PERIOD 2023 to 2033

PREPARED BY FESCO

WITH FACILITATION FROM NTDC

NATIONAL TRANSMISSION & DESPATCH COMPANY LIMITED

Acknowledgement

The following officers/officials of FESCO developed this Medium-Term Energy and Demand Forecast report under the supervision of Mr. Abid Rasheed, Manager (Transmission Planning & Forecasting) MIRAD FESCO& Mr. Muhammad Abdullah Dy. Manager (Demand Forecasting) FESCO.

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On the eve of publishing of this report we would like to express our sincere gratitude to NTDC Load Forecast Team comprising Mr. Shehbaz (Manager Load Forecast), Engr. Tauseef-ur-Rehman Khan – Deputy Manager Load Forecast, Engr. Maham Shahzadi – Assistant Manager Load Forecast Their contribution and expertise have been very instrumental and invaluable for the quality of this report. Their devotion and dedication to keep the forecast methodology at par with the best international industrial practices is highly commendable. We highly appreciate the efforts of Power System Planning, NTDC for initiating the forecast process every year and facilitating all DSICOs to ensure the timely completion of the report.

PMS Team
FESCO

Executive Summary

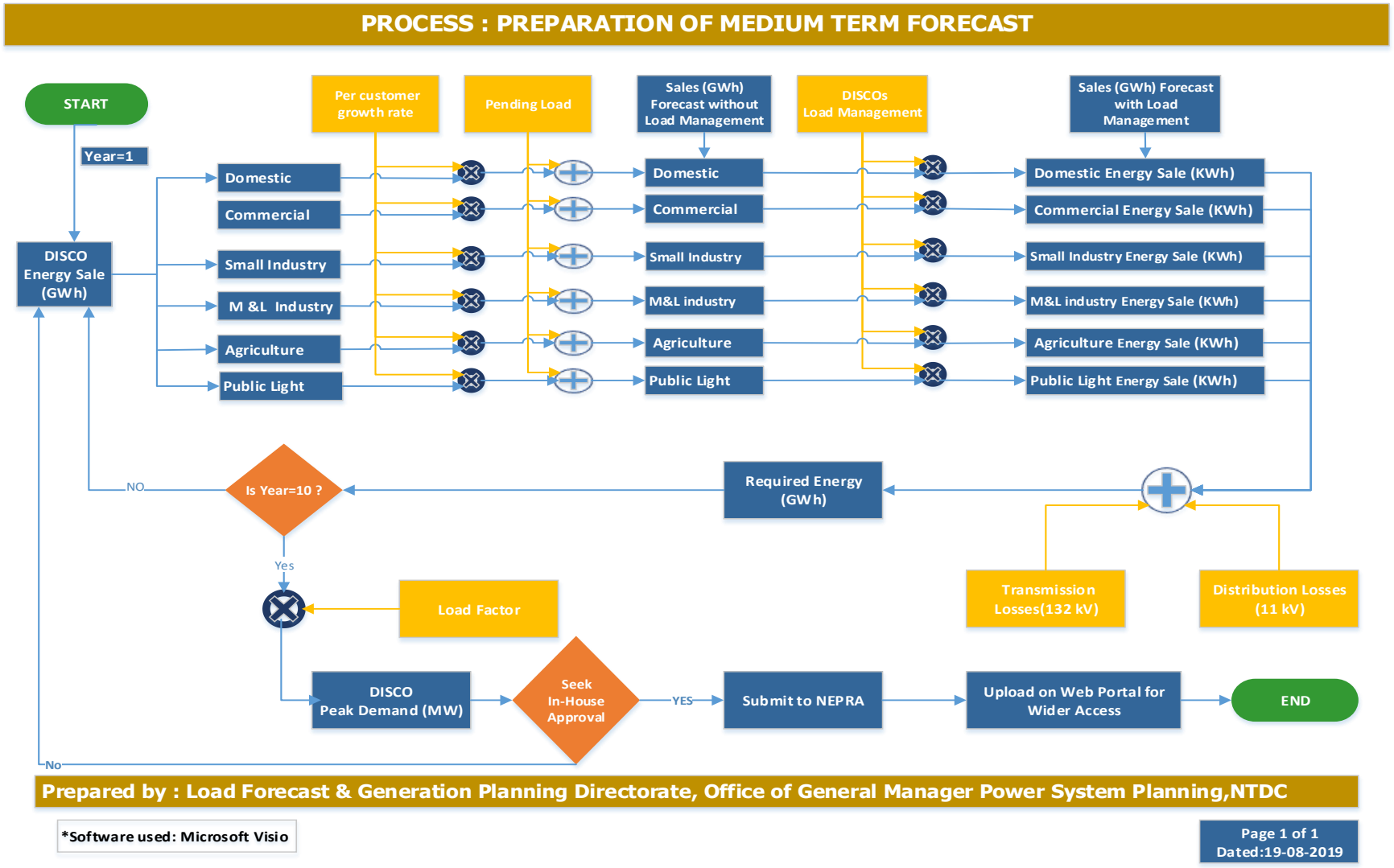
Faisalabad Electric Supply Company (FESCO) is supplying power to civil administrative divisions of Faisalabad and Sargodha and their respective districts. This company came into existence in the year 2001 after unbundling of WAPDA system. Earlier it was known as Faisalabad Area Electricity Board (AEB). In the year 2001, its distribution network comprised Thirty Eight (38) 132 kV and Thirty-Three (33) 66 kV sub-stations. Presently, it operates Eighty Five (86) 132 kV and Nineteen (16) 66 kV sub-stations.

This forecast is developed by conducting Power Market Survey (PMS), where the bottom up approach is applied considering the best international practices for the development of ten years forecast which is called Medium-term Load Forecast with facilitation from National Transmission and Dispatch Company (NTDC). The year 2022-23 has been taken as the base year and the forecast horizon is ten years up to 2032-33. The base year sale data (consumer-category wise energy sale of each feeder) and the expected spot loads data at the locations of different sub-stations have been collected by FESCO Power Market Survey team besides Transmission & Distribution losses along with the loss reduction plans, historical category-wise sale and number of consumers. Data for the base year has also been adjusted for the estimated amount of un-served energy (load shedding) in order to have realistic figures of energy consumption. Furthermore, this report is updated on yearly basis, in order to capture any potential drastic change in consumer consumption pattern.

In the year 2022-23, peak demand of FESCO was 3165-MW (Recorded), energy sale was 14663-GWh hand energy purchased was 16041-GWh. In the total energy sale for the year 2022-23 the shares of domestic sector and industrial sector were 43.59% and 37.48% respectively. The total number of consumers in 2022-23 were 5.10-million, and number of consumers in various categories was 4.48 million in domestic, 0.51-million in commercial, 0.054-million in industrial sector and 0.053-million in agricultural sector.

Forecast results show that in the years 2026-27 and 2032-33 energy sale will be 16773-GWh and 23557-GWh, peak demand will be 4075-MW and 5685-MW, and energy purchased will be 18269-GWh and 25417-GWh respectively. For the period 2022-22 to 2032-33, annual average compound growth rate of energy sale, peak demand and energy purchased will be 4.18%, 4.21% and 4.03% respectively.

Process Map


PROCESS : PREPARATION OF MEDIUM TERM FORECAST
START
Year=1
DISCO Energy Sale (GWh)
Per customer growth rate
Pending Load
Sales (GWh) Forecast without Load Management
DISCOs Load Management
Sales (GWh) Forecast with Load Management
Domestic
Commercial
Small Industry
M &L Industry
Agriculture
Public Light
Domestic
Commercial
Small Industry
M&L industry
Agriculture
Public Light
Domestic Energy Sale (KWh)
Commercial Energy Sale (KWh)
Small Industry Energy Sale (KWh)
M&L industry Energy Sale (KWh)
Agriculture Energy Sale (KWh)
Public Light Energy Sale (KWh)
Is Year=10 ?
NO
Yes
Required Energy (GWh)
Transmission Losses(132 kV)
Distribution Losses (11 kV)
Load Factor
DISCO Peak Demand (MW)
Seek In-House Approval
YES
No
Submit to NEPRA
Upload on Web Portal for Wider Access
END
Prepared by : Load Forecast & Generation Planning Directorate, Office of General Manager Power System Planning,NTDC
*Software used: Microsoft Visio
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Dated:19-08-2019

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1 Introduction

This report is the 31st edition of Medium term energy & Demand forecast based on Power Market Survey. This forecast prepared by FESCO with the support of NTDC & CPPA-G. The report consists of year wise detailed forecast of energy sale and power demand for the whole company and each sub-station within the company's distribution network. In addition, forecast for Civil Administrative areas such as Divisions and Districts served by the company's distribution network is also computed and depicted in different tables. The forecasted peak demand of FESCO has been graphically presented in Figure 1-1

Load forecasting is an important element of the power planning process involving prediction of energy and demand in the future. The forecast serves as the basis for demand and supply-side planning. Load forecasts are typically prepared by utilities for different time frames and the level of details required depends upon different planning applications and operations for which the forecast will be used.

Long term planning requires a system level forecast of total generation requirement and peak demand. On the other hand, transmission and distribution planning requires more load level and geographic details to assess location, timing and loading of individual lines, substations and transformation facilities. The following figure (Figure 1-1) shows the computed peak demand of FESCO for the current forecast period.

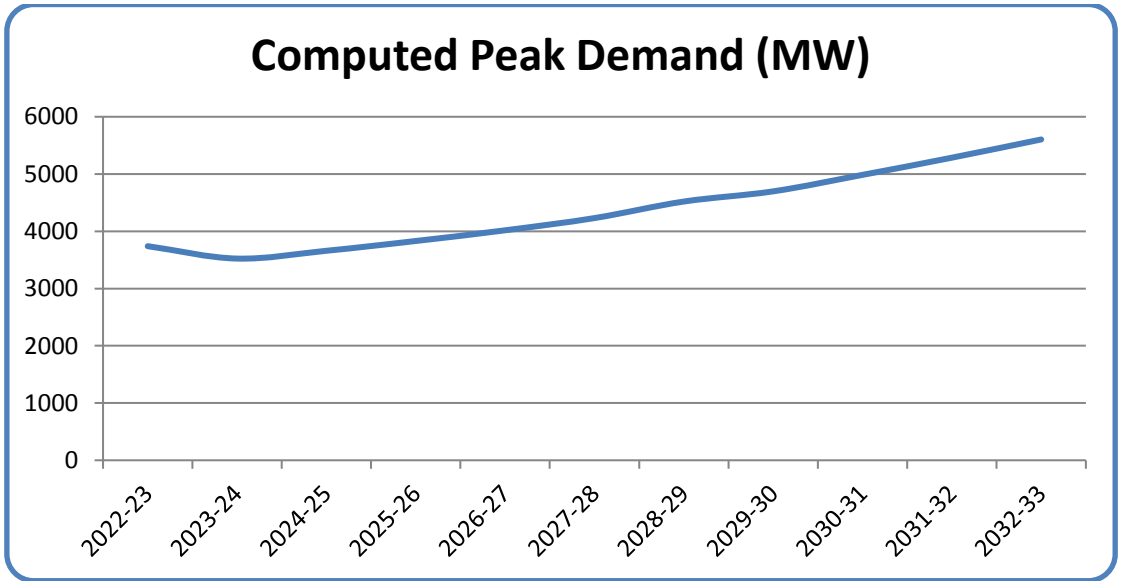


Figure 1-1: Computed Peak Demand Forecast

Forecasting models fall into the following three general categories:

- Trend models
- Econometric based models
- End-use models

Trend forecasts graphically or mathematically extrapolate past electricity demand trends into the future. They may be inadequate for short time periods where demographic changes in the underlying casual factors of load growth are not anticipated. Econometric models represent a more complex 'top-down' approach to forecasting and these models rely on the observed or the implied relationship between past energy consumption and other variables defining past economic output (likewise GDP data), demographics and price or income variables. End-use models relate energy use to the physical appliances stock levels and use patterns or industrial process. These end use models represent a

'bottom-up' forecasting approach and normally incorporate disaggregate end use forecast and consumer survey techniques.

This report has been prepared on the basis of Power Market Survey Methodology and the model used is called Power Market Survey (PMS) model. It uses bottom-up approach. This model is a form of end use model which provides energy and power projections for all distribution companies and all grid stations within a company's distribution network.

The PMS model relies on an extensive data base of historical sales. The data base includes historical figures of consumption by consumer type (i.e. domestic, industrial and commercial etc.) of each feeder of a grid station and overall consumption from a grid station. Actual consumption data is adjusted for un-served demands attributed to load shedding.

Energy forecasts are computed for each consumption category at the sub area level on the basis of a trend analysis of recent per consumer sales plus new consumer connection applications. Industrial forecasts are based on interviews with existing consumers, trend projections and a review of the applications for request of new and increased service. These analyses are repeated for each sub area for each of the years to be forecasted. The annual peak demand is determined from the resulting energy forecasts by using the load factors and diversity factors developed for each consumer category. Forecasts are then aggregated to system level.

Because the PMS forecast is based on a mix of end-use, trend projection and known consumer expansion plans, it cannot be used reliably to predict demand over the longer term. This model had not been created to predict impacts of changes in growth of different economic sectors or consumers categories over time, or changes in both the absolute and relative prices of electricity, and of changes in the relationships between income growth and electricity growth over time as a result of market saturation and technological change (in order to capture these changes NTDC is using another model called regression model). Regression model is used for long term forecasting as the changes in growth are occurred due to change in technology, life style over a longer time period.

The Power Market Survey forecast model most closely approaches the requirements of power system planning. It provides the level of detail required for siting studies and transmission and substation planning as well as the sectoral details necessary to assess different sectors growth rates and their impacts on load shapes for the system, DISCOs and grid stations. In addition, it also provides a reasonable approximation of unconstrained load growth because it makes specific provision for load shedding i.e. suppressed demand.

2 Historical Supply and Demand Analysis

2.1 Category-wise Sale

The customers within the company can be segregated in different categories. The segregation is usually based upon the type of applications for which electricity is being used. Major categories include Domestic, Commercial, Small industries, Medium & Large industries and Agriculture. The category-wise sale (GWh) along with percentage for the years 2012-13, 2017-18, and 2022-23 are given in Figure 1-2.

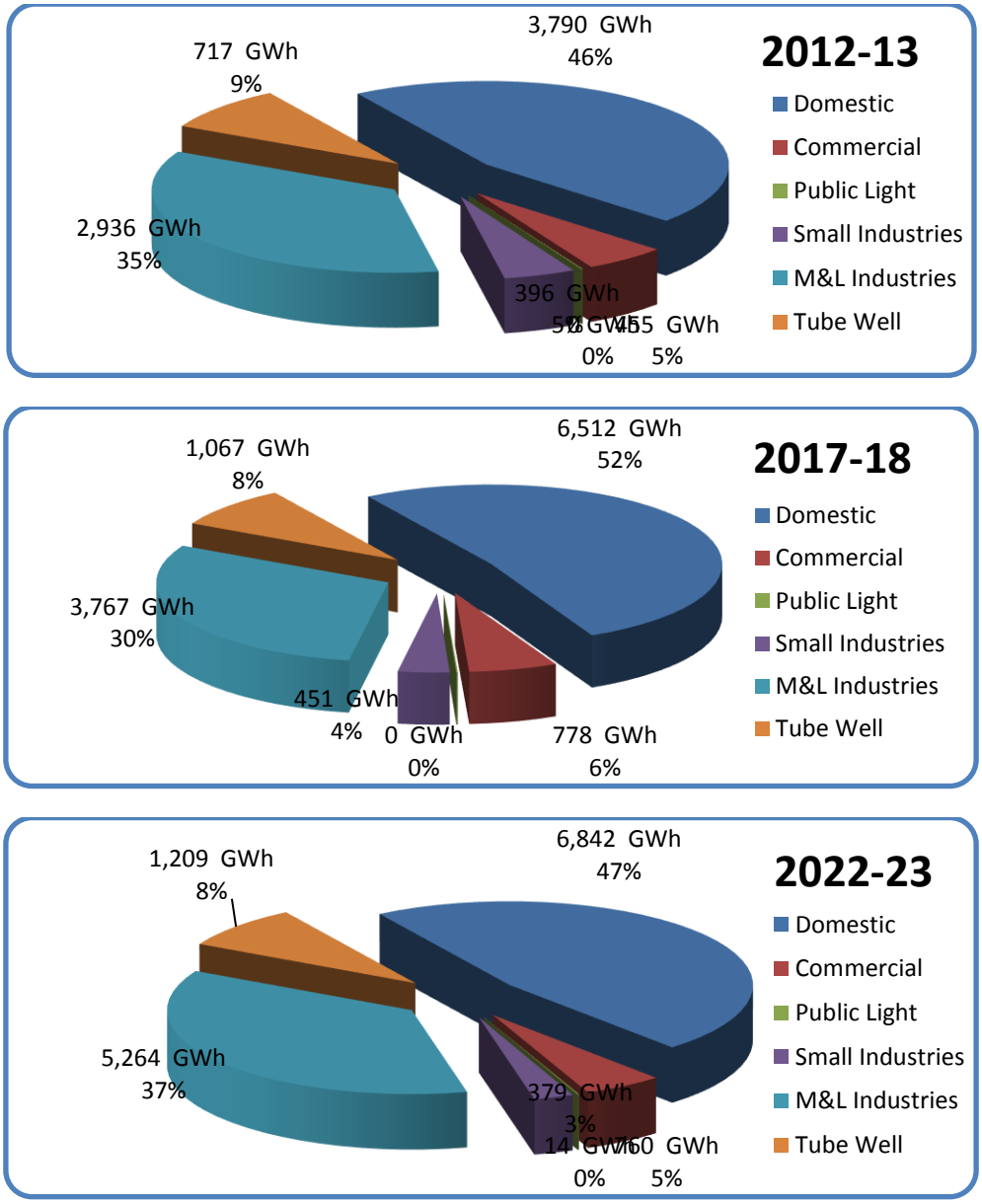


Figure 1-2: Historical Category-wise Sale

Figures of category-wise sale for the last five years i.e. 2018-19 to 2022-23 are given in the table below.Table2.1-1: Historical Sale (GWh) of FESCO

Financial Year	Domestic	Commercial	Public Light	Small Industries	M&L Industries	Tube Well	Bulk	Total
2019	6678	737	10	502	4195	1108	268	13500
2020	6531	1060	10	395	3733	1139	255	13123
2021	6913	1148	13	457	4464	1268	238	14501
2022	7217	1315	18	429	5359	1367	214	15919
2023	6392	1207	17	379	5264	1209	195	14663
Growth Rate (2019-2023)	-1.09	13.11	14.19	-6.79	5.84	2.20	-7.64	2.09

2.2 Transmission and Distribution Losses

In FESCO's system, losses are divided into two types;

- Transmission Losses
- Distribution Losses

The losses of 132 kV transmission lines are considered as Transmission Losses whereas the losses of 11 kV and 440 Volts lines supplying the consumers are called Distribution Losses. In a system, generally the high losses are due to lack of proper maintenance and element of theft. Reduction in losses can be achieved through installation of properly sized conductors in 11kV feeders and low-tension lines. Installation of capacitor banks to reduce reactive power and thereby improving power factor is also and effective method to reduce line losses. The breakup of energy sent out is shown as Sale, Distribution Losses and Transmission Losses with their percentages in Figure 1-3for the year 2020-21, 2021-22 and 2022-23.

