21.92		364	233	48	48	48	1.16	20.70	100.50
2	400	400	0	279	0	2.09	21.73		364	233	48	48	48	1.16	20.68	100.40
3	400	400	0	281	0	2.12	22.05		364	233	48	48	48	1.15	20.64	100.19
4	400	400	0	284	0	2.14	22.24		364	233	48	48	48	1.15	20.56	99.79
5	400	400	0	263	0	1.82	18.93		364	233	48	48	40	1.14	20.30	98.54
6	400	400	0	239	0	1.01	10.48		364	233	48	48	48	1.15	20.55	99.76
7	400	400	0	250	0	1.34	14.01		364	233	46	48	42	1.13	20.21	102.39
8	400	400	0	318	0	1.88	19.55		364	233	41	48	35	1.09	19.43	110.41
9	400	400	0	294	0	2.14	22.33		364	233	48	48	48	1.14	20.41	99.08
10	400	400	0	238	0	1.15	12.00		364	233	48	48	48	1.15	20.54	99.70
11	400	400	0	304	0	1.83	19.10		364	233	48	48	48	1.15	20.51	99.57
12	400	400	0	297	0	2.23	23.26		364	233	48	48	48	1.13	20.16	97.86
13	400	400	0	294	0	2.16	22.52		364	233	48	48	24	1.15	20.49	99.47
14	400	400	0	247	0	1.45	15.07		364	233	48	48	48	1.15	20.54	99.68
15	400	400	0	289	0	2.10	21.88		364	233	48	48	48	1.15	20.48	99.41
16	400	400	0	292	0	2.03	21.15		364	233	48	48	48	1.15	20.52	99.63
17	400	400	0	234	0	1.87	19.49		364	233	24	48	24	0.61	10.97	106.49
18	400	400	0	263	0	1.77	18.41		364	233	24	24	24	0.57	10.28	99.77
19	400	400	0	289	0	2.00	20.80		364	233	24	24	24	0.57	10.26	99.64
20	400	400	0	256	0	1.54	16.08		364	233	0	0	0	0.01	0.12	
21	400	400	0	294	0	2.06	21.49		364	233	0	0	0	0.00	0.00	
22	400	400	0	228	0	1.81	18.89		364	233	0	0	0	0.00	0.00	
23	400	400	0	277	0	2.08	21.69		364	233	0	0	0	0.00	0.00	
24	400	400	0	250	0	1.96	20.41		364	233	0	0	0	0.00	0.00	
25	400	400	0	216	0	1.24	12.90		364	233	0	0	0	0.00	0.00	
26	400	400	0	175	0	1.00	10.38		364	233	0	0	0	0.00	0.00	
27	400	400	0	296	0	1.89	19.71		364	233	0	0	0	0.00	0.00	
28	400	400	0	300	0	2.01	20.94		364	233	0	0	0	0.00	0.00	
29	400	400	0	286	0	1.97	20.56		364	233	0	0	0	0.00	0.00	
30	400	400	0	303	0	1.93	20.13		364	233	0	0	0	0.00	0.00	
31	400	400	0	196	0	0.72	7.45		364	233	0	0	0	0.00	0.00	

September, 2020

Day	Hydel								Wind							
	Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	9874	9871	8571	8712	7916	202.76	85.58	98.57	1235	1085	0	165	0	0.84	3.24	
2	9874	9871	8749	8916	7936	202.31	85.39	96.35	1235	1085	260	346	0	2.63	10.09	42.11
3	9874	9871	8811	8922	7591	200.21	84.51	94.68	1235	1085	161	178	4	1.75	6.71	45.21
4	9874	9871	8969	9122	7216	202.74	85.57	94.18	1235	1085	0	340	0	1.38	5.29	
5	9874	9871	9091	9094	7924	205.28	86.65	94.09	1235	1085	314	486	63	4.64	17.81	61.54
6	9874	9871	8588	9001	7371	201.86	85.20	97.93	1235	1085	315	603	267	10.12	38.85	133.80
7	9874	9871	8659	9158	7625	205.67	86.81	98.97	1235	1085	307	699	159	8.88	34.09	120.48
8	9874	9871	8661	9060	7087	203.32	85.82	97.81	1235	1085	218	455	159	6.81	26.15	130.16
9	9874	9871	8355	8769	6596	192.18	81.12	95.84	1235	1085	225	350	34	3.92	15.07	72.67
10	9874	9871	7891	8598	6066	176.27	74.40	93.07	1235	1085	210	440	27	3.66	14.07	72.69
11	9874	9871	7715	7715	5938	165.77	69.97	89.53	1235	1085	114	410	70	4.79	18.41	175.21
12	9874	9871	7244	7789	5290	163.20	68.88	93.87	1235	1085	5	58	0	0.53	2.05	444.74
13	9874	9871	8141	8141	4989	160.09	67.57	81.94	1235	1085	11	96	0	0.53	2.04	201.43
14	9874	9871	7440	7936	4991	159.26	67.22	89.19	1235	1085	4	381	0	0.89	3.41	924.46
15	9874	9871	6952	7328	4544	147.19	62.13	88.22	1235	1085	83	117	0	0.89	3.41	44.54

Day	Hydel								Wind							
	Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
16	9874	9871	7147	7582	5027	159.83	67.46	93.18	1235	1085	259	310	18	3.60	13.84	57.97
17	9874	9871	7346	7643	4423	147.19	62.13	83.49	1235	1085	360	568	163	8.58	32.95	99.31
18	9874	9871	7115	7115	4478	146.61	61.88	85.86	1235	1085	164	662	160	8.91	34.22	226.40
19	9874	9871	7395	7395	4168	144.37	60.94	81.35	1235	1085	94	252	33	4.00	15.35	177.14
20	9874	9871	6680	6713	4107	130.96	55.28	81.69	1235	1085	100	114	0	0.81	3.09	33.57
21	9874	9871	6630	6630	4474	136.36	57.55	85.69	1235	1085	144	267	3	2.20	8.46	63.76
22	9874	9871	7802	7802	3790	146.61	61.88	78.30	1235	1085	208	341	14	3.32	12.73	66.41
23	9874	9871	7555	7720	4904	155.12	65.48	85.55	1235	1085	297	434	18	4.17	16.01	58.50
24	9874	9871	6533	7059	4221	139.68	58.96	89.08	1235	1085	314	461	120	5.72	21.98	75.94
25	9874	9871	7842	8072	3784	136.33	57.55	72.44	1235	1085	334	739	145	10.05	38.61	125.42
26	9874	9871	7540	7542	3955	139.06	58.70	76.84	1235	1085	777	873	335	14.02	53.84	75.18
27	9874	9871	7437	7513	4394	136.47	57.60	76.46	1235	1085	377	674	122	9.10	34.94	100.56
28	9874	9871	6417	6829	4230	135.49	57.19	87.98	1235	1085	495	677	98	6.47	24.83	54.43
29	9874	9871	6824	6824	4259	133.61	56.40	81.58	1235	1085	526	671	162	8.60	33.01	68.09
30	9874	9871	6937	6937	4479	133.67	56.42	80.29	1235	1085	286	594	70	5.62	21.57	81.83

September, 2020

Day	Solar								Bagasse							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	400	400	0	124	0	0.81	8.49		364	233	0	0	0	0.00	0.00	
2	400	400	0	212	0	1.16	12.07		364	233	0	0	0	0.00	0.00	
3	400	400	0	296	0	1.18	12.30		364	233	0	0	0	0.00	0.00	
4	400	400	0	237	0	1.44	14.96		364	233	0	0	0	0.00	0.00	
5	400	400	0	306	0	1.93	20.09		364	233	0	0	0	0.00	0.00	
6	400	400	0	239	0	1.69	17.61		364	233	0	0	0	0.00	0.00	
7	400	400	0	287	0	2.13	22.16		364	233	0	0	0	0.00	0.00	
8	400	400	0	302	0	2.19	22.86		364	233	24	24	0	0.24	4.24	41.16
9	400	400	0	298	0	2.22	23.11		364	233	24	24	16	0.56	10.09	97.97
10	400	400	0	309	0	2.26	23.52		364	233	24	24	24	0.58	10.31	100.07
11	400	400	0	303	0	2.23	23.19		364	233	24	24	24	0.58	10.31	100.12
12	400	400	0	257	0	1.91	19.89		364	233	24	24	4	0.58	10.32	100.23
13	400	400	0	289	0	2.12	22.11		364	233	24	24	24	0.58	10.33	100.30
14	400	400	0	291	0	1.89	19.67		364	233	24	24	24	0.57	10.14	98.49
15	400	400	0	292	0	1.61	16.77		364	233	24	24	24	0.58	10.31	100.14
16	400	400	0	290	0	1.98	20.63		364	233	24	24	24	0.58	10.32	100.17
17	400	400	0	276	0	2.03	21.18		364	233	24	24	24	0.57	10.14	98.40
18	400	400	0	289	0	2.07	21.61		364	233	24	24	24	0.58	10.32	100.21
19	400	400	0	285	0	2.07	21.57		364	233	24	24	24	0.58	10.29	99.88
20	400	400	0	282	0	2.10	21.88		364	233	24	24	24	0.57	10.27	99.72
21	400	400	0	291	0	2.11	22.02		364	233	24	24	24	0.57	10.28	99.77
22	400	400	0	290	0	2.09	21.78		364	233	24	24	24	0.58	10.30	99.95
23	400	400	0	285	0	1.99	20.75		364	233	24	24	9	0.57	10.11	98.11
24	400	400	0	282	0	2.04	21.29		364	233	24	24	24	0.50	8.95	86.94
25	400	400	0	297	0	2.07	21.57		364	233	24	24	24	0.58	10.32	100.19
26	400	400	0	286	0	1.99	20.73		364	233	24	24	24	0.58	10.33	100.28
27	400	400	0	284	0	1.96	20.44		364	233	24	24	24	0.58	10.35	100.47
28	400	400	0	287	0	2.04	21.23		364	233	24	24	24	0.58	10.34	100.40
29	400	400	0	291	0	2.03	21.12		364	233	24	24	24	0.58	10.36	100.59
30	400	400	0	283	0	1.96	20.40		364	233	24	24	24	0.58	10.37	100.71

October, 2020																
Day	Hydel								Wind							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	9874	9871	6864	7369	3731	139.50	58.88	84.68	1235	1085	364	599	57	4.94	18.99	56.60
2	9874	9871	7458	7487	4797	150.20	63.40	83.92	1235	1085	234	819	105	6.49	24.93	115.60
3	9874	9871	7140	7340	4387	140.55	59.32	82.02	1235	1085	225	313	28	4.17	16.01	77.20
4	9874	9871	6837	6966	3894	132.70	56.01	80.87	1235	1085	234	349	49	3.89	14.94	69.27
5	9874	9871	6388	6388	4146	130.41	55.04	85.06	1235	1085	306	327	4	2.90	11.12	39.43
6	9874	9871	6471	6596	3977	130.29	55.00	83.90	1235	1085	306	327	4	2.90	11.12	39.43
7	9874	9871	6459	6459	3613	126.11	53.23	81.36	1235	1085	399	660	70	5.96	22.88	62.22
8	9874	9871	6964	6964	3835	133.93	56.53	80.13	1235	1085	68	405	17	2.43	9.32	148.69
9	9874	9871	5069	5722	3260	111.05	46.87	91.28	1235	1085	62	222	3	1.11	4.25	74.32
10	9874	9871	5617	5617	3561	119.84	50.58	88.89	1235	1085	36	168	12	1.15	4.41	133.03
11	9874	9871	5513	5553	3374	112.52	47.50	85.04	1235	1085	58	319	0	2.51	9.65	180.48
12	9874	9871	5632	5740	2953	107.35	45.31	79.42	1235	1085	93	288	7	2.37	9.10	106.22
13	9874	9871	5484	5484	3394	107.73	45.47	81.85	1235	1085	139	428	1	4.42	16.96	132.36
14	9874	9871	5207	5573	3434	108.44	45.77	86.77	1235	1085	490	547	208	8.45	32.46	71.88
15	9874	9871	5318	5500	3713	108.75	45.90	85.21	1235	1085	347	743	240	10.62	40.78	127.51
16	9874	9871	5884	5884	2977	106.81	45.09	75.64	1235	1085	543	717	433	14.63	56.19	112.27
17	9874	9871	5311	5311	3457	107.91	45.55	84.66	1235	1085	348	788	323	14.60	56.09	174.87
18	9874	9871	5366	5366	2935	108.23	45.68	84.04	1235	1085	70	565	0	4.46	17.13	265.56
19	9874	9871	5463	5463	3068	108.21	45.68	82.54	1235	1085	131	131	0	0.62	2.38	19.67
20	9874	9871	4588	4829	3101	97.72	41.25	88.75	1235	1085	296	330	1	2.35	9.04	33.14
21	9874	9871	4352	4871	2283	84.77	35.78	81.16	1235	1085	81	199	1	1.28	4.93	65.99
22	9874	9871	4336	4336	2146	73.70	31.11	70.82	1235	1085	10	157	1	0.61	2.35	254.95
23	9874	9871	3683	4098	1964	68.63	28.97	77.65	1235	1085	254	331	3	3.62	13.88	59.30
24	9874	9871	3552	3552	1654	64.01	27.02	75.08	1235	1085	181	306	0	1.91	7.32	43.89
25	9874	9871	3695	3811	1788	64.95	27.41	73.24	1235	1085	200	200	0	1.46	5.62	30.49
26	9874	9871	4430	4430	1872	66.83	28.21	62.86	1235	1085	6	150	0	0.73	2.80	506.85
27	9874	9871	4969	4969	1518	69.71	29.42	58.45	1235	1085	68	121	0	0.80	3.08	49.22
28	9874	9871	5054	5054	2016	77.44	32.69	63.85	1235	1085	255	323	2	2.15	8.26	35.13
29	9874	9871	4339	4354	1820	72.07	30.42	69.21	1235	1085	20	43	0	0.29	1.11	60.45
30	9874	9871	4964	4965	2655	81.50	34.40	68.41	1235	1085	130	237	6	2.12	8.12	67.80
31	9874	9871	4395	4619	2472	84.01	35.46	79.65	1235	1085	97	258	10	3.03	11.63	130.12

October, 2020																
Day	Solar								Bagasse							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	400	400	0	297	0	2.04	21.27		364	233	24	24	8	0.57	10.27	99.70
2	400	400	0	288	0	2.06	21.48		364	233	24	24	24	0.58	10.40	100.92
3	400	400	0	281	0	1.97	20.48		364	233	24	24	24	0.58	10.40	100.94
4	400	400	0	279	0	1.98	20.67		364	233	24	24	24	0.58	10.41	101.04
5	400	400	0	286	0	1.98	20.66		364	233	24	24	24	0.58	10.38	100.82
6	400	400	0	287	0	2.00	20.80		364	233	24	24	24	0.58	10.40	100.97
7	400	400	0	285	0	1.99	20.72		364	233	24	24	24	0.58	10.40	101.01
8	400	400	0	285	0	1.99	20.68		364	233	24	24	24	0.58	10.39	100.87
9	400	400	0	284	0	1.95	20.36		364	233	24	24	3	0.57	10.23	99.29
10	400	400	0	283	0	1.98	20.61		364	233	24	24	24	0.58	10.40	100.94
11	400	400	0	288	0	2.00	20.81		364	233	24	24	24	0.58	10.41	101.02
12	400	400	0	268	0	1.83	19.05		364	233	24	24	24	0.58	10.41	101.08

Day	Solar								Bagasse							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
13	400	400	0	278	0	1.86	19.33		364	233	24	24	24	0.58	10.41	101.11
14	400	400	0	244	0	1.63	17.00		364	233	24	24	24	0.58	10.40	101.01
15	400	400	0	267	0	1.79	18.64		364	233	24	24	24	0.58	10.40	100.95
16	400	400	0	281	0	1.95	20.29		364	233	24	24	24	0.58	10.40	101.01
17	400	400	0	274	0	1.90	19.80		364	233	24	24	24	0.58	10.40	100.94
18	400	400	0	276	0	1.89	19.64		364	233	24	24	24	0.58	10.41	101.04
19	400	400	0	272	0	1.85	19.31		364	233	51	51	24	0.77	13.82	63.13
20	400	400	0	264	0	1.74	18.08		364	233	75	80	48	1.38	24.70	76.72
21	400	400	0	279	0	1.88	19.63		364	233	74	79	43	1.52	27.14	85.46
22	400	400	0	265	0	1.73	18.05		364	233	24	50	23	1.00	17.94	174.17
23	400	400	0	266	0	1.83	19.03		364	233	24	24	0	0.56	10.07	97.78
24	400	400	0	264	0	1.76	18.38		364	233	24	24	0	0.58	10.35	100.50
25	400	400	0	258	0	1.70	17.73		364	233	24	24	24	0.58	10.44	101.32
26	400	400	0	251	0	1.57	16.39		364	233	24	24	24	0.58	10.35	100.43
27	400	400	0	270	0	1.74	18.13		364	233	24	24	24	0.58	10.31	100.05
28	400	400	0	264	0	1.71	17.85		364	233	24	48	24	0.66	11.87	115.20
29	400	400	0	229	0	1.43	14.87		364	233	48	48	48	1.15	20.58	99.88
30	400	400	0	241	0	1.52	15.84		364	233	48	48	48	1.16	20.72	100.60
31	400	400	0	190	0	1.14	11.88		364	233	48	48	48	1.15	20.65	100.23

November, 2020

Day	Hydel								Wind							
	Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	9874	9871	5028	5028	2272	81.37	34.35	67.43	1235	1085	32	88	0	0.49	1.90	64.29
2	9874	9871	5028	5028	2272	81.37	34.35	67.43	1235	1085	32	88	0	0.49	1.90	64.29
3	9874	9871	6035	6035	2456	94.72	39.98	65.39	1235	1085	367	458	31	4.64	17.82	52.69
4	9874	9871	5540	5754	3333	111.26	46.96	83.68	1235	1085	152	487	124	7.60	29.17	208.25
5	9874	9871	5734	5734	3285	110.36	46.58	80.19	1235	1085	169	190	2	2.07	7.94	50.95
6	9874	9871	5500	5507	3267	108.79	45.92	82.42	1235	1085	128	258	2	3.71	14.26	120.84
7	9874	9871	4967	5325	3003	106.81	45.08	89.60	1235	1085	65	471	2	4.44	17.03	284.30
8	9874	9871	5753	5823	3220	108.96	45.99	78.91	1235	1085	1	96	0	0.67	2.56	2782.28
9	9874	9871	5640	5759	2865	105.49	44.53	77.93	1235	1085	111	164	0	1.21	4.66	45.53
10	9874	9871	5635	5635	2697	105.36	44.47	77.91	1235	1085	3	144	0	0.62	2.39	863.46
11	9874	9871	5351	5568	2925	106.44	44.93	82.89	1235	1085	228	753	4	7.64	29.34	139.61
12	9874	9871	5512	5512	2889	105.05	44.34	79.41	1235	1085	190	477	131	5.40	20.75	118.47
13	9874	9871	5418	5470	3042	104.77	44.22	80.57	1235	1085	28	540	1	4.01	15.41	597.19
14	9874	9871	4962	5422	3287	105.47	44.52	88.56	1235	1085	191	191	0	0.92	3.52	19.98
15	9874	9871	5801	5919	3390	111.94	47.25	80.41	1235	1085	42	54	7	0.65	2.50	64.59
16	9874	9871	4905	5059	3380	103.17	43.55	87.64	1235	1085	561	767	38	10.13	38.89	75.22
17	9874	9871	5984	5985	2566	97.59	41.19	67.95	1235	1085	262	605	206	9.16	35.19	145.72
18	9874	9871	4935	4939	2923	91.03	38.42	76.86	1235	1085	43	246	0	1.58	6.06	152.79
19	9874	9871	4591	4598	1912	77.10	32.54	69.97	1235	1085	145	145	0	0.50	1.91	14.30
20	9874	9871	5504	5728	1697	87.81	37.06	66.47	1235	1085	163	328	17	3.94	15.14	100.80
21	9874	9871	6071	6071	1906	101.16	42.70	69.43	1235	1085	63	175	0	1.60	6.13	105.58
22	9874	9871	5646	5646	2698	102.73	43.36	75.82	1235	1085	254	303	0	1.53	5.88	25.13
23	9874	9871	5452	5479	2648	98.86	41.73	75.55	1235	1085	196	214	0	1.71	6.57	36.39
24	9874	9871	5740	5826	2626	99.44	41.97	72.19	1235	1085	979	986	229	14.47	55.57	61.58
25	9874	9871	6134	6158	2544	102.68	43.34	69.75	1235	1085	429	953	0	13.07	50.18	126.92
26	9874	9871	5728	5758	2548	104.62	44.16	76.10	1235	1085	902	1014	710	20.82	79.94	96.16
27	9874	9871	6030	6030	1938	102.85	43.41	71.07	1235	1085	530	962	511	19.45	74.67	152.87
28	9874	9871	6047	6051	2105	102.83	43.40	70.85	1235	1085	279	880	250	12.68	48.69	189.36
29	9874	9871	5951	6004	1920	102.74	43.36	71.93	1235	1085	78	575	25	5.57	21.38	297.41
30	9874	9871	4746	4818	2696	90.12	38.04	79.12	1235	1085	96	134	0	0.63	2.41	27.27

November, 2020																	
Day	Solar								Bagasse								
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	
1	400	400	0	253	0	1.65	17.20		364	233	24	24	24	0.59	10.50	101.97	
2	400	400	0	273	0	1.80	18.74		364	233	24	24	24	0.59	10.50	101.97	
3	400	400	0	282	0	1.86	19.38		364	233	37	48	24	0.88	15.82	99.62	
4	400	400	0	274	0	1.79	18.67		364	233	37	37	24	0.87	15.57	98.07	
5	400	400	0	275	0	1.81	18.87		364	233	37	37	37	0.90	16.03	100.96	
6	400	400	0	260	0	1.65	17.23		364	233	61	61	37	1.22	21.79	83.25	
7	400	400	0	231	0	1.41	14.64		364	233	61	61	51	1.39	24.80	94.74	
8	400	400	0	266	0	1.69	17.56		364	233	61	61	54	1.46	26.16	99.94	
9	400	400	0	272	0	1.73	18.02		364	233	61	61	48	1.40	25.02	95.57	
10	400	400	0	251	0	1.51	15.74		364	233	60	61	54	1.45	26.02	101.04	
11	400	400	0	170	0	1.04	10.87		364	233	65	68	56	1.58	28.32	101.53	
12	400	400	0	187	0	1.09	11.36		364	233	62	69	45	1.59	28.41	106.76	
13	400	400	0	149	0	0.89	9.29		364	233	51	79	50	1.70	30.32	138.53	
14	400	400	0	202	0	1.02	10.60		364	233	95	98	66	2.05	36.72	90.05	
15	400	400	0	100	0	0.41	4.29		364	233	93	102	71	2.25	40.15	100.60	
16	400	400	0	206	0	0.85	8.81		364	233	93	97	92	2.30	41.09	102.95	
17	400	400	0	279	0	1.76	18.38		364	233	97	107	89	2.34	41.81	100.42	
18	400	400	0	303	0	1.90	19.83		364	233	91	106	86	2.39	42.80	109.60	
19	400	400	0	278	0	1.76	18.32		364	233	103	107	89	2.47	44.16	99.89	
20	400	400	0	256	0	1.52	15.82		364	233	100	105	97	2.38	42.60	99.25	
21	400	400	0	257	0	1.56	16.23		364	233	98	115	96	2.59	46.25	109.97	
22	400	400	0	268	0	1.53	15.99		364	233	128	148	99	2.96	53.01	96.49	
23	400	400	0	257	0	1.52	15.81		364	233	147	151	138	3.44	61.57	97.59	
24	400	400	0	218	0	0.83	8.65		364	233	136	156	114	3.44	61.56	105.46	
25	400	400	0	228	0	1.04	10.87		364	233	138	153	131	3.45	61.69	104.16	
26	400	400	0	233	0	1.21	12.65		364	233	137	142	126	3.21	57.44	97.69	
27	400	400	0	304	0	1.95	20.34		364	233	131	148	127	3.21	57.35	102.01	
28	400	400	0	293	0	1.88	19.57		364	233	115	145	106	3.14	56.19	113.85	
29	400	400	0	286	0	1.81	18.89		364	233	148	152	109	3.26	58.28	91.76	
30	400	400	0	272	0	1.65	17.17		364	233	137	156	131	3.48	62.29	105.93	

December, 2020																	
Day	Hydel								Wind								
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	
1	9874	9871	4600	4600	2296	86.81	36.64	78.63	1235	1085	96	351	0	2.09	8.03	90.79	
2	9874	9871	5248	5248	2073	78.40	33.09	62.25	1235	1085	54	191	0	0.97	3.72	74.73	
3	9874	9871	5203	5203	2216	81.97	34.60	65.64	1235	1085	181	208	0	1.60	6.13	36.76	
4	9874	9871	4674	4674	2156	80.85	34.12	72.07	1235	1085	242	242	82	3.89	14.95	67.04	
5	9874	9871	4372	4372	2119	81.49	34.40	77.66	1235	1085	65	120	0	1.13	4.36	72.73	
6	9874	9871	4365	4365	2233	75.38	31.82	71.95	1235	1085	173	336	4	4.03	15.46	96.98	
7	9874	9871	4605	4605	2129	75.30	31.78	68.13	1235	1085	2	243	0	1.60	6.15	3334.25	
8	9874	9871	4421	4421	1938	71.28	30.08	67.17	1235	1085	60	219	0	0.54	2.07	37.36	
9	9874	9871	4354	4364	1633	69.91	29.51	66.91	1235	1085	287	644	239	9.39	36.05	136.30	
10	9874	9871	4428	4428	1725	68.48	28.90	64.44	1235	1085	450	792	200	11.88	45.60	109.95	
11	9874	9871	3130	3800	1597	62.02	26.18	82.56	1235	1085	352	805	186	10.34	39.70	122.36	
12	9874	9871	4052	4062	1304	62.46	26.36	64.22	1235	1085	205	297	44	3.60	13.84	73.23	
13	9874	9871	3684	3684	1370	59.57	25.14	67.37	1235	1085	273	397	80	6.05	23.23	92.32	
14	9874	9871	3345	3836	1259	57.74	24.37	71.92	1235	1085	96	232	22	2.57	9.86	111.49	
15	9874	9871	3832	3926	763	53.90	22.75	58.61	1235	1085	537	646	87	8.49	32.60	65.88	
16	9874	9871	3577	3666	1058	49.31	20.82	57.44	1235	1085	525	951	466	18.11	69.53	143.70	

Day	Hydel								Wind							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
17	9874	9871	3574	3574	1201	54.28	22.91	63.28	1235	1085	298	734	0	8.21	31.53	114.81
18	9874	9871	2689	3462	1126	48.44	20.44	75.05	1235	1085	85	237	24	2.58	9.92	126.62
19	9874	9871	2861	2861	1070	41.99	17.73	61.16	1235	1085	208	650	122	7.40	28.40	148.16
20	9874	9871	2794	2859	1020	39.36	16.61	58.69	1235	1085	320	612	102	8.22	31.56	107.00
21	9874	9871	3014	3014	1244	42.26	17.84	58.42	1235	1085	120	305	28	2.75	10.55	95.39
22	9874	9871	3168	3168	1184	40.04	16.90	52.66	1235	1085	142	246	28	2.56	9.83	75.08
23	9874	9871	4179	4259	1397	58.88	24.85	58.71	1235	1085	280	346	75	5.59	21.47	83.21
24	9874	9871	3530	3941	2644	80.05	33.79	94.48	1235	1085	229	712	58	8.20	31.48	149.17
25	9874	9871	3245	3335	1558	61.06	25.77	78.40	1235	1085	392	837	251	10.24	39.34	108.88
26	9874	9871	3068	3282	1395	59.52	25.12	80.84	1235	1085	27	360	0	2.35	9.04	363.07
27	9874	9871	2140	2589	1037	39.10	16.50	76.13	1235	1085	11	440	0	4.25	16.34	1611.30
28	9874	9871	2484	2484	730	32.68	13.80	54.83	1235	1085	218	397	72	4.71	18.09	90.02
29	9874	9871	2472	2472	796	30.54	12.89	51.48	1235	1085	410	719	113	11.79	45.29	119.85
30	9874	9871	2739	2740	617	30.41	12.84	46.26	1235	1085	379	778	320	18.51	71.08	203.48
31	9874	9871	2155	2267	675	28.54	12.05	55.19	1235	1085	421	856	415	15.92	61.13	157.55

December, 2020

Day	Solar								Bagasse							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	400	400	0	276	0	1.71	17.85		364	233	164	167	138	3.71	66.26	94.13
2	400	400	0	265	0	1.62	16.89		364	233	177	179	157	4.06	72.61	95.58
3	400	400	0	290	0	1.80	18.73		364	233	170	182	166	4.22	75.53	103.52
4	400	400	0	257	0	1.52	15.80		364	233	170	178	154	4.03	72.10	98.82
5	400	400	0	223	0	1.26	13.16		364	233	182	185	153	4.10	73.35	93.91
6	400	400	0	221	0	1.24	12.91		364	233	176	187	146	4.34	77.56	102.68
7	400	400	0	224	0	1.26	13.16		364	233	175	185	165	4.21	75.34	100.31
8	400	400	0	201	0	1.12	11.69		364	233	184	185	174	4.32	77.30	97.88
9	400	400	0	165	0	0.72	7.48		364	233	180	188	166	4.36	78.04	101.01
10	400	400	0	250	0	1.51	15.70		364	233	184	189	180	4.42	79.13	100.20
11	400	400	0	261	0	1.10	11.49		364	233	120	194	120	4.06	72.66	141.08
12	400	400	0	287	0	1.22	12.75		364	233	147	165	133	3.51	62.83	99.58
13	400	400	0	254	0	0.94	9.77		364	233	145	152	103	3.31	59.25	95.22
14	400	400	0	301	0	1.12	11.72		364	233	171	186	150	4.11	73.47	100.11
15	400	400	0	276	0	1.31	13.67		364	233	172	179	152	4.13	73.93	100.14
16	400	400	0	300	0	1.77	18.47		364	233	178	182	145	4.17	74.66	97.72
17	400	400	0	296	0	1.87	19.45		364	233	177	187	177	4.30	76.89	101.21
18	400	400	0	306	0	1.91	19.91		364	233	190	193	168	4.39	78.42	96.17
19	400	400	0	301	0	1.88	19.63		364	233	187	195	181	4.53	81.09	101.04
20	400	400	0	264	0	1.53	15.98		364	233	182	192	180	4.43	79.18	101.36
21	400	400	0	295	0	1.78	18.51		364	233	179	186	146	4.34	77.53	100.92
22	400	400	0	270	0	1.64	17.07		364	233	161	188	148	4.03	72.10	104.34
23	400	400	0	282	0	1.73	18.01		364	233	171	173	159	3.95	70.56	96.14
24	400	400	0	290	0	1.72	17.91		364	233	164	174	153	4.00	71.58	101.70
25	400	400	0	280	0	1.57	16.33		364	233	141	165	124	3.51	62.77	103.73
26	400	400	0	271	0	1.62	16.87		364	233	165	171	127	3.80	67.94	95.94
27	400	400	0	298	0	1.78	18.49		364	233	165	175	137	3.81	68.16	96.25
28	400	400	0	290	0	1.79	18.64		364	233	155	170	150	3.86	69.03	103.77
29	400	400	0	286	0	1.57	16.39		364	233	168	172	130	3.81	68.05	94.38
30	400	400	0	290	-1	1.74	18.17		364	233	160	171	160	3.98	71.21	103.70
31	400	400	0	302	0	1.77	18.43		364	233	150	172	150	3.85	68.77	106.83

January, 2021																
Day	Hydel								Wind							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	9874	9871	1772	2581	617	30.66	12.94	72.10	1235	1085	269	526	134	7.93	30.45	122.81
2	9874	9873	2048	2082	679	29.31	12.37	59.63	1235	1085	358	441	114	6.58	25.28	76.61
3	9874	9871	2225	2282	825	29.48	12.45	55.21	1235	1085	178	406	16	4.50	17.28	105.30
4	9874	9871	2528	2528	769	32.32	13.64	53.27	1235	1085	261	486	93	6.02	23.12	96.11
5	9874	9871	3083	3083	797	38.94	16.44	52.63	1235	1085	56	490	0	3.19	12.26	237.57
6	9874	9871	2421	2570	1107	41.43	17.49	71.29	1235	1085	141	177	0	0.78	2.98	22.95
7	9874	9871	2508	2673	1053	39.63	16.73	65.84	1235	1085	270	294	0	4.54	17.43	70.05
8	9874	9871	2058	2293	783	34.73	14.66	70.32	1235	1085	541	771	146	9.68	37.17	74.54
9	9874	9871	2701	2701	0	30.59	12.91	47.19	1235	1085	551	977	0	17.26	66.30	130.55
10	9874	9871	3392	3579	32	53.74	22.68	66.01	1235	1085	261	463	0	2.43	9.33	38.79
11	9874	9871	2357	2728	640	38.96	16.45	68.88	1235	1085	231	397	59	4.54	17.42	81.82
12	9874	9871	2282	2282	565	25.94	10.95	47.36	1235	1085	18	142	0	1.01	3.86	232.81
13	9874	9871	2428	2428	804	30.17	12.74	51.78	1235	1085	2	49	0	0.23	0.88	478.79
14	9874	9871	2491	2491	506	26.23	11.07	43.87	1235	1085	11	294	0	1.14	4.37	430.93
15	9874	9871	1607	1828	544	24.47	10.33	63.45	1235	1085	186	558	115	6.35	24.40	142.35
16	9874	9871	2298	2298	687	27.99	11.82	50.76	1235	1085	285	649	184	10.83	41.60	158.36
17	9874	9871	2143	2143	606	25.96	10.96	50.47	1235	1085	12	181	0	1.06	4.07	368.03
18	9874	9871	2388	2403	620	27.82	11.74	48.55	1235	1085	481	741	314	12.09	46.44	104.75
19	9874	9871	2555	2555	705	26.78	11.30	43.67	1235	1085	94	658	81	7.84	30.10	347.44
20	9874	9873	2605	2605	556	26.42	11.15	42.26	1235	1085	5	109	0	0.68	2.61	565.84
21	9874	9873	2356	2356	597	25.68	10.84	45.42	1235	1085	383	621	0	3.44	13.19	37.38
22	9874	9873	1227	2214	524	25.49	10.76	86.56	1235	1085	470	596	27	6.05	23.24	53.66
23	9874	9873	2158	2174	720	27.07	11.42	52.27	1235	1085	48	528	0	4.28	16.44	371.58
24	9874	9873	1934	1953	588	27.11	11.44	58.40	1235	1085	213	213	0	1.77	6.79	34.57
25	9874	9873	2360	2709	661	31.78	13.41	56.11	1235	1085	27	264	0	2.02	7.76	311.64
26	9874	9873	3044	3044	890	39.78	16.79	54.45	1235	1085	8	62	0	0.36	1.39	188.59
27	9874	9873	3393	3393	855	48.44	20.44	59.48	1235	1085	103	255	4	2.11	8.12	85.56
28	9874	9873	3689	3689	1124	44.72	18.87	50.51	1235	1085	26	381	0	2.71	10.42	434.90
29	9874	9873	3296	3514	1121	53.04	22.38	67.05	1235	1085	21	34	0	0.26	0.99	51.26
30	9874	9873	3472	3572	1354	53.72	22.67	64.47	1235	1085	135	229	0	1.45	5.57	44.77
31	9874	9873	3334	3532	1512	53.95	22.77	67.43	1235	1085	590	633	35	5.68	21.82	40.13

January, 2021																
Day	Solar								Bagasse							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	400	400	0	290	0	1.80	18.74		364	233	147	155	146	3.60	64.31	101.93
2	400	400	0	240	0	1.18	12.27		364	233	137	155	130	3.43	61.35	104.33
3	400	400	0	233	0	1.32	13.76		364	233	147	153	135	3.53	63.06	99.95
4	400	400	0	47	0	0.23	2.35		364	233	143	150	140	3.45	61.61	100.38
5	400	400	0	187	0	0.81	8.48		364	233	142	153	106	3.33	59.49	97.62
6	400	400	0	49	0	0.29	3.05		364	233	143	148	107	3.28	58.67	95.59
7	400	400	0	260	0	1.56	16.27		364	233	147	167	104	3.42	61.07	96.80
8	400	400	0	65	0	0.32	3.35		364	233	170	173	114	3.72	66.54	91.20
9	400	400	0	278	0	1.09	11.38		364	233	147	166	0	3.60	64.31	101.94
10	400	400	0	202	0	0.68	7.08		364	233	129	164	0	1.57	28.04	50.64
11	400	400	0	315	0	1.96	20.44		364	233	159	167	135	3.83	68.47	100.33
12	400	400	0	318	0	2.09	21.73		364	233	163	167	151	3.82	68.39	97.76
13	400	400	0	318	0	2.10	21.91		364	233	165	172	136	3.97	70.96	100.21
14	400	400	0	138	0	0.96	9.97		364	233	161	172	125	3.86	69.07	99.95
15	400	400	0	292	0	1.46	15.22		364	233	161	164	125	3.78	67.65	97.90

Day	Solar								Bagasse							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
16	400	400	0	303	0	1.30	13.57		364	233	176	183	146	4.08	73.04	96.69
17	400	400	0	315	0	1.65	17.21		364	233	185	185	141	3.88	69.42	87.43
18	400	400	0	140	0	0.64	6.69		364	233	177	185	161	4.12	73.71	97.03
19	400	400	0	278	0	1.45	15.12		364	233	176	184	171	4.18	74.73	98.94
20	400	400	0	304	0	1.57	16.33		364	233	178	179	165	4.16	74.38	97.36
21	400	400	0	301	0	1.97	20.56		364	233	176	183	138	4.13	73.89	97.83
22	400	400	0	280	0	1.79	18.60		364	233	172	180	166	4.16	74.41	100.80
23	400	400	0	263	0	1.53	15.96		364	233	186	187	141	4.04	72.23	90.48
24	400	400	0	288	0	1.84	19.16		364	233	192	194	176	4.43	79.14	96.04
25	400	400	0	294	0	1.93	20.06		364	233	193	193	185	4.51	80.63	97.34
26	400	400	0	303	0	1.98	20.60		364	233	188	195	169	4.51	80.72	100.04
27	400	400	0	297	0	1.92	20.02		364	233	181	190	173	4.37	78.09	100.53
28	400	400	0	301	0	1.96	20.42		364	233	172	182	129	4.22	75.55	102.34
29	400	400	0	303	0	1.99	20.71		364	233	176	185	136	4.22	75.50	99.96
30	400	400	0	305	0	1.97	20.54		364	233	171	188	142	4.13	73.87	100.66
31	400	400	0	292	0	1.89	19.71		364	233	179	179	140	4.14	74.12	96.48

February, 2021

Day	Hydel								Wind							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	9874	9873	3368	3597	1383	55.90	23.59	69.16	1235	1085	91	96	3	0.90	3.45	41.13
2	9874	9873	3431	3561	1447	56.86	24.00	69.06	1235	1085	251	251	0	2.48	9.51	41.09
3	9874	9873	3740	3805	1135	59.86	25.26	66.69	1235	1085	168	168	0	1.26	4.82	31.13
4	9874	9873	3700	3720	1166	62.60	26.42	70.50	1235	1085	338	726	37	10.09	38.75	124.40
5	9874	9873	3637	3793	2226	79.72	33.64	91.33	1235	1085	74	117	0	0.55	2.10	30.73
6	9874	9873	3720	3770	1908	75.49	31.86	84.56	1235	1085	16	138	0	0.64	2.45	166.08
7	9874	9873	3487	3718	2472	78.61	33.17	93.93	1235	1085	4	32	0	0.25	0.98	265.24
8	9874	9873	3609	3735	2344	77.08	32.53	88.99	1235	1085	153	286	0	1.90	7.30	51.80
9	9874	9873	3615	3794	2068	72.91	30.77	84.04	1235	1085	125	198	8	1.37	5.25	45.60
10	9874	9873	3699	3811	1863	74.62	31.49	84.05	1235	1085	77	233	22	2.54	9.76	137.49
11	9874	9873	3868	3948	2003	77.95	32.89	83.96	1235	1085	18	79	0	0.62	2.38	143.52
12	9874	9873	3933	3944	2960	86.40	36.46	91.53	1235	1085	93	191	0	1.24	4.76	55.52
13	9874	9873	3926	3927	3146	87.24	36.82	92.59	1235	1085	169	170	0	1.03	3.94	25.30
14	9874	9873	3826	3973	2916	87.45	36.91	95.24	1235	1085	236	439	2	2.47	9.47	43.54
15	9874	9873	3863	4002	3373	87.65	36.99	94.54	1235	1085	180	193	1	1.62	6.21	37.43
16	9874	9873	4024	4036	3273	89.02	37.57	92.18	1235	1085	141	197	0	1.11	4.25	32.68
17	9874	9873	4164	4168	3345	90.00	37.98	90.05	1235	1085	122	126	0	0.50	1.93	17.20
18	9874	9873	4001	4191	3405	88.46	37.33	92.13	1235	1085	197	326	0	1.61	6.19	34.10
19	9874	9873	4015	4116	2680	82.93	35.00	86.06	1235	1085	64	481	33	3.90	14.96	253.60
20	9874	9873	3760	4040	1975	75.06	31.68	83.18	1235	1085	41	201	0	1.51	5.79	153.09
21	9874	9873	4087	4100	1778	74.57	31.47	76.03	1235	1085	36	212	0	0.94	3.60	108.58
22	9874	9873	3690	3824	1978	67.81	28.61	76.56	1235	1085	345	411	16	6.18	23.75	74.69
23	9874	9873	3741	3741	1647	64.52	27.23	71.86	1235	1085	587	646	114	7.69	29.51	54.55
24	9874	9873	3371	3371	1721	58.61	24.74	72.45	1235	1085	702	816	186	9.60	36.88	56.99
25	9874	9873	3168	3347	1620	56.57	23.87	74.40	1235	1085	397	713	14	5.22	20.03	54.74
26	9874	9873	2982	3021	1621	56.83	23.98	79.41	1235	1085	561	781	278	11.12	42.70	82.58
27	9874	9873	3292	3413	1640	59.54	25.13	75.36	1235	1085	225	367	0	3.30	12.65	61.02
28	9874	9873	3363	3484	1977	62.99	26.58	78.04	1235	1085	336	410	1	3.26	12.53	40.45

February, 2021

Day	Solar								Bagasse							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	400	400	0	284	0	1.77	18.46		364	233	171	180	165	4.18	74.79	101.91
2	400	400	0	237	0	1.54	16.00		364	233	182	185	168	4.25	76.03	97.33
3	400	400	0	240	0	1.45	15.10		364	233	184	185	174	4.31	77.11	97.65
4	400	400	0	259	0	1.53	15.96		364	233	175	185	153	4.33	77.47	103.14
5	400	400	0	295	0	1.92	20.03		364	233	172	184	145	4.23	75.66	102.50
6	400	400	0	305	0	2.04	21.27		364	233	141	179	140	3.94	70.48	116.47
7	400	400	0	297	0	1.98	20.65		364	233	176	192	129	4.24	75.85	100.41
8	400	400	0	303	0	2.05	21.40		364	233	171	176	143	4.15	74.24	101.15
9	400	400	0	281	0	1.81	18.88		364	233	178	520	144	3.94	70.41	92.16
10	400	400	0	280	0	1.83	19.10		364	233	165	174	131	3.94	70.42	99.43
11	400	400	0	285	0	1.73	18.01		364	233	171	180	171	4.12	73.72	100.45
12	400	400	0	293	0	1.89	19.71		364	233	178	180	165	4.22	75.42	98.72
13	400	400	0	301	0	2.03	21.15		364	233	176	181	154	4.13	73.82	97.73
14	400	400	0	297	0	1.81	18.80		364	233	173	180	166	4.17	74.56	100.42
15	400	400	0	294	0	1.88	19.60		364	233	169	185	157	4.15	74.13	102.21
16	400	400	0	288	0	1.87	19.51		364	233	173	177	127	4.10	73.31	98.73
17	400	400	0	282	0	1.87	19.52		364	233	182	184	163	4.25	75.96	97.25
18	400	400	0	294	0	1.93	20.10		364	233	190	197	181	4.56	81.46	99.89
19	400	400	0	299	0	1.99	20.68		364	233	193	196	185	4.58	81.82	98.77
20	400	400	0	299	0	2.05	21.35		364	233	193	195	155	4.53	81.02	97.81
21	400	400	0	312	0	2.06	21.45		364	233	187	194	164	4.46	79.70	99.31
22	400	400	0	301	0	2.03	21.18		364	233	186	193	169	4.40	78.69	98.57
23	400	400	0	300	0	2.03	21.11		364	233	175	191	173	4.28	76.49	101.84
24	400	400	0	298	0	2.06	21.45		364	233	186	194	144	4.43	79.31	99.35
25	400	400	0	293	0	2.02	21.09		364	233	198	199	180	4.53	80.96	95.27
26	400	400	0	276	0	1.90	19.76		364	233	189	197	180	4.64	82.94	102.25
27	400	400	0	320	0	2.27	23.62		364	233	202	214	173	4.68	83.64	96.47
28	400	400	0	316	0	2.24	23.35		364	233	205	209	161	4.89	87.40	99.34

March, 2021

Day	Hydel								Wind							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	9874	9873	3076	3076	1984	60.98	25.73	82.60	1235	1085	105	144	0	1.21	4.63	47.82
2	9874	9873	3157	3188	1897	58.26	24.59	76.89	1235	1085	209	271	0	2.67	10.24	53.17
3	9874	9873	3282	3282	1803	57.69	24.34	73.24	1235	1085	426	683	16	4.98	19.13	48.72
4	9874	9873	2933	3068	1842	56.94	24.03	80.89	1235	1085	94	199	0	1.81	6.97	80.42
5	9874	9873	3293	3458	1928	57.28	24.17	72.48	1235	1085	260	374	0	2.59	9.94	41.49
6	9874	9873	3371	3453	1797	56.44	23.82	69.76	1235	1085	735	864	73	11.11	42.68	63.01
7	9874	9873	3599	3680	1801	57.95	24.46	67.09	1235	1085	420	715	283	12.51	48.04	124.12
8	9874	9873	3007	3351	1776	56.94	24.03	78.90	1235	1085	288	432	0	4.00	15.38	57.93
9	9874	9873	3285	3285	1771	57.62	24.31	73.08	1235	1085	359	638	0	3.10	11.90	35.98
10	9874	9873	3034	3263	1782	57.14	24.11	78.47	1235	1085	442	442	10	4.09	15.70	38.54
11	9874	9873	2993	3339	1716	58.29	24.60	81.15	1235	1085	248	467	88	5.72	21.95	96.03
12	9874	9873	3571	3571	1980	63.62	26.85	74.23	1235	1085	173	513	0	5.16	19.83	124.39
13	9874	9873	2879	2890	1767	56.89	24.01	82.33	1235	1085	144	717	0	8.76	33.66	253.58
14	9874	9873	2617	2795	1631	49.94	21.07	79.51	1235	1085	399	476	0	2.71	10.39	28.25
15	9874	9873	2395	2603	1794	49.73	20.99	86.52	1235	1085	344	435	8	3.20	12.29	38.75
16	9874	9873	2418	2644	1688	47.67	20.12	82.14	1235	1085	331	478	0	3.20	12.29	40.27
17	9874	9873	2655	2655	1694	49.16	20.75	77.16	1235	1085	365	559	14	3.63	13.94	41.44
18	9874	9873	2465	2523	1603	47.60	20.09	80.46	1235	1085	247	898	0	3.50	13.44	59.06

Day	Hydel								Wind							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
19	9874	9873	2755	2885	1593	47.46	20.03	71.78	1235	1085	38	149	9	1.61	6.20	176.99
20	9874	9873	2634	2719	1606	48.36	20.41	76.50	1235	1085	297	564	1	4.08	15.67	57.23
21	9874	9873	3024	3312	1843	52.43	22.12	72.24	1235	1085	396	730	10	4.99	19.17	52.52
22	9874	9873	2990	3550	1820	57.10	24.10	79.57	1235	1085	735	735	0	6.09	23.38	34.51
23	9874	9873	3185	3295	1412	57.35	24.20	75.02	1235	1085	180	210	0	1.04	3.99	24.07
24	9874	9873	2530	2543	1856	50.68	21.39	83.47	1235	1085	53	135	0	1.08	4.14	84.80
25	9874	9873	2488	2505	1634	47.15	19.90	78.97	1235	1085	37	568	0	3.69	14.16	415.27
26	9874	9873	2435	2436	1455	44.14	18.63	75.54	1235	1085	381	542	3	5.60	21.49	61.20
27	9874	9873	3240	3240	1465	47.74	20.15	61.40	1235	1085	278	482	113	8.15	31.29	122.14
28	9874	9873	3634	3854	1546	56.34	23.78	64.60	1235	1085	682	851	142	12.13	46.58	74.10
29	9874	9873	4352	4371	2172	71.07	29.99	68.04	1235	1085	765	877	206	12.25	47.05	66.73
30	9874	9873	4356	4541	2736	88.47	37.33	84.62	1235	1085	137	263	10	2.87	11.01	87.22
31	9874	9873	3980	4507	2614	79.82	33.68	83.56	1235	1085	207	257	28	2.60	9.98	52.30

March, 2021

Day	Solar								Bagasse							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	400	400	0	306	0	2.19	22.84		364	233	189	198	161	4.73	84.54	104.22
2	400	400	0	314	0	2.23	23.21		364	233	197	208	175	4.66	83.26	98.48
3	400	400	0	309	0	2.20	22.91		364	233	212	212	183	4.95	88.61	97.38
4	400	400	0	325	0	2.28	23.78		364	233	197	217	175	4.88	87.30	103.25
5	400	400	0	316	0	2.28	23.71		364	233	159	211	147	4.40	78.70	115.33
6	400	400	0	315	0	1.73	18.00		364	233	141	155	123	3.51	62.85	103.86
7	400	400	0	203	0	1.53	15.89		364	233	163	165	145	3.86	69.07	98.73
8	400	400	0	292	0	1.95	20.29		364	233	152	165	148	3.76	67.30	103.16
9	400	400	0	297	0	2.04	21.26		364	233	151	164	148	3.73	66.73	102.97
10	400	400	0	269	0	1.80	18.72		364	233	156	161	150	3.74	66.81	99.79
11	400	400	0	302	0	2.04	21.27		364	233	138	155	134	3.50	62.51	105.54
12	400	400	0	306	0	1.97	20.52		364	233	144	146	136	3.38	60.43	97.78
13	400	400	0	283	0	1.86	19.32		364	233	145	148	125	3.45	61.66	99.09
14	400	400	0	263	0	1.80	18.78		364	233	140	149	138	3.48	62.16	103.45
15	400	400	0	237	0	1.49	15.56		364	233	118	173	115	3.05	54.51	107.63
16	400	400	0	253	0	1.49	15.56		364	233	119	124	117	2.87	51.26	100.38
17	400	400	0	263	0	1.62	16.87		364	233	106	122	104	2.79	49.91	109.70
18	400	400	0	275	0	1.71	17.82		364	233	78	107	61	2.04	36.54	109.15
19	400	400	0	267	0	1.69	17.62		364	233	75	93	74	2.00	35.79	111.20
20	400	400	0	277	0	1.87	19.50		364	233	92	92	55	1.78	31.79	80.52
21	400	400	0	275	0	1.57	16.30		364	233	64	94	49	1.92	34.31	124.93
22	400	400	0	321	0	2.21	23.02		364	233	65	66	47	1.51	27.06	96.99
23	400	400	0	312	0	2.26	23.50		364	233	87	88	49	1.59	28.39	76.04
24	400	400	0	302	0	2.07	21.58		364	233	88	90	76	2.12	37.90	100.35
25	400	400	0	327	0	1.98	20.64		364	233	88	90	88	2.13	38.14	101.00
26	400	400	0	310	0	2.24	23.34		364	233	115	116	75	2.32	41.44	83.97
27	400	400	0	316	0	2.27	23.60		364	233	104	104	103	2.50	44.75	100.27
28	400	400	0	310	0	2.26	23.54		364	233	103	104	102	2.50	44.67	101.04
29	400	400	0	306	0	2.21	23.04		364	233	103	104	102	2.49	44.53	100.73
30	400	400	0	337	0	2.45	25.51		364	233	104	104	103	2.50	44.70	100.14
31	400	400	0	313	0	2.32	24.20		364	233	104	104	103	2.50	44.65	100.03

April, 2021																
Day	Hydel								Wind							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	9874	9873	3732	3845	2355	73.86	31.17	82.46	1235	1085	115	535	2	2.87	11.01	103.85
2	9874	9873	3968	3997	2173	64.90	27.39	68.14	1235	1085	32	462	11	3.50	13.44	455.62
3	9874	9873	3493	3495	2191	66.29	27.98	79.08	1235	1085	184	322	5	3.18	12.21	72.02
4	9874	9873	3557	3557	1838	62.68	26.45	73.43	1235	1085	519	672	3	6.52	25.04	52.34
5	9874	9873	4617	4651	1753	74.15	31.29	66.91	1235	1085	426	787	332	12.55	48.20	122.77
6	9874	9873	4951	4973	3162	99.82	42.13	84.01	1235	1085	660	746	172	10.89	41.82	68.74
7	9874	9873	4840	4851	3024	100.35	42.35	86.39	1235	1085	163	498	2	4.16	15.98	106.34
8	9874	9873	4571	4649	3413	94.04	39.69	85.73	1235	1085	315	364	0	2.36	9.06	31.19
9	9874	9873	4793	4799	2891	88.05	37.16	76.55	1235	1085	245	384	7	3.39	13.02	57.68
10	9874	9873	4397	4397	3110	86.55	36.53	82.02	1235	1085	184	440	4	3.89	14.95	88.15
11	9874	9873	4829	4842	2694	82.87	34.97	71.50	1235	1085	247	334	1	3.03	11.64	51.13
12	9874	9873	4397	4397	3067	86.51	36.51	81.98	1235	1085	308	573	33	5.00	19.19	67.59
13	9874	9873	4589	4589	2896	84.66	35.73	76.87	1235	1085	206	383	45	4.95	19.00	100.06
14	9874	9873	4110	4656	2915	87.20	36.80	88.40	1235	1085	564	709	221	9.08	34.87	67.09
15	9874	9873	4594	4594	2548	89.20	37.64	80.90	1235	1085	110	916	110	11.11	42.66	420.77
16	9874	9873	4486	4589	2777	91.21	38.49	84.71	1235	1085	522	863	2	5.73	22.02	45.76
17	9874	9873	4140	4496	2748	88.42	37.31	88.99	1235	1085	163	711	2	4.14	15.89	105.78
18	9874	9873	3531	4183	2618	78.23	33.01	92.31	1235	1085	86	784	41	6.03	23.14	291.94
19	9874	9873	3396	3443	2498	68.73	29.00	84.33	1235	1085	474	878	188	10.87	41.75	95.58
20	9874	9873	4631	4631	2444	79.43	33.52	71.46	1235	1085	102	854	4	8.63	33.13	352.43
21	9874	9873	4992	4992	2820	91.59	38.65	76.45	1235	1085	252	318	1	2.36	9.06	39.00
22	9874	9873	4854	5221	2846	94.47	39.87	81.09	1235	1085	708	904	70	9.06	34.78	53.29
23	9874	9873	5100	5239	2684	95.19	40.17	77.77	1235	1085	57	766	53	9.07	34.84	663.12
24	9874	9873	5102	5144	2678	93.79	39.58	76.60	1235	1085	78	383	6	3.73	14.32	199.21
25	9874	9873	4981	5247	2767	95.50	40.30	79.88	1235	1085	163	368	2	2.82	10.81	71.96
26	9874	9873	5162	5162	3467	104.45	44.08	84.31	1235	1085	365	604	8	4.92	18.88	56.11
27	9874	9873	4079	4448	3033	93.51	39.46	95.52	1235	1085	134	405	19	4.02	15.44	125.00
28	9874	9873	4398	4398	3012	87.47	36.91	82.87	1235	1085	103	409	62	5.25	20.17	212.45
29	9874	9873	4829	4940	2930	89.84	37.91	77.51	1235	1085	334	611	71	5.48	21.06	68.41
30	9874	9873	4724	4724	2988	90.72	38.28	80.02	1235	1085	334	899	50	7.08	27.18	88.29

April, 2021																
Day	Solar								Bagasse							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	400	400	0	328	0	2.38	24.77		364	233	80	80	65	1.90	33.91	98.76
2	400	400	0	319	0	2.33	24.25		364	233	80	80	61	1.90	33.91	98.78
3	400	400	0	321	0	2.34	24.37		364	233	79	80	52	1.93	34.47	101.67
4	400	400	0	305	0	2.09	21.81		364	233	80	80	55	1.90	33.97	98.93
5	400	400	0	293	0	1.89	19.71		364	233	80	80	79	1.93	34.45	100.34
6	400	400	0	294	0	1.89	19.66		364	233	80	80	79	1.93	34.45	100.33
7	400	400	0	331	0	2.44	25.43		364	233	51	80	51	1.76	31.42	143.54
8	400	400	0	312	0	2.30	23.98		364	233	52	52	39	1.25	22.37	100.25
9	400	400	0	295	0	2.26	23.54		364	233	52	52	51	1.26	22.47	100.67
10	400	400	0	302	0	2.23	23.28		364	233	80	81	51	1.52	27.11	78.96
11	400	400	0	297	0	2.17	22.65		364	233	102	104	80	2.06	36.90	84.30
12	400	400	0	275	0	2.02	21.09		364	233	102	104	82	2.49	44.46	101.55
13	400	400	0	275	0	1.92	20.01		364	214	102	104	89	2.47	48.03	100.76
14	400	400	0	280	0	1.94	20.21		364	214	131	131	100	2.76	53.67	87.67
15	400	400	0	298	0	2.03	21.14		364	214	102	122	101	2.51	48.80	102.39
16	400	400	0	299	0	2.02	21.07		364	214	103	104	101	2.45	47.64	98.98

Day	Solar								Bagasse							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
17	400	400	0	305	0	2.26	23.55		364	214	103	103	101	2.47	48.06	99.86
18	400	400	0	286	0	2.12	22.10		364	214	103	104	102	2.48	48.21	100.16
19	400	400	0	270	0	1.98	20.65		364	214	102	103	102	2.46	47.87	100.43
20	400	400	0	275	0	0.91	9.43		364	214	98	103	88	2.33	45.27	98.87
21	400	400	0	322	0	2.42	25.18		364	233	129	130	93	2.70	48.35	87.33
22	400	400	0	306	0	2.28	23.73		364	233	131	134	117	3.14	56.08	99.74
23	400	400	0	328	0	2.41	25.07		364	233	131	132	102	2.97	53.10	94.45
24	400	400	0	311	0	2.38	24.80		364	233	131	132	131	3.17	56.67	100.79
25	400	400	0	300	0	2.24	23.36		364	233	130	132	113	3.16	56.46	101.19
26	400	400	0	295	0	2.17	22.61		364	233	130	131	126	3.12	55.81	100.04
27	400	400	0	288	0	2.15	22.42		364	233	124	126	104	2.99	53.41	100.35
28	400	400	0	285	0	2.04	21.23		364	233	117	124	0	2.99	53.41	106.35
29	400	400	0	281	0	2.11	21.95		364	233	117	117	117	2.82	50.35	100.28
30	400	400	0	211	0	1.38	14.36		364	233	117	117	117	2.80	50.00	99.57