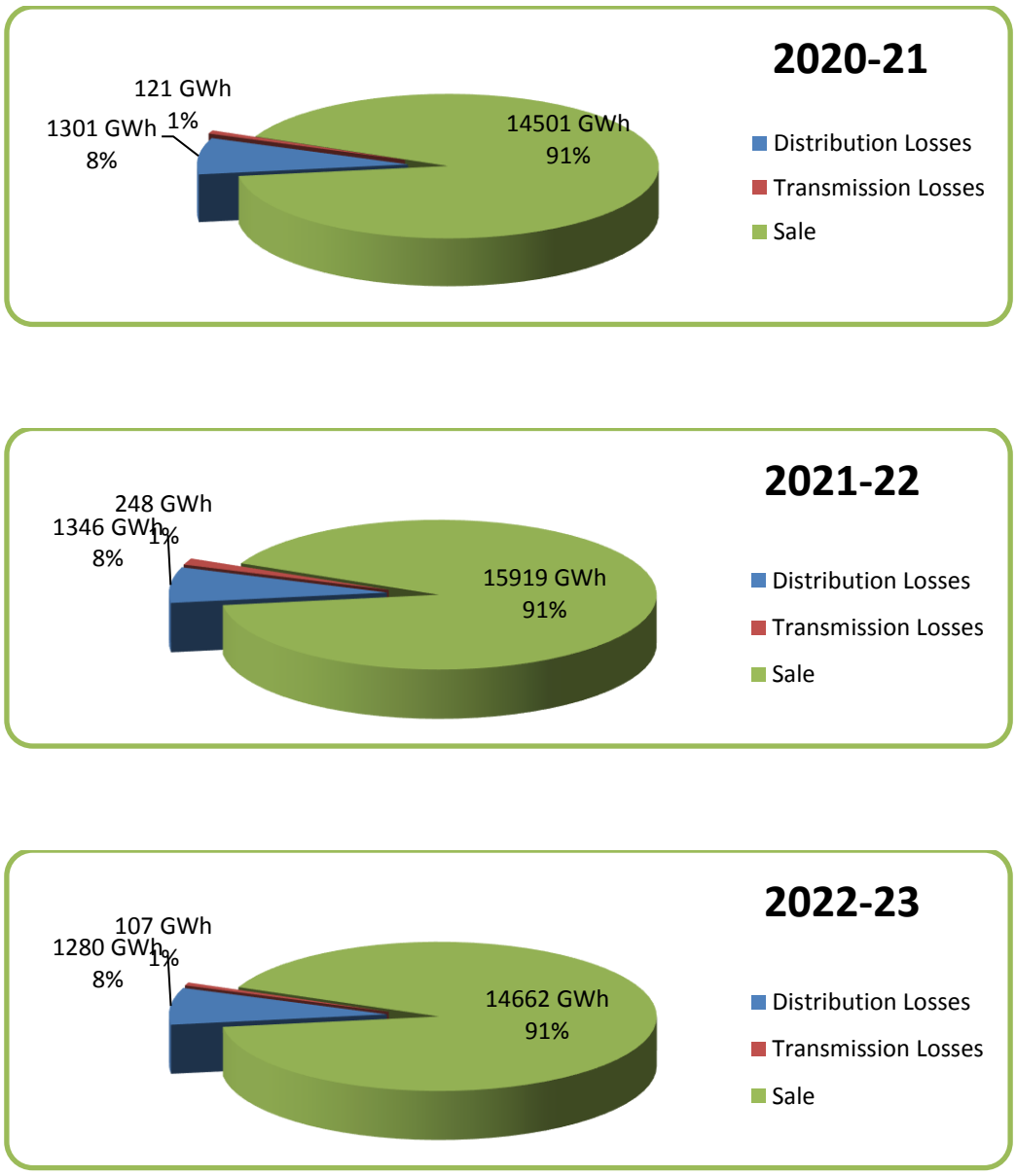


Figure 1-3: Historical Energy Sale and Losses (T&D) with their percentages

2.3 Recorded and Computed Peak Demand

Recorded peak demand is the highest electricity demand or maximum power supplied to the consumers during the base year. Computed peak demand is calculated from the recorded peak demand by adding the element of unserved power to the values of recorded peak demand. Figure 1-4 shows the recorded and computed peak demands (MW) from the year 2018-19 to 2022-23.

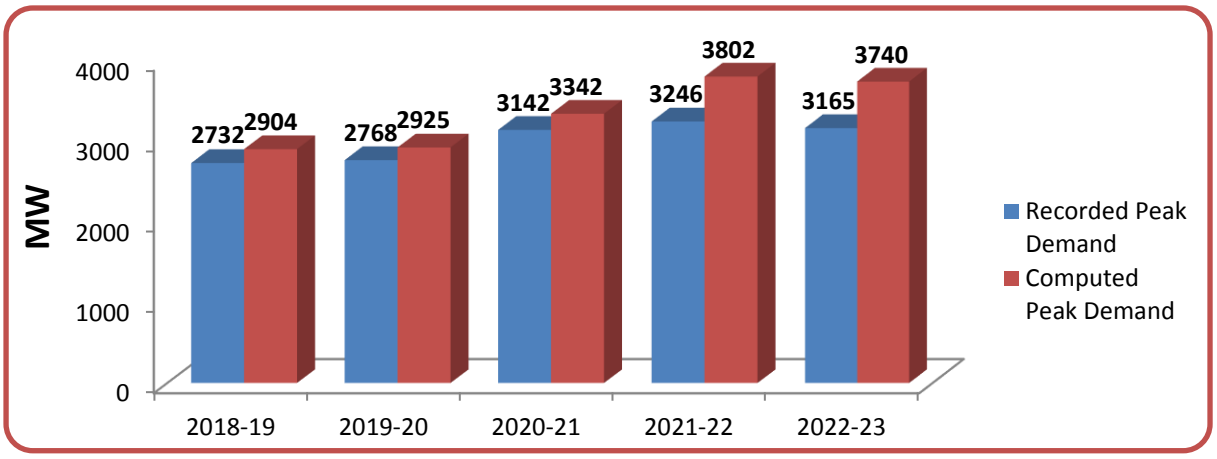


Figure 1-4: Historical Recorded and Computed Peak Demands

Historical figures of recorded and computed peak, energy sale and purchase, losses and load factors for FESCO are given in the following table.

Table 2.3-1: Historical Peak Demand, Energy Sale & Purchase, Losses and Load Factor

Year	Energy Sale	Energy Purchase	Losses		Comp. Energy Purchase	Rec. Peak	Comp. Peak
			11 KV	132 KV			
	GWh	GWh	GWh	GWh	GWh	MW	MW
2019	13500	14970	1212	258	15253	2780	2955
2020	13123	14510	1168	218	14579	2732	2904
2021	14501	15984	1258	225	16070	2768	2925
2022	15,919	17265	1346	248	17513	3246	3802
2023	14662	16049	1280	107	17118	3165	3740

2.4 Number of Consumers

Historical figures of number of consumers within FESCO's jurisdiction for the last five years are given in Table 1-5. These figures show the total number of consumers in all consumer categories; i.e. Domestic, Commercial, Small industries, Medium & Large industries, Public Lighting, Bulk and Agriculture. Figure 1-5 shows a regular increase in the number of customers each year.

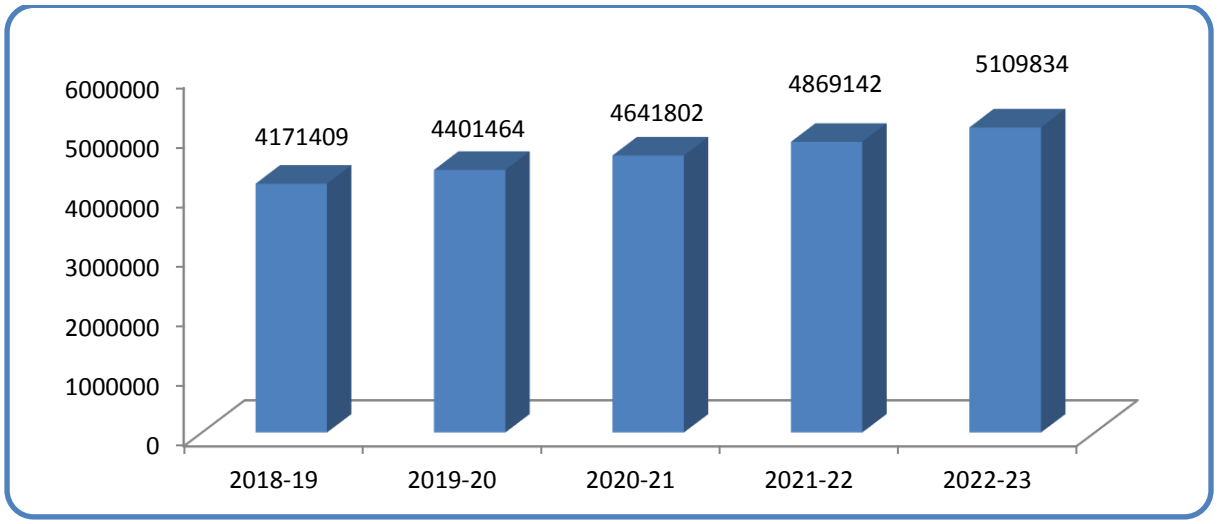


Figure 1-5: Number of Consumers

Category-wise number of consumers for the last five years i.e.2018-19 to 2022-23 is shown in the following table.

Table 2.4-1: Historical Number of Consumers in FESCO

Year	Domestic	Commercial	Public Light	Small Industries	M&L Industries	Tube Well	Bulk	Total
2019	3635640	441021	1782	37367	12613	42763	223	4158503
2020	3839553	462983	1860	37762	13102	45978	226	4401464
2021	4058205	479548	1882	38532	13668	49738	229	4641802
2022	4266638	495019	1913	39192	14227	51922	231	4869142
2023	4489145	510860	1955	39717	14577	53345	235	5109834
Growth Rate (2019-2023)	5.41	3.74	2.34	1.54	3.68	5.68	1.32	5.29

3 Power Market Survey Methodology

3.1 Overview

The Power Market Survey Model forms the basis of the Medium Term Forecast. It produces energy and peak demand forecast for each consumer category and grid station for the entire service area over a period of ten years. The model has three inter-related components: the main database, the basic input parameters and the calculations.

A huge energy consumption database has been developed through the Power Market Survey. The database contains base year consumption data for existing consumers and ten years' forecast data for new consumers for each consumer category within the company. In addition, there is separate information for peak demand in medium & large industries and traction categories. Because of its huge volume, this data is not listed as part of the report.

In addition to the database, a number of basic input parameters are separately prepared for each DISCO which forms an integral part of the forecast model. These include:

- **Growth Rates:** The annual increase in consumption per consumer by consumer category
- **Loss Rates:** Transmission and Distribution Losses expressed as a percentage of energy purchased and energy sold, respectively
- **Load Factors:** It expresses the ratio of the amount of energy actually generated to the amount that would have been generated, had the peak demand been continued over the entire period.
- **Coincidence Factors:** Describing the load diversity within the system.

The forecast calculations within the model combine the energy consumption data and the input parameters to compute the energy and peak demand requirements within each area for each year to be forecasted. The basic data unit is an area. The data is accumulated from the area basis to grid stations, then to DISCOs and ultimately combined to produce a forecast for the entire system. A detailed discussion of each of the three model components is given below.

3.2 Survey Base Data

An extensive database has been developed on gross consumption by consumer category such as household (domestic), commercial, small industrial, large industrial, tube wells (agriculture), public lighting, and traction (electric rail). Energy consumption figures come from consumer service meter readings. Maximum demand readings and load factors for large industrial consumers and other demand-meteredconsumers are based on service meter readings. The consumption data is collected from Computer Centers of each DISCO (It is category-wise consumption data of each feeder). The database also contains data regarding un-served demands attributed to load shedding.

The basic geographic unit represented within the database is called an area, although many areas are divided into two or more subareas. This occurs when portions of the area are served by different feeders or where a single feeder services different administrative districts. Each area is assigned a series of codes which identify the technical boundaries associated with the area.

The technical boundaries, which are emphasized in this report, start at the grid station. Thus, all areas and subareas are assigned to one of the sub-stations in each DISCO. These are distribution grid stations supplying power at 11 kV after transformation from a 132kV or 66 kV source. Grid stations are combined to form a DISCO.

There can be up to eleven records in the data base for each area or subarea, one record for each year of forecast. The first year is typically year zero and records the base year level of consumption for each consumer category. The remaining records for the area list the incremental consumption associated with new consumers to be added to the area within the specified year.

This incremental consumption is based on applications for new or extended service which are filed at each revenue office and from discussions with the relevant industries and government agencies. Incremental industrial consumption is based on a combination of interviews, trend projections, and

reviews of applications for new and/or increased service. Interviews are held with major industrial consumers to identify their current capacity utilization and any long-term plans they have for future expansion or changes in their electricity consumption. In addition, the various branches of the Ministry of Industries are interviewed to determine the number of applications received for new developments or plant expansions and the anticipated electrical load associated with each development or expansion. These anticipated new demands are added to the basic forecast of industrial consumption.

Extension of electricity to new areas over the forecast period is dealt with separately. The number of new communities to be electrified is also obtained. Initial loads and load growths are calculated based on past experience in terms of market penetration and consumption per consumer in newly electrified communities. This analysis is conducted at DISCO level.

3.3 Input Parameters

A number of input parameters are defined in order to use these in the Power Market Survey model. These parameters are:

- Transmission and Distribution Loss Rates
- The Growth Rates in consumption per consumer for each category
- Load Factors for each consumer category
- Coincidence or Diversity Factors
- Load Shedding or Un-served Energy

The definition and basic derivation of each parameter is discussed below.

3.3.1 Growth Rates

The forecast calculations, as will be discussed below, use per consumer growth rates to update the previous year's consumption before adding the incremental consumption estimate for the current year. The Power Market Survey model requires per consumer growth rates to be specified by DISCO for each consumer category (domestic, commercial, etc.). The rates selected for the forecast are based on average annual compound growth rates, calculated from the last five years data of each consumer category in each DISCO.

3.3.2 Losses

For every 100 units of electricity purchased from a power station only 85 to 90 units are actually sold to the ultimate end-user. The remaining units are consumed by the power system itself during transmission and distribution of the sold energy. The transmission and distribution losses must be added to the sales forecast in order to determine the total generation requirement for the system. An additional source of "loss" is the consumption in auxiliaries (also called station service) used by the power plants in the process of generating electricity. Auxiliary consumption cannot be avoided and is totally dependent on the type of generation. For example, a thermal plant would have a higher auxiliary consumption than a hydro plant to account for the energy consumed by fuel and waste handling systems. Auxiliary losses are determined and incorporated in the forecast outside the model. However, presently as the power is purchased at the bus bar level so the energy consumption in auxiliary is not calculated.

The Power Market Survey model handles Distribution and Transmission losses in such a manner that Distribution losses are expressed as a percentage of Sales and Transmission losses are expressed as a percentage of the energy purchased from the generating stations. The model is capable of handling different loss rates of each year for each DISCO. The Distribution and Transmission losses used in the Power Market Survey Model are based on the review of current loss rates and an evaluation of existing loss reduction initiatives within the Distribution Network of the DISCO. The proposed losses (Distribution losses at 11kV and Transmission losses at 132 kV) are applied DISCO-wise. Previously a separate excel sheet was used outside the model to calculate the loss rates needed for the model. Now a separate module has been incorporated in the model to adjust 132 kV and 11 kV received and

sale of a DISCO. This model simulates sale, Distribution losses and Transmission losses of a DISCO. It also includes the loss reduction program.

3.3.3 Load Factors

Energy sale in each consumer category is converted to peak power demand through the use of a load factor. It expresses the ratio of the amount of energy actually generated to the amount that would have been generated, had the peak demand been continued over the entire period. Load factors can be calculated over any time period but the most common are daily, weekly and annual.

The load factors utilized in the Power Market Survey Model relate annual energy sales to peak capacity for each consumer category (domestic, commercial, public lighting, small industries and private tube wells). Input load factors are not required for medium/large industry, public tube well and traction sales as consumption for these sectors is provided through the survey in both energy and power terms.

Maximum demand readings are available directly for large industrial and other demand metered consumers such as public tube wells. Load factors for non-demand metered consumers are determined on a sample basis. For example, peak demand is based on maximum demand readings from substation feeders which are identified as serving predominantly one sector.

Domestic and commercial load factors are differentiated by community size (village, town or city). Whereas a single load factor is used for small industrial, private tube wells, public lighting and traction because of the similar nature in the operation of these loads.

3.3.4 Coincidence Factors

The total energy demand of a number of individual consumers is determined as the simple sum of their individual energy consumption values. The total peak load, however, is calculated as the diversified sum of their individual peak load levels. The coincidence factor, as its name implies, is a general term which measures the coincidence between the peak loads of any number of individual consumers or consumer groups over a specified time period in order to compute a combined peak. Mathematically, it is the inverse of the diversity factor.

The daily coincidence factor is determined by comparing the daily load patterns of each consumer or group under consideration. In this case, the sum of the individual hourly (or 15-minute) peaks would determine the overall daily load pattern and the overall peak load. Suppose one consumer (or group) consumes energy only in the morning and a second consumer (or group) consumes energy only in the evening, the coincidence factor between these two consumers would be zero and the peak load of the combined group would be the peak of the larger consumer. Conversely, if both groups consumed all energy at the same hour, the coincidence factor would be one and the combined peak would be the sum of the two peaks. In practice, the coincidence factor is found between these two extremes.

Coincidence factors can be determined between any group and sub-group of consumers whether it is domestic versus commercial or Lahore versus Islamabad, provided that reasonable estimates of the appropriate load patterns are available. Typically, these patterns are not readily available and must be synthesized from incomplete or estimated data. In addition, all coincidence factors calculated from these load patterns are approximations of the corresponding instantaneous peak faced by the system. In fact, a common practice is to define this instantaneous peak as the bench mark and specify all coincidence factors in relation to this peak and time. The advantage of this approach is that all peak can be easily converted into their contribution to the overall system peak, the disadvantage is that the relationship between any two groups cannot be so clearly specified and will likely be incorrectly specified.

The Power Market Survey Model depends upon specified coincidence factors between consumption categories and between consumption areas in the aggregation of peak loads from consumers to the peaks at grid stations and at DISCO level and at the level of overall system peak. The coincidence factors estimated for the medium-term model have been based on the limited available System records of the peak loads at various points in their respective systems.

3.3.5 Load Shedding

Over the course of time load forecast is gaining high importance as a lot of policy decisions and approval for installation of new power plants depend on them. We are going through critical times and one major challenge is huge capacity payments we are facing today. These things urge us to do forecast with great attention and there should not be redundant generating units committed in the future. In this regard the Load Forecast and Generation Planning team from NTDC had numerous meetings and discussions with MoE and it was mutually agreed that any further expansion in transmission network should be based on rationalized forecast numbers. For the rationalized numbers it was mutually agreed that load shedding will not be incorporated in the first three years, but we believe that governance issues will improve with passage of time. Federal government has decided not to provide electricity in high loss areas based on ATC losses. Therefore, NTDC rationalized demand forecast for all DISCOs keeping in view ground realities of un-served energy.

3.4 Forecast Calculations

The forecast calculations involve three basic steps. Firstly, an energy forecast is determined at the area (or subarea) level using per consumer growth rates and incremental consumption estimates from the data base. This is then converted to a peak demand forecast, again at the area (or subarea) level using the input load and diversity factors. Then transmission and distribution losses are added, and final step is to accumulate the areas into their corresponding grid stations, and grid stations into their DISCO and finally all DISCOs to form the system.

3.5 Energy Calculations

The basic calculation unit is the area or subarea where applicable. The database provides the base year energy consumption level for each of the six consumption categories (Domestic, Commercial, Public Lighting, Small Industry, Private Tube Wells and Medium & Large Industry). The database also includes the peak demand associated with the medium and large industry category. The domestic energy forecast for year 1 (the base year is indicated as year 0) is calculated by multiplying the base year consumption by the domestic per consumer growth rate to account for growth in the intensity of use in the sector, and then incremental consumption listed in the database is added to account for new use in the sector. This process is repeated for the remaining five energy sectors (plus the medium and large industrial demand) for the entire forecast period (remaining 10 years). The total energy consumed in the subarea for each year of the forecast period is then computed.