May, 2021

Day	Hydel								Wind							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	9874	9873	4884	5075	2771	92.45	39.02	78.87	1235	1085	202	873	161	9.15	35.13	188.68
2	9874	9873	4413	5112	3037	99.73	42.09	94.17	1235	1085	342	917	122	12.06	46.32	146.97
3	9874	9873	5220	5226	2977	105.33	44.45	84.08	1235	1085	664	713	132	9.91	38.04	62.16
4	9874	9873	4977	5185	3645	106.87	45.10	89.47	1235	1085	428	939	336	15.38	59.08	149.76
5	9874	9873	5176	5193	4013	109.59	46.25	88.22	1235	1085	232	987	174	11.10	42.64	199.40
6	9874	9873	5152	5322	3854	106.56	44.97	86.18	1235	1085	118	536	48	5.39	20.71	190.40
7	9874	9873	5127	5140	3520	107.05	45.18	87.00	1235	1085	249	448	7	3.25	12.46	54.31
8	9874	9873	5372	5385	3402	108.71	45.88	84.32	1235	1085	185	886	20	6.05	23.25	136.36
9	9874	9873	4917	5383	3613	110.03	46.43	93.24	1235	1085	626	985	166	11.35	43.59	75.56
10	9874	9873	5385	5394	4122	117.52	49.60	90.93	1235	1085	655	1019	423	15.69	60.27	99.83
11	9874	9873	5242	5358	4139	116.69	49.24	92.75	1235	1085	678	947	420	17.99	69.10	110.58
12	9874	9873	5024	5314	4065	115.45	48.72	95.75	1235	1085	968	1030	329	17.55	67.39	75.53
13	9874	9873	5333	5368	4367	118.15	49.86	92.31	1235	1085	449	995	218	14.90	57.21	138.26
14	9874	9873	5350	5350	4311	115.51	48.75	89.96	1235	1085	182	578	14	6.05	23.24	138.52
15	9874	9873	5331	5333	4334	116.35	49.10	90.94	1235	1085	19	597	5	2.24	8.62	491.99
16	9874	9873	5235	5344	4281	114.98	48.52	91.51	1235	1085	880	1001	11	15.46	59.36	73.19
17	9874	9873	5294	5323	4072	115.05	48.55	90.55	1235	1085	975	984	359	17.32	66.52	74.03
18	9874	9873	4996	5359	3848	114.28	48.23	95.31	1235	1085	6	712	0	7.45	28.61	5173.41
19	9874	9873	5190	5359	3919	115.23	48.63	92.51	1235	1085	260	575	2	4.02	15.43	64.39
20	9874	9873	5286	5286	3693	113.14	47.75	89.18	1235	1085	711	780	107	10.45	40.13	61.25
21	9874	9873	4694	5225	3776	114.43	48.29	101.57	1235	1085	402	759	336	13.34	51.23	138.27
22	9874	9873	4220	5233	3612	112.20	47.35	110.78	1235	1085	219	682	21	8.20	31.48	155.94
23	9874	9873	5045	5206	4039	116.18	49.03	95.95	1235	1085	382	744	0	5.17	19.84	56.35
24	9874	9873	4938	5190	3900	111.52	47.06	94.10	1235	1085	606	753	245	10.61	40.75	72.97
25	9874	9873	4982	5227	3878	113.09	47.73	94.58	1235	1085	958	989	531	19.55	75.09	85.04
26	9874	9873	5329	5338	3867	113.05	47.71	88.39	1235	1085	732	933	381	14.28	54.84	81.28
27	9874	9873	5305	5305	3784	113.84	48.04	89.41	1235	1085	703	875	368	13.84	53.14	82.01
28	9874	9873	5320	5320	3816	114.71	48.41	89.84	1235	1085	736	930	261	14.24	54.69	80.63
29	9874	9873	4716	5323	4055	113.98	48.10	100.71	1235	1085	382	809	322	15.12	58.05	164.87
30	9874	9873	5370	5372	4070	116.03	48.97	90.03	1235	1085	851	998	431	16.70	64.12	81.75
31	9874	9873	5366	5366	4075	115.68	48.82	89.83	1235	1085	0	997	0	12.15	46.65	

May, 2021

Day	Solar								Bagasse							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	400	400	0	282	0	1.78	18.55		364	233	117	117	102	2.80	50.07	99.71
2	400	400	0	230	0	1.53	15.90		364	233	104	104	94	2.46	43.93	98.42
3	400	400	0	293	0	2.16	22.50		364	233	104	104	98	2.50	44.63	100.00
4	400	400	0	286	0	1.95	20.32		364	233	104	104	92	2.49	44.60	99.93
5	400	400	0	290	0	2.16	22.46		364	233	104	104	104	2.51	44.82	100.41
6	400	400	0	360	0	1.08	11.22		364	233	104	104	104	2.51	44.84	100.45
7	400	400	0	298	0	2.26	23.59		364	233	104	104	104	2.51	44.95	100.70
8	400	400	0	317	0	2.22	23.16		364	233	48	104	48	1.60	28.66	139.13
9	400	400	0	292	0	2.20	22.97		364	233	48	48	48	1.16	20.80	100.97
10	400	400	0	222	0	1.56	16.21		364	233	48	48	48	1.16	20.76	100.79
11	400	400	0	277	0	1.84	19.22		364	233	48	48	48	1.16	20.77	100.80
12	400	400	8	291	0	2.11	21.94		364	233	24	48	24	0.97	17.42	169.10
13	400	400	0	288	0	1.98	20.66		364	233	48	48	48	1.16	20.74	100.68
14	400	400	0	275	0	1.99	20.77		364	233	48	48	48	1.16	20.75	100.73
15	400	400	0	283	0	2.14	22.24		364	233	48	48	48	1.16	20.78	100.89
16	400	400	0	274	0	1.77	18.44		364	233	48	48	48	1.15	20.62	100.08
17	400	400	0	282	0	2.13	22.18		364	233	48	48	48	1.16	20.66	100.29
18	400	400	0	177	0	1.34	13.93		364	233	48	48	48	1.15	20.62	100.09
19	400	400	0	294	0	2.02	21.04		364	233	48	48	48	1.15	20.65	100.23
20	400	400	0	285	0	2.15	22.39		364	233	48	48	48	1.16	20.67	100.33
21	400	400	0	284	0	2.09	21.82		364	233	48	48	48	1.15	20.61	100.04
22	400	400	8	264	0	1.91	19.93		364	233	48	48	24	1.12	20.03	97.21
23	400	400	0	307	0	2.31	24.09		364	233	48	48	48	1.16	20.75	100.70
24	400	400	0	278	0	2.16	22.54		364	233	48	48	24	0.97	17.29	83.92
25	400	400	0	276	0	2.11	22.01		364	233	48	48	48	1.15	20.50	99.51
26	400	400	0	274	0	2.09	21.80		364	233	48	48	48	1.15	20.56	99.82
27	400	400	0	270	0	2.10	21.89		364	233	48	48	48	1.15	20.58	99.90
28	400	400	0	269	0	2.07	21.57		364	233	48	48	48	1.15	20.56	99.78
29	400	400	0	268	0	2.00	20.88		364	233	48	48	48	1.15	20.60	99.97
30	400	400	0	272	0	2.04	21.24		364	233	48	48	48	1.15	20.62	100.10
31	400	400	0	270	0	1.99	20.72		364	233	48	48	48	1.15	20.54	99.73

June, 2021

Day	Hydel								Wind							
	Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	9874	9873	5342	5342	4071	115.29	48.65	89.92	1235	1085	746	854	563	17.44	66.99	97.43
2	9874	9873	5322	5322	4076	115.43	48.71	90.37	1235	1085	876	876	204	14.13	54.26	67.20
3	9874	9873	5390	5390	4330	116.39	49.12	89.97	1235	1085	630	731	78	8.78	33.70	58.04
4	9874	9873	5423	5423	4163	116.20	49.04	89.28	1235	1085	485	706	17	4.95	19.00	42.51
5	9874	9873	5449	5449	4175	117.17	49.44	89.59	1235	1085	443	716	126	7.76	29.79	72.97
6	9874	9873	5488	5488	3897	118.39	49.96	89.88	1235	1085	453	704	10	7.15	27.47	65.81
7	9874	9873	5481	5481	3944	117.65	49.65	89.44	1235	1085	885	913	340	16.04	61.58	75.50
8	9874	9873	5560	5562	3888	120.00	50.64	89.93	1235	1085	1020	1040	770	23.16	88.92	94.59
9	9874	9873	5577	6119	4243	124.91	52.71	93.32	1235	1085	936	1034	862	22.99	88.28	102.33
10	9874	9873	5868	6119	4243	124.91	52.71	88.69	1235	1085	1016	1037	836	22.96	88.16	94.14
11	9874	9873	5868	6443	4768	131.39	55.45	93.30	1235	1085	865	1034	862	22.99	88.28	110.73
12	9874	9873	7801	7819	4989	151.68	64.01	81.01	1235	1085	934	1025	501	21.81	83.76	97.30
13	9874	9873	7409	7792	4270	160.90	67.90	90.49	1235	1085	978	1012	425	19.56	75.13	83.35
14	9874	9873	7954	7959	4852	161.85	68.30	84.78	1235	1085	751	878	364	15.76	60.51	87.42
15	9874	9873	7742	7742	5300	161.76	68.26	87.06	1235	1085	962	1018	263	17.57	67.48	76.10

Day	Hydel								Wind							
	Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
16	9874	9873	7944	7969	5902	170.53	71.97	89.44	1235	1085	419	757	88	8.32	31.94	82.72
17	9874	9873	8116	8142	5841	171.23	72.26	87.91	1235	1085	53	290	3	1.86	7.12	145.84
18	9874	9873	7786	7786	6418	166.95	70.46	89.34	1235	1085	106	277	5	2.04	7.85	80.35
19	9874	9873	7913	8173	5823	171.26	72.27	90.18	1235	1085	604	813	216	11.90	45.69	82.07
20	9874	9873	7471	8274	5993	176.17	74.35	98.25	1235	1085	221	959	0	13.48	51.78	254.19
21	9874	9873	7966	8123	6173	178.44	75.30	93.33	1235	1085	753	955	353	16.32	62.66	90.29
22	9874	9873	7677	7894	6691	178.42	75.29	96.83	1235	1085	851	961	274	15.34	58.91	75.11
23	9874	9873	6729	6758	5323	151.59	63.97	93.87	1235	1085	738	947	482	17.90	68.74	101.05
24	9874	9873	6180	6722	5022	147.70	62.33	99.58	1235	1085	923	1010	585	19.84	76.18	89.55
25	9874	9873	6047	6387	4662	142.25	60.03	98.02	1235	1085	978	1034	715	21.56	82.78	91.83
26	9874	9873	5535	6374	4677	137.54	58.04	103.54	1235	1085	867	1040	682	21.13	81.13	101.53
27	9874	9873	5648	5655	4472	125.59	53.00	92.65	1235	1085	750	952	20	10.13	38.89	56.26
28	9874	9873	5269	5647	4452	123.42	52.08	97.60	1235	1085	639	907	181	11.00	42.24	71.72
29	9874	9873	5639	5641	4457	124.13	52.39	91.72	1235	1085	786	988	262	14.68	56.37	77.82
30	9874	9873	5669	5671	4351	122.96	51.89	90.37	1235	1085	977	1040	639	21.05	80.84	89.77

June, 2021

Day	Solar								Bagasse							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	400	400	0	259	0	1.69	17.57		364	233	48	48	48	1.15	20.55	99.76
2	400	400	0	257	0	1.91	19.93		364	233	61	61	48	1.42	25.33	96.76
3	400	400	0	265	0	2.00	20.87		364	233	61	61	49	1.46	26.05	99.50
4	400	400	0	265	0	1.91	19.92		364	233	61	61	61	1.48	26.40	100.85
5	400	400	0	262	0	1.83	19.10		364	233	27	61	13	1.30	23.17	199.97
6	400	400	0	259	0	1.97	20.49		364	233	61	61	37	1.43	25.62	97.87
7	400	400	0	280	0	2.14	22.26		364	233	61	61	37	1.45	26.00	99.30
8	400	400	0	288	0	2.17	22.57		364	233	61	61	61	1.47	26.23	100.18
9	400	400	0	281	0	2.12	22.10		364	233	61	61	61	1.47	26.32	100.54
10	400	400	0	281	0	2.12	22.10		364	233	61	61	61	1.47	26.32	100.54
11	400	400	0	268	0	2.03	21.10		364	233	61	61	61	1.47	26.31	100.50
12	400	400	0	258	0	1.88	19.62		364	233	60	61	30	1.44	25.82	100.27
13	400	400	0	220	0	1.26	13.08		364	233	61	61	55	1.47	26.26	100.29
14	400	400	0	241	0	1.63	17.01		364	233	61	61	61	1.46	26.11	99.74
15	400	400	0	286	0	1.51	15.71		364	233	61	61	61	1.47	26.21	100.13
16	400	400	0	295	0	2.26	23.54		364	233	61	61	61	1.47	26.32	100.55
17	400	400	0	189	0	0.96	9.98		364	233	88	88	61	1.71	30.64	81.12
18	400	400	0	282	0	2.16	22.50		364	233	88	88	88	2.23	39.93	105.71
19	400	400	0	261	0	1.98	20.60		364	233	88	89	88	2.13	38.14	100.99
20	400	400	0	280	0	2.13	22.19		364	233	88	89	61	2.11	37.78	100.03
21	400	400	0	267	0	2.01	20.93		364	233	116	117	86	2.27	40.60	81.55
22	400	400	0	259	0	2.01	20.96		364	233	117	117	107	2.80	50.02	99.61
23	400	400	0	268	0	2.04	21.30		364	233	117	118	87	2.77	49.53	98.63
24	400	400	0	278	0	2.09	21.75		364	233	115	117	87	2.77	49.58	100.46
25	400	400	0	280	0	2.11	21.96		364	233	117	117	117	2.81	50.29	100.15
26	400	400	0	267	0	1.98	20.60		364	233	117	118	111	2.79	49.88	99.33
27	400	400	0	263	0	1.98	20.60		364	233	117	117	106	2.82	50.35	100.26
28	400	400	0	265	0	2.01	20.98		364	233	88	117	87	2.43	43.46	115.08
29	400	400	0	274	0	2.09	21.80		364	233	88	89	88	2.13	38.10	100.89
30	400	400	0	281	0	2.14	22.32		364	233	88	88	63	2.13	38.10	100.87

Source: NPCC DLR

TABLE 98

Daily Generation Capacity (MW), Daily Generation (GWh) and Load Management

Days	July, 2020													August, 2020											
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Load Management (MW)					Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Load Management (MW)				
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	DISCOs Cons-traint	Furn-aces	Gene-ration	NTDC+ WAPDA Transf-ormation	Total	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	DISCOs Cons-traint	Furn-aces	Gene-ration	NTDC+ WAPDA Transf-ormation	Total
1	36166	32246	24712	21918	17969	488.52	63.13	82.37	2933	53	0	30	3016	36166	32246	26548	21455	17132	471.55	60.93	74.01	1849	69	0	103	2021
2	36166	32246	24791	22206	19729	508.60	65.72	85.48	2916	53	0	265	3234	36166	32246	26772	21745	18049	485.43	62.73	75.55	1594	69	0	20	1683
3	36166	32246	24791	22206	19729	514.18	66.44	86.42	2900	51	0	155	3106	36166	32246	25902	21414	18188	477.03	61.64	76.73	3140	53	0	0	3193
4	36166	32246	24796	21858	11307	458.49	59.24	77.05	2626	38	0	0	2664	36166	32246	26529	22009	18171	482.34	62.33	75.76	3210	52	0	0	3262
5	36166	32246	25040	19902	14922	418.51	54.08	69.64	2464	53	0	0	2517	36166	32246	24716	22305	19622	504.03	65.13	84.97	3486	49	0	0	3535
6	36166	32246	24413	21469	17620	472.78	61.09	80.69	2736	51	0	0	2787	36166	32246	25100	22125	19469	508.19	65.67	84.36	2922	52	0	32	3006
7	36166	32246	24633	22532	19108	502.48	64.93	84.99	2979	52	0	0	3031	36166	32246	24917	21423	17913	490.15	63.34	81.97	3728	49	0	0	3777
8	36166	32246	24282	22891	18490	494.59	63.91	84.87	3141	53	0	0	3194	36166	32246	25751	21443	18702	488.47	63.12	79.04	3277	49	0	0	3326
9	36166	32246	23709	22115	19252	502.28	64.90	88.27	2967	52	0	0	3019	36166	32246	25626	21009	18205	484.33	62.58	78.75	3113	53	0	26	3192
10	36166	32686	24424	21857	18180	502.21	64.02	85.67	2952	52	0	0	3004	36166	32246	26109	21717	18731	489.69	63.28	78.15	3163	54	0	0	3217
11	36166	32246	23716	22351	15196	473.64	61.20	83.22	3492	4	0	50	3546	36166	32246	26073	22868	19125	509.48	65.83	81.42	3171	49	0	0	3220
12	36166	32246	25070	18765	15766	415.40	53.68	69.04	2971	52	0	0	3023	36166	32246	27104	23190	19985	525.69	67.93	80.81	3111	54	0	355	3520
13	36166	32246	24205	21716	16800	465.51	60.15	80.13	3129	53	0	0	3182	36166	32246	26206	22858	20826	528.14	68.25	83.97	3349	49	0	95	3493
14	36166	32246	24780	22630	19402	506.80	65.49	85.22	3178	54	0	50	3282	36166	32246	26657	21731	19117	492.74	63.67	77.02	3052	53	0	0	3105
15	36166	32246	25043	22174	17400	493.77	63.80	82.15	2975	54	0	0	3029	36166	32246	24349	23038	19627	517.80	66.91	88.61	3034	53	0	73	3160
16	36166	32246	25084	21466	18066	477.61	61.72	79.33	3144	52	0	0	3196	36166	32246	24812	22687	19093	511.43	66.09	85.88	3225	53	0	155	3433
17	36166	32246	24605	21636	17351	478.54	61.83	81.04	3022	52	0	0	3074	36166	32246	25212	22700	20702	521.69	67.41	86.22	3080	49	0	1150	4279
18	36166	32246	23280	22021	19504	501.99	64.87	89.85	3091	54	0	368	3513	36166	32246	25802	22723	19714	519.89	67.18	83.96	3270	54	0	222	3546
19	36166	32246	23940	21938	16188	473.96	61.24	82.49	3005	53	0	0	3058	36166	32246	25525	22290	17797	493.20	63.73	80.51	3192	53	0	70	3315
20	36166	32246	24172	21244	16305	451.18	58.30	77.77	3117	54	0	0	3171	36166	32246	25952	18871	15090	418.37	54.06	67.17	2615	54	0	0	2669
21	36166	32246	25056	17386	13795	382.53	49.43	63.61	2967	53	0	0	3020	36166	32246	25608	19103	15907	424.84	54.90	69.12	2774	53	0	0	2827
22	36166	32246	25545	19587	14685	422.27	54.56	68.88	2836	51	0	0	2887	36166	32246	25069	21133	16070	449.08	58.03	74.64	2719	55	0	0	2774
23	36166	32246	25755	21076	17017	467.65	60.43	75.66	2971	53	0	0	3024	36166	32246	25308	21537	17453	476.17	61.53	78.39	2746	54	0	0	2800
24	36166	32246	26073	21511	18532	483.50	62.48	77.27	3172	52	0	0	3224	36166	32246	25021	22251	18308	492.34	63.62	81.99	2937	56	0	178	3171
25	36166	32246	24633	21462	18527	486.53	62.87	82.29	3266	34	0	0	3300	36166	32246	24930	20529	17920	468.23	60.50	78.26	3279	57	0	0	3336
26	36166	32246	24698	20907	18351	480.61	62.10	81.08	3044	62	0	0	3106	36166	32246	26362	18586	16429	423.15	54.68	66.88	2733	52	0	0	2785
27	36166	32246	25275	22773	19284	508.41	65.69	83.81	3020	51	0	0	3071	36166	32246	26502	17293	14654	389.75	50.36	61.28	2555	29	0	0	2584
28	36166	32246	26744	23214	19653	518.27	66.97	80.75	3110	51	0	0	3161	36166	32246	26413	18285	13749	386.41	49.93	60.96	2388	55	0	0	2443
29	36166	32246	25983	23474	19583	514.08	66.43	82.44	3027	51	0	0	3078	36166	32246	26962	18854	15157	412.07	53.25	63.68	2204	55	0	0	2259
30	36166	32246	25390	21228	18028	478.55	61.84	78.53	2966	51	0	0	3017	36166	32246	26723	17767	14078	394.51	50.98	61.51	2234	55	0	0	2289
31	36166	32246	26226	21744	18826	491.88	63.56	78.15	1316	64	0	30	1410	36166	32246	26438	16682	13336	360.60	46.60	56.83	2494	55	0	0	2549

Days	September, 2020													October, 2020											
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Load Management (MW)					Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Load Management (MW)				
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	DISCOs Cons-traint	Furn-aces	Gene-ration	NTDC+ WAPDA Transf-ormation	Total	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	DISCOs Cons-traint	Furn-aces	Gene-ration	NTDC+ WAPDA Transf-ormation	Total
1	36166	32246	25861	15619	12527	342.81	44.30	55.23	2494	55	0	0	2549	36166	32246	20889	18108	14868	403.52	52.14	80.49	3175	2	0	0	3177
2	36166	32246	25583	17594	13257	373.48	48.26	60.83	2374	54	391	0	2819	36166	32246	22825	17259	14276	386.18	49.90	70.50	2738	54	0	0	2792
3	36166	32246	25542	17763	14726	395.80	51.14	64.57	2736	51	0	0	2787	36166	32246	22851	17241	14032	383.42	49.54	69.91	2829	56	0	0	2885
4	36166	32246	25907	16743	13439	368.36	47.60	59.24	2590	54	0	0	2644	36166	32246	22655	16462	13479	369.68	47.77	67.99	2851	58	0	0	2909
5	36166	32246	26310	18353	14066	397.40	51.35	62.94	2652	56	0	0	2708	36166	32246	21982	16951	13722	374.32	48.37	70.95	2878	54	0	0	2932
6	36166	32246	26403	17934	14727	405.54	52.40	64.00	2609	51	0	0	2660	36166	32246	22328	16890	13673	373.80	48.30	69.75	3159	2	0	0	3161
7	36166	32246	25612	19336	14701	422.87	54.64	68.79	2706	56	0	0	2762	36166	32246	21681	17030	13747	374.74	48.42	72.02	3154	3	0	0	3157
8	36166	32246	25332	20045	16203	446.24	57.66	73.40	2782	55	0	0	2837	36166	32246	21884	16876	13650	372.85	48.18	70.99	2911	56	0	0	2967
9	36166	32246	24761	20825	16549	456.85	59.03	76.88	2846	52	0	0	2898	36166	32246	20603	16304	13421	359.56	46.46	72.72	2808	54	0	0	2862
10	36166	32246	24911	20466	16885	460.05	59.45	76.95	2763	59	0	0	2822	36166	32246	20904	16324	13075	362.31	46.82	72.21	3013	2	0	0	3015
11	36166	32246	24541	20191	16674	454.70	58.75	77.20	2766	55	0	0	2821	36166	32246	21063	15704	12677	350.59	45.30	69.35	2801	58	0	0	2859
12	36166	32246	23709	21009	17412	468.82	60.58	82.39	2715	57	142	0	2914	36166	32246	21589	16354	13057	355.04	45.88	68.52	2966	2	0	0	2968
13	36166	32246	24271	20478	17446	462.51	59.76	79.40	2764	57	0	0	2821	36166	32246	22087	16013	12808	349.76	45.20	65.98	2913	2	0	0	2915
14	36166	32246	23443	21099	17671	472.60	61.07	84.00	2792	58	0	0	2850	36166	32246	21482	15794	12506	344.29	44.49	66.78	2855	2	0	0	2857
15	36166	32246	23511	20604	18038	474.40	61.30	84.08	2952	8	0	0	2960	36166	32246	21473	15602	12224	336.62	43.50	65.32	2931	2	0	0	2933
16	36166	32246	23948	21408	17592	474.23	61.28	82.51	2760	60	0	0	2820	36166	32246	22532	14618	12066	324.23	41.90	59.96	2809	0	0	0	2809
17	36166	32246	24106	21138	17557	471.21	60.89	81.45	2822	57	0	0	2879	36166	32246	21942	14999	11672	324.28	41.90	61.58	2887	2	0	0	2889
18	36166	32246	23774	20720	17835	471.19	60.89	82.58	2873	55	0	0	2928	36166	32246	21726	14223	11572	309.80	40.03	59.41	2878	2	0	0	2880
19	36166	32246	23112	21226	17621	471.68	60.95	85.04	2807	56	0	100	2963	36166	32246	21685	14786	11329	314.35	40.62	60.40	2804	2	0	0	2806
20	36166	32246	23269	20481	17433	458.31	59.22	82.07	2769	57	0	0	2826	36166	32246	20293	14800	11299	313.02	40.45	64.27	2854	2	0	0	2856
21	36166	32246	22827	20475	16984	455.90	58.91	83.22	3079	57	267	0	3403	36166	32246	20626	14525	11030	308.65	39.88	62.35	2886	2	0	0	2888
22	36166	32246	23823	20928	17237	467.52	60.41	81.77	2827	57	0	0	2884	36166	32246	20372	14255	10789	301.49	38.96	61.66	2782	2	0	0	2784
23	36166	32246	22630	20588	17342	461.53	59.64	84.98	2001	57	848	0	2906	36166	32246	19907	13680	10334	293.39	37.91	61.41	2644	0	0	0	2644
24	36166	32246	23014	20507	17113	462.86	59.81	83.80	2870	55	0	0	2925	36166	32246	19464	14107	10307	294.64	38.07	63.07	2836	2	0	0	2838
25	36166	32246	24558	19468	16436	433.04	55.96	73.47	2819	56	0	0	2875	36166	32246	19739	13125	9902	281.37	36.36	59.39	2740	2	0	0	2742
26	36166	32246	24569	18359	15243	413.27	53.40	70.09	2914	56	0	0	2970	36166	32246	20432	13921	9660	280.71	36.27	57.25	2971	2	0	0	2973
27	36166	32246	24879	18135	14707	404.40	52.25	67.73	2900	57	0	0	2957	36166	32246	22320	13877	9694	281.74	36.41	52.59	2925	2	0	0	2927
28	36166	32246	24161	18808	15169	415.22	53.65	71.61	3090	3	0	0	3093	36166	32246	21030	13759	9575	281.73	36.40	55.82	2671	2	0	0	2673
29	36166	32246	24431	18478	14760	411.62	53.19	70.20	2746	57	0	0	2803	36166	32246	19943	13760	9909	281.59	36.39	58.83	2725	2	0	0	2727
30	36166	32246	22879	18529	15253	411.31	53.15	74.91	2861	57	0	0	2918	36166	32246	20451	11660	9719	254.80	32.93	51.91	2588	0	0	0	2588
31														36166	32246	20441	12996	8712	265.01	34.24	54.02	2765	2	0	0	2767

Days	November, 2020													December, 2020											
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Load Management (MW)					Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Load Management (MW)				
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	DISCOs Cons-traint	Furn-aces	Gene-ration	NTDC+ WAPDA Transf-ormation	Total	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	DISCOs Cons-traint	Furn-aces	Gene-ration	NTDC+ WAPDA Transf-ormation	Total
1	36166	32246	19003	12611	9088	263.88	34.10	57.86	2709	2	0	0	2711	36166	32246	22150	12892	7798	250.29	32.34	47.08	2777	1	0	0	2778
2	36166	32246	19048	13136	8757	267.90	34.62	58.60	2824	2	0	0	2826	36166	32246	22662	12671	7890	250.93	32.42	46.14	2717	2	0	0	2719
3	36166	32246	21316	13307	9030	268.69	34.72	52.52	2510	2	0	0	2512	36166	32246	23099	12767	7837	249.78	32.28	45.06	2811	2	0	0	2813
4	36166	32246	20926	13196	9048	270.22	34.92	53.80	2638	2	0	0	2640	36166	32246	21945	12156	7791	248.02	32.05	47.09	2843	0	0	0	2843
5	36166	32246	20884	13100	9112	269.04	34.76	53.68	2765	2	0	0	2767	36166	32246	21093	12628	7479	251.25	32.47	49.63	2568	57	0	0	2625
6	36166	32246	20977	12556	9070	262.46	33.91	52.13	2762	0	0	0	2762	36166	32246	21876	12076	7838	241.55	31.21	46.01	2588	57	0	0	2645
7	36166	32246	20398	12650	8776	261.45	33.78	53.41	2756	2	0	0	2758	36166	32246	21463	12680	7609	249.25	32.21	48.39	2896	58	0	0	2954
8	36166	32246	21488	12110	8790	252.21	32.59	48.91	2647	2	0	0	2649	36166	32246	21558	12705	7382	245.91	31.78	47.53	2684	57	0	0	2741
9	36166	32246	21519	12867	8399	256.78	33.18	49.72	2765	2	0	0	2767	36166	32246	22049	12574	7583	247.55	31.99	46.78	2609	56	0	0	2665
10	36166	32246	21367	12953	8753	259.25	33.50	50.56	2661	2	0	0	2663	36166	32246	22887	12787	7724	248.55	32.12	45.25	2648	57	0	0	2705
11	36166	32246	22272	12796	8658	258.98	33.46	48.45	2730	2	0	0	2732	36166	32246	20850	12225	7576	237.03	30.63	47.37	2846	49	0	0	2895
12	36166	32246	22395	12709	8456	255.49	33.01	47.54	2926	2	0	0	2928	36166	32246	20816	12513	6805	235.55	30.44	47.15	2610	54	0	0	2664
13	36166	32246	21574	12113	8249	250.60	32.38	48.40	2838	0	0	0	2838	36166	32246	20809	12040	7254	232.81	30.08	46.62	2775	57	0	0	2832
14	36166	32246	21458	11631	8167	239.03	30.89	46.41	3124	6	0	0	3130	36166	32246	21472	12988	6539	245.71	31.75	47.68	2896	9	0	0	2905
15	36166	32246	22904	10640	7497	213.97	27.65	38.93	1873	5	0	0	1878	36116	32246	22522	13197	7460	253.58	32.77	46.91	2684	52	0	0	2736
16	36166	32246	20818	12345	7275	237.01	30.63	47.44	2639	2	0	0	2641	36116	32246	21394	13510	7449	255.81	33.05	49.82	2795	45	0	0	2840
17	36166	32246	21627	12206	7343	239.48	30.94	46.14	2688	2	0	0	2690	36116	32246	22036	13656	7495	256.35	33.12	48.47	2639	49	0	0	2688
18	36166	32246	20509	12428	7318	241.59	31.22	49.08	2691	2	0	0	2693	36116	32246	21807	13011	7694	258.38	33.39	49.37	2676	53	0	0	2729
19	36166	32246	21302	12456	7592	243.42	31.45	47.61	2847	2	0	0	2849	36116	32246	22111	13604	7743	262.82	33.96	49.53	2679	56	0	0	2735
20	36166	32246	22791	11568	7452	236.28	30.53	43.20	2739	0	0	0	2739	36116	32246	21228	12870	7967	256.36	33.13	50.32	2693	43	0	0	2736
21	36166	32246	23100	12140	7178	238.97	30.88	43.10	2557	2	0	0	2559	36116	32246	21045	13624	7582	260.76	33.69	51.63	2732	42	0	0	2774
22	36166	32246	21882	11655	7274	230.36	29.77	43.86	2819	2	0	0	2821	36116	32246	20332	13690	7900	262.92	33.97	53.88	2701	43	0	0	2744
23	36166	32246	23281	12400	7123	239.68	30.97	42.90	2822	2	0	20	2844	36116	32246	22719	13606	7942	265.94	34.36	48.77	2624	42	0	0	2666
24	36166	32246	23886	12250	7393	237.92	30.74	41.50	3317	2	0	0	3319	36116	32246	22184	13450	8023	264.92	34.23	49.76	2939	41	0	0	2980
25	36166	32246	25195	12114	6923	243.36	31.45	40.25	2886	2	0	0	2888	36116	32246	22080	12690	7870	256.72	33.17	48.45	2883	40	0	0	2923
26	36166	32246	25452	12485	7273	239.90	31.00	39.27	2676	0	0	0	2676	36116	32246	21767	13420	7562	261.06	33.73	49.97	2878	43	0	0	2921
27	36166	32246	25451	12076	7275	239.50	30.95	39.21	2616	0	0	0	2616	36116	32246	20808	12857	7555	246.94	31.91	49.45	2746	40	0	0	2786
28	36166	32246	24718	12433	7148	245.62	31.74	41.40	2677	0	0	0	2677	36116	32246	21368	13890	7752	265.98	34.37	51.87	2787	42	0	0	2829
29	36166	32246	24772	12030	7513	236.00	30.49	39.69	2926	3	0	0	2929	36116	32246	21834	14137	8002	271.00	35.02	51.72	3034	6	0	0	3040
30	36166	32246	23783	12469	7213	241.74	31.24	42.35	2656	3	0	0	2659	36116	32246	21730	13938	7942	273.35	35.32	52.41	2822	44	0	0	2866
31													0	36116	32246	21712	14159	8083	269.89	34.87	51.79	2797	41	0	0	2838

Days	January, 2021													February, 2021											
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Load Management (MW)					Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Load Management (MW)				
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	DISCOs Cons-traint	Furn-aces	Gene-ration	NTDC+ WAPDA Transf-ormation	Total	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	DISCOs Cons-traint	Furn-aces	Gene-ration	NTDC+ WAPDA Transf-ormation	Total
1	36116	32246	21266	13572	8201	271.34	35.06	53.16	2842	40	0	0	2882	36116	32345	20342	13324	7865	265.70	34.23	54.42	2838	41	0	0	2879
2	36116	32345	22246	13958	8090	272.45	35.10	51.03	2669	41	0	0	2710	36116	32246	21266	13572	8201	271.34	35.06	53.16	2842	40	0	0	2882
3	36116	32345	22246	13572	8090	262.87	33.86	49.24	2729	36	0	0	2765	36116	32345	21148	13435	7879	269.53	34.72	53.10	2949	34	0	0	2983
4	36116	32246	22157	13850	7700	265.08	34.25	49.85	2861	41	0	0	2902	36116	32345	20563	13320	7821	264.93	34.13	53.68	2818	40	0	0	2858
5	36116	32246	22320	12986	7382	252.28	32.60	47.09	2674	40	0	0	2714	36116	32345	20887	12810	7789	249.78	32.18	49.83	2897	38	0	0	2935
6	36116	32246	21099	13523	7872	262.39	33.91	51.82	2678	41	0	0	2719	36116	32345	20862	12894	7408	254.34	32.76	50.80	2784	41	0	0	2825
7	36116	32246	22313	13573	7884	264.22	34.14	49.34	2709	41	0	0	2750	36116	32345	20675	12234	7651	249.16	32.10	50.21	2805	42	0	0	2847
8	36116	32246	20122	13171	7772	260.31	33.64	53.90	2740	39	0	0	2779	36116	32345	20326	12947	7514	257.08	33.12	52.70	2686	41	0	0	2727
9	36116	32246	21220	14020	0	264.21	34.14	51.88	2781	0	0	0	2781	36116	32345	21296	13195	7642	258.67	33.32	50.61	2689	41	0	0	2730
10	36116	32246	13195	9306	42	114.55	14.80	36.17	2574	36	2455	0	5065	36116	32345	21640	12995	7688	256.85	33.09	49.45	2814	41	0	0	2855
11	36116	32246	15070	12610	7555	234.10	30.25	64.73	2500	41	1410	0	3951	36116	32345	22016	12969	7625	254.95	32.84	48.25	2751	41	0	0	2792
12	36116	32246	19766	13876	8164	270.51	34.95	57.02	2808	42	0	0	2850	36116	32345	21915	12805	7596	251.90	32.45	47.89	2715	39	0	0	2754
13	36116	32345	20200	14072	8129	270.73	34.88	55.84	2756	41	0	0	2797	36116	32345	20200	14072	8129	270.73	34.88	55.84	2756	41	0	0	2797
14	36116	32246	19863	14073	8083	274.89	35.52	57.66	2789	41	0	0	2830	36116	32345	21740	12100	7233	242.75	31.27	46.52	2597	41	0	0	2638
15	36116	32246	19331	13447	8199	270.18	34.91	58.23	2807	39	0	0	2846	36116	32345	21622	12975	7441	257.46	33.17	49.61	2485	39	0	0	2524
16	36116	32246	20203	13928	8233	271.64	35.10	56.02	2746	39	0	0	2785	36116	32345	21499	13046	8030	261.37	33.67	50.65	2751	40	0	0	2791
17	36116	32246	19994	13533	8127	263.85	34.09	54.99	2907	41	0	0	2948	36116	32345	20881	12803	7958	257.01	33.11	51.29	2787	40	0	0	2827
18	36116	32246	20813	14064	8093	270.77	34.99	54.21	2907	41	0	0	2948	36116	32345	21541	12871	8091	255.16	32.87	49.35	2769	40	0	0	2809
19	36116	32246	20601	13974	8154	269.49	34.82	54.51	2901	40	0	0	2941	36116	32345	21247	12773	7768	254.26	32.75	49.86	2842	36	0	0	2878
20	36116	32345	20469	13854	8364	267.44	34.45	54.44	2915	41	0	0	2956	36116	32345	21263	12645	7829	259.43	33.42	50.84	2914	41	0	0	2955
21	36116	32345	20568	13596	8090	266.86	34.38	54.06	2915	41	0	0	2956	36116	32345	22424	12067	8025	251.78	32.43	46.78	2827	40	0	0	2867
22	36116	32345	19462	13380	8135	265.59	34.21	56.86	2966	39	0	0	3005	36116	32345	21409	13167	7988	260.53	33.56	50.71	2581	39	0	0	2620
23	36116	32345	19946	13381	7816	261.19	33.65	54.56	2824	35	0	0	2859	36116	32345	21905	13326	8007	264.91	34.13	50.39	2695	39	0	0	2734
24	36116	32345	19022	13033	8168	259.46	33.42	56.83	2883	41	0	0	2924	36116	32345	22416	13471	8569	272.47	35.10	50.65	2780	37	0	0	2817
25	36116	32345	19012	13385	7839	266.34	34.31	58.37	2974	41	0	0	3015	36116	32345	21552	13475	8501	273.63	35.25	52.90	2681	39	0	0	2720
26	36116	32345	18719	13780	8293	268.09	34.54	59.67	2830	6	0	0	2836	36116	32345	21556	13362	9030	275.14	35.44	53.18	2710	36	0	0	2746
27	36116	32345	21384	13800	8292	268.72	34.62	52.36	2923	41	0	0	2964	36116	32345	21841	13162	8738	271.26	34.94	51.75	2745	41	0	0	2786
28	36116	32345	21737	13759	8035	265.74	34.23	50.94	2686	40	0	0	2726	36116	32345	21540	12631	8907	265.83	34.24	51.42	2643	41	0	0	2684
29	36116	32345	21170	13340	8163	264.02	34.01	51.96	2862	39	0	0	2901													
30	36116	32345	21617	13479	7833	264.20	34.03	50.93	2862	39	0	0	2901													
31	36116	32345	21965	12880	7942	256.11	32.99	48.58	2769	62	0	0	2831													

Days	March, 2021													April, 2021											
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Load Management (MW)					Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Load Management (MW)				
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	DISCOs Cons-traint	Furn-aces	Gene-ra-tion	NTDC+ WAPDA Transf-or-mation	Total	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	DISCOs Cons-traint	Furn-aces	Gene-ra-tion	NTDC+ WAPDA Transf-or-mation	Total
1	36116	32345	21144	13608	8763	280.49	36.13	55.27	2588	41	0	0	2629	37261	33435	20568	14305	11810	309.49	38.57	62.70	2640	36	0	0	2676
2	36116	32345	20890	13810	9075	285.35	36.76	56.91	2816	39	0	0	2855	37261	33435	22200	14356	11433	311.00	38.76	58.37	2564	36	0	0	2600
3	36116	32345	20664	14022	9296	288.73	37.19	58.22	2583	40	0	0	2623	37261	33435	21254	14781	11492	318.98	39.75	62.53	2681	41	0	0	2722
4	36116	32345	20575	13933	9550	290.96	37.48	58.92	2602	39	0	0	2641	37261	33435	21933	14127	11988	314.58	39.20	59.76	2613	42	0	0	2655
5	36116	32345	21205	13949	9684	289.28	37.27	56.84	2621	36	0	0	2657	37261	33435	22884	14579	11744	317.01	39.51	57.72	2691	42	0	0	2733
6	36116	32345	21658	13738	9449	289.20	37.26	55.64	2912	39	0	0	2951	37261	33435	23894	13635	11404	297.93	37.13	51.95	2568	39	0	0	2607
7	36116	32345	21653	13052	9358	272.74	35.13	52.48	2750	40	0	0	2790	37261	33435	23236	14446	10528	302.54	37.70	54.25	2585	43	0	0	2628
8	36116	32345	21069	13582	9521	285.21	36.74	56.40	2702	36	0	0	2738	37261	33435	22889	14809	11662	318.73	39.72	58.02	2571	43	0	0	2614
9	36116	32345	21313	14116	9912	294.89	37.99	57.65	2532	39	0	0	2571	37261	33435	23143	14928	12095	324.27	40.41	58.38	2608	50	0	0	2658
10	36116	32345	20810	14018	10001	297.39	38.31	59.55	2704	39	0	0	2743	37261	33435	22630	15622	12402	334.22	41.65	61.54	2542	42	0	0	2584
11	36116	32345	20304	13002	9764	284.88	36.70	58.46	2984	0	0	0	2984	37261	33435	23335	15430	12567	336.10	41.89	60.01	2598	39	0	0	2637
12	36116	32345	20771	12529	8880	256.02	32.98	51.36	2591	37	0	0	2628	37261	33435	22401	16514	12609	351.68	43.83	65.41	2645	39	0	0	2684
13	36116	32345	20367	13270	9207	278.32	35.85	56.94	2697	40	0	0	2737	37261	33548	22805	17709	13574	370.39	46.00	67.67	1890	42	0	0	1932
14	36116	32345	19828	12891	9646	278.25	35.84	58.47	2780	37	0	0	2817	37261	33503	23266	17782	13439	381.98	47.51	68.41	1429	57	0	0	1486
15	36116	32345	20267	13815	9982	292.12	37.63	60.06	2696	39	0	0	2735	37261	33503	23449	16750	12409	357.61	44.47	63.54	1507	50	0	0	1557
16	36116	32345	19857	14085	10649	303.31	39.07	63.65	2876	39	0	0	2915	37261	33503	23490	15335	12312	334.12	41.55	59.27	1366	45	0	0	1411
17	37175	33404	20079	14568	10832	310.53	38.73	64.44	2832	40	0	0	2872	37261	33578	23245	16020	11587	336.27	41.73	60.28	1335	41	0	0	1376
18	37175	33404	19228	14328	11144	309.93	38.66	67.16	2963	38	0	0	3001	37261	33578	22141	16259	11376	346.91	43.05	65.28	1358	46	0	0	1404
19	37175	33404	19543	14234	11079	307.97	38.41	65.66	2773	38	0	0	2811	37261	33578	22683	16626	12570	358.18	44.45	65.79	1404	42	0	0	1446
20	37175	33404	18922	14373	11033	305.95	38.16	67.37	3036	39	0	0	3075	37261	33578	22736	15478	12598	338.23	41.97	61.99	1436	41	0	0	1477
21	37175	33404	19868	12075	10184	269.62	33.63	56.54	3014	38	0	0	3052	37261	33597	23607	16484	11382	337.97	41.91	59.65	1386	44	0	0	1430
22	37175	33404	20654	12128	8620	251.16	31.33	50.67	3067	36	0	0	3103	37261	33597	23430	15284	11995	336.68	41.75	59.87	1396	49	0	0	1445
23	37175	33404	20121	11931	5967	223.63	27.90	46.31	2265	40	0	0	2305	37261	33597	23248	15580	9208	303.38	37.62	54.37	1343	48	0	0	1391
24	37261	33435	19701	12941	9147	266.73	33.24	56.41	2711	40	0	0	2751	37261	33597	23094	16657	11552	342.27	42.45	61.75	1387	45	0	0	1432
25	37261	33435	19966	13207	9989	276.00	34.40	57.60	2746	42	0	0	2788	37261	33597	23381	17284	12228	357.33	44.32	63.68	1461	45	0	0	1506
26	37261	33435	20591	13142	10382	280.00	34.89	56.66	2685	39	0	0	2724	37261	33597	24170	18713	13126	389.44	48.30	67.14	1395	45	0	0	1440
27	37261	33435	21585	13956	10754	294.43	36.69	56.83	2649	39	0	0	2688	37261	33597	23177	19047	14261	412.35	51.14	74.13	1382	47	0	0	1429
28	37261	33435	22005	14136	11032	299.45	37.32	56.70	2738	39	0	0	2777	37261	33597	22378	19527	15317	427.82	53.06	79.66	1474	47	0	0	1521
29	37261	33435	21372	14944	11621	314.32	39.17	61.28	2667	40	0	0	2707	37261	33597	24078	19786	15692	437.71	54.28	75.75	1489	47	0	0	1536
30	37261	33435	20757	14550	12001	320.63	39.96	64.36	2983	36	0	0	3019	37261	33597	23902	19385	15701	431.55	53.52	75.23	1518	45	0	0	1563
31	37261	33435	20987	14430	11939	315.80	39.36	62.70	2916	20	0	0	2936													

Days	May, 2021													June, 2021											
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Load Management (MW)					Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Load Management (MW)				
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	DISCOs Cons-traint	Furn-aces	Gene-ration	NTDC+ WAPDA Transf-ormation	Total	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	DISCOs Cons-traint	Furn-aces	Gene-ration	NTDC+ WAPDA Transf-ormation	Total
1	37261	33597	23970	19830	15415	431.14	53.47	74.94	1521	42	0	0	1563	37261	33566	24280	19194	14735	416.78	51.74	71.52	2778	40	0	35	2853
2	37261	33597	23479	18797	15627	425.38	52.76	75.49	1586	38	0	0	1624	37261	33566	24032	21178	17078	462.38	57.40	80.17	2972	39	0	0	3011
3	37261	33597	24714	20570	15687	445.43	55.24	75.10	1652	39	0	0	1691	37261	33566	23842	19516	16285	434.05	53.88	75.86	3019	40	0	0	3059
4	37261	33597	24452	19879	16425	438.23	54.35	74.67	1670	42	0	0	1712	37261	33566	24539	19987	16294	443.04	55.00	75.23	2944	43	0	0	2987
5	37261	33597	24633	19355	13588	422.48	52.40	71.46	1581	41	0	0	1622	37261	33566	23518	21108	17504	466.24	57.88	82.60	3252	43	0	0	3295
6	37261	33597	23567	18690	15330	417.38	51.76	73.79	1486	43	0	0	1529	37261	33566	23787	21001	17731	463.57	57.55	81.20	2889	41	0	0	2930
7	37261	33597	23728	18832	14809	418.42	51.89	73.47	1524	31	0	0	1555	37261	33566	24267	22043	18764	500.36	62.11	85.91	2994	45	386	0	3425
8	37261	33597	23535	19498	14722	422.33	52.38	74.77	1434	39	0	0	1473	37261	33566	24140	22116	19783	512.40	63.61	88.44	2977	41	885	0	3903
9	37261	33597	24328	19223	15357	427.07	52.97	73.15	1436	40	0	0	1476	37261	33566	24125	22251	20454	516.39	64.10	89.18	3115	44	1272	0	4431
10	37261	33597	24639	18614	15257	423.08	52.47	71.55	1391	43	0	0	1434	37261	33566	24915	22837	20067	521.37	64.72	87.19	2921	47	0	0	2968
11	37261	33597	24868	18779	14188	404.59	50.18	67.79	1447	42	0	0	1489	37261	33566	24647	23685	19573	515.53	63.99	87.15	2862	4	0	0	2866
12	37261	33597	24807	18134	14517	391.51	48.55	65.76	1915	37	0	0	1952	37261	33566	26443	23792	19259	507.66	63.02	79.99	3256	41	0	0	3297
13	37261	33597	25043	16273	13176	353.33	43.82	58.79	1641	0	0	0	1641	37261	33566	26619	22049	13668	429.17	53.27	67.18	3070	40	0	0	3110
14	37261	33597	24886	16050	13189	352.35	43.70	58.99	1620	0	0	0	1620	37261	33566	27418	21867	17144	480.64	59.66	73.04	2847	40	0	0	2887
15	37261	33597	24472	15739	13006	350.85	43.51	59.74	1603	1	0	0	1604	37261	33566	27819	21224	16658	452.07	56.12	67.71	3110	40	0	0	3150
16	37261	33597	24767	16535	12937	352.77	43.75	59.35	2369	35	0	0	2404	37261	33566	27518	20127	16594	438.94	54.49	66.46	2732	47	0	0	2779
17	37261	33597	24416	18100	13985	394.93	48.98	67.40	2719	40	0	0	2759	37261	33566	26706	20156	15523	436.76	54.22	68.14	2905	42	0	0	2947
18	37261	33597	23762	19378	15562	421.97	52.33	73.99	2726	40	0	0	2766	37261	33566	26333	20897	17218	463.37	57.52	73.32	2731	8	0	0	2739
19	37261	33597	24413	19554	15897	427.17	52.98	72.91	2745	40	0	0	2785	37261	33566	26670	22305	18167	490.21	60.85	76.59	2868	44	0	0	2912
20	37261	33597	24384	19464	15530	416.09	51.60	71.10	2700	42	0	0	2742	37261	33566	25745	21083	13346	442.33	54.91	71.59	2935	41	0	0	2976
21	37261	33566	25305	18859	14999	413.50	51.33	68.09	2869	40	0	0	2909	37261	33566	27090	21265	16063	455.23	56.51	70.02	2665	44	0	0	2709
22	37261	33566	22191	18805	11216	392.09	48.67	73.62	3314	0	0	0	3314	37261	33566	27175	22556	18388	499.69	62.03	76.62	2386	47	0	0	2433
23	37261	33566	23862	17286	13223	368.74	45.77	64.39	2705	42	0	0	2747	37261	33566	25842	23033	19461	512.93	63.67	82.70	2321	40	0	0	2361
24	37261	33566	23890	19201	14928	418.95	52.01	73.07	2768	40	0	0	2808	37261	33566	25554	22736	19300	505.02	62.69	82.35	2273	42	0	0	2315
25	37261	33566	23871	19711	16221	440.55	54.69	76.90	2845	42	0	0	2887	37261	33566	25558	22300	16594	483.14	59.97	78.77	2311	39	0	0	2350
26	37261	33566	23377	19932	17021	451.06	55.99	80.39	2930	44	0	0	2974	37261	33566	25572	21138	16594	456.42	56.66	74.37	2436	5	0	80	2521
27	37261	33566	23873	20573	17780	465.57	57.79	81.26	1424	42	1808	0	3274	37261	33566	25072	21535	18050	479.16	59.48	79.63	2316	5	219	0	2540
28	37261	33566	23846	20404	17795	466.80	57.95	81.57	2929	38	0	0	2967	37261	33566	24256	21798	19407	502.95	62.43	86.40	2646	5	1911	0	4562
29	37261	33566	22684	20436	18588	473.91	58.83	87.05	3007	44	70	0	3121	37261	33566	22895	21505	19905	501.60	62.27	91.29	2281	4	2208	0	4493
30	37261	33566	23777	20980	17938	467.82	58.07	81.98	2674	40	110	0	2824	37261	33566	23160	21830	20373	508.42	63.11	91.47	2732	5	2062	0	4799
31	37261	33566	22379	20740	13430	443.09	55.00	82.50	2928	40	0	0	2968													

Source: NPCC DLR

TABLE 99

Sector-wise Generation Capacity (MW) and Daily Energy Generation (GWh)

July, 2020																								
Day	GENCOs								IPPs Thermal								Nuclear							
	Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy %		Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)	
	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	5782	3852	2179	1534	1292	34.96	37.81	66.84	17166	15558	13228	11014	8546	240.90	64.52	75.88	1345	1246	1198	1198	1191	28.66	95.85	99.69
2	5782	3852	2263	1734	1455	39.03	42.22	71.88	17166	15558	12486	11305	9474	250.40	67.06	83.56	1345	1246	1198	1198	1193	28.71	96.00	99.84
3	5782	3852	2148	1666	1404	38.66	41.81	75.00	17166	15558	12871	11098	9359	254.37	68.12	82.35	1345	1246	1198	1198	1196	28.71	96.01	99.85
4	5782	3852	2556	1704	355	33.97	36.74	55.38	17166	15558	13284	11160	4587	211.59	56.67	66.37	1345	1246	1126	1198	1064	27.78	92.90	102.80
5	5782	3852	2547	1275	193	19.94	21.57	32.61	17166	15558	12717	9070	6007	181.51	48.61	59.47	1345	1246	1186	1186	1069	27.30	91.28	95.90
6	5782	3852	2378	1575	977	33.66	36.41	58.98	17166	15558	13197	10787	7977	225.84	60.48	71.30	1345	1246	1189	1189	1120	28.38	94.90	99.45
7	5782	3852	2655	1888	1190	37.87	40.96	59.42	17166	15558	12955	11651	9806	256.76	68.76	82.58	1345	1246	925	1074	925	22.62	75.65	101.91
8	5782	3852	2389	1996	1590	44.47	48.11	77.57	17166	15558	12863	11255	8705	244.72	65.54	79.27	1345	1246	925	925	923	22.19	74.19	99.94
9	5782	3852	1864	1762	1488	40.96	44.31	91.56	17166	15558	12508	11568	9610	256.94	68.81	85.59	1345	1246	923	926	923	22.16	74.11	100.05
10	5782	4027	1831	1686	1181	38.80	40.15	88.31	17166	15703	12546	11373	7914	252.77	67.07	83.95	1345	1246	923	923	921	22.12	73.98	99.86
11	5782	3852	2029	1538	948	33.06	35.77	67.91	17166	15558	12617	10454	5194	215.59	57.74	71.20	1345	1246	923	923	765	21.90	73.23	98.86
12	5782	3852	2072	1060	779	21.77	23.55	43.78	17166	15558	12885	8089	5699	167.01	44.73	54.01	1345	1246	923	923	726	21.09	70.52	95.19
13	5782	3852	2111	1256	711	24.71	26.73	48.78	17166	15558	12881	10776	7343	223.41	59.83	72.27	1345	1246	923	923	923	22.15	74.08	100.00
14	5782	3852	2218	1388	1157	32.71	35.39	61.44	17166	15558	12914	11710	9791	260.47	69.76	84.04	1345	1246	923	923	923	22.15	74.08	100.00
15	5782	3852	2518	1609	1299	35.04	37.90	57.97	17166	15558	12742	11662	7480	248.64	66.59	81.31	1345	1246	921	923	921	22.13	74.02	100.14
16	5782	3852	2765	2005	1616	45.50	49.22	68.56	17166	15558	13022	10714	7849	223.24	59.79	71.43	1345	1246	921	921	921	22.10	73.92	100.00
17	5782	3852	2701	1963	1571	44.30	47.92	68.34	17166	15558	12704	10275	7509	219.45	58.77	71.97	1345	1246	921	921	921	22.10	73.92	100.00
18	5782	3852	2413	1951	1830	46.84	50.66	80.88	17166	15558	11867	10795	8564	247.53	66.29	86.91	1345	1246	921	921	919	22.10	73.91	99.99
19	5782	3852	2479	1947	1489	42.55	46.02	71.51	17166	15558	12011	10834	6983	225.38	60.36	78.19	1345	1246	921	921	920	22.10	73.91	99.99
20	5782	3852	2587	1814	1472	40.30	43.59	64.91	17166	15558	11788	9670	6181	189.12	50.65	66.85	1345	1246	921	921	921	22.10	73.92	100.00
21	5782	3852	2877	1651	813	34.34	37.14	49.73	17166	15558	13235	6587	5008	142.34	38.12	44.81	1345	1246	922	922	921	22.11	73.93	99.91
22	5782	3852	3021	1208	813	23.77	25.71	32.77	17166	15558	12889	9380	5981	191.56	51.30	61.93	1345	1246	922	922	922	22.13	74.00	100.00
23	5782	3852	2972	1349	1046	28.90	31.26	40.52	17166	15558	12928	10246	7886	219.99	58.92	70.90	1345	1246	922	925	922	22.03	73.67	99.56
24	5782	3852	2910	1563	1200	32.86	35.54	47.05	17166	15558	13199	10647	7336	230.87	61.83	72.88	1345	1246	919	922	919	22.11	73.93	100.23
25	5782	3852	2977	1583	1436	36.83	39.84	51.55	17166	15558	12591	10559	8701	234.31	62.75	77.54	1345	1246	922	922	919	22.11	73.92	99.90
26	5782	3852	2897	1580	1389	35.59	38.49	51.18	17166	15558	12713	10433	8595	229.30	61.41	75.15	1345	1246	918	920	918	22.06	73.78	100.14
27	5782	3852	2987	1594	1403	36.99	40.01	51.59	17166	15558	13670	11976	9509	262.46	70.29	79.99	1345	1246	920	920	913	22.04	73.70	99.81
28	5782	3852	2908	1683	1480	38.64	41.80	55.38	17166	15558	13864	11741	9788	262.94	70.42	79.02	1345	1246	920	920	913	22.05	73.73	99.85
29	5782	3852	2932	1685	1548	39.16	42.36	55.65	17166	15558	14341	11579	9920	261.42	70.01	75.95	1345	1246	913	919	907	21.96	73.45	100.23
30	5782	3852	2968	1707	1435	38.62	41.78	54.22	17166	15558	14054	11028	8934	250.04	66.96	74.13	1345	1246	916	916	908	21.93	73.33	99.75
31	5782	3852	2914	1713	1465	39.04	42.22	55.82	17166	15558	14745	11282	10237	261.80	70.11	73.98	1345	1246	915	917	899	21.79	72.88	99.24