3.6 Peak Demand Calculations

The annual energy sale values for each of the consumer category (domestic, commercial, public lighting, small industry and private tube well) are converted to peak demand using the load factors listed in the appropriate input parameter file and then adjusted to account for coincidence within the category. The annual peak demand for the subarea is computed as the sum of the individual category peaks multiplied by coincidence factors within the subarea. The sub area peak demands are accumulated to an area by applying proper coincidence factors.

3.7 Accumulations

The total energy and peak demand at a given grid station is calculated as the sum of all the areas and subareas in that grid station's service area plus an allowance for distribution losses. Peak demand estimates are accumulated, and different coincidence factors applied to city, town and village areas within the service area. The total energy and peak demand within a given DISCO is the sum of all grid stations in that DISCO plus traction and an allowance for transmission losses. Peak demands are again diversified in the accumulation, and the system totals are obtained from DISCO’s total with some coincidence.

4 PMS Forecast Results

4.1 Recorded Forecast & Computed Forecast

The term 'Recorded Forecast' means the energy sale figures used in the forecast has not been adjusted for un-served energy (load shedding). Forecasted sale, growth rates, transmission and distribution losses, generation requirement and peak demand without incorporating load shedding has been shown in Table 1-1.This forecast is also called the Low Forecast.

The term 'Computed Forecast' means the energy sale figures used in forecast have been adjusted for un-served energy (load shedding). Forecasted energy sale, growth rates, transmission and distribution losses, generation requirement and peak demand with incorporating load shedding has been shown in Table 1-2 for Computed Forecast.

Peak demand of this table has been demonstrated graphically in Figure 1-6. Similarly, energy sale and energy purchased also have been shown in Figure 1-7.The difference between energy purchased and energy sale shows all losses of the DISCO. This forecast is also called the Base Forecast. If there had not been the load shedding, the recorded forecast (Low Forecast) would have been the actual forecast i.e. the Base Forecast.

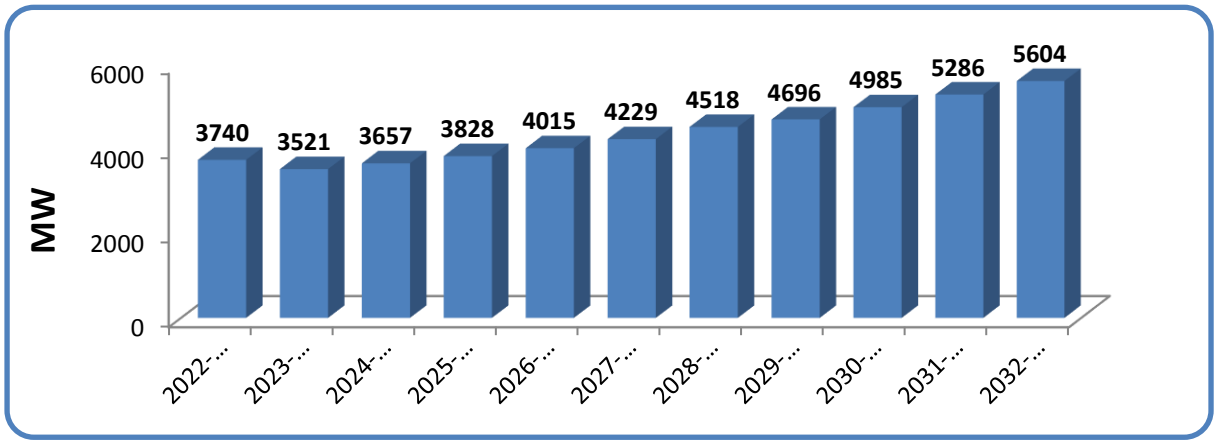


Figure 1-6: Computed Peak Demand

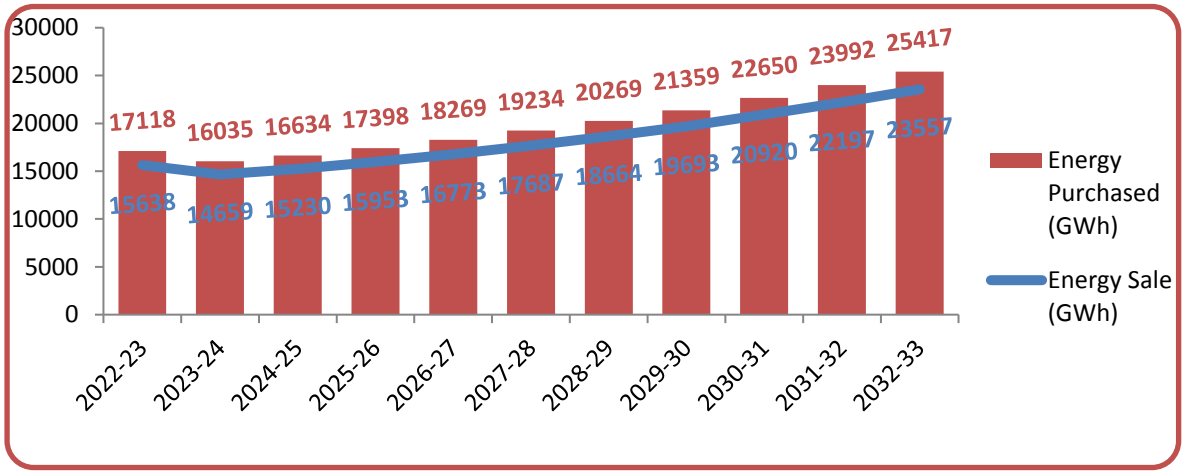


Figure 1-7: Energy Purchased Vs Energy Sale

4.2 Category-wise Forecasted Energy Sale (GWh)

Amount and percentage share of each consumer category in the total consumption for the year 2026-27 and year 2032-33 have been depicted in Figure 1-8. If we critically analyze Figure 1-2 and Figure 1-8, it is evident that domestic sector has decreased from 46% to 44 % from year 2027-28 up to year 2032-33. Industrial sector sustained from 38% to 38% from year 2027-28 up to year 2032-33.

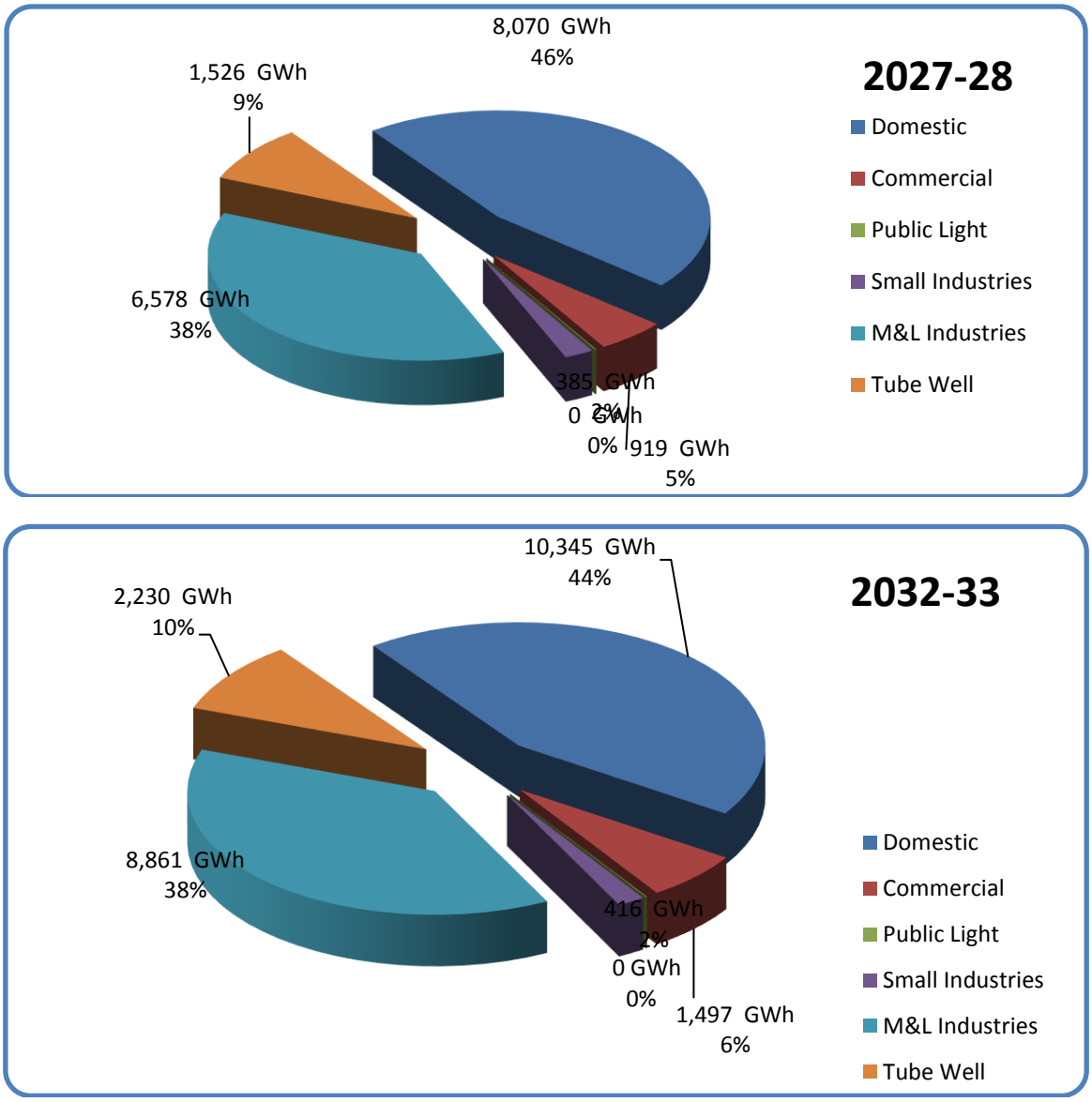


Figure 1-8: **Forecasted Category Wise Sale**

The category-wise forecasted sale without incorporating load shedding(Low Forecast)is shown in Table 1- 3.The category-wise forecasted sale with incorporating load shedding effect (Base Forecast) is shown in Table 1-4

4.3 Category wise Forecasted Demand (MW)

The forecast of consumption (Demand) in MW without and with incorporating load shedding impact is shown in Table 1- 5andTable 1- 6respectively.

4.4 Civil Administrative Area Forecast

The FESCO service area comprises of two civil administrative divisions i.e. Faisalabad and Sargodha which comprises of 8 districts, Faisalabad, Chiniot, Jhang, T.T. Singh, Sargodha, Khushab, Mianwali and Bhakkar. The civil administrative Division-wise and District-wise energy and demand projections have been presented in Table 1- 7 to Table 1- 16. The last column of the table contains peak demand.

4.5 Monthly Demand (MW) and Energy (GWh) Purchase Projections

The Month–wise demand (MW) and energy (GWh) purchase projections have been presented in Table 1-17and Table 1-18. To develop the projection, monthly demand and energy factors are computed for last five years and then its average is taken as a base factor for monthly demand and Energy projection. For this, each month peak is calculated from the ratio of the historical peak of that particular month to the annual historical peak of that year. Whereas each month Energy purchase is calculated from the ratio of historical monthly energy purchase of that particular month to annual energy purchase of that year. In this manner, historical ratios are calculated for each month of the last five years. The average of these values is taken as the monthly factor and multiplied with the peak demand of the year to obtain monthly peak demand and energy purchase.

4.6 List of Overloaded Substations

The list of overloaded substations will inform about that particular year in which a substation will be overloaded. The overloading criterion of a substation has been considered as 85% i.e. when any substation is 85% loaded, the remedial measures should be taken in the form of new substation or augmentation of the existing transformers. Table 1- 19 &

Table 1- 20 show the lists of overloaded substations based on overloading criterion of 85% and 100% respectively. Based on the overloading criterion of 85%, the number of overloaded substations are 26 and if we consider 100% overloading criteria, there would be 38 overloaded substations upto 2032-33.

4.7 List of Grids with their Codes and MVA Capacities

The list of substations in a DISCO mentioning number of transformers with MVA capacities at each substation is provided in Table 1- 21.

4.8 Peak Demand of Substations

A projection of peak demand at a substation is the most peculiar feature of this report. It is indeed a very rare and useful forecast. It provides the basis for transmission system expansion planning. It also provides a very solid ground for proposing a new substation or augmentation, extension and conversion of a sub-station. Only distribution losses have been considered in preparing the grid station peak demand forecast. The peak demand of each substation, existing as well as proposed, situated in the service area of the DISCO has been shown in Table 1-25.The proposed substations during the present period have also been incorporated in this table. The demand of the proposed substations is shown on the existing grids before the commissioning of proposed substation and it is shifted to the proposed substation after its commissioning year.

4.9 Peak Demands of existing, transit and proposed grids (Family of Grids)

This report also shows the projection of peak demands of existing substations as well as the demands that will be transferred to the proposed substation at when commissioned. This is also a very important forecast to accurately plan the capacity of the proposed substations as well as the status of the existing substation after the load is transferred to the proposed substation. It accurately forecast the demand in MW that will be transferred from one existing grid to the proposed grid and as well as the total load that will be transferred to the proposed grid. The peak demands of existing, transit and proposed grids are shown in Table 1- 23.Transit grid is a new term introduced in the current issue of the report. It is a virtual or temporary substation with a particular name and number on which the necessary load from one overloaded substation is shifted temporarily during base year. In Table 1- 23, the proposed grids are shown with zero loads and the transit grid shows the estimated load that will be shifted from one existing substation to the proposed grid when it is commissioned. This table helps in finding out the amount of load in the future that will be shifted to the proposed grid from the existing grid when it is commissioned.

4.10 Per Capita Consumption

Per capita consumption is a very vivid indicator of development in a country. Usually developed countries have very high per capita consumption. Per capita consumption (kWh/person) for the year 2013-14, 2017-18, 2021-22, 2026-27, and 2031-32 is given in Table 1-19.(The consumption for the years 2024-25, and 2030-31 are obtained from forecasted data.). Population data is obtained from Pakistan census 2016-17.

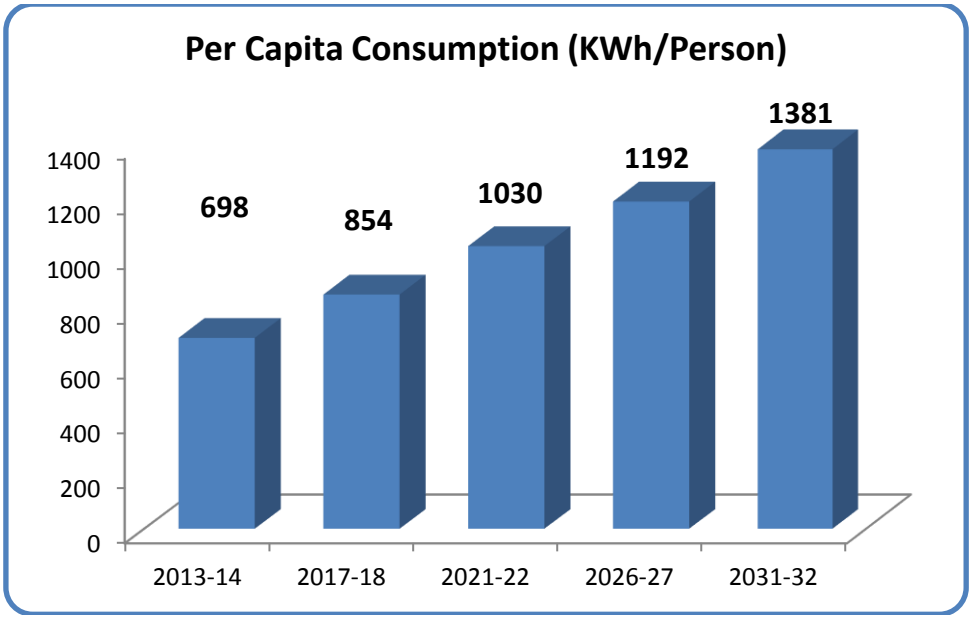


Figure 1-9: Per Capita Consumption

4.11 Category-wise Energy and Maximum Demand Projections for each Substation

The category-wise energy and maximum demand projections for each substation have been presented in Table 1- 24**.**The last two columns of the table contain power factor and reactive power values. The maximum demand for the DISCO in this table is the diversified sum of the individual peak demands of each substation and this figure will coincide with the peak demand of the respective year. In order to reduce the volume of the report, only the values of the last year i.e. 2032-33 have been presented in the table.

Table 1- 1: Forecast without incorporating Load Shedding effect - Low Forecast

Year	Energy Sale		Distribution Losses		Energy Received at 11 kV	Peak Demand at 11 kV	Transmission Losses		Energy Sent out at 132 kV	Load Factor	Peak Demand at 132 kV
	(GWh)	G.R	(GWh)	(%)	GWh	MW	(GWh)	(%)	(GWh)	(%)	(MW)
2022-23	14662		1272	7.98	15934	3165	107	0.67	16041	57.5	3186
2023-24	13691	-6.6	1053	7.14	14743	2968	226	1.51	14969	56.7	3014
2024-25	14262	4.2	1074	7.00	15336	3091	233	1.50	15569	56.6	3138
2025-26	14984	5.1	1107	6.88	16091	3246	243	1.49	16334	56.6	3295
2026-27	15803	5.5	1148	6.77	16951	3414	254	1.48	17205	56.7	3466
2027-28	16715	5.8	1188	6.64	17903	3607	267	1.47	18170	56.7	3661
2028-29	17690	5.0	1234	8.40	18924	6894	280	0.11	19204	61.1	3870
2029-30	18718	5.8	1282	6.41	20000	4029	294	1.45	20294	56.7	4088
2030-31	19942	6.5	1331	6.26	21273	4289	311	1.44	21584	56.6	4352
2031-32	21218	6.4	1380	6.11	22598	4560	328	1.43	22926	56.6	4627
2032-33	22575	6.4	1429	5.95	24005	4848	346	1.42	24350	56.5	4918
Ave. Growth (2023-2033)	4.41%				4.18%	4.36%			4.26%		4.44%

Table 1- 2: Computed Forecast (Base Forecast)

Year	Computed Sale	G.R	Distribution Losses		Energy Received at 11 kV	Peak Demand at 11 kV	Transmission Losses		Energy Sent out at 132 kV	Load Factor	Computed Peak Demand at 132 kV	G.R
		(%)	(GWh)	(%)	GWh	MW	(GWh)	(%)	(GWh)	(%)	(MW)	(%)
2022-23	15638		1357	8.0	16995	3740	114.1	0.67	17109	51.9	3765	
2023-24	14667	-6.2	1128	7.1	15795	3523	241.7	1.51	16037	51.2	3577	-5.0
2024-25	15238	3.9	1147	7.0	16386	3659	249.1	1.50	16635	51.1	3715	3.9
2025-26	15960	4.7	1179	6.9	17140	3830	258.8	1.49	17398	51.1	3888	4.7
2026-27	16779	5.1	1219	6.8	17998	4017	270.0	1.48	18268	51.2	4077	4.9
2027-28	17691	5.4	1258	6.6	18949	4230	282.3	1.47	19232	51.1	4293	5.3
2028-29	18667	5.6	1302	8.40	19968	4519	295.5	0.11	20264	51.1	4524	5.3
2029-30	19695	5.5	1349	6.4	21043	4697	309.3	1.45	21352	51.1	4766	5.4
2030-31	20919	6.2	1396	6.3	22315	4985	325.8	1.44	22641	51.1	5058	6.1
2031-32	22194	6.1	1444	6.1	23638	5285	342.7	1.43	23981	51.1	5362	6.0
2032-33	23557	6.1	1500	5.95	25056	5604	360.8	1.42	25417	51.0	5685	6.0
Ave. Growth (2023-2033)	4.18%				3.95%	4.13%			4.03%		4.21%	