August, 2020

Day	GENCOs								IPPs Thermal								Nuclear							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy %		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	5782	3852	3060	1529	1260	34.34	37.15	46.76	17166	15558	14753	11343	7584	243.87	65.31	68.88	1345	1246	899	916	869	21.73	72.65	100.69
2	5782	3852	3074	1524	1324	33.67	36.42	45.64	17166	15558	14579	11326	9262	255.72	68.49	73.08	1345	1246	867	912	767	21.28	71.16	102.27
3	5782	3852	3108	1423	1076	31.62	34.20	42.38	17166	15558	13100	10328	8108	229.34	61.42	72.94	1345	1246	906	906	897	21.70	72.57	99.80
4	5782	3852	2646	1315	731	26.54	28.71	41.79	17166	15558	14229	11235	8925	241.67	64.72	70.77	1345	1246	906	907	901	21.74	72.71	99.99
5	5782	3852	2703	1330	1145	29.19	31.58	45.01	17166	15558	13585	11988	10680	274.02	73.39	84.05	1345	1246	905	910	902	21.74	72.69	100.08
6	5782	3852	2654	1195	1142	28.54	30.87	44.81	17166	15558	12250	12047	9470	274.81	73.60	93.47	1345	1246	1097	1121	905	24.35	81.43	92.49
7	5782	3852	2605	1214	1043	27.84	30.12	44.54	17166	15558	13425	11809	9193	262.96	70.42	81.62	1345	1246	1122	1123	1117	26.94	90.07	100.03
8	5782	3852	2856	1403	1150	30.50	33.00	44.50	17166	15558	13963	11870	10322	270.50	72.44	80.72	1345	1246	1217	1219	1122	27.85	93.14	95.36
9	5782	3852	2875	1465	1315	33.96	36.74	49.21	17166	15558	13615	10731	8768	241.65	64.72	73.95	1345	1246	1213	1221	1207	29.20	97.63	100.29
10	5782	3852	2287	1426	821	30.77	33.29	56.06	17166	15558	13960	11061	9631	254.99	68.29	76.11	1345	1246	1211	1214	1198	28.99	96.94	99.74
11	5782	3852	2700	1206	916	27.23	29.46	42.03	17166	15558	13842	12217	10511	274.31	73.46	82.57	1345	1246	1216	1222	1214	29.28	97.92	100.34
12	5782	3852	2678	1322	1009	28.29	30.60	44.01	17166	15558	14114	12169	10969	279.55	74.87	82.52	1345	1246	1216	1219	1211	29.18	97.57	99.97
13	5782	3852	2704	1303	1033	27.88	30.15	42.96	17166	15558	13973	12433	11068	280.44	75.10	83.63	1345	1246	1207	1211	1203	29.02	97.03	100.17
14	5782	3852	2735	1330	1050	27.59	29.85	42.04	17166	15558	13862	11448	9813	254.53	68.17	76.51	1345	1246	1206	1211	896	29.01	97.00	100.21
15	5782	3852	1778	1432	1150	29.86	32.30	69.95	17166	15558	13190	12238	10894	278.41	74.56	87.94	1345	1246	1206	1206	1201	28.93	96.74	99.95
16	5782	3852	1693	1311	1054	28.64	30.98	70.49	17166	15558	13300	11953	11190	278.10	74.48	87.13	1345	1246	1201	1206	1198	28.89	96.62	100.24
17	5782	3852	1669	1328	1073	29.39	31.79	73.37	17166	15558	13418	11881	10353	268.44	71.89	83.36	1345	1246	1198	1201	1188	28.79	96.26	100.12
18	5782	3852	1837	1632	1287	36.86	39.88	83.61	17166	15558	13490	11316	9631	248.54	66.56	76.77	1345	1246	1192	1196	1185	28.63	95.75	100.09
19	5782	3852	1950	1559	1081	35.76	38.68	76.42	17166	15558	13313	10750	7597	220.72	59.11	69.08	1345	1246	1196	1199	1191	28.71	95.99	100.01
20	5782	3852	2282	1142	814	22.38	24.20	40.86	17166	15558	13586	8354	5953	170.54	45.67	52.30	1345	1246	1191	1196	1096	28.10	93.98	98.32
21	5782	3852	2105	1013	805	21.58	23.34	42.71	17166	15558	13768	8524	6360	182.56	48.89	55.25	1345	1246	1185	1191	1185	28.53	95.42	100.33
22	5782	3852	2189	1211	820	23.61	25.54	44.95	17166	15558	13289	10984	6864	208.55	55.85	65.39	1345	1246	1176	1186	1176	28.06	93.82	99.40
23	5782	3852	2130	1447	1013	28.24	30.55	55.23	17166	15558	13121	10748	8433	237.87	63.71	75.54	1345	1246	1172	1181	1171	28.27	94.53	100.49
24	5782	3852	2209	1573	1259	34.30	37.10	64.70	17166	15558	13070	10711	9131	241.61	64.71	77.03	1345	1246	1174	1176	1169	28.16	94.17	99.95
25	5782	3852	2254	1455	1204	32.72	35.39	60.49	17166	15558	13400	10081	8244	223.79	59.93	69.59	1345	1246	1163	1174	1157	28.04	93.75	100.44
26	5782	3852	2260	1205	530	20.25	21.90	37.33	17166	15558	13761	8519	6289	174.53	46.74	52.85	1345	1246	1171	1171	1165	28.06	93.84	99.85
27	5782	3852	2290	530	360	9.29	10.05	16.90	17166	15558	14310	6681	5406	148.35	39.73	43.20	1345	1246	870	1171	870	25.40	84.92	121.62
28	5782	3852	2281	406	200	7.64	8.26	13.96	17166	15558	13841	7593	5028	146.50	39.24	44.10	1345	1246	865	870	670	19.31	64.56	93.00
29	5782	3852	2300	873	406	15.69	16.97	28.42	17166	15558	14406	7813	5734	160.04	42.86	46.29	1345	1246	860	885	860	20.78	69.49	100.68
30	5782	3852	2229	785	384	13.50	14.61	25.24	17166	15558	14386	7312	4837	141.92	38.01	41.11	1345	1246	1160	1161	900	26.92	90.00	96.68
31	5782	3852	2223	601	384	11.42	12.35	21.40	17166	15558	14183	6390	3849	120.13	32.17	35.29	1345	1246	1004	1161	1001	26.65	89.13	110.61

September, 2020

Day	GENCOs								IPPs Thermal								Nuclear							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy %		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	5782	3852	2223	600	385	12.76	13.81	23.92	17166	15558	14142	5428	3226	101.55	27.20	29.92	1345	1246	925	1149	841	24.08	80.54	108.49
2	5782	3852	2073	682	505	14.09	15.24	28.32	17166	15558	13416	6939	3854	128.73	34.48	39.98	1345	1246	1085	1085	945	24.56	82.14	94.33
3	5782	3852	1723	686	505	14.78	15.98	35.74	17166	15558	14079	7097	5366	154.37	41.34	45.69	1345	1246	768	1085	668	23.52	78.65	127.60
4	5782	3852	1680	605	430	12.11	13.10	30.04	17166	15558	14364	6241	4285	129.22	34.61	37.48	1345	1246	894	996	856	21.48	71.83	100.12
5	5782	3852	1884	828	464	14.52	15.71	32.12	17166	15558	13961	7472	4495	150.21	40.23	44.83	1345	1246	1060	1060	913	20.82	69.61	81.82
6	5782	3852	2230	811	630	17.03	18.42	31.82	17166	15558	14209	7140	5192	150.06	40.19	44.00	1345	1246	1061	1061	967	24.79	82.89	97.34
7	5782	3852	1880	976	613	17.55	18.98	38.89	17166	15558	13694	8627	5019	163.09	43.68	49.63	1345	1246	1072	1072	1056	25.56	85.46	99.33
8	5782	3852	1872	839	616	16.76	18.13	37.31	17166	15558	13629	9644	5987	193.87	51.92	59.27	1345	1246	928	1072	915	23.05	77.06	103.47
9	5782	3852	1864	964	625	19.19	20.75	42.88	17166	15558	13396	10127	7333	216.77	58.05	67.42	1345	1246	897	933	897	22.01	73.59	102.22
10	5782	3852	1944	1056	730	22.63	24.48	48.51	17166	15558	13917	10502	8763	232.45	62.25	69.59	1345	1246	925	930	920	22.21	74.27	100.05
11	5782	3852	1795	1054	762	21.19	22.92	49.17	17166	15558	13962	10598	8637	237.61	63.63	70.91	1345	1246	931	934	920	22.35	74.73	100.02
12	5782	3852	1707	913	755	21.28	23.02	51.95	17166	15558	13797	11509	9548	258.92	69.34	78.19	1345	1246	932	935	920	22.37	74.80	100.00
13	5782	3852	1562	945	680	20.95	22.66	55.90	17166	15558	13601	11288	9959	255.90	68.53	78.39	1345	1246	932	932	925	22.34	74.71	99.88
14	5782	3852	1993	1473	700	28.07	30.36	58.69	17166	15558	13050	11269	10110	260.59	69.79	83.20	1345	1246	933	934	922	21.35	71.39	95.34
15	5782	3852	2072	1578	1326	37.18	40.22	74.76	17166	15558	13446	11307	10173	264.54	70.85	81.98	1345	1246	933	933	933	22.39	74.88	100.00
16	5782	3852	2078	1573	1365	37.12	40.15	74.41	17166	15558	13507	10998	8754	248.73	66.61	76.73	1345	1246	933	933	933	22.39	74.88	100.00
17	5782	3852	2043	1581	1367	35.98	38.92	73.37	17166	15558	13399	10988	10100	254.49	68.16	79.14	1345	1246	933	936	918	22.36	74.78	99.87
18	5782	3852	2045	1535	1119	34.72	37.56	70.74	17166	15558	13492	11111	10126	255.91	68.54	79.03	1345	1246	933	933	933	22.39	74.88	100.00

Day	GENCOs								IPPs Thermal								Nuclear							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy %		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
19	5782	3852	2183	1680	1521	38.47	41.61	73.43	17166	15558	12483	11152	10178	259.81	69.58	86.72	1345	1246	933	933	933	22.39	74.88	100.00
20	5782	3852	2111	1677	1594	39.45	42.68	77.89	17166	15558	13421	11268	10441	262.00	70.17	81.34	1345	1246	933	933	933	22.39	74.88	100.00
21	5782	3852	2150	1642	1280	38.71	41.87	75.04	17166	15558	12946	11426	9373	253.55	67.90	81.61	1345	1246	933	935	933	22.40	74.89	100.01
22	5782	3852	1851	1646	1382	37.04	40.07	83.40	17166	15558	13006	11149	9738	255.48	68.42	81.85	1345	1246	933	933	933	22.39	74.88	100.00
23	5782	3852	1599	1324	463	25.50	27.59	66.45	17166	15558	12222	11238	10019	251.74	67.42	85.82	1345	1246	933	933	933	22.39	74.88	100.00
24	5782	3852	1820	1662	1346	38.40	41.54	87.93	17166	15558	13390	10980	9959	254.12	68.06	79.08	1345	1246	933	936	933	22.40	74.89	100.01
25	5782	3852	1891	1671	1108	35.16	38.03	77.46	17166	15558	13534	10671	7029	226.46	60.65	69.72	1345	1246	933	933	933	22.39	74.88	100.00
26	5782	3852	1889	1249	800	26.61	28.78	58.69	17166	15558	13406	9391	7452	208.63	55.87	64.84	1345	1246	933	933	933	22.39	74.88	100.00
27	5782	3852	1795	869	697	17.62	19.06	40.90	17166	15558	14313	9602	8144	216.28	57.92	62.96	1345	1246	933	933	933	22.39	74.88	100.00
28	5782	3852	1827	1100	696	20.95	22.66	47.77	17166	15558	14464	10235	8706	227.30	60.87	65.48	1345	1246	933	933	933	22.39	74.88	100.00
29	5782	3852	1771	964	708	19.81	21.43	46.62	17166	15558	14353	10308	8092	224.60	60.15	65.20	1345	1246	933	933	933	22.39	74.88	100.00
30	5782	3852	1755	1134	688	21.58	23.35	51.25	17166	15558	12944	10254	8759	225.51	60.39	72.59	1345	1246	933	933	933	22.39	74.88	100.00

October, 2020

Day	GENCOs								IPPs Thermal								Nuclear							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy %		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	5782	3852	1236	725	604	16.26	17.59	54.81	17166	15558	11468	9808	7796	217.80	58.33	79.13	1345	1246	933	958	933	22.39	74.88	100.00
2	5782	3852	1455	707	508	14.42	15.60	41.30	17166	15558	12694	8882	6829	190.03	50.89	62.37	1345	1246	960	960	933	22.39	74.89	97.20
3	5782	3852	1718	929	846	21.01	22.73	50.97	17166	15558	12811	9325	7146	192.74	51.62	62.69	1345	1246	933	934	933	22.40	74.90	100.02
4	5782	3852	1777	927	846	21.25	22.98	49.83	17166	15558	12850	8340	6771	186.87	50.05	60.59	1345	1246	933	934	933	22.41	74.92	100.06
5	5782	3852	1685	936	851	21.86	23.65	54.07	17166	15558	12735	8676	6976	194.09	51.98	63.51	1345	1246	934	934	933	22.41	74.95	99.99
6	5782	3852	1867	1102	859	23.76	25.70	53.02	17166	15558	12726	8304	7337	191.85	51.38	62.82	1345	1246	934	934	934	22.42	74.96	100.00
7	5782	3852	1862	1105	996	25.41	27.49	56.85	17166	15558	12002	8268	7796	192.27	51.49	66.75	1345	1246	934	934	933	22.41	74.94	99.98
8	5782	3852	1872	1102	923	23.44	25.35	52.16	17166	15558	12022	8314	7268	188.09	50.37	65.19	1345	1246	933	934	933	22.40	74.91	100.04
9	5782	3852	1872	938	766	21.95	23.74	48.85	17166	15558	12643	8852	7522	200.51	53.70	66.08	1345	1246	933	934	933	22.42	74.96	100.11
10	5782	3852	1901	1216	859	23.98	25.94	52.56	17166	15558	12393	8741	7082	192.39	51.53	64.68	1345	1246	933	934	933	22.38	74.85	99.96
11	5782	3852	2007	1220	1078	28.66	31.01	59.50	17166	15558	12527	8089	6452	181.89	48.71	60.50	1345	1246	934	934	933	22.42	74.96	100.00
12	5782	3852	2042	1219	926	27.12	29.34	55.33	17166	15558	12863	8709	6992	193.37	51.79	62.64	1345	1246	934	937	934	22.42	74.96	100.00
13	5782	3852	2018	981	725	21.75	23.52	44.91	17166	15558	13488	8519	7385	190.95	51.14	58.99	1345	1246	934	934	934	22.42	74.96	100.00
14	5782	3852	1725	667	420	12.11	13.10	29.26	17166	15558	13102	8547	6836	190.66	51.06	60.63	1345	1246	934	934	934	22.42	74.96	100.00
15	5782	3852	1750	587	435	12.75	13.80	30.37	17166	15558	13100	8407	6361	179.70	48.13	57.16	1345	1246	934	937	934	22.42	74.98	100.03
16	5782	3852	1755	489	435	10.82	11.71	25.70	17166	15558	13392	7977	6005	167.01	44.73	51.96	1345	1246	934	934	650	22.42	74.96	100.00
17	5782	3852	1853	722	435	11.37	12.30	25.57	17166	15558	13472	7911	5829	165.49	44.32	51.18	1345	1246	934	934	934	22.42	74.96	100.00
18	5782	3852	2172	834	720	18.05	19.53	34.63	17166	15558	13160	7304	5315	154.17	41.29	48.81	1345	1246	934	934	934	22.42	74.96	100.00
19	5782	3852	2174	838	720	18.64	20.16	35.73	17166	15558	12952	7500	5755	162.08	43.41	52.14	1345	1246	914	937	850	22.16	74.11	101.03
20	5782	3852	2070	922	720	19.00	20.56	38.25	17166	15558	12330	8383	5677	168.41	45.10	56.91	1345	1246	934	934	934	22.42	74.96	100.00
21	5782	3852	2173	908	642	19.03	20.58	36.48	17166	15558	13012	8241	6235	177.75	47.60	56.92	1345	1246	934	934	934	22.42	74.96	100.00
22	5782	3852	2192	1027	776	21.86	23.65	41.56	17166	15558	12876	8027	6236	180.14	48.24	58.29	1345	1246	934	934	931	22.42	74.96	100.00
23	5782	3852	2190	1031	818	22.29	24.11	42.41	17166	15558	12822	8078	6166	174.13	46.63	56.58	1345	1246	934	934	912	22.27	74.45	99.33
24	5782	3852	2168	1400	899	26.05	28.18	50.08	17166	15558	12616	8033	6619	177.87	47.64	58.75	1345	1246	924	999	924	22.46	75.09	101.26
25	5782	3852	2222	1108	820	23.53	25.46	44.13	17166	15558	12549	7593	5796	164.15	43.96	54.50	1345	1246	1049	1070	612	24.00	80.26	95.33
26	5782	3852	2238	1031	700	21.33	23.08	39.72	17166	15558	12595	7321	5446	162.14	43.42	53.64	1345	1246	1139	1139	1075	27.05	90.44	98.94
27	5782	3852	2210	685	385	15.50	16.77	29.22	17166	15558	13916	7797	4672	166.06	44.47	49.72	1345	1246	1133	1149	1133	27.28	91.22	100.32
28	5782	3852	1610	687	0	11.97	12.95	30.98	17166	15558	13021	7532	4988	161.39	43.22	51.64	1345	1246	1066	1206	889	26.40	88.28	103.18
29	5782	3852	1857	802	300	13.85	14.98	31.07	17166	15558	12777	7698	6427	171.03	45.80	55.77	1345	1246	902	964	869	21.73	72.68	100.39
30	5782	3852	1924	769	457	11.89	12.86	25.75	17166	15558	12220	6307	4590	129.68	34.73	44.22	1345	1246	1165	1213	996	26.70	89.28	95.48
31	5782	3852	2268	1143	769	22.14	23.95	40.69	17166	15558	12427	6173	3243	124.50	33.34	41.75	1345	1246	1207	1213	1207	29.02	97.06	100.19

November, 2020

Day	GENCOs								IPPs Thermal								Nuclear							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy %		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	5782	3852	1381	354	236	7.57	8.19	22.85	17166	15558	11331	6669	4986	143.03	38.30	52.60	1345	1246	1208	1208	1205	28.98	96.90	99.94
2	5782	3852	1251	256	157	5.75	6.22	19.16	17166	15558	11926	7093	4900	150.10	40.20	52.44	1345	1246	1203	1205	1202	28.89	96.62	100.07
3	5782	3852	1005	157	0	1.52	1.64	6.30	17166	15558	12672	7255	3947	136.23	36.48	44.79	1345	1246	1200	1203	930	28.84	96.44	100.14
4	5782	3852	1340	0	0	0.00	0.00	0.00	17166	15558	12662	6272	3838	120.26	32.21	39.58	1345	1246	1195	1197	1118	28.41	95.01	99.07
5	5782	3852	1320	168	0	1.92	2.08	6.07	17166	15558	12694	6225	4125	129.27	34.62	42.43	1345	1246	930	1098	930	22.72	75.98	101.79
6	5782	3852	1317	175	158	3.97	4.30	12.56	17166	15558	13041	5927	4025	121.07	32.42	38.68	1345	1246	930	932	619	22.04	73.70	98.75
7	5782	3852	1317	170	0	2.79	3.02	8.83	17166	15558	13053	6512	4016	122.71	32.86	39.17	1345	1246	935	935	736	21.71	72.58	96.72
8	5782	3852	1340	0	0	0.00	0.00	0.00	17166	15558	13398	5676	3995	117.97	31.59	36.69	1345	1246	935	935	785	21.47	71.80	95.69
9	5782	3852	1420	0	0	0.01	0.01	0.03	17166	15558	13352	6137	4010	125.77	33.68	39.25	1345	1246	935	938	736	21.16	70.77	94.31
10	5782	3852	1875	25	0	0.29	0.31	0.63	17166	15558	12859	6304	4229	127.58	34.17	41.34	1345	1246	935	935	935	22.44	75.04	100.00
11	5782	3852	2200	365	0	4.80	5.19	9.08	17166	15558	13493	5929	3994	114.99	30.80	35.51	1345	1246	935	937	935	22.44	75.04	100.00
12	5782	3852	2240	0	0	0.00	0.00	0.00	17166	15558	13456	6014	3798	119.93	32.12	37.13	1345	1246	935	935	935	22.44	75.04	100.00
13	5782	3852	2240	0	0	0.00	0.00	0.00	17166	15558	12902	5946	3704	116.80	31.28	37.72	1345	1246	935	935	935	22.44	75.04	100.00
14	5782	3852	2240	0	0	0.00	0.00	0.00	17166	15558	13035	5497	3381	107.48	28.79	34.36	1345	1246	935	935	736	22.09	73.87	98.44
15	5782	3852	2240	0	0	0.00	0.00	0.00	17166	15558	13792	3970	3028	81.06	21.71	24.49	1345	1246	936	736	736	17.66	59.07	78.63
16	5782	3852	1500	0	0	0.00	0.00	0.00	17166	15558	12824	5908	2960	99.43	26.63	32.31	1345	1246	935	935	736	21.13	70.65	94.15
17	5782	3852	1500	0	0	0.00	0.00	0.00	17166	15558	12849	5302	3355	107.36	28.75	34.82	1345	1246	935	935	736	21.17	70.80	94.34
18	5782	3852	1500	0	0	0.00	0.00	0.00	17166	15558	13005	6585	3133	122.22	32.73	39.16	1345	1246	935	935	935	22.44	75.04	100.00
19	5782	3852	1854	354	0	4.08	4.42	9.17	17166	15558	13674	6536	4374	135.03	36.16	41.15	1345	1246	935	941	925	22.45	75.07	100.04
20	5782	3852	2180	390	300	7.53	8.15	14.40	17166	15558	13909	5751	3416	111.54	29.87	33.41	1345	1246	935	938	735	21.55	72.06	96.02
21	5782	3852	2180	300	300	7.17	7.76	13.71	17166	15558	13753	5483	3220	104.16	27.90	31.56	1345	1246	935	935	736	20.66	69.09	92.08
22	5782	3852	1800	300	0	5.73	6.20	13.27	17166	15558	13122	4816	3276	95.09	25.46	30.19	1345	1246	932	935	736	20.55	68.72	91.87
23	5782	3852	1840	300	300	7.26	7.86	16.45	17166	15558	14711	5370	3148	105.09	28.14	29.76	1345	1246	935	939	835	21.79	72.88	97.12
24	5782	3852	1840	300	300	7.28	7.88	16.49	17166	15558	14356	4820	3141	91.60	24.53	26.59	1345	1246	835	935	756	20.85	69.74	104.06
25	5782	3852	2675	670	300	9.19	9.94	14.31	17166	15558	14984	4418	2380	94.49	25.31	26.28	1345	1246	835	835	736	19.29	64.49	96.23
26	5782	3852	2860	698	600	14.56	15.75	21.22	17166	15558	14923	4217	2243	75.48	20.22	21.08	1345	1246	902	935	730	19.78	66.13	91.35
27	5782	3852	2975	715	620	16.38	17.71	22.93	17166	15558	14949	3715	2305	74.75	20.02	20.84	1345	1246	836	935	835	20.90	69.88	104.16
28	5782	3852	2924	784	620	17.13	18.53	24.41	17166	15558	14417	4305	2647	87.16	23.34	25.19	1345	1246	936	936	836	20.80	69.57	92.61
29	5782	3852	2750	715	590	14.75	15.95	22.35	17166	15558	15009	4427	3200	86.97	23.29	24.14	1345	1246	836	936	836	20.90	69.90	104.18
30	5782	3852	2860	715	590	14.84	16.05	21.62	17166	15558	15014	6565	3039	110.82	29.68	30.75	1345	1246	930	936	736	20.21	67.57	90.53

December, 2020

Day	GENCOs								IPPs Thermal								Nuclear							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy %		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	5782	3852	2998	718	315	14.44	15.62	20.07	17166	15558	13457	6479	3037	121.48	32.53	37.61	1345	1246	835	836	835	20.05	67.05	100.06
2	5782	3852	2630	360	300	7.75	8.39	12.28	17166	15558	13618	6855	4426	136.23	36.48	41.68	1345	1246	935	936	836	21.90	73.22	97.57
3	5782	3852	3008	380	300	8.12	8.78	11.24	17166	15558	13602	6516	3975	129.63	34.72	39.71	1345	1246	935	936	932	22.46	75.10	100.08
4	5782	3852	2955	368	300	8.14	8.81	11.48	17166	15558	12969	6772	3744	127.15	34.05	40.85	1345	1246	935	936	935	22.44	75.05	100.01
5	5782	3852	2471	794	300	12.62	13.65	21.29	17166	15558	13068	6577	3956	128.82	34.50	41.07	1345	1246	935	936	836	21.82	72.95	97.22
6	5782	3852	3089	1167	513	17.12	18.52	23.10	17166	15558	13137	6043	3900	117.78	31.54	37.36	1345	1246	936	936	817	21.67	72.48	96.48
7	5782	3852	3286	966	404	19.05	20.61	24.16	17166	15558	12459	6052	3706	126.35	33.84	42.26	1345	1246	936	938	786	21.47	71.80	95.58
8	5782	3852	2920	597	403	12.53	13.55	17.88	17166	15558	13038	6520	3975	134.77	36.09	43.07	1345	1246	935	935	777	21.35	71.40	95.15
9	5782	3852	2924	625	403	12.77	13.81	18.20	17166	15558	13354	6276	4256	128.80	34.49	40.19	1345	1246	950	1010	786	21.59	72.21	94.71
10	5782	3852	2925	600	406	12.85	13.89	18.30	17166	15558	13746	6091	4254	124.80	33.42	37.83	1345	1246	1154	1158	816	24.62	82.33	88.90
11	5782	3852	2942	621	135	9.72	10.51	13.76	17166	15558	13148	6195	3893	124.10	33.24	39.33	1345	1246	1158	1158	958	25.69	85.90	92.43
12	5782	3852	2807	690	379	11.22	12.14	16.66	17166	15558	12665	6609	3813	132.07	35.37	43.45	1345	1246	940	940	744	21.47	71.79	95.16
13	5782	3852	2972	977	418	17.21	18.62	24.13	17166	15558	12796	6188	4137	123.13	32.98	40.09	1345	1246	939	940	939	22.54	75.38	100.03
14	5782	3852	2520	1021	748	22.17	23.98	36.65	17166	15558	14399	7569	2871	135.46	36.28	39.20	1345	1246	942	942	939	22.55	75.41	99.75
15	5782	3852	2592	947	718	20.48	22.15	32.92	17116	15558	14449	6824	3880	142.72	38.22	41.16	1345	1246	940	940	939	22.55	75.40	99.94
16	5782	3852	2526	1054	620	21.50	23.26	35.47	17116	15558	13648	7413	3735	138.40	37.06	42.25	1345	1246	940	940	939	22.54	75.39	99.93
17	5782	3852	2602	1109	613	20.32	21.98	32.55	17116	15558	14379	7715	4193	145.21	38.89	42.08	1345	1246	1006	1098	740	22.17	74.12	91.80
18	5782	3852	2650	1150	625	21.25	22.98	33.41	17116	15558	15020	7724	4549	153.08	41.00	42.47	1345	1246	1174	1174	949	26.74	89.41	94.89
19	5782	3852	2600	1101	620	22.59	24.43	36.20	17116	15558	15002	8161	4352	154.98	41.51	43.05	1345	1246	1254	1254	1174	29.44	98.46	97.83
20	5782	3852	2599	1101	620	23.98	25.94	38.45	17116	15558	14394	7701	4083	153.98	41.24	44.58	1345	1246	940	1178	940	24.86	83.13	110.19
21	5782	3852	2481	981	620	20.76	22.46	34.87	17116	15558	14313	8413	4330	166.35	44.55	48.43	1345	1246	939	943	929	22.53	75.35	99.99
22	5782	3852	2469	1079	620	22.52	24.36	38.01	17116	15558	13453	8401	4596	169.58	45.41	52.52	1345	1246	939	940	939	22.55	75.40	100.06

Day	GENCOs								IPPs Thermal								Nuclear							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy %		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
23	5782	3852	2745	1089	620	19.61	21.21	29.76	17116	15558	14405	8318	3808	154.02	41.25	44.55	1345	1246	939	940	759	22.17	74.12	98.35
24	5782	3852	2786	1186	620	19.04	20.60	28.48	17116	15558	14535	7401	3755	130.33	34.90	37.36	1345	1246	940	943	740	21.58	72.18	95.67
25	5782	3852	2626	1163	611	22.94	24.81	36.39	17116	15558	14736	6846	3952	134.85	36.11	38.13	1345	1246	940	940	939	22.56	75.43	99.98
26	5782	3852	2625	1141	779	24.27	26.25	38.52	17116	15558	14628	7781	3752	142.49	38.16	40.59	1345	1246	1253	1254	939	27.01	90.32	89.81
27	5782	3852	2714	1215	779	24.67	26.68	37.87	17116	15558	14524	8073	3614	144.76	38.77	41.53	1345	1246	1254	1254	1043	28.57	95.53	94.92
28	5782	3852	2715	1215	856	25.84	27.95	39.66	17116	15558	14542	8709	3964	168.23	45.05	48.20	1345	1246	1254	1254	1055	28.86	96.52	95.90
29	5782	3852	2990	1208	748	25.79	27.90	35.94	17116	15558	14540	8825	4267	167.41	44.84	47.98	1345	1246	1254	1254	1253	30.08	100.59	99.95
30	5782	3852	2745	1192	748	22.54	24.38	34.21	17116	15558	14454	8534	4022	166.08	44.48	47.88	1345	1246	1253	1254	1253	30.09	100.61	100.05
31	5782	3852	3003	1200	751	25.39	27.46	35.23	17116	15558	14729	9026	4331	164.33	44.01	46.49	1345	1246	1254	1256	1253	30.10	100.64	100.00

January, 2021

Day	GENCOs								IPPs Thermal								Nuclear							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy %		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	5782	3852	3162	1157	1002	98.47	106.51	129.75	17116	15558	14662	8897	4637	169.92	45.51	48.29	1345	1246	1254	1254	1254	30.10	100.64	100.00
2	5782	3852	3180	1155	948	95.80	103.63	125.53	17116	15655	15269	9011	4233	175.30	46.66	47.84	1345	1246	1254	1254	1254	30.10	100.64	100.00
3	5782	3852	2902	921	598	90.60	98.00	130.10	17116	15558	15128	8722	4730	173.92	46.58	47.90	1345	1246	1254	1254	1154	30.10	100.64	100.00
4	5782	3852	2754	849	652	92.23	99.77	139.55	17116	15558	15218	8840	4729	174.20	46.65	47.69	1345	1246	1253	1254	1244	30.09	100.63	100.07
5	5782	3852	2685	780	631	93.73	101.39	145.46	17116	15558	15100	8338	4062	158.36	42.41	43.70	1345	1246	1254	1254	1254	30.10	100.64	100.00
6	5782	3852	2685	780	630	95.45	103.25	148.13	17116	15558	14455	8787	4645	168.65	45.17	48.61	1345	1246	1254	1254	1254	30.10	100.64	100.00
7	5782	3852	3040	1140	491	88.86	96.12	121.80	17116	15558	15094	8344	4507	160.67	43.03	44.35	1345	1246	1254	1254	1254	30.09	100.63	99.98
8	5782	3852	2454	1077	689	87.46	94.61	148.50	17116	15558	13644	7767	4474	159.14	42.62	48.60	1345	1246	1255	1255	1253	30.11	100.68	99.95
9	5782	3852	2360	1078	0	92.39	99.94	163.15	17116	15558	14203	8449	0	159.49	42.71	46.79	1345	1246	1258	1258	0	28.28	94.57	93.66
10	5782	3852	1620	430	0	18.36	19.86	47.23	17116	15558	7793	5340	0	54.14	14.50	28.95	1345	1246	0	0	0	0.00	0.00	
11	5782	3852	1530	691	250	73.11	79.09	199.10	17116	15558	10506	9689	5147	169.72	45.45	67.31	1345	1246	287	287	0	2.83	9.48	41.14
12	5782	3852	2089	701	630	96.41	104.29	192.30	17116	15558	14409	9943	6405	206.16	55.21	59.61	1345	1246	805	1028	283	15.28	51.11	79.10
13	5782	3852	2092	692	487	95.35	103.14	189.92	17116	15655	14257	9536	5057	189.34	50.39	55.34	1345	1246	1256	1256	1082	29.08	97.23	96.45
14	5782	3852	2089	689	583	96.62	104.51	192.72	17116	15558	13855	9542	5238	196.59	52.65	59.12	1345	1246	1256	1257	1256	30.15	100.82	100.01
15	5782	3852	2127	747	351	79.65	86.16	156.04	17116	15558	13996	9406	5316	189.71	50.81	56.47	1345	1246	1254	1256	1254	30.12	100.72	100.08
16	5782	3852	2149	749	610	95.47	103.27	185.11	17116	15558	14041	9240	4888	180.17	48.25	53.47	1345	1246	1254	1254	1254	30.10	100.64	100.00
17	5782	3852	2213	1016	511	72.28	78.18	136.08	17116	15558	14187	9141	5418	183.58	49.17	53.92	1345	1246	1254	1254	1254	30.10	100.64	100.00
18	5782	3852	2171	816	629	94.13	101.82	180.69	17116	15558	14342	9140	4761	177.56	47.55	51.58	1345	1246	1254	1254	1254	30.10	100.64	100.00
19	5782	3852	2213	818	630	92.15	99.68	173.52	17116	15558	14309	9082	4772	181.06	48.49	52.72	1345	1246	1254	1276	1253	30.10	100.64	100.00
20	5782	3852	2210	817	630	92.94	100.53	175.23	17116	15655	14217	9251	5627	186.30	49.58	54.60	1345	1246	1254	1254	978	30.10	100.64	100.00
21	5782	3852	2140	809	581	87.92	95.11	171.19	17116	15655	14259	8964	5404	184.47	49.10	53.90	1345	1246	1254	1257	1254	30.10	100.64	100.00
22	5782	3852	2145	868	607	83.32	90.13	161.87	17116	15655	14194	9062	4977	180.65	48.08	53.03	1345	1246	1254	1254	1254	30.10	100.64	100.00
23	5782	3852	2194	796	605	80.67	87.26	153.20	17116	15655	14106	8973	4775	178.77	47.58	52.81	1345	1246	1254	1254	1254	30.10	100.64	100.00
24	5782	3852	2195	796	621	91.72	99.22	174.12	17116	15655	13234	8645	5264	176.70	47.03	55.63	1345	1246	1254	1254	1254	30.10	100.64	100.00
25	5782	3852	2194	796	626	93.66	101.31	177.87	17116	15655	12984	9310	4782	178.12	47.41	57.16	1345	1246	1254	1257	1254	30.10	100.64	100.00
26	5782	3852	2196	796	414	84.02	90.89	159.43	17116	15655	12029	8841	5303	175.30	46.66	60.72	1345	1246	1254	1255	1251	30.11	100.69	100.05
27	5782	3852	2126	796	463	85.13	92.09	166.84	17116	15655	14327	8197	5215	165.63	44.08	48.17	1345	1246	1254	1254	1244	29.99	100.28	99.64
28	5782	3852	2226	626	562	94.84	102.58	177.54	17116	15655	14370	8020	4700	167.79	44.66	48.65	1345	1246	1254	1256	1254	30.10	100.66	100.02
29	5782	3852	2073	720	522	87.47	94.62	175.82	17116	15655	14350	8020	4742	159.30	42.40	46.25	1345	1246	1254	1254	1254	30.10	100.64	100.00
30	5782	3852	2263	571	444	92.93	100.52	171.12	17116	15655	14322	8012	4520	161.18	42.90	46.89	1345	1246	1254	1254	1013	29.03	97.07	96.45
31	5782	3852	2309	576	444	93.95	101.63	169.54	17116	15655	14299	7539	4459	147.37	39.22	42.94	1345	1246	1254	1254	1254	30.10	100.64	100.00

February, 2021

Day	GENCOs								IPPs Thermal								Nuclear							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy %		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	5782	3852	2319	793	522	17.12	18.51	30.76	17116	15655	13138	7809	4434	155.72	41.45	49.39	1345	1246	1255	1255	1254	30.11	100.67	99.95
2	5782	3852	2289	795	365	17.08	18.48	31.10	17116	15655	12995	7927	4194	154.70	41.17	49.60	1345	1246	1255	1255	1251	30.12	100.72	100.00
3	5782	3852	2289	729	300	13.36	14.46	24.33	17116	15655	13512	8185	4455	159.16	42.36	49.08	1345	1246	1255	1258	1254	30.12	100.72	100.00
4	5782	3852	2191	729	300	12.28	13.28	23.35	17116	15655	12904	7230	4017	144.19	38.38	46.56	1345	1246	1255	1255	1059	29.91	100.02	99.30
5	5782	3852	2192	662	300	11.18	12.10	21.26	17116	15655	13557	6748	3611	124.37	33.10	38.22	1345	1246	1255	1255	955	27.72	92.70	92.04
6	5782	3852	2201	661	300	11.18	12.09	21.16	17116	15655	13529	7133	3536	132.15	35.17	40.70	1345	1246	1255	1255	955	28.57	95.53	94.84
7	5782	3852	2205	547	100	8.71	9.43	16.46	17116	15655	13548	6777	3701	126.47	33.66	38.89	1345	1246	1255	1255	960	28.74	96.09	95.40
8	5782	3852	2127	587	290	10.69	11.56	20.94	17116	15655	13001	7162	3700	132.22	35.19	42.38	1345	1246	1255	1258	955	28.47	95.20	94.52
9	5782	3852	2127	587	0	9.55	10.33	18.70	17116	15655	13946	7385	3938	138.03	36.74	41.24	1345	1246	1255	1255	1255	30.12	100.72	100.00
10	5782	3852	2583	523	265	8.91	9.64	14.37	17116	15655	13861	7281	3860	134.16	35.71	40.33	1345	1246	1255	1255	1180	29.99	100.27	99.55
11	5782	3852	2543	539	265	8.38	9.06	13.73	17116	15655	14161	7179	3652	133.83	35.62	39.38	1345	1246	1255	1255	1009	27.99	93.61	92.94
12	5782	3852	2368	688	0	9.05	9.79	15.92	17116	15655	14088	6735	3019	121.46	32.33	35.92	1345	1246	1255	1255	976	27.62	92.36	91.70
13	5782	3852	2758	593	65	10.07	10.89	15.21	17116	15655	13489	6647	2808	119.53	31.81	36.92	1345	1246	1255	1255	955	27.02	90.37	89.72
14	5782	3852	2760	545	0	9.74	10.53	14.70	17116	15655	13450	6025	2771	109.10	29.04	33.80	1345	1246	1255	1255	955	27.22	91.01	90.36
15	5782	3852	2645	390	0	4.35	4.70	6.85	17116	15655	13510	7128	2691	130.26	34.67	40.18	1345	1246	1255	1255	955	27.43	91.74	91.08
16	5782	3852	2477	438	250	8.33	9.01	14.01	17116	15655	13429	7071	3022	129.31	34.42	40.12	1345	1246	1255	1255	955	27.63	92.41	91.75
17	5782	3852	2451	390	0	7.58	8.20	12.89	17116	15655	12707	6818	3143	124.80	33.21	40.92	1345	1246	1255	1257	955	28.00	93.64	92.97
18	5782	3852	2553	488	0	4.44	4.80	7.25	17116	15655	13663	7058	3368	130.44	34.72	39.78	1345	1246	937	1257	837	23.72	79.32	105.48
19	5782	3852	2454	391	0	4.96	5.37	8.43	17116	15655	13585	7046	3857	134.37	35.76	41.21	1345	1246	936	937	787	21.54	72.04	95.90
20	5782	3852	2573	547	194	7.41	8.01	11.99	17116	15655	13590	7100	4439	144.60	38.49	44.33	1345	1246	1106	1155	937	24.28	81.19	91.47
21	5782	3852	2606	231	194	5.16	5.58	8.25	17116	15655	14253	6460	4582	135.12	35.96	39.50	1345	1246	1255	1255	1155	29.47	98.54	97.83
22	5782	3852	2575	351	200	5.96	6.45	9.65	17116	15655	13358	7341	3966	144.02	38.33	44.92	1345	1246	1255	1256	1255	30.12	100.74	100.01
23	5782	3852	2539	314	104	5.38	5.82	8.83	17116	15655	13608	7451	4376	150.88	40.16	46.20	1345	1246	1255	1256	940	30.14	100.78	100.06
24	5782	3852	2725	512	133	10.22	11.05	15.63	17116	15655	14176	7585	4856	157.40	41.89	46.26	1345	1246	1256	1259	1256	30.15	100.81	100.01
25	5782	3852	2717	512	358	11.14	12.05	17.09	17116	15655	13816	8064	4867	164.00	43.65	49.46	1345	1246	1256	1259	1256	30.15	100.81	100.01
26	5782	3852	2719	763	401	13.15	14.23	20.16	17116	15655	13849	7736	4805	157.36	41.88	47.34	1345	1246	1256	1256	1255	30.14	100.80	100.00
27	5782	3852	2722	507	401	11.27	12.19	17.25	17116	15655	14144	7918	4593	160.06	42.60	47.15	1345	1246	1256	1256	1255	30.14	100.80	100.00
28	5782	3852	2726	506	401	11.15	12.06	17.05	17116	15655	13654	7600	4914	151.16	40.23	46.13	1345	1246	1256	1256	1256	30.14	100.80	100.00

March, 2021

Day	GENCOs								IPPs Thermal								Nuclear							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy %		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	5782	3852	2724	522	401	11.32	12.25	17.32	17116	15655	13794	8490	4915	169.92	45.23	51.33	1345	1246	1256	1256	1256	30.14	100.80	99.99
2	5782	3852	2725	517	395	11.18	12.09	17.09	17116	15655	13347	8518	5097	176.49	46.97	55.10	1345	1246	1256	1256	1256	29.87	99.90	99.10
3	5782	3852	2724	518	401	11.35	12.28	17.36	17116	15655	12764	8471	5280	178.77	47.58	58.36	1345	1246	1256	1256	1176	28.78	96.25	95.48
4	5782	3852	2717	514	401	11.46	12.40	17.58	17116	15655	13378	8961	5597	183.42	48.82	57.13	1345	1246	1256	1256	1256	30.16	100.87	100.07
5	5782	3852	2718	514	401	11.15	12.06	17.09	17116	15655	13519	8904	5721	181.44	48.29	55.92	1345	1246	1256	1256	1255	30.14	100.79	99.99
6	5782	3852	2708	497	102	8.99	9.72	13.83	17116	15655	13447	8925	5523	177.30	47.19	54.94	1345	1246	1256	1256	1255	30.13	100.74	99.94
7	5782	3852	2739	498	401	10.89	11.78	16.57	17116	15655	13476	7321	5315	155.64	41.42	48.12	1345	1246	1256	1256	1255	30.14	100.80	100.00
8	5782	3852	2766	511	402	11.30	12.23	17.03	17116	15655	13600	8389	5590	177.11	47.14	54.26	1345	1246	1256	1256	1255	30.14	100.78	99.98
9	5782	3852	2760	510	402	11.46	12.39	17.30	17116	15655	13518	8630	6183	187.35	49.86	57.75	1345	1246	1240	1256	1186	29.60	98.97	99.45
10	5782	3852	2751	504	401	11.27	12.20	17.08	17116	15655	13173	8646	6216	189.27	50.37	59.87	1345	1246	1254	1254	1253	30.09	100.62	99.98
11	5782	3852	2396	502	103	7.00	7.58	12.18	17116	15655	13275	8189	5355	178.24	47.44	55.95	1345	1246	1254	1254	1254	30.10	100.64	100.00
12	5782	3852	2396	104	0	1.88	2.04	3.27	17116	15655	13233	7390	5009	150.10	39.95	47.26	1345	1246	1254	1254	1207	29.91	100.00	99.37
13	5782	3852	2396	132	101	2.81	3.03	4.88	17116	15655	13550	8757	5185	174.65	46.48	53.71	1345	1246	1254	1254	1207	29.91	100.00	99.37
14	5782	3852	2396	265	101	3.16	3.42	5.49	17116	15655	13022	8577	6403	187.05	49.79	59.85	1345	1246	1254	1254	1234	30.10	100.64	100.00
15	5782	3852	2451	461	207	8.15	8.82	13.86	17116	15655	13705	9273	6109	196.39	52.27	59.71	1345	1246	1254	1254	1254	30.10	100.64	100.00
16	5782	3852	2397	858	240	12.82	13.87	22.29	17116	15655	13338	9161	7094	205.17	54.61	64.09	1345	1246	1254	1254	1254	30.10	100.64	100.00
17	5782	3852	2387	911	281	14.50	15.69	25.32	17116	15655	13312	9425	7058	208.79	55.57	65.35	2404	2305	1254	1254	1249	30.04	54.30	99.80
18	5782	3852	2323	760	238	10.74	11.61	19.25	17116	15655	12861	9766	7767	214.20	57.01	69.39	2404	2305	1254	1311	1249	30.14	54.48	100.14
19	5782	3852	2464	299	228	6.63	7.17	11.20	17116	15655	12960	10017	7794	218.59	58.18	70.28	2404	2305	1251	1319	1249	29.98	54.19	99.84
20	5782	3852	2464	300	228	6.96	7.53	11.77	17116	15655	12186	9825	7454	212.92	56.67	72.80	2404	2305	1249	1249	1249	29.98	54.19	100.00
21	5782	3852	2394	388	103	6.10	6.60	10.62	17116	15655	12741	8324	6095	172.61	45.94	56.45	2404	2305	1249	1249	1248	29.97	54.17	99.97

Day	GENCOs								IPPs Thermal								Nuclear							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy %		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
22	5782	3852	2497	203	0	3.53	3.82	5.89	17116	15655	13122	7304	4645	150.78	40.13	47.88	2404	2305	1245	1249	1240	29.94	54.13	100.21
23	5782	3852	2332	257	0	1.84	1.99	3.29	17116	15655	13092	7049	3512	131.96	35.12	42.00	2404	2305	1245	1349	946	27.60	49.90	92.38
24	5782	3852	2488	607	148	6.91	7.47	11.57	17116	15655	13297	8702	5571	174.00	46.31	54.52	2490	2336	1245	1245	1245	29.88	53.30	100.00
25	5782	3852	2852	679	501	14.72	15.93	21.51	17116	15655	13213	8761	5716	175.25	46.64	55.27	2490	2336	1288	1373	1245	31.07	55.42	100.52
26	5782	3852	2848	671	549	14.74	15.95	21.57	17116	15655	13477	8325	6448	178.40	47.48	55.15	2490	2336	1335	1389	1320	32.57	58.09	101.65
27	5782	3852	2842	656	584	14.82	16.03	21.72	17116	15655	13719	8520	6532	185.31	49.32	56.28	2490	2336	1402	1465	1364	33.64	60.00	99.96
28	5782	3852	2830	658	590	14.99	16.21	22.06	17116	15655	13466	8254	6640	179.19	47.69	55.45	2490	2336	1290	1412	1246	32.04	57.15	103.50
29	5782	3852	2828	659	585	14.88	16.10	21.92	17116	15655	11942	8117	6853	179.12	47.67	62.49	2490	2336	1382	1419	1287	32.31	57.62	97.40
30	5782	3852	2843	654	582	15.11	16.35	22.15	17116	15655	11843	7850	6565	174.18	46.36	61.28	2490	2336	1474	1482	1375	35.05	62.52	99.08
31	5782	3852	2848	661	565	15.51	16.77	22.69	17116	15655	12426	8063	6578	178.69	47.56	59.92	2490	2336	1422	1480	1314	34.37	61.31	100.72

April, 2021

Day	GENCOs								IPPs Thermal								Nuclear							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy %		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	5782	3852	2732	1094	472	16.82	18.20	25.66	17116	15655	12382	7858	6589	176.71	47.03	59.47	2490	2336	1527	1537	1410	34.96	62.35	95.39
2	5782	3852	2805	834	487	14.22	15.39	21.13	17116	15655	13659	8457	6640	184.64	49.14	56.32	2490	2336	1656	1658	1543	39.52	70.50	99.44
3	5782	3852	2744	1070	430	17.09	18.49	25.95	17116	15655	13084	8496	6779	188.88	50.27	60.15	2490	2336	1670	1674	1655	39.27	70.05	97.98
4	5782	3852	2779	823	597	16.95	18.33	25.42	17116	15655	13328	8661	6987	185.05	49.25	57.85	2490	2336	1670	1673	1653	39.39	70.25	98.27
5	5782	3852	2755	1089	540	18.93	20.48	28.63	17116	15655	13747	7640	6435	173.43	46.16	52.57	2490	2336	1259	1673	1252	34.13	60.87	112.94
6	5782	3852	2869	815	300	13.30	14.39	19.32	17116	15655	13697	6690	4062	131.70	35.05	40.06	2490	2336	1637	1729	1532	38.40	68.50	97.75
7	5782	3852	2887	610	300	10.76	11.64	15.53	17116	15655	13758	7386	4348	148.24	39.45	44.90	2490	2336	1537	1670	1242	34.82	62.11	94.40
8	5782	3852	2875	1019	505	16.24	17.57	23.54	17116	15655	13834	7753	5934	167.49	44.58	50.45	2490	2336	1242	1668	1242	35.04	62.50	117.56
9	5782	3852	2879	1014	599	19.67	21.28	28.47	17116	15655	13932	7859	6634	179.84	47.86	53.78	2490	2336	1242	1242	1242	29.81	53.17	100.00
10	5782	3852	2822	1172	601	22.41	24.24	33.09	17116	15655	13906	8742	6983	188.98	50.30	56.63	2490	2336	1241	1242	1142	28.63	51.07	96.13
11	5782	3852	2858	1138	594	23.78	25.73	34.67	17116	15655	13666	8453	6825	188.08	50.06	57.34	2490	2336	1633	1645	1142	34.10	60.82	87.00
12	5782	3852	2697	1184	594	22.65	24.50	34.99	17116	15655	13661	9327	6591	198.42	52.81	60.52	2490	2336	1236	1695	1236	34.59	61.69	116.59
13	5782	3985	2686	1174	908	26.10	27.29	40.48	17116	15655	13986	10668	7809	220.63	58.72	65.73	2490	2336	1236	1239	1236	29.66	52.91	100.00
14	5782	3940	2673	1183	899	24.92	26.35	38.83	17116	15655	14071	10127	7633	217.98	58.02	64.55	2490	2336	1717	1804	1236	38.10	67.96	92.46
15	5782	3940	2535	1016	531	18.80	19.89	30.91	17116	15655	14199	9290	6598	191.22	50.89	56.11	2490	2336	1909	1918	1715	42.75	76.25	93.30
16	5782	3940	2851	870	459	16.51	17.46	24.13	17116	15655	13827	8117	6141	175.05	46.59	52.75	2490	2336	1701	1804	1691	41.16	73.41	100.82
17	5782	4014	2826	716	512	14.49	15.04	21.36	17116	15655	14317	9202	6353	183.96	48.96	53.54	2490	2336	1696	1705	1631	40.54	72.30	99.59
18	5782	4014	2805	1272	512	18.89	19.61	28.07	17116	15655	13926	9535	6238	192.72	51.29	57.66	2490	2336	1691	1701	1428	46.45	82.86	114.46
19	5782	4014	2745	1259	562	20.46	21.24	31.06	17116	15655	14274	9827	7171	213.02	56.70	62.18	2490	2336	1691	1769	1675	40.65	72.51	100.17
20	5782	4014	2730	981	565	20.35	21.12	31.05	17116	15655	14233	9467	6548	191.12	50.87	55.95	2490	2336	941	1937	941	35.48	63.28	157.10
21	5782	4014	2833	1013	599	18.67	19.38	27.47	17116	15655	14461	9416	6842	197.63	52.60	56.95	2490	2336	941	941	941	22.58	40.28	100.00
22	5782	4014	2514	923	401	16.69	17.33	27.67	17116	15655	14282	8745	6037	189.76	50.51	55.36	2490	2336	941	941	791	21.28	37.95	94.22
23	5782	4014	2608	597	361	10.70	11.10	17.09	17116	15655	14411	8860	4800	160.46	42.71	46.40	2490	2336	941	941	941	22.58	40.28	100.00
24	5782	4014	2601	971	402	14.70	15.25	23.54	17116	15655	14241	9556	6804	201.92	53.74	59.08	2490	2336	941	941	941	22.58	40.28	100.00
25	5782	4014	2683	1143	558	17.67	18.34	27.44	17116	15655	14483	9926	7552	213.32	56.78	61.37	2490	2336	941	978	941	22.62	40.35	100.16
26	5782	4014	2621	1127	542	19.75	20.50	31.40	17116	15655	13999	10452	7123	214.09	56.98	63.72	2490	2336	1893	1971	1125	40.94	73.01	90.10
27	5782	4014	2674	1147	570	20.87	21.66	32.51	17116	15655	14197	11642	8334	241.00	64.14	70.73	2490	2336	1969	1973	1927	47.82	85.30	101.20
28	5782	4014	2661	1156	894	25.51	26.48	39.94	17116	15655	13125	11938	9160	257.19	68.45	81.65	2490	2336	1974	1982	1934	47.51	84.73	100.27
29	5782	4014	2563	1153	782	25.15	26.10	40.87	17116	15655	14250	12134	9617	265.30	70.61	77.57	2490	2336	1984	1988	1971	47.02	83.87	98.75
30	5782	4014	2552	1038	673	21.68	22.51	35.40	17116	15655	14389	11848	9711	262.81	69.95	76.10	2490	2336	1786	1981	1558	45.09	80.42	105.19

May, 2021

Day	GENCOs								IPPs Thermal								Nuclear							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy %		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	5782	4014	2687	988	680	20.97	21.77	21.77	17116	15655	14293	11892	9547	257.92	68.65	68.65	2490	2336	1787	1980	1639	46.06	82.16	82.16
2	5782	4014	2682	920	744	20.17	20.94	20.94	17116	15655	14041	11184	9314	242.76	64.61	64.61	2490	2336	1897	1986	1869	46.67	83.25	83.25
3	5782	4014	2672	993	745	21.88	22.71	22.71	17116	15655	14290	12163	9495	259.37	69.03	69.03	2490	2336	1764	1943	1662	44.29	79.00	79.00
4	5782	4014	2780	1078	779	22.38	23.23	23.23	17116	15655	14410	11982	8958	253.93	67.58	67.58	2490	2336	1753	2015	935	35.22	62.83	62.83
5	5782	4014	2790	1080	781	22.25	23.10	23.10	17116	15655	14369	10801	6854	232.82	61.97	61.97	2490	2336	1963	1980	1002	42.05	75.01	75.01
6	5782	4014	2814	1108	784	22.86	23.73	23.73	17116	15655	14443	11304	8027	250.52	66.68	66.68	2490	2336	936	1978	936	28.47	50.78	50.78
7	5782	4014	2799	1095	737	24.09	25.01	25.01	17116	15655	14367	11438	9303	255.93	68.12	68.12	2490	2336	1083	1128	936	23.32	41.59	41.59
8	5782	4014	2769	1083	818	23.02	23.90	23.90	17116	15655	14046	11955	8967	253.91	67.58	67.58	2490	2336	1115	1128	1100	26.81	47.81	47.81
9	5782	4014	2714	1092	804	22.60	23.46	23.46	17116	15655	14061	11692	8568	241.81	64.36	64.36	2490	2336	1962	1967	1123	37.91	67.62	67.62
10	5782	4014	2810	861	513	18.87	19.58	19.58	17116	15655	14074	10595	8046	228.75	60.88	60.88	2490	2336	1667	1671	1449	39.53	70.50	70.50
11	5782	4014	2937	808	513	13.66	14.18	14.18	17116	15655	13989	10438	7101	211.17	56.20	56.20	2490	2336	1974	1976	1667	42.07	75.05	75.05
12	5782	4014	2774	715	324	14.00	14.53	14.53	17116	15655	14214	9831	6746	198.46	52.82	52.82	2490	2336	1795	1980	1417	42.97	76.65	76.65
13	5782	4014	2811	484	403	10.40	10.79	10.79	17116	15655	14426	8289	5429	165.13	43.95	43.95	2490	2336	1976	1980	1423	41.61	74.23	74.23
14	5782	4014	2815	477	402	10.10	10.49	10.49	17116	15655	14514	8879	5537	175.52	46.71	46.71	2490	2336	1977	1978	1421	42.02	74.95	74.95
15	5782	4014	2800	485	403	10.15	10.54	10.54	17116	15655	14298	7938	5958	170.97	45.50	45.50	2490	2336	1976	1979	1885	47.48	84.69	84.69
16	5782	4014	2800	466	402	10.39	10.78	10.78	17116	15655	13827	7968	5513	161.53	42.99	42.99	2490	2336	1977	1979	1974	47.50	84.72	84.72
17	5782	4014	2806	765	443	13.82	14.34	14.34	17116	15655	13320	9572	6572	198.41	52.81	52.81	2490	2336	1974	1979	1973	47.05	83.92	83.92
18	5782	4014	2781	1033	580	19.31	20.05	20.05	17116	15655	13959	10516	8383	230.50	61.35	61.35	2490	2336	1972	1999	1905	47.74	85.15	85.15
19	5782	4014	2777	1223	586	21.98	22.81	22.81	17116	15655	14163	11181	8923	234.91	62.52	62.52	2490	2336	1975	1978	1971	47.86	85.37	85.37
20	5782	4014	2728	1025	553	18.43	19.13	19.13	17116	15655	13635	10392	7873	223.81	59.57	59.57	2490	2336	1976	1979	1972	46.94	83.73	83.73
21	5782	4014	3050	1108	553	19.33	20.06	20.06	17116	15655	15445	10618	7814	219.68	58.47	58.47	2490	2305	1666	1979	1664	43.48	78.60	78.60
22	5782	4014	3040	1250	610	23.18	24.06	24.06	17116	15655	13200	10850	5059	206.61	54.99	54.99	2490	2305	1456	1670	1451	38.88	70.28	70.28
23	5782	4014	2766	1098	711	21.88	22.71	22.71	17116	15655	13959	9093	5387	182.33	48.53	48.53	2490	2305	1663	1669	1558	39.72	71.80	71.80
24	5782	4014	2770	1093	767	23.83	24.73	24.73	17116	15655	13865	10809	7866	229.98	61.21	61.21	2490	2305	1663	1669	1661	39.89	72.10	72.10
25	5782	4014	2637	1085	911	23.66	24.55	24.55	17116	15655	13583	11013	8542	241.11	64.17	64.17	2490	2305	1663	1667	1654	39.88	72.10	72.10
26	5782	4014	2152	1500	935	26.91	27.93	27.93	17116	15655	13451	11013	9699	253.67	67.51	67.51	2490	2305	1665	1668	1662	39.91	72.15	72.15
27	5782	4014	2595	1838	1486	40.44	41.98	41.98	17116	15655	13557	11142	9927	254.03	67.61	67.61	2490	2305	1665	1668	1661	40.17	72.61	72.61
28	5782	4014	2404	1879	1428	41.81	43.40	43.40	17116	15655	13673	10911	9583	252.84	67.29	67.29	2490	2305	1665	1667	1662	39.98	72.26	72.26
29	5782	4014	2516	1890	1752	45.89	47.63	47.63	17116	15655	13358	11150	10045	256.01	68.14	68.14	2490	2305	1665	1669	1663	39.75	71.86	71.86
30	5782	4014	2482	1848	1666	44.41	46.09	46.09	17116	15655	13057	10908	9387	244.28	65.02	65.02	2490	2305	1969	1970	1661	43.21	78.11	78.11
31	5782	4014	2230	1865	694	39.22	40.71	40.71	17116	15655	12795	10827	5830	226.07	60.17	60.17	2490	2305	1940	1977	1934	46.84	84.67	84.67