Table 1- 3: Category Wise Sale – GWh without incorporating Load Shedding effect (Low Forecast)

Year	Domestic		Commercial		Public Light		Small Industries		M&L Industries		Tube Well		Bulk		Total	
	(GWh)	G.R	(GWh)	G.R	(GWh)	G.R	(GWh)	G.R	(GWh)	G.R	(GWh)	G.R	(GWh)	G.R	(GWh)	G.R
2022-23	6842		760		14		379		5264		1209		194.0		14662	
2023-24	6174	-9.8	685	-9.8	12	-9.8	342	-9.9	5204	-1.1	1090	-9.8	183.0	-5.7	13691	-6.7
2024-25	6461	4.6	708	3.3	12	0.7	345	0.8	5411	4.0	1142	4.8	183.0	0.0	14262	4.2
2025-26	6830	5.7	748	5.7	12	1.5	350	1.7	5651	4.4	1208	5.7	185.0	1.1	14984	5.1
2026-27	7223	5.8	807	7.9	13	2.1	357	1.9	5896	4.3	1322	9.4	185.0	0.0	15803	5.5
2027-28	7629	5.6	868	7.6	13	2.1	364	1.9	6215	5.4	1442	9.0	185.0	0.0	16715	5.8
2028-29	8055	7.6	958	5.5	13	0.1	371	1.9	6541	2.6	1567	1.5	185.0	2.6	17690	5.0
2029-30	8517	5.7	1053	10.0	14	2.1	378	1.9	6873	5.1	1699	8.4	185.0	2.6	18718	5.8
2030-31	8981	5.5	1171	11.2	14	2.1	385	1.8	7369	7.2	1837	8.1	185.0	0.0	19942	6.6
2031-32	9446	5.2	1297	10.8	14	2.1	392	1.8	7901	7.2	1982	7.9	185.0	0.0	21218	6.4
2032-33	9916	5.0	1432	10.4	14	2.1	399	1.8	8494	7.5	2135	7.7	186.0	0.5	22575	6.4
Ave. Growth (2023-2033)	3.8%		6.5%		0.6%		0.5%		4.9%		5.8%		-0.4%		4.4%	

Table 1- 4: Category Wise Sale (GWh)- Base Forecast

Year	Domestic		Commercial		Public Light		Small Industries		M&L Industries		Tube Well		Bulk		Total	
	(GWh)	G.R	(GWh)	G.R	(GWh)	G.R	(GWh)	G.R	(GWh)	G.R	(GWh)	G.R	(GWh)	G.R	(GWh)	G.R
2022-23	7298		810		14		404		5615		1290		207		15638	
2023-24	6608	-9.5	734	-9.5	13	-9.4	366	-9.5	5575	-0.7	1167	-9.5	196	-5.3	14659	-6.3
2024-25	6897	4.4	756	3.0	13	0.4	368	0.6	5781	3.7	1220	4.5	196	0.0	15230	3.9
2025-26	7268	5.4	796	5.4	13	1.1	373	1.4	6020	4.1	1286	5.4	197	0.5	15953	4.7
2026-27	7664	5.4	856	7.6	14	1.8	379	1.6	6261	4.0	1403	9.1	196	-0.5	16773	5.1
2027-28	8070	5.3	919	7.3	14	1.8	385	1.6	6578	5.1	1526	8.7	196	0.0	17687	5.4
2028-29	8496	8.2	1011	6.1	14	0.7	391	2.5	6902	3.2	1654	2.1	195	3.2	18664	5.6
2029-30	8958	5.4	1109	9.7	14	1.8	397	1.6	7231	4.8	1789	8.1	195	3.4	19693	5.5
2030-31	9418	5.1	1230	10.9	15	1.8	403	1.5	7730	6.9	1929	7.8	194	-0.5	20920	6.2
2031-32	9879	4.9	1359	10.5	15	1.8	410	1.6	8264	6.9	2076	7.6	194	0.0	22197	6.1
2032-33	10345	4.7	1497	10.1	15	1.8	416	1.6	8861	7.2	2230	7.4	194	0.0	23557	6.1
Ave. Growth (2023-2033)	3.6%		6.3%		0.4%		0.3%		4.7%		5.6%		-0.6%		4.2%	

Table 1- 5: Category Wise Demand – MW without incorporating Load Shedding effect - Low Forecast

Year	Domestic		Commercial		Public Light		Small Industries		M&L Industries		Tube Well		Bulk		Total	
	(MW)	G.R	(MW)	G.R	(MW)	G.R	(MW)	G.R	(MW)	G.R	(MW)	G.R	(MW)	G.R	(MW)	G.R
2022-23	1372		167		5		28		1204		246		121		2912	
2023-24	1236	-9.9	151	-9.9	5	-9.8	25	-9.9	1211	0.6	221	-9.9	115	-5.0	2758	-5.3
2024-25	1295	4.8	155	2.9	5	0.7	25	0.9	1263	4.3	232	4.7	115	0.0	2877	4.3
2025-26	1371	5.9	163	5.1	5	1.4	26	1.8	1323	4.7	245	5.7	116	0.9	3025	5.2
2026-27	1452	5.9	175	7.5	5	2.1	26	2.0	1378	4.2	268	9.4	116	0.0	3186	5.3
2027-28	1535	5.8	188	7.2	5	2.1	27	2.0	1454	5.5	292	9.0	116	0.0	3372	5.8
2028-29	1623	5.7	207	10.0	5	2.1	27	2.0	1531	5.3	317	8.7	116	0.0	3570	5.9
2029-30	1718	5.8	227	9.7	5	2.1	28	1.9	1610	5.1	344	8.4	116	0.0	3777	5.8
2030-31	1814	5.6	252	10.8	6	2.1	28	1.9	1726	7.2	372	8.1	116	0.0	4028	6.7
2031-32	1909	5.3	278	10.4	6	2.1	29	1.9	1851	7.2	401	7.9	116	0.0	4291	6.5
2032-33	2006	5.1	306	10.1	6	2.1	29	1.9	1988	7.4	432	7.7	116	0.0	4569	6.5
Ave. Growth (2023-2033)	3.9%		6.2%		0.6%		0.6%		5.1%		5.8%				4.6%	

Table 1- 6: Category Wise Demand (MW) - Base Forecast

Year	Domestic		Commercial		Public Light		Small Industries		M&L Industries		Tube Well		Bulk		Total	
	(MW)	G.R	(MW)	G.R	(MW)	G.R	(MW)	G.R	(MW)	G.R	(MW)	G.R	(MW)	G.R	(MW)	G.R
2022-23	1621		198		6		33		1423		290		143		3442	
2023-24	1468	-9.5	179	-9.5	6	-9.4	29	-9.5	1438	1.1	263	-9.5	136	-4.9	3273	-4.9
2024-25	1533	4.5	184	2.6	6	0.4	30	0.6	1495	4.0	274	4.4	136	0.0	3406	4.0
2025-26	1618	5.5	193	4.8	6	1.1	30	1.5	1561	4.4	289	5.3	136	0.0	3570	4.8
2026-27	1708	5.6	206	7.1	6	1.8	31	1.7	1622	3.9	315	9.0	136	0.0	3749	5.0
2027-28	1801	5.4	221	6.9	6	1.8	31	1.6	1705	5.2	342	8.7	136	0.0	3954	5.5
2028-29	1898	5.4	242	9.7	6	1.8	32	1.6	1790	5.0	371	8.3	135	-0.7	4173	5.5
2029-30	2003	5.5	265	9.4	6	1.8	32	1.6	1877	4.8	401	8.1	135	0.0	4403	5.5
2030-31	2108	5.2	293	10.5	6	1.8	33	1.6	2006	6.9	432	7.8	135	0.0	4682	6.3
2031-32	2212	5.0	322	10.1	7	1.8	33	1.6	2145	6.9	465	7.6	134	-0.7	4973	6.2
2032-33	2318	4.8	354	9.8	7	1.8	34	1.6	2298	7.1	499	7.4	134	0.0	5281	6.2
Ave. Growth (2023-2033)	3.6%		6.0%		0.4%		0.3%		4.9%		5.6%				4.4%	

Table 1- 7: Division-wise Sale (GWh), Generation (GWh) and Demand (MW) Forecast - Faisalabad

Year	Energy Sale		Distribution Losses		Transmission Losses		Generation	Load Factor	Peak Demand
	(GWh)	G.R.(%)	(GWh)	%	(GWh)	%	(GWh)	%	(MW)
2022-23	12071		1046	7.97	88	0.67	13205	48.0	3142
2023-24	11244	-6.85	869	7.18	185	1.51	12298	47.5	2955
2024-25	11720	4.23	884	7.01	192	1.50	12795	47.2	3092
2025-26	12312	5.05	908	6.87	200	1.49	13420	47.0	3260
2026-27	12966	5.31	938	6.75	209	1.48	14113	46.9	3437
2027-28	13712	5.75	968	6.59	219	1.47	14899	46.6	3646
2028-29	34680	5.58	3417	8.97	61	0.16	38157	58.3	7467
2029-30	15358	5.79	1037	6.32	241	1.45	16636	46.3	4103
2030-31	16390	6.72	1073	6.15	255	1.44	17718	46.0	4393
2031-32	17477	6.63	1109	5.97	269	1.43	18856	45.8	4699
2032-33	18640	6.66	1146	5.79	285	1.42	20071	45.6	5025
Ave. Growth (2023-2033)	4.44 %						4.28 %		4.81 %

Table 1- 8: Division-wise Sale (GWh), Generation (GWh) and Demand (MW) Forecast - Sargodha

Year	Energy Sale		Distribution Losses		Transmission Losses		Generation	Load Factor	Peak Demand
	(GWh)	G.R.(%)	(GWh)	%	(GWh)	%	(GWh)	%	(MW)
2022-23	3567		320	8.22	26	0.67	3913	35.4	1261
2023-24	3415	-4.26	266	7.22	56	1.51	3737	34.8	1225
2024-25	3511	2.79	271	7.16	57	1.50	3839	35.1	1249
2025-26	3641	3.71	278	7.10	59	1.49	3978	35.4	1284
2026-27	3807	4.56	288	7.03	61	1.48	4156	35.7	1328
2027-28	3975	4.41	297	6.96	64	1.47	4336	36.1	1373
2028-29	4147	4.33	308	6.91	66	1.46	4521	36.4	1419
2029-30	4336	4.55	319	6.86	68	1.45	4724	36.7	1469
2030-31	4530	4.47	331	6.81	71	1.44	4932	37.0	1521
2031-32	4721	4.22	342	6.76	73	1.43	5136	37.3	1571
2032-33	4917	4.15	354	6.71	76	1.42	5346	37.6	1623
Ave. Growth (2023-2033)	3.26 %						3.17 %		2.56 %

Table 1- 9: District-wise Sale (GWh), Generation (GWh) and Demand (MW) Forecast - Faisalabad

Year	Energy Sale		Distribution Losses		Transmission Losses		Generation	Load Factor	Peak Demand
	(GWh)	G.R.(%)	(GWh)	%	(GWh)	%	(GWh)	%	(MW)
2022-23	9008		751	7.70	66	0.67	9825	49.7	2256
2023-24	8469	-5.98	624	6.87	139	1.51	9233	48.9	2155
2024-25	8829	4.25	632	6.68	144	1.50	9605	48.4	2267
2025-26	9268	4.97	645	6.51	150	1.49	10063	47.9	2399
2026-27	9734	5.03	662	6.37	156	1.48	10553	47.6	2531
2027-28	10287	5.67	679	6.19	163	1.47	11129	47.2	2694
2028-29	10881	5.78	698	6.03	171	1.46	11750	46.8	2868
2029-30	11495	5.65	718	5.88	180	1.45	12393	46.4	3046
2030-31	12283	6.85	738	5.67	190	1.44	13211	46.0	3279
2031-32	13115	6.78	758	5.46	201	1.43	14074	45.6	3526
2032-33	14015	6.86	778	5.26	213	1.42	15006	45.2	3790
Ave. Growth (2023-2033)	4.52%						4.33%		5.33%

Table 1- 10: District-wise Sale (GWh), Generation (GWh) and Demand (MW) Forecast - Chiniot

Year	Energy Sale		Distribution Losses		Transmission Losses		Generation	Load Factor	Peak Demand
	(GWh)	G.R.(%)	(GWh)	%	(GWh)	%	(GWh)	%	(MW)
2022-23	710		69	8.83	5	0.67	784	36.5	246
2023-24	643	-9.49	57	8.17	11	1.51	711	36.4	223
2024-25	660	2.59	58	8.08	11	1.50	729	36.6	227
2025-26	684	3.72	59	8.00	11	1.49	755	36.8	234
2026-27	719	5.08	62	7.91	12	1.48	792	37.1	244
2027-28	754	4.93	64	7.83	12	1.47	831	37.3	254
2028-29	19955	5.46	1999	9.11	35	0.16	21989	46.9	5352
2029-30	834	5.11	69	7.66	13	1.45	916	37.8	277
2030-31	875	4.98	72	7.57	14	1.44	961	37.9	289
2031-32	918	4.88	74	7.49	14	1.43	1007	38.1	301
2032-33	962	4.80	77	7.40	15	1.42	1054	38.3	314
Ave. Growth (2023-2033)	3.08%						3.00%		2.49%

Table 1- 11: District-wise Sale (GWh), Generation (GWh) and Demand (MW) Forecast - Jhang

Year	Energy Sale		Distribution Losses		Transmission Losses		Generation	Load Factor	Peak Demand
	(GWh)	G.R.(%)	(GWh)	%	(GWh)	%	(GWh)	%	(MW)
2022-23	1279		122	8.68	9	0.67	1410	38.3	420
2023-24	1160	-9.31	101	8.02	19	1.51	1280	38.3	382
2024-25	1216	4.90	105	7.94	20	1.50	1341	38.6	397
2025-26	1284	5.57	110	7.87	21	1.49	1415	38.9	416
2026-27	1368	6.52	116	7.79	22	1.48	1506	39.2	439
2027-28	1453	6.25	122	7.72	23	1.47	1598	39.4	463
2028-29	1545	6.32	128	7.64	25	1.46	1698	39.7	488
2029-30	1646	6.51	135	7.56	26	1.45	1807	39.9	517
2030-31	1749	6.28	142	7.48	28	1.44	1918	40.1	545
2031-32	1856	6.09	148	7.41	29	1.43	2033	40.3	575
2032-33	1965	5.90	155	7.33	31	1.42	2151	40.5	606
Ave. Growth (2023-2033)	4.39%						4.32%		3.72%

Table 1- 12: District-wise Sale (GWh), Generation (GWh) and Demand (MW) Forecast - T.T. Singh

Year	Energy Sale		Distribution Losses		Transmission Losses		Generation	Load Factor	Peak Demand
	(GWh)	G.R.(%)	(GWh)	%	(GWh)	%	(GWh)	%	(MW)
2022-23	1074		104	8.83	8	0.67	1186	42.0	322
2023-24	972	-9.50	87	8.17	16	1.51	1075	42.0	292
2024-25	1015	4.38	89	8.09	17	1.50	1121	42.3	302
2025-26	1076	6.03	94	8.00	18	1.49	1187	42.6	318
2026-27	1145	6.47	99	7.92	19	1.48	1263	42.9	336
2027-28	1218	6.30	103	7.83	20	1.47	1341	43.2	354
2028-29	1297	6.55	109	7.75	21	1.46	1427	43.4	375
2029-30	1383	6.59	115	7.66	22	1.45	1520	43.7	397
2030-31	1483	7.22	122	7.58	23	1.44	1628	43.9	423
2031-32	1588	7.09	129	7.49	25	1.43	1741	44.2	450
2032-33	1698	6.93	136	7.41	26	1.42	1860	44.4	478
Ave. Growth (2023-2033)	4.69%						4.60%		4.03%

Table 1- 13: District-wise Sale (GWh), Generation (GWh) and Demand (MW) Forecast -Sargodha

Year	Energy Sale		Distribution Losses		Transmission Losses		Generation	Load Factor	Peak Demand
	(GWh)	G.R.(%)	(GWh)	%	(GWh)	%	(GWh)	%	(MW)
2022-23	1749		167	8.72	13	0.67	1929	37.0	595
2023-24	1609	-8.04	139	7.95	27	1.51	1774	37.0	548
2024-25	1658	3.08	141	7.86	27	1.50	1827	37.2	561
2025-26	1728	4.20	145	7.76	28	1.49	1901	37.4	581
2026-27	1817	5.19	150	7.62	30	1.48	1997	37.6	606
2027-28	1908	4.97	155	7.49	31	1.47	2093	37.8	632
2028-29	1993	4.47	160	7.42	32	1.46	2184	37.9	657
2029-30	2088	4.76	165	7.33	33	1.45	2286	38.1	685
2030-31	2184	4.63	170	7.24	34	1.44	2389	38.3	712
2031-32	2276	4.21	176	7.17	36	1.43	2488	38.4	739
2032-33	2371	4.16	181	7.10	37	1.42	2589	38.6	766
Ave. Growth (2023-2033)	3.09%						2.99%		2.55%

Table 1- 14: District-wise Sale (GWh), Generation (GWh) and Demand (MW) Forecast- Khushab

Year	Energy Sale		Distribution Losses		Transmission Losses		Generation	Load Factor	Peak Demand
	(GWh)	G.R.(%)	(GWh)	%	(GWh)	%	(GWh)	%	(MW)
2022-23	584		45	7.22	4	0.67	634	31.7	229
2023-24	655	12.02	38	5.46	11	1.51	703	31.7	253
2024-25	667	1.89	39	5.46	11	1.50	716	31.9	256
2025-26	684	2.48	40	5.47	11	1.49	734	32.2	260
2026-27	706	3.27	41	5.50	11	1.48	758	32.6	265
2027-28	729	3.20	43	5.53	11	1.47	783	33.0	271
2028-29	756	3.77	44	5.56	12	1.46	812	33.4	277
2029-30	785	3.80	46	5.58	34	1.45	843	33.8	285
2030-31	816	4.00	48	5.61	13	1.44	877	34.3	292
2031-32	848	3.87	50	5.62	13	1.43	911	34.7	300
2032-33	880	3.81	53	5.63	13	1.42	946	35.1	308
Ave. Growth (2023-2033)	4.18%						4.08%		3.01%

Table 1- 15: District-wise Sale (GWh), Generation (GWh) and Demand (MW) Forecast - Mianwali

Year	Energy Sale		Distribution Losses		Transmission Losses		Generation	Load Factor	Peak Demand
	(GWh)	G.R.(%)	(GWh)	%	(GWh)	%	(GWh)	%	(MW)
2021-22	865		71	7.61	6	0.67	943	29.9	359
2022-23	819	-5.38	59	6.75	13	1.51	891	28.5	357
2023-24	843	2.98	61	6.70	14	1.50	917	28.8	363
2024-25	873	3.58	62	6.67	14	1.49	950	29.2	372
2025-26	911	4.33	65	6.64	15	1.48	991	29.6	381
2026-27	950	4.22	67	6.61	15	1.47	1032	30.1	391
2027-28	991	4.34	70	6.57	16	1.46	1076	30.5	402
2028-29	1037	4.64	73	6.54	16	1.45	1126	31.0	415
2029-30	1083	4.50	75	6.50	17	1.44	1176	31.4	427
2030-31	1131	4.40	78	6.46	18	1.43	1227	31.8	440
2031-32	1180	4.32	81	6.42	18	1.42	1279	32.2	453
Ave. Growth (2022-2032)	3.15%						3.10%		2.34%

Table 1- 16: District-wise Sale (GWh), Generation (GWh) and Demand (MW) Forecast - Bhakkar

Year	Energy Sale		Distribution Losses		Transmission Losses		Generation	Load Factor	Peak Demand
	(GWh)	G.R.(%)	(GWh)	%	(GWh)	%	(GWh)	%	(MW)
2022-23	368		36	8.83	3	0.67	407	39.2	118
2023-24	333	-9.50	30	8.17	6	1.51	369	39.2	107
2024-25	342	2.71	30	8.09	6	1.50	378	39.3	110
2025-26	356	4.00	31	8.00	6	1.49	393	39.5	114
2026-27	372	4.58	32	7.92	6	1.48	411	39.7	118
2027-28	389	4.44	33	7.83	6	1.47	428	39.9	123
2028-29	407	4.71	34	7.75	7	1.46	448	40.0	128
2029-30	427	4.74	35	7.66	7	1.45	469	40.2	133
2030-31	446	4.50	37	7.58	7	1.44	489	40.3	139
2031-32	465	4.40	38	7.49	7	1.43	510	40.4	144
2032-33	486	4.32	39	7.41	8	1.42	532	40.5	150
Ave. Growth (2023-2033)	2.80%						2.72%		2.38%

Table 1- 17: Monthly Peak Demand Forecast (Base Forecast)

Year	July	August	September	October	November	December	January	February	March	April	May	June
	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)	(MW)
2022-23	3765	3301	3356	2723	1973	1872	1854	1823	2009	2406	2992	3341
2023-24	3575	3135	3187	2586	1873	1777	1760	1731	1908	2284	2841	3173
2024-25	3713	3255	3310	2685	1946	1846	1828	1797	1981	2373	2951	3295
2025-26	3886	3407	3464	2811	2036	1932	1913	1881	2074	2483	3088	3449
2026-27	4075	3573	3633	2948	2135	2026	2007	1973	2175	2604	3239	3617
2027-28	4292	3763	3826	3104	2249	2134	2113	2078	2290	2743	3411	3809
2028-29	4523	3966	4032	3271	2370	2249	2227	2190	2413	2890	3594	4014
2029-30	4765	4178	4248	3447	2497	2369	2346	2307	2543	3045	3787	4229
2030-31	5058	4435	4509	3658	2650	2515	2490	2448	2699	3232	4019	4489
2031-32	5362	4702	4780	3878	2810	2666	2640	2596	2861	3426	4261	4759
2032-33	5685	4985	5068	4112	2979	2827	2799	2752	3034	3633	4518	5045

Table 1- 18: Monthly Energy Purchased (GWh) Forecast - Base Forecast

Year	July	August	September	October	November	December	January	February	March	April	May	June	Total
	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh	GWh
2022-23	1820	1898	1605	1352	968	1036	1076	939	1286	1582	1782	1774	17118
2023-24	1704	1778	1504	1267	907	971	1008	879	1205	1482	1669	1662	16035
2024-25	1768	1844	1560	1314	940	1007	1046	912	1250	1537	1731	1724	16634
2025-26	1849	1929	1632	1374	984	1053	1094	954	1307	1608	1811	1803	17398
2026-27	1942	2025	1713	1443	1033	1106	1149	1002	1372	1688	1902	1894	18269
2027-28	2045	2132	1804	1519	1087	1165	1209	1055	1445	1777	2002	1994	19234
2028-29	2154	2247	1901	1601	1146	1227	1275	1111	1523	1873	2110	2101	20269
2029-30	2270	2368	2003	1687	1208	1293	1343	1171	1604	1974	2223	2214	21359
2030-31	2408	2511	2124	1789	1280	1371	1424	1242	1701	2093	2358	2348	22650
2031-32	2550	2660	2250	1895	1356	1453	1509	1316	1802	2217	2497	2487	23992
2032-33	2702	2818	2384	2008	1437	1539	1598	1394	1909	2349	2646	2634	25417

Table 1- 19: List of Overloaded Substations during Period 2021-22 to 2031-32- Criterion= 85%

S. No.	Name	Rating KV	Grid #	Total Capacity (MVA)	Total Capacity (MW)	Overloading Criterion (MW)	Overloading Criterion (%)	Year of Overloading	Overloading Status (MW)	Power Factor
1	MAKAR WAL	66	352	19	17.10	14.54	85.00	2022-23	17.20	0.90
2	MILLAT ROAD	132	1077	39	36.27	30.83	85.00	2022-23	35.30	0.93
3	SPS FAISALABAD	132	1147	52	47.32	40.22	85.00	2022-23	44.30	0.91
4	LUNDIANWALA	132	1101	26	23.40	19.89	85.00	2022-23	20.40	0.90
5	NOOR PUR SETHI	132	597	0	0.00	0.00	85.00	2022-23	4.30	0.91
6	BHALWAL	132	243	78	70.20	59.67	85.00	2022-23	60.60	0.90
7	126 S.B SARGODH	132	1010	66	61.38	52.17	85.00	2022-23	60.80	0.93
8	66KV MUSAKHEL (	66	1213	13	11.70	9.95	85.00	2022-23	10.70	0.90
9	SHOR KOT CITY	132	373	52	46.80	39.78	85.00	2024-25	38.70	0.90
10	TANDLIAN WALA	132	459	78	70.20	59.67	85.00	2025-26	55.10	0.90
11	GAREH FATEH SHA	132	1079	26	23.40	19.89	85.00	2025-26	18.60	0.90
12	66KV KALOOR KOT	66	1211	10	9.00	7.65	85.00	2025-26	7.20	0.90
13	66KV MITHA TIWA	132	1243	13	11.70	9.95	85.00	2025-26	9.50	0.90
14	KALA BAGH	132	298	26	23.40	19.89	85.00	2026-27	19.40	0.90
15	AMIN PUR ROAD	132	1170	39	35.10	29.84	85.00	2026-27	29.20	0.90
16	CHENAB NAGAR	132	1134	39	35.10	29.84	85.00	2027-28	29.60	0.90
17	CHUTIANA	132	255	39	35.10	29.84	85.00	2027-28	29.50	0.90

S. No.	Name	Rating KV	Grid #	Total Capacity (MVA)	Total Capacity (MW)	Overloading Criterion (MW)	Overloading Criterion (%)	Year of Overloading	Overloading Status (MW)	Power Factor
18	INDUSTRIAL-ESTA	132	824	79	72.68	61.78	85.00	2028-29	60.00	0.92
19	SAMUNDRI	132	984	78	70.20	59.67	85.00	2028-29	58.90	0.90
20	OLD THERMAL	132	431	120	109.20	92.82	85.00	2029-30	92.20	0.91
21	BHAWANA	132	244	68	61.20	52.02	85.00	2029-30	49.60	0.90
22	KHEWA	132	108	65	58.50	49.73	85.00	2029-30	49.20	0.90
23	THEKRIWALA	132	953	78	71.76	61.00	85.00	2029-30	59.80	0.92
24	NISHATABAD	132	853	92	83.72	71.16	85.00	2029-30	69.80	0.91
25	GIS CITY FAISAL	132	1177	80	73.60	62.56	85.00	2030-31	61.00	0.92
26	JOHARABAD	132	76	93	83.70	71.15	85.00	2031-32	68.70	0.90

Table 1- 20: List of Overloaded Substations during Period 2021-22 to 2031-32 Criterion=100%

S. No.	Name	Rating (KV)	Grid #	Total Capacity (MVA)	Total Capacity (MW)	Overloading Criterion (MW)	Overloading Criterion (%)	Year of Overloading	Overloading Status (MW)	Power Factor
1	MAKAR WAL	66	352	19	17.10	17.10	100.00	2022-23	17.20	0.90
2	SHOR KOT CITY	132	373	52	46.80	46.80	100.00	2025-26	43.40	0.90
3	GAREH FATEH SHA	132	1079	26	23.40	23.40	100.00	2026-27	22.20	0.90
4	SPS FAISALABAD	132	1147	52	47.32	47.32	100.00	2027-28	46.00	0.91
5	LUNDIANWALA	132	1101	26	23.40	23.40	100.00	2027-28	23.40	0.90
6	AMIN PUR ROAD	132	1170	39	35.10	35.10	100.00	2027-28	32.80	0.90
7	66KV KALOOR KOT	66	1211	10	9.00	9.00	100.00	2027-28	8.70	0.90
8	TANDLIAN WALA	132	459	78	70.20	70.20	100.00	2028-29	64.70	0.90
9	66KV MITHA TIWA	132	1243	13	11.70	11.70	100.00	2028-29	11.60	0.90
10	KALA BAGH	132	298	26	23.40	23.40	100.00	2029-30	22.80	0.90
11	CHUTIANA	132	255	39	35.10	35.10	100.00	2030-31	34.40	0.90
12	CHENAB NAGAR	132	1134	39	35.10	35.10	100.00	2031-32	34.60	0.90
13	BHALWAL	132	243	78	70.20	70.20	100.00	2031-32	67.70	0.90
14	KHEWA	132	108	65	58.50	58.50	100.00	2031-32	57.80	0.90
15	SAMUNDRI	132	984	78	70.20	70.20	100.00	2031-32	69.50	0.90

Table 1- 21: List of Grids with their Codes and MVA Capacities

Sr. No.	Grid No.	KV	Grid Name	Transformer (MVA)					Total (MVA)	Sr. No.	Grid No.	KV	Grid Name	Transformer (MVA)					Total (MVA)
				T1	T2	T3	T4	T5						T1	T2	T3	T4	T5	
1	16	132	BHAMB	26	26	26	26	0	104	2	28	132	CHINIOT ROAD	40	40	40	0	0	120
3	47	132	GOJRA	0	40	40	40	0	120	4	61	132	HAVELI B.SHAH	26	26	0	0	0	52
5	73	132	JARANWALA	40	40	40	0	0	120	6	76	132	JOHARABAD	40	40	13	0	0	93
7	78	132	JHANG-1	40	40	40	0	0	120	8	79	132	JHANG ROAD	40	40	40	40	0	160
9	93	132	KAMALIA	40	40	26	0	0	106	10	108	132	KHEWA	26	13	13	0	0	52
11	115	132	KUD LATHI	26	26	0	0	0	52	12	134	132	MIANWALI	40	40	26	0	0	106
13	143	132	NARWALA ROAD	40	40	40	0	0	120	14	160	132	PIPLAN	0	26	26	0	0	52
15	192	132	SHAHKOT	40	40	40	0	0	120	16	205	132	SAMUNDRI ROAD	40	40	40	40	26	186
17	226	66	ADHI KOT	13	13	0	0	0	26	18	227	132	AHMAD PUR SIAL	0	26	13	0	0	39
19	242	132	BHABRA	13	13	13	0	0	39	20	243	132	BHALWAL	26	26	26	0	0	78
21	244	132	BHAWANA	26	26	16	0	0	68	22	255	132	CHUTIANA	0	26	13	0	0	39
23	275	132	FAAZIL	13	13	0	0	0	26	24	298	132	KALA BAGH	0	13	13	0	0	26
25	322	66	MANKERA	13	0	0	0	0	13	26	331	132	MURID WALA	40	26	0	0	0	66
27	333	132	RAKH DAGRAN	26	26	13	0	0	65	28	334	132	NIA LAHORE	0	0	26	26	0	52
29	339	66	OLD THERMAL	0	0	0	13	13	26	30	352	66	MAKAR WAL	18.8	0	0	0	0	18.8

Sr. No.	Grid No.	KV	Grid Name	Transformer (MVA)					Total (MVA)
				T1	T2	T3	T4	T5	
31	363	132	SARGODHA CITY	40	40	26	0	0	106
33	395	66	TRUG	13	18.8	0	0	0	31.8
35	421	132	MANJALA BAGH	26	26	13	0	0	65
37	423	66	NUSHERA SAKESAR	5.6	10.5	0	0	0	16.1
39	441	132	MEHMOOD KOT	0	26	13	0	0	39
41	458	132	DAUD KHEL	0	13	0	26	0	39
43	475	132	AGRI UNIVERSITY	40	40	40	40	0	160
45	524	132	SAR-LUDEWALA	0	0	26	26	0	52
47	526	132	BARANA	26	26	0	0	0	52
49	585	132	HEAD FAQIRIAN	26	0	26	0	0	52
51	597	132	NOOR PUR SETHI	0	0	0	0	0	0
53	601	132	TALIB WALA	40	26	0	0	0	66
55	641	132	CHINIOT INDUSTRIAL	40	40	40	0	0	120
57	686	66	HYDER ABAD THAL	5	0	0	0	0	5
59	790	220	220KV SUMMANDRI ROAD	0	0	0	26	13	39

Sr. No.	Grid No.	KV	Grid Name	Transformer (MVA)					Total (MVA)
				T1	T2	T3	T4	T5	
32	373	132	SHOR KOT CITY	26	26	0	0	0	52
34	420	220	220KV JARANWALA ROAD	0	0	0	40	26	66
36	422	66	JAHANIAN SHAH	5	13	0	0	0	18
38	431	132	OLD THERMAL	40	40	40	0	0	120
40	442	132	18-HAZARI	0	0	26	26	0	52
42	459	132	TANDLIAN WALA	26	26	26	0	0	78
44	523	132	S.PUR NOON	16	16	0	0	0	32
46	525	66	BEHAL	13	13	0	0	0	26
48	581	132	WAN BUCHRAN	26	26	0	0	0	52
50	595	132	CHAK JHUMRA	26	26	26	0	0	78
52	598	132	QUAID ABAD	0	26	26	0	0	52
54	618	132	FACTORY AREA	40	40	40	40	0	160
56	673	132	KHURRIANWALA	40	26	40	0	0	106
58	759	132	BHAKKAR	0	40	26	40	0	106
60	793	220	220KV MARI INDUS	0	0	13	0	0	13

Sr. No.	Grid No.	KV	Grid Name	Transformer (MVA)					Total (MVA)
				T1	T2	T3	T4	T5	
61	824	132	INDUSTRIAL-ESTATE	40	26	0	0	0	66
63	856	132	JHANG-2	40	26	0	0	0	66
65	867	132	SCARP COLONY	26	26	0	0	0	52
67	908	132	KIRANA	26	26	26	0	0	78
69	947	132	SATIANA	26	26	0	0	0	52
71	953	132	THEKRIWALA	26	26	26	0	0	78
73	976	132	LALIAN	26	26	13	0	0	65
75	995	132	VAC	26	26	0	0	0	52
77	1012	132	SATIANA ROAD	26	26	13	0	0	65
79	1021	132	KAMAL PUR	26	13	13	0	0	52
81	1077	132	MILLAT ROAD	13	13	0	0	0	26
83	1101	132	LUNDIANWALA	13	13	0	0	0	26
85	1140	132	MAMUKANJAN	26	13	0	0	0	39
87	1168	132	132KV SHAHBAZ K	13	13	0	0	0	26
89	1177	132	GIS CITY FAISALABAD	40	40	0	0	0	80
91	1192	132	BHAGTANWALA	0	0	0	26	26	52

Sr. No.	Grid No.	KV	Grid Name	Transformer (MVA)					Total (MVA)
				T1	T2	T3	T4	T5	
62	853	132	NISHATABAD	40	26	26	0	0	92
64	862	132	BANDALA	40	26	26	0	0	92
66	873	220	220KV LUDEWALA	0	0	0	13	0	13
68	918	132	T.T.SINGH	40	40	26	0	0	106
70	948	132	PIR MAHAL	26	26	40	0	0	92
72	957	132	SHAH PUR	26	26	0	0	0	52
74	984	132	SAMUNDRI	26	26	26	0	0	78
76	1010	132	126 S.B SARGODHA	26	26	0	0	0	52
78	1018	132	103/RB CHUDRIWALA	26	26	26	0	0	78
80	1065	132	BHERA INDUSTRIAL	26	13	0	0	0	39
82	1079	132	GAREH FATEH SHAH	13	13	0	0	0	26
84	1134	132	CHENAB NAGAR	26	13	0	0	0	39
86	1147	132	SPS FAISALABAD	26	26	0	0	0	52
88	1170	132	AMIN PUR ROAD	13	26	0	0	0	39
90	1179	132	DARYA KHAN	13	26	0	0	0	39
92	1211	66	66KV KALOOR KOT	10	0	0	0	0	10

Sr. No.	Grid No.	KV	Grid Name	Transformer (MVA)					Total (MVA)		Sr. No.	Grid No.	KV	Grid Name	Transformer (MVA)					Total (MVA)
				T1	T2	T3	T4	T5							T1	T2	T3	T4	T5	
93	1213	66	66KV MUSA KHEL	13	0	0	0	0	13		94	1214	132	CHEENA	13	13	0	0	0	26
95	1230	132	KOT SHAKIR	13	0	0	0	0	13		96	1236	132	TARIQABAD	26	40	0	0	0	66
97	1243	66	66KV MITHA TIWANA	13	0	0	0	0	13		98	1246	66	66KV ESSA KHEL	13	0	0	0	0	13
99	1248	132	FIEDMC NO.2	26	26	0	0	0	52		100	1249	66	66KV JAURA KALAN	13	0	0	0	0	13
101	1255	132	ALLAMA IQBAL No.1	26	0	0	0	0	26		102	1261	132	FDA CITY No.1	26	0	0	0	0	26
103	1264	132	582/GB JARANWALA	26	0	0	0	0	26		104	1282	66	66KV Old Thermal	0	0	0	13	13	26
105	1289	132	Allied	40	0	0	0	0	40		106	1293	132	Jhakkar	13	0	0	0	0	13

Table 1- 22: Maximum Demand (MW) of Substations (Base Forecast)

S . No.	Grid No.	Name of Grid Station	KV	Year										
				2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
1	16	BHAMB	132	78	69.8	72.1	61.2	63.3	55.3	57.3	59.5	61.7	64.1	66.6
2	28	CHINIOT ROAD	132	101.9	59.9	62	64.6	67.4	70.2	73.4	77.1	80.8	84.6	88.4
3	47	GOJRA	132	77.7	69.5	70.6	62.8	57.6	59.3	61.2	63.2	65.4	67.8	70.2
4	61	HAVELI B.SHAH	132	21.9	19.6	21.3	23.2	25.4	15.6	16.6	17.6	18.7	19.9	21
5	73	JARANWALA	132	82.4	73.7	74.5	70.7	72.4	74.2	71.4	73.3	75.4	77.5	79.7
6	76	JOHARABAD	132	61.2	54.7	56.6	49.7	52.1	54.6	57.9	61.2	64.9	68.7	72.5
7	78	JHANG-1	132	84.2	75.3	76.2	67.5	53.8	48.8	50.2	51.8	53.4	55	56.7
8	79	JHANG ROAD	132	147.6	132	134.2	101.8	104.4	96.2	98.7	101.7	104.8	107.9	111.1
9	93	KAMALIA	132	72.5	49.1	49.9	46.2	42.6	44.1	45.8	47.5	49.4	51.3	53.2
10	108	KHEWA	132	37	33.1	36	39.2	37.8	41.4	45.2	49.2	53.5	57.8	62.4
11	115	KUD LATHI	132	39.1	35	35.5	23	23.5	24.1	24.7	25.3	26	26.6	27.4
12	134	MIANWALI	132	51.8	46.3	39.1	31.7	33.1	34.6	36.2	38	39.9	41.8	43.8
13	143	NARWALA ROAD	132	77.1	69	71.5	57.4	60.2	32.3	33.3	34.3	35.4	36.5	37.6
14	160	PIPLAN	132	22.6	20.2	21.9	23.9	14.9	16.1	17.3	18.7	20.2	21.7	23.2
15	192	SHAHKOT (LESCO)	132	15.9	14.3	14.3	14.4	14.5	14.7	14.9	15.1	15.3	15.5	15.7
16	205	SUMANDRI ROAD	132	121.5	108.7	97.3	92.1	94.4	96.8	96.4	99.6	102.8	106.1	109.5
17	226	ADHI KOT	66	15.9	14.2	14.2	0	0	0	0	0	0	0	0
18	227	AHMAD PUR SIAL	132	17.6	15.8	16.6	17.6	18.6	19.7	20.9	22.2	23.6	25	26.4
19	231	ASHIANA MILL	66	4	4	4	4	4	4	4	4	4	4	4
20	242	BHABRA	132	29.5	26.4	29.3	32.4	5.4	1.5	1.5	1.5	1.6	1.6	1.6