June, 2021

Day	GENCOs								IPPs Thermal								Nuclear							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy %		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	5782	4014	2568	1506	795	28.52	29.61	46.27	17116	15655	13395	10104	6915	203.42	54.14	63.28	2490	2305	2181	2185	1944	49.26	89.05	94.11
2	5782	4014	2266	1438	788	28.44	29.52	52.28	17116	15655	13319	11428	9116	247.88	65.97	77.54	2490	2305	2188	2191	2182	53.18	96.14	101.28
3	5782	4014	2227	1194	737	22.93	23.81	42.91	17116	15655	13266	10763	7940	228.22	60.74	71.68	2490	2305	2268	2268	2187	54.28	98.12	99.72
4	5782	4014	2418	1137	786	22.32	23.16	38.45	17116	15655	13875	11139	8646	243.06	64.69	72.99	2490	2305	2276	2280	2266	53.13	96.04	97.27
5	5782	4014	1722	1267	339	24.29	25.21	58.77	17116	15655	13601	11752	9714	259.22	68.99	79.41	2490	2305	2276	2281	2275	54.69	98.85	100.11
6	5782	4014	1942	823	339	14.92	15.49	32.01	17116	15655	13569	11871	10202	265.04	70.54	81.39	2490	2305	2274	2279	2259	54.67	98.83	100.18
7	5782	4014	1915	1101	727	22.49	23.35	48.95	17116	15655	13654	12402	11042	286.18	76.17	87.33	2490	2305	2271	2275	2264	54.41	98.36	99.83
8	5782	4014	2057	1119	803	25.25	26.21	51.15	17116	15655	13172	12142	11490	286.00	76.12	90.47	2490	2305	2270	2274	2261	54.37	98.28	99.79
9	5782	4014	2074	1092	924	25.64	26.62	51.51	17116	15655	13209	12828	9391	279.81	74.47	88.26	2490	2305	2268	2277	2266	54.41	98.36	99.97
10	5782	4014	1995	1092	924	25.64	26.62	53.57	17116	15655	13701	12799	11550	289.86	77.15	88.15	2490	2305	2274	2277	2266	54.41	98.36	99.70
11	5782	4014	2038	1069	599	23.35	24.24	47.74	17116	15655	13549	12828	9391	279.81	74.47	86.05	2490	2305	2266	2277	2251	54.49	98.50	100.20
12	5782	4014	2008	1177	628	21.22	22.03	44.05	17116	15655	13364	12042	9306	255.24	67.93	79.58	2490	2305	2276	2277	2266	54.38	98.31	99.56
13	5782	4014	2460	1098	0	5.75	5.97	9.75	17116	15655	13434	11179	5869	187.87	50.00	58.27	2490	2305	2277	2277	1980	52.35	94.64	95.80
14	5782	4014	2759	968	230	14.13	14.66	21.33	17116	15655	13615	10729	8567	231.02	61.49	70.70	2490	2305	2278	2280	2274	54.79	99.05	100.22
15	5782	4014	2648	1095	388	18.12	18.81	28.51	17116	15655	14129	10325	6036	196.19	52.22	57.86	2490	2305	2276	2279	2274	55.46	100.25	101.52
16	5782	4014	2686	925	347	15.77	16.37	24.46	17116	15655	14132	9719	6068	186.91	49.75	55.11	2490	2305	2276	2280	2253	53.68	97.03	98.27
17	5782	4014	2531	1025	269	16.50	17.13	27.17	17116	15655	13644	9174	6190	189.90	50.54	57.99	2490	2305	2274	2283	2273	54.60	98.69	100.04
18	5782	4014	2539	1044	537	20.84	21.63	34.20	17116	15655	13537	9976	7321	214.45	57.08	66.01	2490	2305	2277	2283	2257	54.70	98.87	100.09
19	5782	4014	2565	1020	757	21.47	22.29	34.88	17116	15655	13223	10444	8513	226.83	60.37	71.48	2490	2305	2277	2282	2272	54.64	98.78	99.99
20	5782	4014	2600	878	480	18.06	18.75	28.94	17116	15655	13001	9084	4715	178.46	47.50	57.20	2490	2305	2364	2278	1694	51.91	93.84	91.49
21	5782	4014	2580	1057	614	21.02	21.82	33.95	17116	15655	13397	9232	4917	181.44	48.29	56.43	2490	2305	2278	2278	2000	53.73	97.12	98.28
22	5782	4014	2549	1063	834	22.21	23.05	36.30	17116	15655	13704	10740	7899	223.95	59.61	68.09	2490	2305	2277	2280	2274	54.96	99.35	100.57
23	5782	4014	2436	1071	756	20.84	21.63	35.64	17116	15655	13541	11832	10049	264.27	70.34	81.32	2490	2305	2282	2285	2274	53.52	96.74	97.72
24	5782	4014	2400	975	761	21.38	22.19	37.12	17116	15655	13659	11718	9639	256.51	68.27	78.25	2490	2305	2277	2287	2274	54.73	98.94	100.15
25	5782	4014	2384	954	563	20.76	21.55	36.29	17116	15655	13752	11808	6707	238.89	63.58	72.38	2490	2305	2280	2287	2270	54.76	98.98	100.06
26	5782	4014	2397	880	621	17.81	18.48	30.95	17116	15655	14374	11103	7068	220.43	58.67	63.90	2490	2305	2282	2285	2278	54.76	98.98	99.98
27	5782	4014	2341	885	711	19.71	20.46	35.08	17116	15655	13933	12144	9737	263.69	70.18	78.85	2490	2305	2283	2284	2280	55.25	99.87	100.84
28	5782	4014	2351	1116	810	23.22	24.10	41.16	17116	15655	13631	12521	11063	286.63	76.29	87.62	2490	2305	2278	2282	2267	54.24	98.04	99.20
29	5782	4014	2101	1397	1148	32.03	33.24	63.52	17116	15655	12003	11827	10621	271.76	72.33	94.34	2490	2305	2278	2284	2276	54.77	99.01	100.19
30	5782	4014	2154	1494	1420	36.05	37.42	69.74	17116	15655	11995	11540	10814	269.39	71.70	93.58	2490	2305	2277	2284	2275	54.70	98.89	100.10

Source: NPCC DLR

TABLE 100

Summary of Daily Generation Capacity (MW) and Daily Energy Generation (GWh)

July, 2020

Day	VRE (Hydel+Wind+Solar+Bagasse)								Thermal Power Plants (GENCOs+IPPs+Nuclear)							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	11873	11589	8107	8985	6354	184.01	66.15	94.57	24293	20656	16605	13746	11029	304.52	61.43	76.41
2	11873	11589	8844	9192	6823	190.46	68.47	89.73	24293	20656	15947	14236	12121	318.14	64.17	83.12
3	11873	11589	9084	9466	6906	192.44	69.19	88.27	24293	20656	16216	13962	11960	321.74	64.90	82.67
4	11873	11589	7830	9291	3934	185.15	66.57	98.53	24293	20656	16966	14062	6006	273.34	55.14	67.13
5	11873	11589	8590	9451	6821	189.76	68.22	92.05	24293	20656	16450	11531	7268	228.74	46.14	57.94
6	11873	11589	7649	8723	6333	184.42	66.30	100.46	24293	20656	16764	13551	10074	287.88	58.07	71.55
7	11873	11589	8098	8853	6510	185.22	66.59	95.30	24293	20656	16535	14612	11921	317.25	63.99	79.94
8	11873	11589	8075	8976	6303	183.13	65.84	94.50	24293	20656	16177	14175	11218	311.38	62.81	80.20
9	11873	11589	8414	8676	6259	182.22	65.51	90.24	24293	20656	15295	14256	12021	320.06	64.56	87.19
10	11873	11709	9125	9603	6450	188.51	67.08	86.08	24293	20976	15299	13982	10015	313.70	62.31	85.43
11	11873	11589	8147	9735	6692	203.09	73.01	103.87	24293	20656	15569	12915	6907	270.55	54.57	72.41
12	11873	11589	9190	9684	6851	205.53	73.89	93.18	24293	20656	15880	10072	7204	209.87	42.33	55.07
13	11873	11589	8291	9440	6596	195.24	70.19	98.12	24293	20656	15914	12955	8977	270.27	54.52	70.76
14	11873	11589	8725	9016	6756	191.47	68.84	91.44	24293	20656	16055	14021	11871	315.34	63.61	81.84
15	11873	11589	8862	9186	6416	187.95	67.57	88.37	24293	20656	16181	14194	9700	305.81	61.69	78.75
16	11873	11589	8376	9117	6639	186.77	67.15	92.91	24293	20656	16708	13640	10386	290.85	58.67	72.53
17	11873	11589	8279	9507	6118	192.58	69.24	96.92	24293	20656	16326	13158	10001	285.86	57.66	72.96
18	11873	11589	8079	8881	6586	185.52	66.70	95.68	24293	20656	15201	13668	11313	316.47	63.84	86.75
19	11873	11589	8529	9113	6417	183.93	66.13	89.86	24293	20656	15411	13702	9392	290.03	58.50	78.42
20	11873	11589	8876	9621	6988	199.65	71.78	93.72	24293	20656	15296	12405	8574	251.52	50.74	68.52
21	11873	11589	8022	8897	6282	183.75	66.06	95.44	24293	20656	17034	9160	6742	198.79	40.10	48.63
22	11873	11589	8713	9094	5905	184.82	66.45	88.38	24293	20656	16832	11509	7716	237.45	47.90	58.78
23	11873	11589	8933	9454	7081	196.73	70.73	91.76	24293	20656	16822	12520	9854	270.92	54.65	67.10
24	11873	11589	9045	9692	6874	197.67	71.07	91.06	24293	20656	17028	13132	9455	285.83	57.66	69.94
25	11873	11589	8144	9037	7107	193.29	69.49	98.89	24293	20656	16489	13064	11056	293.24	59.15	74.10
26	11873	11589	8170	9051	7086	192.77	69.31	98.31	24293	20656	16528	12933	10902	286.95	57.88	72.34
27	11873	11589	7697	8949	5849	186.89	67.19	101.17	24293	20656	17578	14490	11825	321.48	64.85	76.20
28	11873	11589	9052	9456	6639	194.55	69.94	89.55	24293	20656	17692	14343	12181	323.63	65.28	76.22
29	11873	11589	7796	9622	6098	191.54	68.86	102.37	24293	20656	18187	14184	12375	322.54	65.06	73.90
30	11873	11589	7452	8381	5577	167.96	60.39	93.91	24293	20656	17938	13651	11277	310.59	62.65	72.14
31	11873	11589	7632	8512	5498	169.22	60.84	92.39	24293	20656	18574	13912	12601	322.63	65.08	72.37

August, 2020

Day	VRE (Hydel+Wind+Solar+Bagasse)								Thermal Power Plants (GENCOs+IPPs+Nuclear)							
	Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)	
	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	11873	11589	7836	8268	5977	171.61	61.70	91.25	24293	20656	18712	13788	9713	299.94	60.50	66.79
2	11873	11589	8252	9031	4987	174.76	62.83	88.24	24293	20656	18520	13761	11352	310.67	62.67	69.90
3	11873	11589	8788	9774	6451	194.38	69.88	92.16	24293	20656	17114	12657	10081	282.65	57.02	68.81
4	11873	11589	8748	9523	6028	192.39	69.17	91.64	24293	20656	17781	13456	10557	289.95	58.49	67.94
5	11873	11589	7524	8760	5493	179.08	64.38	99.17	24293	20656	17192	14228	12727	324.95	65.55	78.75
6	11873	11589	9099	9424	5676	180.39	64.86	82.61	24293	20656	16001	14362	11517	327.69	66.10	85.33
7	11873	11589	7765	8693	5847	172.40	61.98	92.51	24293	20656	17152	14146	11353	317.74	64.09	77.19
8	11873	11589	7715	8751	4951	159.55	57.36	86.17	24293	20656	18036	14491	12594	328.86	66.34	75.97
9	11873	11589	7923	8685	6046	179.52	64.54	94.41	24293	20656	17703	13417	11291	304.81	61.48	71.74
10	11873	11589	8650	9081	5784	174.93	62.89	84.26	24293	20656	17459	13701	11651	314.76	63.49	75.12
11	11873	11589	8315	8867	5935	178.65	64.23	89.52	24293	20656	17758	14645	12640	330.83	66.73	77.62
12	11873	11589	9095	9444	6101	188.68	67.83	86.44	24293	20656	18009	14711	13189	337.01	67.98	77.97
13	11873	11589	8322	8909	6612	190.82	68.60	95.54	24293	20656	17884	14947	13304	337.33	68.04	78.59
14	11873	11589	8854	9585	5805	181.61	65.29	85.47	24293	20656	17803	13988	11759	311.13	62.76	72.82
15	11873	11589	8174	9064	6142	180.61	64.93	92.06	24293	20656	16175	14876	13246	337.19	68.02	86.86
16	11873	11589	8619	9217	5123	175.80	63.21	84.99	24293	20656	16193	14469	13442	335.63	67.70	86.36
17	11873	11589	8927	9663	6204	195.07	70.13	91.05	24293	20656	16285	14410	12614	326.62	65.88	83.57
18	11873	11589	9283	9903	7222	205.85	74.01	92.40	24293	20656	16519	14145	12103	314.04	63.35	79.21
19	11873	11589	9066	10016	7125	208.01	74.79	95.60	24293	20656	16459	13508	9869	285.19	57.53	72.19
20	11873	11589	8893	9552	7114	197.35	70.95	92.47	24293	20656	17059	10692	7863	221.02	44.58	53.98
21	11873	11589	8550	9653	7106	192.08	69.06	93.60	24293	20656	17058	10728	8350	232.67	46.93	56.83

Day	VRE (Hydel+Wind+Solar+Bagasse)								Thermal Power Plants (GENCOs+IPPs+Nuclear)							
	Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)	
	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
22	11873	11589	8415	9042	6990	188.72	67.85	93.44	24293	20656	16654	13380	8860	260.22	52.49	65.10
23	11873	11589	8885	9318	6160	181.78	65.36	85.25	24293	20656	16423	13376	10617	294.38	59.38	74.69
24	11873	11589	8568	9287	6221	188.27	67.69	91.56	24293	20656	16453	13460	11559	304.07	61.34	77.01
25	11873	11589	8114	8953	6328	183.15	65.85	94.05	24293	20656	16816	12710	10605	284.54	57.40	70.50
26	11873	11589	9170	9706	6923	200.31	72.02	91.02	24293	20656	17192	10894	7984	222.84	44.95	54.01
27	11873	11589	8952	9797	7033	206.03	74.07	95.89	24293	20656	17470	8382	6636	183.03	36.92	43.65
28	11873	11589	9416	9798	7594	212.80	76.51	94.17	24293	20656	16987	8869	5898	173.45	34.99	42.54
29	11873	11589	9396	9922	7829	215.44	77.45	95.54	24293	20656	17566	9571	7000	196.51	39.64	46.61
30	11873	11589	8948	9829	7692	211.91	76.19	98.68	24293	20656	17775	9258	6121	182.34	36.78	42.74
31	11873	11589	9028	9580	7142	202.40	72.77	93.41	24293	20656	17410	8152	5234	158.19	31.91	37.86

September, 2020

Day	VRE (Hydel+Wind+Solar+Bagasse)								Thermal Power Plants (GENCOs+IPPs+Nuclear)							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	11873	11589	8571	9001	7916	204.42	73.49	99.37	24293	20656	17290	7177	4452	138.39	27.92	33.35
2	11873	11589	9009	9474	7936	206.10	74.10	95.32	24293	20656	16574	8706	5304	167.38	33.76	42.08
3	11873	11589	8972	9396	7595	203.14	73.03	94.34	24293	20656	16570	8868	6539	192.67	38.86	48.45
4	11873	11589	8969	9699	7216	205.55	73.90	95.49	24293	20656	16938	7842	5571	162.81	32.84	40.05
5	11873	11589	9405	9886	7987	211.85	76.16	93.85	24293	20656	16905	9360	5872	185.55	37.43	45.73
6	11873	11589	8903	9843	7638	213.66	76.82	100.00	24293	20656	17500	9012	6789	191.88	38.70	45.68
7	11873	11589	8966	10144	7784	216.67	77.90	100.69	24293	20656	16646	10675	6688	206.20	41.59	51.61
8	11873	11589	8903	9841	7246	212.56	76.42	99.48	24293	20656	16429	11555	7518	233.68	47.14	59.27
9	11873	11589	8604	9441	6646	198.89	71.51	96.32	24293	20656	16157	12024	8855	257.96	52.04	66.52
10	11873	11589	8125	9371	6117	182.76	65.71	93.72	24293	20656	16786	12488	10413	277.29	55.93	68.83
11	11873	11589	7853	8452	6032	173.37	62.33	91.99	24293	20656	16688	12586	10319	281.14	56.71	70.20
12	11873	11589	7273	8128	5294	166.22	59.76	95.23	24293	20656	16436	13357	11223	302.57	61.03	76.70
13	11873	11589	8176	8550	5013	163.32	58.72	83.23	24293	20656	16095	13165	11564	299.19	60.35	77.45
14	11873	11589	7468	8632	5015	162.60	58.46	90.72	24293	20656	15975	13676	11732	310.00	62.53	80.86
15	11873	11589	7059	7761	4568	150.26	54.02	88.69	24293	20656	16452	13819	12433	324.12	65.38	82.09
16	11873	11589	7430	8206	5069	165.99	59.68	93.09	24293	20656	16518	13504	11052	308.24	62.18	77.75
17	11873	11589	7730	8511	4610	158.38	56.94	85.37	24293	20656	16376	13506	12385	312.84	63.10	79.60
18	11873	11589	7303	8090	4662	158.17	56.87	90.24	24293	20656	16471	13580	12178	313.02	63.14	79.19
19	11873	11589	7513	7956	4225	151.01	54.29	83.75	24293	20656	15599	13764	12632	320.67	64.68	85.65
20	11873	11589	6804	7133	4131	134.44	48.34	82.33	24293	20656	16465	13878	12968	323.85	65.32	81.95
21	11873	11589	6798	7212	4501	141.25	50.78	86.57	24293	20656	16029	14002	11585	314.66	63.47	81.80
22	11873	11589	8034	8457	3828	152.59	54.86	79.14	24293	20656	15789	13728	12053	314.91	63.52	83.10
23	11873	11589	7876	8463	4931	161.85	58.19	85.62	24293	20656	14754	13495	11415	299.63	60.44	84.62
24	11873	11589	6871	7826	4365	147.94	53.19	89.72	24293	20656	16143	13577	12238	314.92	63.52	81.29
25	11873	11589	8200	9132	3953	149.04	53.58	75.73	24293	20656	16358	13274	9070	284.01	57.29	72.34
26	11873	11589	8341	8725	4314	155.64	55.96	77.75	24293	20656	16228	11573	9185	257.63	51.97	66.15
27	11873	11589	7838	8495	4540	148.11	53.25	78.73	24293	20656	17041	11404	9775	256.29	51.70	62.67
28	11873	11589	6936	7817	4352	144.58	51.98	86.85	24293	20656	17225	12268	10335	270.65	54.59	65.47
29	11873	11589	7374	7810	4445	144.81	52.06	81.82	24293	20656	17057	12206	9732	266.81	53.82	65.18
30	11873	11589	7247	7838	4573	141.82	50.99	81.54	24293	20656	15632	12321	10381	269.49	54.36	71.83

October, 2020

Day	VRE (Hydel+Wind+Solar+Bagasse)								Thermal Power Plants (GENCOs+IPPs+Nuclear)							
	Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)	
	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	11873	11589	7252	8289	3796	147.06	52.87	84.50	24293	20656	13637	11492	9333	256.45	51.73	78.36
2	11873	11589	7716	8618	4926	159.34	57.29	86.04	24293	20656	15109	10549	8270	226.84	45.76	62.56
3	11873	11589	7389	7958	4439	147.26	52.95	83.04	24293	20656	15462	11189	8925	236.15	47.64	63.64
4	11873	11589	7095	7618	3967	139.16	50.03	81.72	24293	20656	15560	10201	8550	230.52	46.50	61.73
5	11873	11589	6718	7025	4174	135.87	48.85	84.27	24293	20656	15353	10546	8759	238.37	48.08	64.69
6	11873	11589	6801	7234	4005	135.77	48.81	83.18	24293	20656	15527	10340	9130	238.03	48.01	63.87
7	11873	11589	6882	7428	3707	134.64	48.41	81.52	24293	20656	14799	10307	9726	240.09	48.43	67.60
8	11873	11589	7056	7678	3876	138.92	49.94	82.03	24293	20656	14828	10351	9124	233.93	47.19	65.74

Day	VRE (Hydel+Wind+Solar+Bagasse)								Thermal Power Plants (GENCOs+IPPs+Nuclear)							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
9	11873	11589	5155	6252	3266	114.68	41.23	92.70	24293	20656	15448	10724	9221	244.88	49.40	66.05
10	11873	11589	5677	6092	3597	123.55	44.42	90.68	24293	20656	15227	10891	8874	238.76	48.16	65.33
11	11873	11589	5595	6184	3398	117.61	42.29	87.59	24293	20656	15468	10243	8463	232.97	46.99	62.75
12	11873	11589	5749	6320	2984	112.13	40.31	81.27	24293	20656	15840	10865	8852	242.91	49.00	63.90
13	11873	11589	5647	6214	3419	114.58	41.19	84.54	24293	20656	16440	10434	9044	235.12	47.43	59.59
14	11873	11589	5721	6388	3666	119.10	42.82	86.75	24293	20656	15761	10148	8190	225.18	45.42	59.53
15	11873	11589	5689	6534	3977	121.74	43.77	89.17	24293	20656	15784	9932	7730	214.88	43.34	56.73
16	11873	11589	6451	6906	3434	123.97	44.57	80.07	24293	20656	16081	9400	7090	200.25	40.39	51.89
17	11873	11589	5683	6397	3804	125.00	44.94	91.65	24293	20656	16259	9567	7198	199.27	40.20	51.07
18	11873	11589	5460	6231	2959	115.16	41.40	87.88	24293	20656	16266	9072	6969	194.64	39.26	49.86
19	11873	11589	5645	5917	3092	111.46	40.07	82.27	24293	20656	16040	9275	7325	202.89	40.93	52.70
20	11873	11589	4959	5503	3150	103.19	37.10	86.70	24293	20656	15334	10239	7331	209.83	42.33	57.02
21	11873	11589	4507	5428	2327	89.46	32.16	82.70	24293	20656	16119	10083	7811	219.19	44.21	56.66
22	11873	11589	4370	4808	2170	77.05	27.70	73.46	24293	20656	16002	9988	7943	224.42	45.27	58.43
23	11873	11589	3961	4719	1967	74.64	26.83	78.51	24293	20656	15946	10043	7896	218.68	44.11	57.14
24	11873	11589	3757	4146	1654	68.26	24.54	75.70	24293	20656	15707	10431	8442	226.38	45.67	60.05
25	11873	11589	3919	4293	1812	68.70	24.70	73.04	24293	20656	15820	9771	7228	211.68	42.70	55.75
26	11873	11589	4460	4855	1896	69.71	25.06	65.12	24293	20656	15972	9491	7221	210.52	42.47	54.92
27	11873	11589	5061	5384	1542	72.83	26.18	59.96	24293	20656	17259	9631	6190	208.84	42.13	50.42
28	11873	11589	5333	5689	2042	81.97	29.47	64.04	24293	20656	15697	9425	5877	199.76	40.29	53.03
29	11873	11589	4407	4674	1868	74.94	26.94	70.85	24293	20656	15536	9464	7596	206.61	41.68	55.41
30	11873	11589	5142	5491	2709	86.29	31.02	69.92	24293	20656	15309	8289	6043	168.27	33.94	45.80
31	11873	11589	4540	5115	2530	89.34	32.12	81.99	24293	20656	15901	8528	5219	175.67	35.44	46.03

November, 2020

Day	VRE (Hydel+Wind+Solar+Bagasse)								Thermal Power Plants (GENCOs+IPPs+Nuclear)							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	11873	11589	5084	5393	2296	84.11	30.24	68.93	24293	20656	13919	8231	6427	179.58	36.22	53.76
2	11873	11589	5084	5413	2296	84.25	30.29	69.05	24293	20656	14380	8554	6259	184.74	37.26	53.53
3	11873	11589	6439	6823	2511	102.10	36.71	66.07	24293	20656	14877	8615	4877	166.58	33.60	46.66
4	11873	11589	5729	6552	3481	121.52	43.69	88.38	24293	20656	15197	7469	4956	148.68	29.99	40.76
5	11873	11589	5940	6236	3324	115.14	41.39	80.76	24293	20656	14944	7491	5055	153.91	31.05	42.91
6	11873	11589	5689	6086	3306	115.38	41.48	84.51	24293	20656	15288	7034	4802	147.08	29.67	40.09
7	11873	11589	5093	6088	3056	114.04	41.00	93.30	24293	20656	15305	7617	4752	147.21	29.69	40.08
8	11873	11589	5815	6246	3274	112.77	40.54	80.81	24293	20656	15673	6611	4780	139.44	28.13	37.07
9	11873	11589	5812	6256	2913	109.83	39.49	78.74	24293	20656	15707	7075	4746	146.94	29.64	38.98
10	11873	11589	5698	6091	2751	108.95	39.17	79.67	24293	20656	15669	7264	5164	150.30	30.32	39.97
11	11873	11589	5644	6559	2985	116.71	41.96	86.16	24293	20656	16628	7231	4929	142.23	28.69	35.64
12	11873	11589	5764	6245	3065	113.13	40.67	81.78	24293	20656	16631	6949	4733	142.37	28.72	35.67
13	11873	11589	5497	6238	3093	111.37	40.04	84.41	24293	20656	16077	6881	4639	139.24	28.09	36.09
14	11873	11589	5248	5913	3353	109.46	39.35	86.90	24293	20656	16210	6432	4117	129.57	26.14	33.31
15	11873	11589	5936	6175	3468	115.25	41.44	80.90	24293	20656	16968	4706	3764	98.72	19.91	24.24
16	11873	11589	5559	6129	3510	116.45	41.87	87.28	24293	20656	15259	6843	3696	120.56	24.32	32.92
17	11873	11589	6343	6976	2861	110.85	39.85	72.82	24293	20656	15284	6237	4091	128.53	25.93	35.04
18	11873	11589	5069	5594	3009	96.91	34.84	79.66	24293	20656	15440	7520	4068	144.66	29.18	39.04
19	11873	11589	4839	5128	2001	81.83	29.42	70.46	24293	20656	16463	7831	5299	161.56	32.59	40.89
20	11873	11589	5767	6417	1811	95.65	34.39	69.11	24293	20656	17024	7079	4451	140.63	28.37	34.42
21	11873	11589	6232	6618	2002	106.90	38.43	71.47	24293	20656	16868	6718	4256	132.00	26.63	32.61
22	11873	11589	6028	6365	2797	108.77	39.10	75.18	24293	20656	15854	6051	4012	121.37	24.48	31.90
23	11873	11589	5795	6101	2786	105.53	37.94	75.88	24293	20656	17486	6609	4283	134.14	27.06	31.96
24	11873	11589	6855	7186	2969	118.18	42.49	71.84	24293	20656	17031	6055	4197	119.74	24.15	29.29
25	11873	11589	6701	7492	2675	120.24	43.23	74.77	24293	20656	18494	5923	3416	122.96	24.80	27.70
26	11873	11589	6767	7147	3384	129.86	46.69	79.96	24293	20656	18685	5850	3573	109.82	22.15	24.49
27	11873	11589	6691	7444	2576	127.45	45.82	79.37	24293	20656	18760	5365	3760	112.02	22.60	24.88
28	11873	11589	6441	7369	2461	120.53	43.33	77.97	24293	20656	18277	6025	4103	125.09	25.23	28.52
29	11873	11589	6177	7017	2054	113.38	40.76	76.48	24293	20656	18595	6078	4626	122.62	24.73	27.48
30	11873	11589	4979	5380	2827	95.88	34.47	80.23	24293	20656	18804	8216	4365	145.86	29.42	32.32