S . No.	Grid No.	Name of Grid Station	KV	Year										
				2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
21	243	BHALWAL	132	60.6	54.2	56.7	59.7	62.9	55.3	58.1	61.3	64.5	67.7	71.1
22	244	BHAWANA	132	47.6	42.6	44	43.1	45.4	44.8	47.1	49.6	52.3	55	57.8
23	250	CHASHMA	66	9.6	9.6	10	10.4	10.9	11.3	11.7	12.2	12.7	13.2	13.7
24	255	CHUTIANA	132	27.4	24.5	25.5	26.8	28.1	29.5	31	32.6	34.4	36.1	37.9
25	275	FAZIL	132	12.7	11.4	11.4	11.6	11.8	12	12.3	12.6	12.9	13.2	13.5
26	298	KALA BAGH	132	19.1	17.1	17.7	18.4	19.4	20.5	21.6	22.8	24	25.3	26.6
27	322	MANKERA	66	10.5	9.4	9.6	9.8	10.2	7.6	7.9	8.1	8.4	8.7	9
28	331	MURID WALA	132	41.9	37.5	37.9	30.6	31.4	32.2	33.2	34.2	35.2	36.3	37.4
29	333	RAKH DAGRAN	132	20.7	18.5	19.6	20.9	22.2	23.6	25.1	26.7	28.4	30.2	31.9
30	334	NIA LAHORE	132	30.5	27.3	28.7	30.2	25.2	26.5	28	29.6	31.2	32.9	34.6
31	352	MAKAR WAL	66	17.2	15.4	16.4	17.5	18.9	20.4	21.9	23.6	25.3	27.1	29
32	363	SARGODHA	132	83.3	74.5	75.3	61.1	62.4	63.8	65.5	67.3	69.2	71.1	73.1
33	371	SHAMAS	66	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
34	373	SHOR KOT CITY	132	38.3	34.3	38.7	43.4	48.5	53.7	59.2	65.4	71.8	78.3	85
35	395	TRAG	66	18.8	16.8	17.4	18.2	19.3	20.3	21.4	22.7	24	25.3	26.7
36	420	220KV JARANWALA	220	44.6	39.9	39.9	0	0	0	0	0	0	0	0
37	421	MANJALA BAGH	132	31.3	28	29.2	30.6	32.6	34.6	36.7	39	41.4	43.9	46.4
38	422	JAHANIAN SHAH	66	7.2	6.4	6.4	0	0	0	0	0	0	0	0
39	423	NUSHERA SAKESAR	66	12.2	10.9	10.9	0	0	0	0	0	0	0	0
40	431	OLD THERMAL	132	82	73.3	74.9	77.6	80.9	84.2	88.1	92.2	95.8	99.5	103.3
41	441	MEHMOOD KOT	132	25.3	22.6	23.2	24.1	12.8	13.2	13.6	14.1	14.5	15	15.5

S . No.	Grid No.	Name of Grid Station	KV	Year										
				2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
42	442	18-HAZARI	132	29.3	26.2	26.7	27.5	20.6	21.3	22.1	22.9	23.8	24.7	25.6
43	458	DAUD KHEL	132	10.2	9.1	9.2	9.3	9.6	9.8	10	10.3	10.6	10.9	11.2
44	459	TANDLIAN WALA	132	50.7	45.4	49.3	55.1	61.5	68.1	64.7	70.6	76.6	82.7	89
45	475	AGRI UNIVERSITY	132	105.1	94	94.7	91.6	93.5	82.6	84.4	86.4	88.4	90.5	92.7
46	523	S.PUR NOON	132	16	14.3	15	15.9	16.9	9.2	9.6	10.1	10.6	11	11.5
47	524	SAR-LUDEWALA	132	30.8	27.5	27.7	19.9	20.2	20.5	20.9	21.4	21.8	22.3	22.8
48	525	BEHAL	66	10.9	9.7	0	0	0	0	0	0	0	0	0
49	526	BARANA	132	37.9	33.9	34.4	30.8	31.7	32.7	33.8	35	36.2	37.4	38.7
50	581	WAN BUCHRAN	132	30.2	27	27.3	13.9	14.4	14.9	15.5	16	16.6	17.2	17.8
51	585	HEAD FAQIRIAN	132	33.7	30.1	30.7	31.6	32.7	31.8	32.7	33.7	34.7	35.7	36.7
52	595	CHAK JHUMRA	132	41.9	37.5	38.5	29.9	31.3	32.7	34.2	35.8	37.5	39.3	41.1
53	597	NOOR PUT SETHI	132	4.3	3.9	4	4.1	4.4	4.6	4.9	5.1	5.3	5.6	5.8
54	598	QUAID ABAD	132	26.2	23.5	24	25	26.2	27.4	28.8	30.2	31.7	33.2	34.8
55	601	TALIB WALA	132	55.9	50	50.6	42	43.1	44.3	42.1	43.1	44.1	45.2	46.3
56	618	FACTORY AREA	132	67.7	60.5	59.3	61.8	64.7	67.6	62.7	65.7	68.6	71.6	74.7
57	641	CHINIOT	132	83.7	74.9	76.7	73.4	76.6	70.6	73.3	76.1	78.9	81.8	84.8
58	648	SITARA CHEMICAL	132	54	54	54	54	54	54	54	54	54	54	54
59	649	M.T.M. MILLS	132	9	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2
60	673	KHURRIANWALA	132	83.1	74.3	68.2	69.5	67.4	68.8	70.6	72.4	74.3	76.2	78.2
61	674	GROAT	132	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8
62	686	HYDER ABAD THAL	66	4.3	3.9	3.9	0	0	0	0	0	0	0	0

S . No.	Grid No.	Name of Grid Station	KV	Year										
				2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
63	701	RAFHAN	132	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
64	703	PIONEER CEMENT	132	39.2	39.2	39.2	39.2	39.2	39.2	39.2	39.2	39.2	39.2	39.2
65	704	A.E.C. CHASHMA	132	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
66	739	J.K.TECH MILLS.	132	14.7	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4
67	759	BHAKKAR	132	50.6	45.2	46.4	48.3	50.6	42.9	44.8	46.8	48.8	50.8	52.8
68	779	PAEC CHASHMA (M	132	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2
69	790	220KV SUMMANDRI	220	26.5	23.7	23.7	0	0	0	0	0	0	0	0
70	793	220KV MARI INDU	220	3	2.7	2.7	0	0	0	0	0	0	0	0
71	824	INDUSTRIAL ESTA	132	56.5	50.5	51.9	53.8	55.8	57.9	60	62.8	65.7	68.4	71
72	853	NISHATABAD	132	65.1	58.3	59.4	61.2	63.1	65.1	67.3	69.8	72.3	74.9	77.6
73	856	JHANG-2	132	43.1	38.5	39.1	40	25.6	26.3	27	27.8	28.6	29.4	30.3
74	862	BANDALA	132	71	63.5	59.1	60.2	61.4	62.6	64.1	65.7	67.4	69.1	70.8
75	867	SCARP COLONY	132	55.8	49.9	50.3	33	29.1	29.6	30.2	30.8	31.5	32.2	32.8
76	873	220KV LUDEWAL	220	9.6	8.6	8.6	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1
77	890	REFHAN MAIZE JR	132	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
78	908	KIRANA	132	56.6	50.6	52.1	52.3	54.7	57.2	50.7	52.6	54.5	56.4	58.4
79	915	A.A. SPINNING M	132	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
80	918	T.T.SINGH	132	60.2	53.9	54.4	54.4	55.8	57.3	59.1	60.9	62.6	64.4	66.3
81	947	SATIANA	132	35.5	31.7	32.1	31.6	32.3	33	29.4	30.1	30.8	31.5	32.3
82	948	PIR MAHAL	132	75	67.1	73.7	77.5	72.8	35.1	36.4	37.7	39.1	40.5	41.9
83	953	THEKRIWALA	132	54.2	48.5	49.5	51.2	53.1	55.1	57.4	59.8	62.1	64.4	66.8

S . No.	Grid No.	Name of Grid Station	KV	Year										
				2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
84	957	SHAH PUR	132	35.6	31.9	32.8	34.4	36.2	23.3	24.4	25.5	26.5	27.6	28.7
85	976	LALIAN	132	40.8	36.5	37.3	38.7	40.4	37.3	36.9	38.3	39.8	41.4	43
86	983	PAEC-C-11	132	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
87	984	SAMUNDRI	132	50.7	45.4	47	49.7	52.6	55.5	58.9	62.3	65.8	69.5	73.1
88	995	VAC	132	22	19.6	21	22.8	24.8	26.7	28.8	30.9	33.1	35.2	37.4
89	1010	126/SB SARGODHA	132	60.8	54.4	54.7	55.5	56.4	57.3	52.5	53.6	54.7	55.8	56.9
90	1012	SATIANA ROAD	132	49.8	44.5	48.2	49	53.2	57.5	32.1	32.7	33.3	34	34.7
91	1015	FLYING CEMENT C	132	20.4	42	42	42	42	42	42	42	42	42	42
92	1018	103/RB CHUDRIWA	132	39.9	35.7	36.3	37.4	38.6	39.7	41.1	42.5	44.1	45.6	47.2
93	1021	KAMAL PUR	132	27.4	24.5	24.7	25.3	26	26.8	27.6	28.6	29.7	30.8	31.9
94	1065	BHERA INDUSTRIA	132	17.4	15.6	16.5	17.7	19	20.3	21.6	23.2	24.7	26.2	27.7
95	1070	KHADIM STEEL MI	132	17.1	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3	29.3
96	1077	MILLAT ROAD	132	35.3	28.4	28.6	29.1	29.6	30.2	30.9	31.6	32.2	32.9	33.6
97	1079	GARH FATEH SHAH	132	14.3	12.8	15.4	18.6	22.2	25.9	29.9	34.1	38.5	42.9	47.4
98	1098	PAEC C-3 C-4	132	18	18	18	18	18	18	18	18	18	18	18
99	1100	INTERLOOP	132	17.9	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1
100	1101	LUNDIANWALA	132	20.4	18.3	19.2	20.4	21.9	23.4	25	26.8	28.7	30.4	32.1
101	1107	NO.1 M3 (FIEDMC	132	37.5	37.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5
102	1110	IBRAHIM FIBRES	132	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4
103	1134	CHANAB NAGAR	132	29.4	26.3	26.8	27.6	28.6	29.6	30.7	32	33.3	34.6	35.9
104	1140	MAMUNKANJAN	132	17	15.2	15.4	15.7	16.3	16.9	17.5	18.2	18.9	19.6	20.4

S . No.	Grid No.	Name of Grid Station	KV	Year										
				2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
105	1147	STEAM POWER STA	132	44.3	39.6	40.6	42.1	44	46	48.3	50.5	52.7	54.9	57.2
106	1158	PAF BASE MUSHAF	132	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
107	1168	SHAHBAZ KHEL	132	15.9	14.2	14.5	9.3	9.6	10	10.3	10.7	11.1	11.6	12
108	1170	AMIN PUR	132	22.5	20.2	22.7	25.6	29.2	32.8	36.6	40.8	45	49.3	53.7
109	1177	FAISALABAD CITY	132	46.8	41.9	44.2	47.1	50.2	53.3	55.8	58.4	61	63.7	66.4
110	1179	DARYA KHAN	132	10.5	9.4	9.6	9.8	10.1	10.3	10.7	11	11.4	11.8	12.1
111	1192	BHAGTAN WALA	132	40.8	39.7	40.7	41.9	43.2	34	32	32.4	32.9	33.4	33.8
112	1199	FIRST TREET	132	5.2	4.7	4.7	4.7	4.7	4.8	4.8	4.9	5	5.1	5.1
113	1211	KALOOR KOT	66	6.5	5.8	6.5	7.2	7.9	8.7	9.5	10.4	11.4	12.2	13.1
114	1213	MUSA KHEL	66	10.7	9.6	9.9	7.7	8.2	8.6	9	9.5	10	10.5	11
115	1214	CHEENA	132	8.6	7.7	7.9	8.1	8.4	8.7	9	9.3	9.6	10	10.3
116	1230	KOT SHAKIR	132	3.6	3.2	3.3	3.5	3.6	3.8	4	4.2	4.4	4.6	4.8
117	1232	PARCO	132	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
118	1236	TARIQ ABAD	132	32.6	29.1	30.1	31.9	33.7	35.5	37.6	39.7	41.5	43.3	45.1
119	1243	66KV MITHA TIWA	132	9.3	8.3	8.9	9.5	10.2	10.9	11.6	12.5	13.3	14.1	14.9
120	1246	66KV ESA KHEL	66	6.5	5.9	6.2	6.5	6.9	7.3	7.7	8.2	8.7	9.1	9.6
121	1248	NO. 2 M3 (FIEDM	132	10.6	10.6	20.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6
122	1249	66 KV JAURA KAL	66	4.3	3.8	4.2	4.7	5.1	5.6	6.1	6.7	7.3	7.8	8.3
123	1255	ALLAMA IQBAL NO	132	7.3	7.3	17.3	27.3	37.3	37.3	37.3	37.3	37.3	37.3	37.3
124	1256	GOHAR TEXTILE	132	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
125	1261	FDA CITY NO.1	132	0	0	0.4	2.6	4.7	6.8	11.1	15.4	21.3	27.2	33.2

S . No.	Grid No.	Name of Grid Station	KV	Year										
				2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
126	1264	CHAK NO. 582/GB	132	4.6	4.1	4.5	5	5.5	6	6.5	7	7.6	8.2	8.8
127	1268	SADAQAT LTD	132	7.6	7.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6
128	1278	BEST FIBRES	132	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
129	1282	66KV OLD THERMA	132	20.7	18.5	18.6	18.8	19.1	19.3	19.7	20	20.4	20.8	21.2
130	1284	INTERLOOP LTD.2	132	9	9	9	9	9	9	9	9	9	9	9
131	1285	BESTWAY CEMENT	132	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8	28.8
132	1288	PAEC HARNOLI RO	132	24.7	22.1	22.1	22.3	22.2	22.2	22.2	22.2	22.2	22.1	22.1
133	1289	ALLIED	132	26.9	24.1	24.4	24.9	25.4	25.9	26.6	27.3	27.9	28.6	29.3
134	1293	JHAKKAR (P)	132	0	15.7	16.3	17	18	19	20.1	21.2	22.4	23.7	25
135	1874	DAUD KHEL CEMEN	132	49.3	44.1	44.1	44.4	44.8	45.3	45.9	46.5	47.2	47.9	48.5
136	1957	RAJANA (P)	132	0	0	0	18.8	19.7	20.5	21.5	22.5	23.5	24.6	25.7
137	1960	CHUND BHERWANA	132	0	0	0	0	0	10.2	10.6	11	11.4	11.8	12.3
138	1965	USMAN-E-GHANI	132	0	0	0	0	0	34.1	36.1	38.2	40.3	42.4	44.6
139	1966	NAMAL (P)	132	0	0	0	2.6	2.7	2.8	3	3.1	3.3	3.5	3.6
140	1967	HARNOLI (P)	132	0	0	0	0	11	11.9	12.9	14	15.1	16.3	17.4
141	1968	SALARWALA (P)	132	0	0	0	10.1	10.6	11.1	11.7	12.3	12.9	13.6	14.2
142	1985	PINDI BHATTIAN	132	0	0	0	8.9	9.6	10.4	11.2	12	12.9	13.8	14.7
143	1990	KOT MOMIN (P)	132	0	0	0	0	0	14.7	15.9	17.2	18.5	19.8	21.1
144	1991	BHABRA (P)	132	0	0	0	0	30.5	33.4	36.4	39.8	42.9	46.1	49.4
145	1997	SARGODHA-III (N	132	0	0	0	18	18.5	19	19.7	20.3	20.9	21.5	22.2
146	2200	GOKHUWAL (P)	132	0	34.4	36.6	39.2	41.9	44.7	47.7	51.1	54.4	57.8	61.2

S . No.	Grid No.	Name of Grid Station	KV	Year										
				2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
147	2202	JARANWALA RD NE	132	0	0	0	40.2	40.8	41.3	42	42.7	43.5	44.3	45.1
148	2203	ADHI KOT (P)	132	0	0	0	14.4	14.5	14.7	14.9	15.2	15.4	15.6	15.9
149	2204	DIJKOT (P)	132	0	0	0	18	18.4	18.8	19.2	19.7	20.3	20.9	21.5
150	2205	ADHA (P)	132	0	0	0	12	12.4	12.9	13.5	14.2	14.9	15.7	16.4
151	2206	JAHANIAN SHAH (	132	0	0	0	6.5	6.6	6.7	6.8	6.9	7	7.1	7.3
152	2207	NUSHERA SAKESAR	132	0	0	0	11	11.1	11.3	11.4	11.6	11.8	11.9	12.1
153	2208	LOWER CANAL RD	132	0	0	0	0	8.1	8.3	8.6	8.9	9.2	9.5	9.8
154	2209	AWAGAT (P)	132	0	0	0	21.7	22.2	22.8	23.4	24.1	24.8	25.5	26.3
155	2210	COLLEGE ROAD FS	132	0	0	16.1	16.7	17.4	18.2	19	20.1	21.1	22.2	23.4
156	2211	BAKKAR MANDI RD	132	0	0	0	57.6	59.4	61.3	63.5	66.1	68.8	71.5	74.3
157	2212	BEHAL (P)	132	0	0	9.7	9.8	10	10.1	10.3	10.5	10.7	10.9	11.1
158	2213	HYDER ABAD THAL	132	0	0	0	3.9	3.9	4	4.1	4.2	4.3	4.3	4.4
159	2214	JANDANWALA (P)	132	0	0	8.9	9.2	9.5	9.8	10.1	10.5	10.8	11.2	11.6
160	2215	KATHA ROAD KHUS	132	0	0	0	9.2	9.9	10.7	11.6	12.5	13.7	14.8	15.9
161	2216	CHIDDRU (P)	132	0	0	0	3.9	4.3	4.6	4.9	5.3	5.7	6.1	6.5
162	2217	RODU SULTAN (P)	132	0	0	0	0	20.4	21.6	22.9	24.2	25.5	26.9	28.3
163	2218	CHHIDRU (P)	132	0	0	0	14.1	14.7	62.4	72.4	82.9	97	111.9	127.7
164	2219	SARAI MOHAJAR (	132	0	0	0	0	0	13	13.8	14.7	15.5	16.4	17.3
165	2220	BAGH (P)	132	0	0	0	9.1	9.4	9.6	10	10.4	10.9	11.3	11.7
166	2221	SAMUNDRI ROAD (	132	0	0	0	11.4	11.5	11.6	11.8	12	12.2	12.3	12.5
167	2222	MARI INDUS (P)	132	0	0	0	2.7	2.7	2.8	2.8	2.8	2.9	2.9	3