December, 2020																
Day	VRE (Hydel+Wind+Solar+Bagasse)								Thermal Power Plants (GENCOs+IPPs+Nuclear)							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	11873	11589	4860	5394	2434	94.32	33.91	80.86	24293	20656	17290	8033	4187	155.97	31.46	37.59
2	11873	11589	5479	5883	2230	85.05	30.58	64.68	24293	20656	17183	8151	5562	165.87	33.46	40.22
3	11873	11589	5554	5883	2382	89.59	32.21	67.21	24293	20656	17545	7832	5207	160.20	32.31	38.04
4	11873	11589	5086	5351	2392	90.29	32.46	73.97	24293	20656	16859	8076	4979	157.73	31.82	38.98
5	11873	11589	4619	4900	2272	87.99	31.63	79.37	24293	20656	16474	8307	5092	163.26	32.93	41.29
6	11873	11589	4714	5109	2383	84.98	30.55	75.12	24293	20656	17162	8146	5230	156.57	31.58	38.01
7	11873	11589	4782	5257	2294	82.37	29.61	71.77	24293	20656	16681	7956	4896	166.87	33.66	41.68
8	11873	11589	4665	5026	2112	77.26	27.78	69.00	24293	20656	16893	8052	5155	168.65	34.02	41.60
9	11873	11589	4821	5361	2038	84.38	30.34	72.93	24293	20656	17228	7911	5445	163.17	32.91	39.46
10	11873	11589	5062	5659	2105	86.28	31.02	71.02	24293	20656	17825	7849	5476	162.26	32.73	37.93
11	11873	11589	3602	5060	1903	77.52	27.87	89.67	24293	20656	17248	7974	4986	159.51	32.18	38.53
12	11873	11589	4404	4811	1481	70.80	25.45	66.98	24293	20656	16412	8239	4936	164.75	33.23	41.83
13	11873	11589	4102	4487	1553	69.87	25.12	70.97	24293	20656	16707	8105	5494	162.88	32.86	40.62
14	11873	11589	3612	4555	1431	65.54	23.56	75.60	24293	20656	17860	9532	4558	180.17	36.34	42.03
15	11873	11589	4541	5027	1002	67.84	24.39	62.24	24243	20656	17981	8711	5537	185.74	37.47	43.04
16	11873	11589	4280	5099	1669	73.37	26.38	71.43	24243	20656	17114	9407	5294	182.44	36.80	44.42
17	11873	11589	4049	4791	1378	68.65	24.68	70.65	24243	20656	17987	9922	5546	187.69	37.86	43.48
18	11873	11589	2964	4198	1318	57.32	20.61	80.57	24243	20656	18843	10047	6123	201.06	40.56	44.46
19	11873	11589	3256	4007	1373	55.81	20.06	71.42	24243	20656	18855	10515	6146	207.01	41.76	45.75
20	11873	11589	3296	3927	1302	53.54	19.25	67.68	24243	20656	17932	9979	5643	202.82	40.91	47.13
21	11873	11589	3313	3800	1418	51.12	18.38	64.29	24243	20656	17732	10336	5879	209.64	42.29	49.26
22	11873	11589	3471	3872	1360	48.27	17.35	57.94	24243	20656	16861	10420	6155	214.65	43.30	53.04
23	11873	11589	4630	5060	1631	70.15	25.22	63.13	24243	20656	18089	10346	5187	195.79	39.49	45.10
24	11873	11589	3923	5117	2855	93.97	33.78	99.80	24243	20656	18261	9530	5115	170.96	34.48	39.01
25	11873	11589	3778	4617	1933	76.38	27.46	84.23	24243	20656	18302	8949	5502	180.34	36.38	41.06
26	11873	11589	3260	4084	1522	67.30	24.19	86.01	24243	20656	18507	10176	5470	193.77	39.09	43.63
27	11873	11589	2316	3502	1174	48.94	17.60	88.05	24243	20656	18492	10542	5436	198.00	39.94	44.61
28	11873	11589	2857	3341	952	43.04	15.48	62.78	24243	20656	18511	11178	5875	222.94	44.97	50.18
29	11873	11589	3050	3649	1039	47.71	17.15	65.18	24243	20656	18784	11287	6268	223.29	45.04	49.53
30	11873	11589	3278	3979	1096	54.65	19.65	69.46	24243	20656	18452	10980	6023	218.70	44.12	49.39
31	11873	11589	2726	3597	1240	50.08	18.00	76.54	24243	20656	18986	11482	6334	219.81	44.34	48.24

January, 2021																
Day	VRE (Hydel+Wind+Solar+Bagasse)								Thermal Power Plants (GENCOs+IPPs+Nuclear)							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	11873	11589	2188	3552	897	43.98	15.81	83.76	24243	20656	19078	11308	6893	298.48	60.21	65.19
2	11873	11591	2543	2918	923	40.50	14.56	66.36	24243	20753	19703	11419	6434	301.20	60.47	63.70
3	11873	11589	2550	3074	976	38.83	13.96	63.45	24243	20656	19284	10897	6482	294.62	59.43	63.66
4	11873	11589	2932	3211	1002	42.01	15.10	59.70	24243	20656	19225	10943	6625	296.52	59.81	64.27
5	11873	11589	3281	3913	903	46.28	16.64	58.77	24243	20656	19039	10372	5948	282.19	56.92	61.76
6	11873	11589	2705	2944	1214	45.78	16.46	70.51	24243	20656	18394	10821	6530	294.20	59.34	66.64
7	11873	11589	2925	3394	1157	49.15	17.67	70.01	24243	20656	19388	10738	6252	279.63	56.41	60.09
8	11873	11589	2769	3302	1043	48.45	17.42	72.91	24243	20656	17353	10099	6416	276.71	55.82	66.44
9	11873	11589	3399	3909	0	51.77	18.61	63.46	24243	20656	17821	10785	0	280.16	56.51	65.51
10	11873	11589	3782	4408	32	58.41	21.00	64.36	24243	20656	9413	5770	0	72.50	14.62	32.09
11	11873	11589	2747	3607	834	49.29	17.72	74.76	24243	20656	12323	10667	5397	245.67	49.56	83.07
12	11873	11589	2463	2909	716	32.85	11.81	55.58	24243	20656	17303	11672	7318	317.85	64.12	76.54
13	11873	11589	2595	2967	940	36.48	13.11	58.57	24243	20753	17605	11484	6626	313.77	63.00	74.26
14	11873	11589	2663	3095	631	32.18	11.57	50.35	24243	20656	17200	11488	7077	323.35	65.23	78.33
15	11873	11589	1954	2842	784	36.07	12.97	76.91	24243	20656	17377	11409	6921	299.48	60.41	71.81
16	11873	11589	2759	3433	1017	44.21	15.89	66.77	24243	20656	17444	11243	6752	305.74	61.67	73.03
17	11873	11589	2340	2824	747	32.55	11.70	57.96	24243	20656	17654	11411	7184	285.95	57.68	67.49
18	11873	11589	3046	3469	1095	44.68	16.06	61.12	24243	20656	17767	11210	6644	301.79	60.88	70.77
19	11873	11589	2825	3675	957	40.25	14.47	59.36	24243	20656	17776	11176	6655	303.31	61.18	71.10
20	11873	11591	2788	3197	721	32.82	11.80	49.06	24243	20753	17681	11322	7235	309.34	62.11	72.90
21	11873	11591	2915	3461	735	35.22	12.66	50.35	24243	20753	17653	11029	7238	302.49	60.73	71.40
22	11873	11591	1869	3270	717	37.49	13.48	83.58	24243	20753	17593	11184	6838	294.07	59.04	69.65
23	11873	11591	2392	3152	861	36.92	13.27	64.32	24243	20753	17554	11023	6634	289.53	58.13	68.73

Day	VRE (Hydel+Wind+Solar+Bagasse)								Thermal Power Plants (GENCOs+IPPs+Nuclear)							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
24	11873	11591	2339	2648	764	35.14	12.63	62.60	24243	20753	16683	10695	7139	298.52	59.93	74.56
25	11873	11591	2580	3460	846	40.23	14.46	64.98	24243	20753	16432	11363	6662	301.87	60.61	76.55
26	11873	11591	3240	3604	1059	46.63	16.76	59.97	24243	20753	15479	10892	6968	289.43	58.11	77.91
27	11873	11591	3677	4135	1032	56.84	20.43	64.41	24243	20753	17707	10247	6922	280.75	56.37	66.06
28	11873	11591	3887	4553	1253	53.61	19.27	57.47	24243	20753	17850	9902	6516	292.72	58.77	68.33
29	11873	11591	3493	4036	1257	59.51	21.39	70.99	24243	20753	17677	9994	6518	276.86	55.59	65.26
30	11873	11591	3778	4294	1496	61.27	22.02	67.57	24243	20753	17839	9837	5977	283.13	56.85	66.13
31	11873	11591	4103	4636	1687	65.67	23.61	66.69	24243	20753	17862	9369	6157	271.41	54.49	63.31

February, 2021

Day	VRE (Hydel+Wind+Solar+Bagasse)								Thermal Power Plants (GENCOs+IPPs+Nuclear)							
	Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)	
	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	11873	11591	3630	4157	1551	62.75	22.56	72.03	24243	20753	16712	9857	6210	202.94	40.75	50.60
2	11873	11591	3864	4234	1615	65.13	23.41	70.23	24243	20753	16539	9977	5810	201.90	40.54	50.86
3	11873	11591	4092	4398	1309	66.88	24.04	68.10	24243	20753	17056	10172	6009	202.65	40.69	49.51
4	11873	11591	4213	4890	1356	78.56	28.24	77.69	24243	20753	16350	9214	5376	186.37	37.42	47.50
5	11873	11591	3883	4389	2371	86.42	31.07	92.74	24243	20753	17004	8665	4866	163.27	32.78	40.01
6	11873	11591	3877	4392	2048	82.11	29.52	88.25	24243	20753	16985	9049	4791	171.89	34.51	42.17
7	11873	11591	3667	4239	2601	85.09	30.59	96.68	24243	20753	17008	8579	4761	163.92	32.91	40.16
8	11873	11591	3933	4500	2487	85.19	30.62	90.25	24243	20753	16383	9007	4945	171.38	34.41	43.59
9	11873	11591	3918	4793	2220	80.03	28.77	85.11	24243	20753	17328	9227	5193	177.69	35.68	42.73
10	11873	11591	3941	4498	2016	82.93	29.81	87.68	24243	20753	17699	9059	5305	173.05	34.74	40.74
11	11873	11591	4057	4492	2174	84.42	30.34	86.70	24243	20753	17959	8973	4926	170.21	34.17	39.49
12	11873	11591	4204	4608	3125	93.75	33.70	92.92	24243	20753	17711	8678	3995	158.13	31.75	37.20
13	11873	11591	4271	4579	3300	94.42	33.94	92.12	24243	20753	17502	8495	3828	156.62	31.45	37.29
14	11873	11591	4235	4889	3084	95.89	34.47	94.34	24243	20753	17465	7825	3726	146.05	29.32	34.84
15	11873	11591	4212	4674	3531	95.30	34.26	94.27	24243	20753	17410	8773	3646	162.04	32.53	38.78
16	11873	11591	4338	4698	3400	96.10	34.54	92.31	24243	20753	17161	8764	4227	165.27	33.18	40.13
17	11873	11591	4468	4760	3508	96.62	34.73	90.11	24243	20753	16413	8465	4098	160.38	32.20	40.71
18	11873	11591	4388	5008	3586	96.56	34.71	91.69	24243	20753	17153	8803	4205	158.60	31.84	38.52
19	11873	11591	4272	5092	2898	93.39	33.57	91.08	24243	20753	16975	8374	4644	160.87	32.30	39.49
20	11873	11591	3994	4735	2130	83.15	29.89	86.74	24243	20753	17269	8802	5570	176.29	35.39	42.53
21	11873	11591	4310	4818	1942	82.03	29.49	79.30	24243	20753	18114	7946	5931	169.74	34.08	39.05
22	11873	11591	4221	4729	2163	80.42	28.91	79.39	24243	20753	17188	8948	5421	180.11	36.16	43.66
23	11873	11591	4503	4878	1934	78.51	28.22	72.65	24243	20753	17402	9021	5420	186.41	37.43	44.63
24	11873	11591	4259	4679	2051	74.71	26.86	73.09	24243	20753	18157	9356	6245	197.76	39.71	45.38
25	11873	11591	3763	4552	1814	68.33	24.56	75.66	24243	20753	17789	9835	6481	205.29	41.22	48.09
26	11873	11591	3732	4275	2079	74.48	26.77	83.16	24243	20753	17824	9755	6461	200.65	40.29	46.91
27	11873	11591	3719	4314	1813	69.78	25.08	78.18	24243	20753	18122	9681	6249	201.48	40.45	46.32
28	11873	11591	3904	4409	2139	73.38	26.38	78.31	24243	20753	17636	9362	6571	192.46	38.64	45.47

March, 2021

Day	VRE (Hydel+Wind+Solar+Bagasse)								Thermal Power Plants (GENCOs+IPPs+Nuclear)							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	11873	11591	3370	3724	2145	69.10	24.84	85.44	24243	20753	17774	10268	6572	211.39	42.44	49.55
2	11873	11591	3563	3981	2072	67.81	24.38	79.30	24243	20753	17327	10291	6748	217.54	43.68	52.31
3	11873	11591	3920	4486	2002	69.82	25.10	74.22	24243	20753	16744	10245	6857	218.91	43.95	54.47
4	11873	11591	3224	3809	2017	65.92	23.69	85.19	24243	20753	17351	10731	7254	225.04	45.18	54.04
5	11873	11591	3712	4359	2075	66.55	23.92	74.70	24243	20753	17493	10674	7377	222.73	44.72	53.05
6	11873	11591	4247	4787	1993	72.80	26.17	71.42	24243	20753	17411	10678	6880	216.41	43.45	51.79
7	11873	11591	4182	4763	2229	75.85	27.27	75.57	24243	20753	17471	9075	6971	196.67	39.49	46.90
8	11873	11591	3447	4240	1924	66.65	23.96	80.57	24243	20753	17622	10156	7247	218.56	43.88	51.68
9	11873	11591	3795	4384	1919	66.49	23.90	73.00	24243	20753	17518	10396	7771	228.40	45.86	54.33
10	11873	11591	3632	4135	1942	66.76	24.00	76.59	24243	20753	17178	10404	7870	230.63	46.30	55.94
11	11873	11591	3379	4263	1938	69.54	25.00	85.75	24243	20753	16925	9945	6712	215.34	43.23	53.01
12	11873	11591	3888	4536	2116	74.13	26.65	79.44	24243	20753	16883	8748	6216	181.89	36.52	44.89

Day	VRE (Hydel+Wind+Solar+Bagasse)								Thermal Power Plants (GENCOs+IPPs+Nuclear)							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
13	11873	11591	3168	4038	1892	70.95	25.51	93.32	24243	20753	17199	10143	6493	207.36	41.63	50.23
14	11873	11591	3156	3683	1769	57.92	20.82	76.47	24243	20753	16672	10096	7738	220.31	44.23	55.06
15	11873	11591	2857	3448	1917	57.47	20.66	83.82	24243	20753	17410	10988	7570	234.64	47.11	56.16
16	11873	11591	2868	3499	1805	55.23	19.85	80.23	24243	20753	16989	11273	8588	248.09	49.81	60.84
17	11873	11591	3126	3599	1812	57.20	20.56	76.25	25302	21812	16953	11590	8588	253.32	48.39	62.26
18	11873	11591	2790	3803	1664	54.86	19.72	81.92	25302	21812	16438	11837	9254	255.07	48.72	64.65
19	11873	11591	2868	3394	1676	52.77	18.97	76.67	25302	21812	16675	11635	9271	255.20	48.75	63.77
20	11873	11591	3023	3652	1662	56.09	20.16	77.31	25302	21812	15899	11374	8931	249.86	47.73	65.48
21	11873	11591	3484	4411	1902	60.90	21.89	72.83	25302	21812	16384	9961	7446	208.68	39.86	53.07
22	11873	11591	3790	4672	1867	66.91	24.05	73.56	25302	21812	16864	8756	5885	184.25	35.20	45.52
23	11873	11591	3452	3905	1461	62.23	22.37	75.11	25302	21812	16669	8655	4458	161.40	30.83	40.34
24	11873	11591	2671	3070	1932	55.95	20.11	87.28	25388	21843	17030	10554	6964	210.78	40.21	51.57
25	11873	11591	2613	3490	1722	54.95	19.75	87.63	25388	21843	17353	10813	7462	221.05	42.17	53.08
26	11873	11591	2931	3404	1533	54.30	19.52	77.19	25388	21843	17660	10385	8317	225.71	43.05	53.25
27	11873	11591	3622	4142	1681	60.66	21.80	69.78	25388	21843	17963	10641	8480	233.77	44.59	54.22
28	11873	11591	4419	5119	1790	73.23	26.32	69.04	25388	21843	17586	10324	8476	226.22	43.15	53.60
29	11873	11591	5220	5658	2480	88.02	31.64	70.26	25388	21843	16152	10195	8725	226.30	43.17	58.38
30	11873	11591	4597	5245	2849	96.28	34.61	87.27	25388	21843	16160	9986	8522	224.34	42.79	57.84
31	11873	11591	4291	5181	2745	87.23	31.36	84.71	25388	21843	16696	10204	8457	228.57	43.60	57.04

April, 2021

Day	VRE (Hydel+Wind+Solar+Bagasse)								Thermal Power Plants (GENCOs+IPPs+Nuclear)							
	Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ra-tion (GWh)	Energy (%)	
	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	11873	11591	3927	4788	2422	81.00	29.12	85.94	25388	21843	16641	10489	8471	228.49	43.59	57.21
2	11873	11591	4080	4858	2249	72.62	26.10	74.16	25388	21843	18120	10949	8670	238.39	45.47	54.82
3	11873	11591	3756	4218	2248	73.74	26.51	81.80	25388	21843	17498	11240	8864	245.24	46.78	58.40
4	11873	11591	4156	4614	1896	73.20	26.31	73.38	25388	21843	17777	11157	9237	241.39	46.05	56.58
5	11873	11591	5123	5811	2164	90.52	32.54	73.62	25388	21843	17761	10402	8227	226.49	43.20	53.13
6	11873	11591	5691	6093	3413	114.52	41.17	83.85	25388	21843	18203	9234	5894	183.41	34.99	41.98
7	11873	11591	5054	5760	3077	108.71	39.08	89.63	25388	21843	18182	9666	5890	193.83	36.97	44.42
8	11873	11591	4938	5377	3452	99.96	35.93	84.34	25388	21843	17951	10440	7681	218.77	41.73	50.78
9	11873	11591	5090	5530	2949	94.96	34.13	77.73	25388	21843	18053	10115	8475	229.32	43.74	52.93
10	11873	11591	4661	5220	3165	94.20	33.86	84.21	25388	21843	17969	11156	8726	240.03	45.79	55.66
11	11873	11591	5178	5577	2775	90.14	32.40	72.53	25388	21843	18157	11236	8561	245.96	46.92	56.44
12	11873	11591	4807	5349	3182	96.02	34.52	83.23	25388	21843	17594	12206	8421	255.65	48.77	60.55
13	11873	11572	4897	5351	3030	94.00	33.84	79.98	25388	21976	17908	13081	9953	276.39	52.40	64.31
14	11873	11572	4805	5776	3236	100.98	36.36	87.56	25388	21931	18461	13114	9768	281.00	53.39	63.42
15	11873	11572	4806	5930	2759	104.84	37.75	90.89	25388	21931	18643	12224	8844	252.77	48.02	56.49
16	11873	11572	5111	5855	2880	101.41	36.51	82.67	25388	21931	18379	10791	8291	232.71	44.21	52.76
17	11873	11572	4406	5615	2851	97.29	35.03	92.00	25388	22005	18839	11623	8496	238.98	45.25	52.86
18	11873	11572	3720	5357	2761	88.85	31.99	99.52	25388	22005	18421	12507	8178	258.07	48.86	58.37
19	11873	11572	3972	4694	2788	84.04	30.26	88.16	25388	22005	18711	12855	9407	274.13	51.91	61.05
20	11873	11572	4831	5863	2536	91.28	32.87	78.73	25388	22005	17905	12386	8055	246.95	46.76	57.47
21	11873	11591	5373	5762	2914	99.07	35.61	76.83	25388	22005	18234	11369	8382	238.89	45.23	54.59
22	11873	11591	5693	6565	3033	108.94	39.16	79.73	25388	22005	17737	10610	7229	227.74	43.12	53.50
23	11873	11591	5288	6465	2839	109.63	39.41	86.39	25388	22005	17960	10398	6102	193.74	36.68	44.95
24	11873	11591	5311	5970	2815	103.07	37.05	80.86	25388	22005	17783	11468	8148	239.20	45.29	56.05
25	11873	11591	5274	6047	2882	103.71	37.28	81.94	25388	22005	18107	12047	9052	253.62	48.02	58.36
26	11873	11591	5657	6192	3601	114.66	41.22	84.45	25388	22005	18513	13550	8790	274.78	52.03	61.84
27	11873	11591	4337	5267	3156	102.67	36.91	98.64	25388	22005	18840	14763	10831	309.68	58.64	68.49
28	11873	11591	4618	5216	3074	97.74	35.13	88.19	25388	22005	17760	15076	11988	330.21	62.52	77.47
29	11873	11591	5280	5949	3118	100.24	36.03	79.11	25388	22005	18798	15275	12370	337.47	63.90	74.80
30	11873	11591	5175	5951	3155	101.97	36.65	82.10	25388	22005	18727	14867	11942	329.58	62.41	73.33

May, 2021

Day	VRE (Hydel+Wind+Solar+Bagasse)								Thermal Power Plants (GENCOs+IPPs+Nuclear)							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Pres-ent day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	11873	11591	5203	6347	3034	106.18	38.17	85.03	25388	22005	18767	14860	11866	324.95	61.53	72.15
2	11873	11591	4859	6363	3253	115.78	41.62	99.28	25388	22005	18620	14090	11927	309.60	58.62	69.28
3	11873	11591	5988	6336	3207	119.90	43.10	83.43	25388	22005	18726	15099	11902	325.54	61.64	72.43
4	11873	11591	5509	6514	4073	126.70	45.54	95.83	25388	22005	18943	15074	10672	311.53	58.99	68.52
5	11873	11591	5512	6574	4291	125.36	45.06	94.76	25388	22005	19121	13860	8637	297.13	56.26	64.75
6	11873	11591	5374	6322	4006	115.54	41.53	89.58	25388	22005	18193	14389	9747	301.84	57.15	69.13
7	11873	11591	5480	5990	3631	115.07	41.36	87.50	25388	22005	18248	13661	10975	303.34	57.44	69.26
8	11873	11591	5605	6692	3470	118.60	42.63	88.16	25388	22005	17930	14166	10885	303.73	57.51	70.58
9	11873	11591	5591	6708	3827	124.75	44.84	92.97	25388	22005	18737	14751	10494	302.33	57.24	67.23
10	11873	11591	6088	6683	4593	135.93	146.84	291.56	24243	20753	17178	10404	7870	230.63	46.30	55.94
11	11873	11591	5968	6630	4607	137.69	49.49	96.13	25388	22005	18900	13222	9281	266.90	50.54	58.84
12	11873	11591	6024	6683	4418	136.08	48.91	94.12	25388	22005	18783	12526	8488	255.43	48.37	56.66
13	11873	11591	5830	6699	4633	136.19	48.96	97.33	25388	22005	19213	10753	7255	217.14	41.12	47.09
14	11873	11591	5580	6251	4373	124.71	44.83	93.12	25388	22005	19306	11333	7361	227.64	43.10	49.13
15	11873	11591	5398	6261	4387	121.89	43.81	94.09	25388	22005	19074	10402	8246	228.60	43.28	49.94
16	11873	11591	6163	6667	4340	133.36	47.94	90.16	25388	22005	18604	10413	7889	219.42	41.55	49.14
17	11873	11591	6317	6637	4479	135.65	48.76	89.48	25388	22005	18099	12316	8988	259.28	49.09	59.69
18	11873	11591	5050	6296	3896	124.22	44.65	102.49	25388	22005	18712	13548	10867	297.55	56.34	66.26
19	11873	11591	5498	6276	3969	122.43	44.01	92.78	25388	22005	18915	14381	11479	304.75	57.70	67.13
20	11873	11591	6045	6399	3848	126.90	45.61	87.47	25388	22005	18339	13396	10398	289.19	54.76	65.70
21	11873	11591	5144	6316	4160	131.01	47.09	106.12	25388	21974	20161	13705	10031	282.49	53.56	58.38
22	11873	11591	4495	6227	3657	123.43	44.37	114.41	25388	21974	17696	13769	7119	268.66	50.94	63.26
23	11873	11591	5475	6305	4087	124.81	44.87	94.99	25388	21974	18387	11859	7655	243.93	46.25	55.28
24	11873	11591	5592	6269	4169	125.26	45.03	93.33	25388	21974	18298	13571	10295	293.69	55.69	66.88
25	11873	11591	5988	6540	4457	135.91	48.85	94.57	25388	21974	17883	13765	11106	304.65	57.77	70.98
26	11873	11591	6109	6593	4296	130.57	46.94	89.06	25388	21974	17268	14182	12295	320.49	60.77	77.33
27	11873	11591	6056	6498	4200	130.93	47.06	90.08	25388	21974	17817	14648	13074	334.64	63.45	78.26
28	11873	11591	6104	6567	4125	132.17	47.51	90.22	25388	21974	17742	14457	12674	334.63	63.45	78.59
29	11873	11591	5146	6448	4425	132.25	47.54	107.09	25388	21974	17538	14708	13460	341.65	64.78	81.17
30	11873	11591	6269	6690	4549	135.92	48.86	90.34	25388	21974	17508	14726	12714	331.90	62.93	78.99
31	11873	11591	5414	6681	4123	130.97	136.74	189.55	25388	21843	16696	10204	8457	228.57	43.60	57.04

June, 2021

Day	VRE (Hydel+Wind+Solar+Bagasse)								Thermal Power Plants (GENCOs+IPPs+Nuclear)							
	Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)		Capacity (MW)			Load (MW)		Gene-ration (GWh)	Energy (%)	
	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC	Inst.	Dep.	Present day	Max.	Min.		W.r.t. Dep. Cap.	W.r.t. PDC
1	11872	7060	6136	5232	726	68.93	40.68	46.81	25388	21974	18144	13795	9654	281.21	53.32	64.58
2	11872	7040	6259	5270	367	66.17	39.16	44.05	25388	21974	17773	15057	12086	329.49	62.48	77.25
3	11872	7108	6081	5387	243	61.35	35.96	42.04	25388	21974	17761	14225	10864	305.43	57.91	71.65
4	11872	7141	5969	5195	194	57.38	33.48	40.05	25388	21974	18570	14557	11698	318.51	60.39	71.47
5	11872	7167	5919	5214	256	60.33	35.08	42.47	25388	21974	17599	15300	12327	338.19	64.13	80.07
6	11872	7206	6002	4921	165	60.51	34.99	42.01	25388	21974	17785	14974	12800	334.63	63.45	78.40
7	11872	7199	6427	5198	495	69.28	40.10	44.91	25388	21974	17840	15778	14033	363.08	68.85	84.80
8	11872	7278	6643	5277	951	77.43	44.33	48.57	25388	21974	17499	15534	14553	365.61	69.33	87.06
9	11872	7295	7116	5619	1048	79.29	45.29	46.43	25388	21974	17551	16198	12582	359.87	68.24	85.43
10	11872	7586	7196	5622	1022	79.26	43.53	45.89	25388	21974	17970	16169	14740	369.91	70.14	85.77
11	11872	7586	7369	6131	1054	81.93	45.00	46.33	25388	21974	17853	16174	12241	357.65	67.82	83.47
12	11872	9519	8813	6333	683	89.15	39.02	42.15	25388	21974	17648	15496	12200	330.85	62.73	78.11
13	11872	9127	8831	5563	641	90.19	41.17	42.55	25388	21974	18171	14554	7849	245.98	46.64	56.40
14	11872	9672	8771	6032	587	87.15	37.54	41.40	25388	21974	18652	13977	11071	299.94	56.87	67.00
15	11872	9460	8765	6665	486	88.81	39.12	42.22	25388	21974	19054	13699	8698	269.77	51.15	58.99
16	11872	9662	8449	7015	320	84.02	36.23	41.43	25388	21974	19094	12924	8668	256.36	48.61	55.94
17	11872	9834	8283	6408	235	76.79	32.54	38.63	25388	21974	18449	12482	8732	261.00	49.49	58.95
18	11872	9504	7980	7065	260	76.89	33.71	40.15	25388	21974	18353	13303	10115	289.98	54.99	65.83
19	11872	9631	8865	6986	475	88.28	38.19	41.49	25388	21974	18065	13746	11542	302.95	57.44	69.87
20	11872	9189	8583	7321	237	92.07	41.75	44.70	25388	21974	17965	12240	6889	248.43	47.11	57.62
21	11872	9684	8992	7512	617	95.90	41.26	44.44	25388	21974	18255	12567	7531	256.19	48.58	58.47
22	11872	9395	8862	8028	559	95.44	42.33	44.87	25388	21974	18530	14083	11007	301.12	57.10	67.71
23	11872	8447	7613	6656	721	86.69	42.76	47.44	25388	21974	18258	15188	13079	338.62	64.21	77.28
24	11872	7898	7760	6427	820	87.03	45.91	46.73	25388	21974	18336	14979	12674	332.62	63.07	75.59
25	11872	7765	7482	6093	974	86.51	46.42	48.18	25388	21974	18416	15049	9540	314.41	59.62	71.14
26	11872	7253	7358	6102	931	83.94	48.22	47.53	25388	21974	19053	14268	9968	292.99	55.56	64.07
27	11872	7366	6522	5804	252	67.92	38.42	43.39	25388	21974	18557	15313	12728	338.65	64.21	76.04
28	11872	6987	6374	5741	391	67.53	40.27	44.14	25388	21974	18260	15918	14140	364.09	69.04	83.08
29	11872	7357	6515	5808	474	71.29	40.38	45.59	25388	21974	16382	15508	14046	358.56	67.99	91.20
30	11872	7387	6736	5760	825	77.21	43.55	47.76	25388	21974	16426	15318	14508	360.14	68.29	91.36

Source: NPCC DLR

ACRONYMS AND ABBREVIATIONS

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
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
CSR	Corporate Social Responsibility
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
EVP	Electric Vehicle Policy
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
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
TOU	Time of Use
TPS	Thermal Power Station
TSEP	Transmission System Expansion Plan
WAPDA	Water and Power Development Authority

SOURCE OF INFORMATION

The following sources of information have been used in the compilation of this State of Industry Report 2021:

i) K-Electric Limited
ii) All Distribution Companies
iii) All Independent Power Producers
iv) Public Sector Generation Companies
v) National Power Control Centre, NTDC
vi) Water and Power Development Authority
vii) Central Power Purchasing Agency-Guarantee
viii) National Transmission and Despatch Company Limited
ix) Pakistan Energy Yearbook, Hydrocarbon Development Institute of Pakistan
x) Power System Statistics, Planning Power, NTDC
xi) Pakhtunkhwa Energy Development Organization
xii) Energy Department, Government of Sindh
xiii) Energy Department, Government of Balochistan
xiv) Alternative Energy Development Board
xv) Private Power and Infrastructure Board
xvi) Punjab Power Development Board
xvii) Others