S . No.	Grid No.	Name of Grid Station	KV	Year										
				2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
168	2223	LUDEWALA (P)	132	0	0	0	7.8	7.9	8	8.2	8.3	8.5	8.6	8.8
169	2224	SADHAR BY PASS	132	0	0	0	0	0	20.6	22.2	23.8	25.5	27.2	28.5
170	2225	CITY HOUSING	132	0	0	2	4.6	7.2	23.4	28.5	32.5	36.6	40.6	44.7
171	2226	SILLANWALI RD.	132	0	0	0	20.2	20.8	21.4	22.2	23	23.8	24.7	25.5
172	2249	SIAL MOR (P)	132	0	0	0	0	0	18.1	19.9	21.7	23.6	25.7	27.8
173	2250	SWANS ROAD (P)	132	0	0	0	11	11.8	12.6	13.4	14.4	15.3	16.2	17.6
174	2251	237/RB Satiana	132	0	0	0	7.8	8	8.3	8.5	8.8	9.1	9.4	9.7
175	2252	MALKHANWALA (P)	132	0	0	0	0	0	0	41.8	46.8	52.1	57.5	63
176	2253	JHOK SEMETLI (P	132	0	0	0	0	0	0	19.8	21.5	23.1	24.8	26.6
177	2254	MOCHIWALA (P)	132	0	0	0	0	23.9	25.7	27.6	29.8	31.9	34.2	36.5
178	2255	MALHO MORE (P)	132	0	0	0	0	0	18.4	20.2	22.2	24.3	26.5	28.7
179	2257	PULL 111 (P)	132	0	0	0	0	0	0	23.4	25.4	27.5	29.7	31.9
180	2260	LAK MORE (P)	132	0	0	0	0	0	23.3	25	26.8	28.7	30.6	32.6
181	2262	FAROOQA (P)	132	0	0	0	13.7	14.3	14.9	15.5	16.2	16.9	17.6	18.4
182	2263	SOBHAGA (P)	132	0	0	0	15.3	17.8	20.4	23.1	25.8	28.8	31.8	35
183	2290	66KV GOJRA RD J	66	0.0	0	0	0	26.8	27.7	28.8	30	31.3	32.5	33.8
184	2292	WAGHI ADDA (P)	132	0	0	0	0	19.6	20.5	21.5	22.6	23.7	24.8	26
185	2293	RASOOLPURA (P)	132	0	0	11.9	12.3	12.7	13.1	13.6	14	14.6	15.1	15.6
186	2297	ZAHIDJEE TEXTIL	132	0	0	0	0	0	0	0	0	0	0	0
187	2300	NO.3 M3(FIEDMC)	132	0	0	10	30	50	89	128	167	232	310	390
188	2301	BIE PIEDMC	132	0	7	8	10	15	20	21	23	25	25	25

S . No.	Grid No.	Name of Grid Station	KV	Year										
				2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
189	2303	KOHAT CEMENT	132	0	34.8	34.8	34.8	34.8	34.8	34.8	34.8	34.8	34.8	34.8
190	2304	NO.2 AIIC(FIEDM	132	0	0	10	30	50	89	128	167	232	297	377
191	2397	ZAHIDJEE TEXTIL	132	0	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1
192	2400	NISHAT MILLS LT	132	0	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
193	2401	CITY HOUSING 2	132	0	0	1.6	3.6	5.4	7.7	9.9	11.5	13.2	14.9	16.6
194	2402	ITHAD METAL PVT	132	0	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7	18.7
195	2403	BEACON IMPEX PV	132	0	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
	0	TOTAL DISCO:	0	4457.1	4180.4	4353.8	4571.9	4808.7	5080.5	5370.7	5674.5	6041	6422.6	6827.5

Table 1- 23: Family of Grids (Existing, Proposed & Transit Grid)

Grid No	Name of Grid Station	KV	Year										
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
1293	JHAKKAR (P)	132	0	0	0	0	0	0	0	0	0	0	0
93	KAMALIA	132	44.4	39.7	40.2	41.1	42.6	44.1	45.8	47.5	49.4	51.3	53.2
5004	Kamalia-Jhakkar	132	17.6	15.7	16.3	17	18	19	20.1	21.2	22.4	23.7	25
1957	RAJANA (P)	132	0	0	0	0	0	0	0	0	0	0	0
93	KAMALIA	132	44.4	39.7	40.2	41.1	42.6	44.1	45.8	47.5	49.4	51.3	53.2
5001	Kamalia-Rajana	132	5.2	4.6	4.8	4.9	5.2	5.5	5.8	6	6.4	6.7	7
1957	RAJANA (P)	132	0	0	0	0	0	0	0	0	0	0	0
331	MURID WALA	132	33.3	29.8	30.1	30.6	31.4	32.2	33.2	34.2	35.2	36.3	37.4
5002	Murid Wala-Raja	132	8.6	7.7	7.8	8.1	8.4	8.7	9	9.4	9.8	10.1	10.5
1957	RAJANA (P)	132	0	0	0	0	0	0	0	0	0	0	0
948	PIR MAHAL	132	35.5	31.8	32.2	32.9	34	35.1	36.4	37.7	39.1	40.5	41.9
5003	Pir Mahl-Rajana	132	6.1	5.5	5.6	5.8	6.1	6.4	6.7	7.1	7.4	7.8	8.1
1960	CHUND BHERWANA	132	0	0	0	0	0	0	0	0	0	0	0
16	BHAMB	132	56.3	50.3	50.8	51.6	53.4	55.3	57.3	59.5	61.7	64.1	66.6
5006	Bhamb-Chund bhe	132	10.4	9.3	9.4	9.6	9.9	10.2	10.6	11	11.4	11.8	12.3
1965	USMAN-E-GHANI	132	0	0	0	0	0	0	0	0	0	0	0
143	NARWALA ROAD	132	32.9	29.4	29.9	30.6	31.5	32.3	33.3	34.3	35.4	36.5	37.6
5009	Narwala Road-Us	132	18.2	16.3	17.4	18.6	20	21.3	22.7	24.2	25.8	27.3	28.9

Grid No	Name of Grid Station	KV	Year										
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
1965	USMAN-E-GHANI	132	0	0	0	0	0	0	0	0	0	0	0
475	AGRI UNIVERSITY	132	87.7	78.5	78.8	79.8	81.2	82.6	84.4	86.4	88.4	90.5	92.7
5010	Agri University	132	12.3	11	11.3	11.8	12.3	12.8	13.3	13.9	14.5	15.1	15.7
1966	NAMAL (P)	132	0	0	0	0	0	0	0	0	0	0	0
1213	MUSA KHEL	66	8	7.2	7.4	7.7	8.2	8.6	9	9.5	10	10.5	11
5011	Musa Khel-Namal	132	2.7	2.4	2.5	2.6	2.7	2.8	3	3.1	3.3	3.5	3.6
1967	HARNOLI (P)	132	0	0	0	0	0	0	0	0	0	0	0
160	PIPLAN	132	13	11.7	12.6	13.7	14.9	16.1	17.3	18.7	20.2	21.7	23.2
5007	PIPLAN-HARNOLI	132	9.6	8.6	9.3	10.1	11	11.9	12.9	14	15.1	16.3	17.4
1968	SALARWALA (P)	132	0	0	0	0	0	0	0	0	0	0	0
595	CHAK JHUMRA	132	31.4	28.1	28.8	29.9	31.3	32.7	34.2	35.8	37.5	39.3	41.1
5008	CHAK JHUMRA-SA	132	10.5	9.4	9.7	10.1	10.6	11.1	11.7	12.3	12.9	13.6	14.2
1985	PINDI BHATTIAN	132	0	0	0	0	0	0	0	0	0	0	0
641	CHINIOT	132	71.2	63.7	64.5	66	68.3	70.6	73.3	76.1	78.9	81.8	84.8
5021	Chiniot-Pindi B	132	6.3	5.6	5.8	6.1	6.6	7	7.4	7.9	8.4	8.9	9.4
1985	PINDI BHATTIAN	132	0	0	0	0	0	0	0	0	0	0	0
244	BHAWANA	132	42.6	38.1	39.1	40.5	42.6	44.8	47.1	49.6	52.3	55	57.8
5022	Bhawana-Pindi B	132	2.5	2.2	2.4	2.7	3	3.4	3.8	4.1	4.5	4.9	5.3

Grid No	Name of Grid Station	KV	Year										
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
1990	KOT MOMIN (P)	132	0	0	0	0	0	0	0	0	0	0	0
585	HEAD FAQIRIAN	132	32.5	29.1	29.4	30.1	31	31.8	32.7	33.7	34.7	35.7	36.7
5028	Head Faqirian-K	132	1.1	1	1	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4
1990	KOT MOMIN (P)	132	0	0	0	0	0	0	0	0	0	0	0
585	HEAD FAQIRIAN	132	32.5	29.1	29.4	30.1	31	31.8	32.7	33.7	34.7	35.7	36.7
5029	Head Faqirian-K	132	0	0	0.2	0.4	0.6	0.8	1.1	1.3	1.5	1.8	2
1990	KOT MOMIN (P)	132	0	0	0	0	0	0	0	0	0	0	0
243	BHALWAL	132	51.6	46.1	48	50.3	52.8	55.3	58.1	61.3	64.5	67.7	71.1
5030	Bhalwal-Kot Mom	132	9	8	8.7	9.4	10.2	10.9	11.7	12.7	13.6	14.5	15.5
1990	KOT MOMIN (P)	132	0	0	0	0	0	0	0	0	0	0	0
1192	BHAGTAN WALA	132	30	30	30.4	30.8	31.2	31.6	32	32.4	32.9	33.4	33.8
5031	Bhaghtanwala-Ko	132	1.7	1.5	1.5	1.6	1.7	1.8	1.8	1.9	2	2.1	2.3
1991	BHABRA (P)	132	0	0	0	0	0	0	0	0	0	0	0
242	BHABRA	132	1.5	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.6
5005	66KV Bhabra-Bha	132	25.2	22.6	25	27.7	30.5	33.4	36.4	39.8	42.9	46.1	49.4
1997	SARGODHA-III (N	132	0	0	0	0	0	0	0	0	0	0	0
524	SAR-LUDEWALA	132	21.9	19.6	19.7	19.9	20.2	20.5	20.9	21.4	21.8	22.3	22.8
5040	Sar Ludewala-Sa	132	8.9	7.9	8	8.2	8.4	8.6	8.8	9.1	9.4	9.6	9.9

Grid No	Name of Grid Station	KV	Year										
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
1997	SARGODHA-III (N	132	0	0	0	0	0	0	0	0	0	0	0
601	TALIB WALA	132	43.2	38.6	38.9	39.5	40.3	41.1	42.1	43.1	44.1	45.2	46.3
5041	Talibwala-Sargo	132	10.5	9.4	9.6	9.8	10.1	10.4	10.8	11.2	11.5	11.9	12.3
2200	GOKHUWAL (P)	132	0	0	0	0	0	0	0	0	0	0	0
28	CHINIOT ROAD	132	67	59.9	62	64.6	67.4	70.2	73.4	77.1	80.8	84.6	88.4
5054	Chiniot rd-Mill	132	34.9	31.2	33.4	35.9	38.5	41.1	43.9	47.3	50.4	53.7	56.9
2200	GOKHUWAL (P)	132	0	0	0	0	0	0	0	0	0	0	0
1077	MILLAT ROAD	132	31.8	28.4	28.6	29.1	29.6	30.2	30.9	31.6	32.2	32.9	33.6
5055	Millat Road-Mil	132	3.6	3.2	3.2	3.4	3.5	3.6	3.7	3.9	4	4.1	4.3
2202	JARANWALA RD NE	132	0	0	0	0	0	0	0	0	0	0	0
420	220KV JARANWALA	220	0	0	0	0	0	0	0	0	0	0	0
5052	220Jaranwala rd	132	44.6	39.9	39.9	40.2	40.8	41.3	42	42.7	43.5	44.3	45.1
2203	ADHI KOT (P)	132	0	0	0	0	0	0	0	0	0	0	0
226	ADHI KOT	66	0	0	0	0	0	0	0	0	0	0	0
5048	Adhi Kot- Adhi	132	15.9	14.2	14.2	14.4	14.5	14.7	14.9	15.2	15.4	15.6	15.9
2204	DIJKOT (P)	132	0	0	0	0	0	0	0	0	0	0	0
790	220KV SUMMANDRI	220	0	0	0	0	0	0	0	0	0	0	0
5056	220KV Samundri-	132	14	12.5	12.5	12.6	12.7	12.9	13.1	13.3	13.5	13.7	13.9

Grid No	Name of Grid Station	KV	Year										
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
2204	DIJKOT (P)	132	0	0	0	0	0	0	0	0	0	0	0
205	SUMANDRI ROAD	132	97.6	87.3	88.1	89.6	91.7	93.9	96.4	99.6	102.8	106.1	109.5
5058	Samundri Rd-Dij	132	5.7	5.1	5.3	5.4	5.6	5.9	6.1	6.5	6.8	7.2	7.6
2205	ADHA (P)	132	0	0	0	0	0	0	0	0	0	0	0
78	JHANG-1	132	51.3	45.9	46.1	46.8	47.8	48.8	50.2	51.8	53.4	55	56.7
5049	Jhang City-Adha	132	2.5	2.3	2.3	2.4	2.5	2.7	2.8	3	3.2	3.4	3.6
2205	ADHA (P)	132	0	0	0	0	0	0	0	0	0	0	0
47	GOJRA	132	60.5	54.2	54.9	56.1	57.6	59.3	61.2	63.2	65.4	67.8	70.2
5057	Gojra-Adha	132	10.1	9	9.2	9.5	9.9	10.3	10.7	11.2	11.7	12.2	12.8
2206	JAHANIAN SHAH (	132	0	0	0	0	0	0	0	0	0	0	0
422	JAHANIAN SHAH	66	0	0	0	0	0	0	0	0	0	0	0
5047	66KV Jahanian S	132	7.2	6.4	6.4	6.5	6.6	6.7	6.8	6.9	7	7.1	7.3
2207	NUSHERA SAKESAR	132	0	0	0	0	0	0	0	0	0	0	0
423	NUSHERA SAKESAR	66	0	0	0	0	0	0	0	0	0	0	0
5046	66KV Nushera Sa	132	12.2	10.9	10.9	11	11.1	11.3	11.4	11.6	11.8	11.9	12.1
2208	LOWER CANAL RD	132	0	0	0	0	0	0	0	0	0	0	0
673	KHURRIANWALA	132	72	64.4	64.9	66.1	67.4	68.8	70.6	72.4	74.3	76.2	78.2
5061	Khurrianwala-20	132	3.6	3.3	3.3	3.4	3.5	3.6	3.8	3.9	4.1	4.2	4.4

Grid No	Name of Grid Station	KV	Year										
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
2208	LOWER CANAL RD	132	0	0	0	0	0	0	0	0	0	0	0
867	SCARP COLONY	132	31.3	28	28.2	28.6	29.1	29.6	30.2	30.8	31.5	32.2	32.8
5062	Scarp Col-208 C	132	4.7	4.2	4.3	4.4	4.5	4.6	4.8	4.9	5.1	5.2	5.4
2209	AWAGAT (P)	132	0	0	0	0	0	0	0	0	0	0	0
867	SCARP COLONY	132	31.3	28	28.2	28.6	29.1	29.6	30.2	30.8	31.5	32.2	32.8
5064	Scarp Col-Awaga	132	18	16.1	16.2	16.5	16.9	17.2	17.6	18	18.5	18.9	19.4
2209	AWAGAT (P)	132	0	0	0	0	0	0	0	0	0	0	0
73	JARANWALA	132	72.5	64.8	65.3	66.4	68	69.5	71.4	73.3	75.4	77.5	79.7
5065	Jaranwala-Awaga	132	5.4	4.8	5	5.1	5.3	5.6	5.8	6.1	6.3	6.6	6.9
2210	COLLEGE ROAD FS	132	0	0	0	0	0	0	0	0	0	0	0
618	FACTORY AREA	132	57.6	51.5	53	55	57.3	59.7	62.7	65.7	68.6	71.6	74.7
5066	Factory Area-Co	132	3.6	3.2	3.4	3.6	3.9	4.1	4.4	4.7	5	5.3	5.6
2210	COLLEGE ROAD FS	132	0	0	0	0	0	0	0	0	0	0	0
205	SUMANDRI ROAD	132	97.6	87.3	88.1	89.6	91.7	93.9	96.4	99.6	102.8	106.1	109.5
5067	Samundri Rd-Col	132	13.9	12.4	12.7	13	13.5	14.1	14.6	15.3	16.1	17	17.8
2211	BAKKAR MANDI RD	132	0	0	0	0	0	0	0	0	0	0	0
475	AGRI UNIVERSITY	132	87.7	78.5	78.8	79.8	81.2	82.6	84.4	86.4	88.4	90.5	92.7
5068	Agri University	132	5.1	4.6	4.6	4.7	4.8	4.9	5	5.1	5.3	5.4	5.6

Grid No	Name of Grid Station	KV	Year										
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
2211	BAKKAR MANDI RD	132	0	0	0	0	0	0	0	0	0	0	0
143	NARWALA ROAD	132	32.9	29.4	29.9	30.6	31.5	32.3	33.3	34.3	35.4	36.5	37.6
5069	Narwala Road-Ba	132	18.2	16.3	16.7	17.3	17.9	18.6	19.3	20.1	20.9	21.7	22.5
2211	BAKKAR MANDI RD	132	0	0	0	0	0	0	0	0	0	0	0
79	JHANG ROAD	132	100.5	89.9	90.7	92.3	94.1	96.2	98.7	101.7	104.8	107.9	111.1
5070	Jhang Road-Bakk	132	38.2	34.2	34.8	35.7	36.7	37.9	39.2	40.9	42.6	44.4	46.3
2212	BEHAL (P)	132	0	0	0	0	0	0	0	0	0	0	0
525	BEHAL	66	0	0	0	0	0	0	0	0	0	0	0
5045	66KV Behal-Beha	132	10.9	9.7	9.7	9.8	10	10.1	10.3	10.5	10.7	10.9	11.1
2213	HYDER ABAD THAL	132	0	0	0	0	0	0	0	0	0	0	0
686	HYDER ABAD THAL	66	0	0	0	0	0	0	0	0	0	0	0
5044	66KV Hyder Abad	132	4.3	3.9	3.9	3.9	3.9	4	4.1	4.2	4.3	4.3	4.4
2214	JANDANWALA (P)	132	0	0	0	0	0	0	0	0	0	0	0
134	MIANWALI	132	33.1	29.6	30.5	31.7	33.1	34.6	36.2	38	39.9	41.8	43.8
5072	Mianwali-Swans	132	9.8	8.7	8.9	9.2	9.5	9.8	10.1	10.5	10.8	11.2	11.6
2215	KATHA ROAD KHUS	132	0	0	0	0	0	0	0	0	0	0	0
76	JOHARABAD	132	52	46.5	47.9	49.7	52.1	54.6	57.9	61.2	64.9	68.7	72.5
5075	Joharab-Katha R	132	9.1	8.2	8.6	9.2	9.9	10.7	11.6	12.5	13.7	14.8	15.9

Grid No	Name of Grid Station	KV	Year										
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
2216	CHIDDRU (P)	132	0	0	0	0	0	0	0	0	0	0	0
134	MIANWALI	132	33.1	29.6	30.5	31.7	33.1	34.6	36.2	38	39.9	41.8	43.8
5071	Mianwali-Chhidd	132	3.8	3.4	3.6	3.9	4.3	4.6	4.9	5.3	5.7	6.1	6.5
2217	RODU SULTAN (P)	132	0	0	0	0	0	0	0	0	0	0	0
441	MEHMOOD KOT	132	13.4	12	12.1	12.4	12.8	13.2	13.6	14.1	14.5	15	15.5
5078	G.M. Raja -Rodu	132	11.9	10.6	11	11.7	12.4	13.2	14	14.8	15.6	16.4	17.3
2217	RODU SULTAN (P)	132	0	0	0	0	0	0	0	0	0	0	0
442	18-HAZARI	132	21.5	19.2	19.5	20	20.6	21.3	22.1	22.9	23.8	24.7	25.6
5079	18-Hazari-Rodu	132	7.9	7	7.2	7.6	8	8.4	8.9	9.4	9.9	10.5	11.1
2218	CHHIDRU (P)	132	0	0	0	0	0	0	0	0	0	0	0
581	WAN BUCHRAN	132	15.2	13.6	13.7	13.9	14.4	14.9	15.5	16	16.6	17.2	17.8
5012	Wanbachran-Chhi	132	15	13.4	13.6	14.1	14.7	15.4	16.1	16.8	17.6	18.3	19.1
2218	CHHIDRU (P)	132	0	0	0	0	0	0	0	0	0	0	0
948	PIR MAHAL	132	35.5	31.8	32.2	32.9	34	35.1	36.4	37.7	39.1	40.5	41.9
5080	Pir Mahal-Sandh	132	19.1	17.1	22.7	30.9	38.8	47	56.2	66.1	79.4	93.5	108.6
2219	SARAI MOHAJAR (	132	0	0	0	0	0	0	0	0	0	0	0
759	BHAKKAR	132	41.7	37.3	38.1	39.5	41.2	42.9	44.8	46.8	48.8	50.8	52.8
5081	Bhakkar-Sarai M	132	8.9	8	8.3	8.8	9.4	10.1	10.8	11.4	12.1	12.8	13.5

Grid No	Name of Grid Station	KV	Year										
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
2219	SARAI MOHAJAR (	132	0	0	0	0	0	0	0	0	0	0	0
322	MANKERA	66	7.7	6.9	7	7.2	7.4	7.6	7.9	8.1	8.4	8.7	9
5082	Mankera-Sarai M	132	2.8	2.5	2.6	2.7	2.8	2.9	3.1	3.2	3.4	3.6	3.7
2220	BAGH (P)	132	0	0	0	0	0	0	0	0	0	0	0
918	T.T.SINGH	132	58.8	52.6	53.2	54.4	55.8	57.3	59.1	60.9	62.6	64.4	66.3
5084	T.T Singh-Bagh	132	1.4	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.7	1.7
2220	BAGH (P)	132	0	0	0	0	0	0	0	0	0	0	0
78	JHANG-1	132	51.3	45.9	46.1	46.8	47.8	48.8	50.2	51.8	53.4	55	56.7
5085	Jhang City-Bagh	66	8.4	7.5	7.6	7.8	8	8.2	8.5	8.9	9.3	9.6	10
2221	SAMUNDRI ROAD (	132	0	0	0	0	0	0	0	0	0	0	0
790	220KV SUMMANDRI	220	0	0	0	0	0	0	0	0	0	0	0
5043	220KV Samundri-	66	12.6	11.3	11.3	11.4	11.5	11.6	11.8	12	12.2	12.3	12.5
2222	MARI INDUS (P)	132	0	0	0	0	0	0	0	0	0	0	0
793	220KV MARI INDU	220	0	0	0	0	0	0	0	0	0	0	0
5042	220KV Mari Indu	132	3	2.7	2.7	2.7	2.7	2.8	2.8	2.8	2.9	2.9	3
2223	LUDEWALA (P)	132	0	0	0	0	0	0	0	0	0	0	0
873	220KV LUDEWAL	220	1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1
5039	220KV Ludewala-	132	8.7	7.7	7.7	7.8	7.9	8	8.2	8.3	8.5	8.6	8.8

Grid No	Name of Grid Station	KV	Year										
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
2224	SADHAR BY PASS	132	0	0	0	0	0	0	0	0	0	0	0
79	JHANG ROAD	132	100.5	89.9	90.7	92.3	94.1	96.2	98.7	101.7	104.8	107.9	111.1
5076	Jhang Road-Sidh	132	8.9	8	8.7	9.5	10.3	11.1	12	12.9	13.9	14.9	15.8
2224	SADHAR BY PASS	132	0	0	0	0	0	0	0	0	0	0	0
143	NARWALA ROAD	132	32.9	29.4	29.9	30.6	31.5	32.3	33.3	34.3	35.4	36.5	37.6
5083	Narwala-Sadhar	132	7.9	7	7.5	8.1	8.8	9.5	10.2	10.9	11.6	12.4	12.7
2225	CITY HOUSING	132	0	0	2	4.6	7.2	11	14.8	17.5	20.1	22.8	25.5
641	CHINIOT	132	71.2	63.7	64.5	66	68.3	70.6	73.3	76.1	78.9	81.8	84.8
5086	Chiniot Industr	132	6.3	5.6	6.4	7.3	8.3	9.3	10.4	11.4	12.5	13.6	14.7
2225	CITY HOUSING	132	0	0	2	4.6	7.2	11	14.8	17.5	20.1	22.8	25.5
244	BHAWANA	132	42.6	38.1	39.1	40.5	42.6	44.8	47.1	49.6	52.3	55	57.8
5087	Bhawana-Bukhari	132	2.5	2.2	2.4	2.6	2.8	3.1	3.4	3.7	4	4.3	4.6
2226	SILLANWALI RD.	132	0	0	0	0	0	0	0	0	0	0	0
115	KUD LATHI	132	25.3	22.6	22.7	23	23.5	24.1	24.7	25.3	26	26.6	27.4
5014	Kud Lathi-Silla	132	2.8	2.5	2.5	2.6	2.7	2.7	2.8	2.9	3	3.1	3.2
2226	SILLANWALI RD.	132	0	0	0	0	0	0	0	0	0	0	0
363	SARGODHA	132	66.7	59.6	60.1	61.1	62.4	63.8	65.5	67.3	69.2	71.1	73.1
5015	Sargodha-Sillan	132	16.7	14.9	15.1	15.5	15.9	16.4	16.9	17.5	18.1	18.7	19.3

Grid No	Name of Grid Station	KV	Year										
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
2226	SILLANWALI RD.	132	0	0	0	0	0	0	0	0	0	0	0
908	KIRANA	132	49.4	44.2	44.8	46	47.4	48.9	50.7	52.6	54.5	56.4	58.4
5016	Kirana-Sillanwa	132	2.2	2	2	2.1	2.2	2.3	2.4	2.6	2.7	2.8	2.9
2249	SIAL MOR (P)	132	0	0	0	0	0	0	0	0	0	0	0
1192	BHAGTAN WALA	132	30	30	30.4	30.8	31.2	31.6	32	32.4	32.9	33.4	33.8
5100	Baghtanwala-Sia	132	7.1	6.3	6.8	7.4	8.1	8.7	9.5	10.2	11.1	12	13
2249	SIAL MOR (P)	132	0	0	0	0	0	0	0	0	0	0	0
242	BHABRA	132	1.5	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.6
5101	Bhabra-Sial Mor	132	2.7	2.4	2.9	3.4	3.9	4.5	5	5.6	6.2	6.8	7.4
2249	SIAL MOR (P)	132	0	0	0	0	0	0	0	0	0	0	0
976	LALIAN	132	35.4	31.7	32.1	32.9	34.2	35.4	36.9	38.3	39.8	41.4	43
5102	Lalian-Sial Mor	132	3.9	3.5	3.8	4.1	4.5	5	5.4	5.9	6.4	6.9	7.4
2250	SWANS ROAD (P)	132	0	0	0	0	0	0	0	0	0	0	0
134	MIANWALI	132	33.1	29.6	30.5	31.7	33.1	34.6	36.2	38	39.9	41.8	43.8
5073	Mianwali-Swans	132	5.1	4.6	4.9	5.3	5.7	6.2	6.6	7.2	7.7	8.2	8.8
2250	SWANS ROAD (P)	132	0	0	0	0	0	0	0	0	0	0	0
1168	SHAHBAZ KHEL	132	10	8.9	9.1	9.3	9.6	10	10.3	10.7	11.1	11.6	12
5077	Shahbaz Khel-Sw	132	5.9	5.2	5.5	5.7	6.1	6.4	6.8	7.2	7.6	8	8.8

Grid No	Name of Grid Station	KV	Year										
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
2251	237/RB Satiana	132	0	0	0	0	0	0	0	0	0	0	0
205	SUMANDRI ROAD	132	97.6	87.3	88.1	89.6	91.7	93.9	96.4	99.6	102.8	106.1	109.5
5103	Samundri Rd-237	132	1.8	1.6	1.6	1.7	1.7	1.8	1.9	2	2.1	2.2	2.3
2251	237/RB Satiana	132	0	0	0	0	0	0	0	0	0	0	0
867	SCARP COLONY	132	31.3	28	28.2	28.6	29.1	29.6	30.2	30.8	31.5	32.2	32.8
5104	Scarp Col-Chak	132	1.8	1.6	1.6	1.7	1.7	1.8	1.8	1.9	1.9	2	2
2251	237/RB Satiana	132	0	0	0	0	0	0	0	0	0	0	0
1012	SATIANA ROAD	132	33.5	30	30.1	30.5	31	31.5	32.1	32.7	33.3	34	34.7
5105	Satiana Rd-Chak	132	3.6	3.2	3.2	3.3	3.3	3.4	3.4	3.5	3.6	3.7	3.7
2251	237/RB Satiana	132	0	0	0	0	0	0	0	0	0	0	0
947	SATIANA	132	30.1	26.9	27.1	27.6	28.1	28.7	29.4	30.1	30.8	31.5	32.3
5106	Satiana-Chak 23	132	1.2	1.1	1.2	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.7
2252	MALKHANWALA (P)	132	0	0	0	0	0	0	0	0	0	0	0
1012	SATIANA ROAD	132	33.5	30	30.1	30.5	31	31.5	32.1	32.7	33.3	34	34.7
5107	Satiana Rd-Malk	132	12.7	11.3	14.8	18.5	22.3	26.1	30	34	38.2	42.4	46.7
2252	MALKHANWALA (P)	132	0	0	0	0	0	0	0	0	0	0	0
618	FACTORY AREA	132	57.6	51.5	53	55	57.3	59.7	62.7	65.7	68.6	71.6	74.7
5108	Factory Area-Ma	132	6.5	5.8	6.2	6.8	7.4	8	8.7	9.4	10.2	11	11.9

Grid No	Name of Grid Station	KV	Year										
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
2252	MALKHANWALA (P)	132	0	0	0	0	0	0	0	0	0	0	0
205	SUMANDRI ROAD	132	97.6	87.3	88.1	89.6	91.7	93.9	96.4	99.6	102.8	106.1	109.5
5109	Samundri Road-M	132	2.4	2.2	2.3	2.5	2.7	2.9	3.2	3.4	3.7	4	4.4
2253	JHOK SEMETLI (P	132	0	0	0	0	0	0	0	0	0	0	0
73	JARANWALA	132	72.5	64.8	65.3	66.4	68	69.5	71.4	73.3	75.4	77.5	79.7
5110	Jaranwala-Jhok	132	4.5	4.1	4.2	4.3	4.5	4.7	4.9	5.1	5.3	5.5	5.7
2253	JHOK SEMETLI (P	132	0	0	0	0	0	0	0	0	0	0	0
947	SATIANA	132	30.1	26.9	27.1	27.6	28.1	28.7	29.4	30.1	30.8	31.5	32.3
5111	Satiana-Jhok Se	132	4.2	3.7	3.9	4	4.2	4.3	4.5	4.7	4.9	5.1	5.3
2253	JHOK SEMETLI (P	132	0	0	0	0	0	0	0	0	0	0	0
459	TANDLIAN WALA	132	45	40.2	43.4	48.1	53.4	58.8	64.7	70.6	76.6	82.7	89
5112	Tandlianwala-Jh	132	5.7	5.1	5.9	7	8.1	9.3	10.5	11.7	13	14.3	15.6
2254	MOCHIWALA (P)	132	0	0	0	0	0	0	0	0	0	0	0
856	JHANG-2	132	27.2	24.3	24.5	25	25.6	26.3	27	27.8	28.6	29.4	30.3
5113	Jhang-II-Mochiw	132	4.5	4	4.1	4.3	4.4	4.6	4.8	5	5.2	5.4	5.6
2254	MOCHIWALA (P)	132	0	0	0	0	0	0	0	0	0	0	0
108	KHEWA	132	32.9	29.4	31.8	34.4	37.8	41.4	45.2	49.2	53.5	57.8	62.4
5114	Khewa-Mochiwala	132	4.1	3.7	4.2	4.8	5.6	6.3	7.1	8	8.8	9.7	10.7

Grid No	Name of Grid Station	KV	Year										
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
2254	MOCHIWALA (P)	132	0	0	0	0	0	0	0	0	0	0	0
334	NIA LAHORE	132	24.5	21.9	22.8	23.9	25.2	26.5	28	29.6	31.2	32.9	34.6
5115	Nia Lahore-Moch	132	6	5.4	5.8	6.4	6.9	7.5	8.2	8.9	9.6	10.2	10.9
2254	MOCHIWALA (P)	132	0	0	0	0	0	0	0	0	0	0	0
47	GOJRA	132	60.5	54.2	54.9	56.1	57.6	59.3	61.2	63.2	65.4	67.8	70.2
5116	Gojra-Mochiwala	132	7	6.3	6.5	6.7	7	7.3	7.6	8	8.4	8.8	9.3
2255	MALHO MORE (P)	132	0	0	0	0	0	0	0	0	0	0	0
78	JHANG-1	132	51.3	45.9	46.1	46.8	47.8	48.8	50.2	51.8	53.4	55	56.7
5117	Jhang City-Malh	132	5.6	5	5.3	5.6	6	6.4	6.8	7.3	7.7	8.2	8.8
2255	MALHO MORE (P)	132	0	0	0	0	0	0	0	0	0	0	0
61	HAVELI B.SHAH	132	14.1	12.6	13.2	13.9	14.7	15.6	16.6	17.6	18.7	19.9	21
5118	H.B.Shah-Malho	132	7.8	7	8.1	9.3	10.6	12	13.4	15	16.6	18.2	19.9
2257	PULL 111 (P)	132	0	0	0	0	0	0	0	0	0	0	0
908	KIRANA	132	49.4	44.2	44.8	46	47.4	48.9	50.7	52.6	54.5	56.4	58.4
5119	Kirana-Pull 111	132	4.9	4.4	5.3	6.3	7.3	8.3	9.4	10.5	11.6	12.8	14
2257	PULL 111 (P)	132	0	0	0	0	0	0	0	0	0	0	0
1010	126/SB SARGODHA	132	54.9	49.1	49.4	50	50.8	51.5	52.5	53.6	54.7	55.8	56.9
5120	Chak 126SB-Pull	132	5.9	5.3	5.4	5.5	5.6	5.7	5.9	6.1	6.2	6.4	6.6

Grid No	Name of Grid Station	KV	Year										
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
2257	PULL 111 (P)	132	0	0	0	0	0	0	0	0	0	0	0
976	LALIAN	132	35.4	31.7	32.1	32.9	34.2	35.4	36.9	38.3	39.8	41.4	43
5121	Lalian-Pull 111	132	1.5	1.4	1.5	1.6	1.7	1.9	2	2.2	2.3	2.5	2.7
2257	PULL 111 (P)	132	0	0	0	0	0	0	0	0	0	0	0
1192	BHAGTAN WALA	132	30	30	30.4	30.8	31.2	31.6	32	32.4	32.9	33.4	33.8
5122	Bhaghtanwala-Pu	132	2	1.8	1.9	2.1	2.2	2.4	2.6	2.8	3	3.2	3.5
2257	PULL 111 (P)	132	0	0	0	0	0	0	0	0	0	0	0
601	TALIB WALA	132	43.2	38.6	38.9	39.5	40.3	41.1	42.1	43.1	44.1	45.2	46.3
5123	Talibwala-Pull	132	2.2	1.9	2.2	2.5	2.9	3.2	3.5	3.9	4.3	4.7	5.1
2260	LAK MORE (P)	132	0	0	0	0	0	0	0	0	0	0	0
523	S.PUR NOON	132	8.9	8	8.2	8.5	8.8	9.2	9.6	10.1	10.6	11	11.5
5125	S. Pur Noon-Lak	132	7.1	6.3	6.8	7.4	8	8.7	9.3	10.1	10.8	11.6	12.4
2260	LAK MORE (P)	132	0	0	0	0	0	0	0	0	0	0	0
957	SHAH PUR	132	22.7	20.3	20.7	21.5	22.4	23.3	24.4	25.5	26.5	27.6	28.7
5126	Shahpur-Lak Mor	132	13	11.6	12.1	12.9	13.8	14.7	15.7	16.7	17.8	19	20.2
2262	FAROOQA (P)	132	0	0	0	0	0	0	0	0	0	0	0
16	BHAMB	132	56.3	50.3	50.8	51.6	53.4	55.3	57.3	59.5	61.7	64.1	66.6
5013	Bhamb-Farooqa	132	2.8	2.5	2.7	2.8	3	3.2	3.4	3.6	3.9	4.1	4.4

Grid No	Name of Grid Station	KV	Year										
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
2262	FAROOQA (P)	132	0	0	0	0	0	0	0	0	0	0	0
115	KUD LATHI	132	25.3	22.6	22.7	23	23.5	24.1	24.7	25.3	26	26.6	27.4
5130	Kud Lathi-Faroo	132	8.2	7.3	7.5	7.7	7.9	8.2	8.5	8.9	9.2	9.5	9.9
2262	FAROOQA (P)	132	0	0	0	0	0	0	0	0	0	0	0
526	BARANA	132	33.5	30	30.2	30.8	31.7	32.7	33.8	35	36.2	37.4	38.7
5131	Barana-Farooqa	132	3.5	3.1	3.1	3.2	3.3	3.4	3.6	3.7	3.8	4	4.1
2263	SOBHAGA (P)	132	0	0	0	0	0	0	0	0	0	0	0
16	BHAMB	132	56.3	50.3	50.8	51.6	53.4	55.3	57.3	59.5	61.7	64.1	66.6
5132	Bhamb-Sobhaga	132	8.5	7.6	9.3	11.1	13.1	15.2	17.3	19.5	21.8	24.1	26.6
2263	SOBHAGA (P)	132	0	0	0	0	0	0	0	0	0	0	0
115	KUD LATHI	132	25.3	22.6	22.7	23	23.5	24.1	24.7	25.3	26	26.6	27.4
5133	Kud Lathi-Sobha	132	2.9	2.6	2.8	3	3.3	3.7	4	4.4	4.8	5.2	5.6
2263	SOBHAGA (P)	132	0	0	0	0	0	0	0	0	0	0	0
526	BARANA	132	33.5	30	30.2	30.8	31.7	32.7	33.8	35	36.2	37.4	38.7
5135	Barana-Sobhaga	132	1	0.9	1	1.2	1.4	1.6	1.8	2	2.2	2.5	2.7
2290	66KV GOJRA RD J	66	0	0	0	0	0	0	0	0	0	0	0
856	JHANG-2	132	27.2	24.3	24.5	25	25.6	26.3	27	27.8	28.6	29.4	30.3
5089	Jhang-II-Gojra	132	11.4	10.2	10.4	10.8	11.2	11.6	12.1	12.6	13.1	13.6	14.2

Grid No	Name of Grid Station	KV	Year										
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
2290	66KV GOJRA RD J	66	0	0	0	0	0	0	0	0	0	0	0
78	JHANG-1	132	51.3	45.9	46.1	46.8	47.8	48.8	50.2	51.8	53.4	55	56.7
5090	Jhang City-Gojr	132	16.4	14.7	14.9	15.2	15.6	16.1	16.7	17.4	18.1	18.9	19.7
2292	WAGHI ADDA (P)	132	0	0	0	0	0	0	0	0	0	0	0
93	KAMALIA	132	44.4	39.7	40.2	41.1	42.6	44.1	45.8	47.5	49.4	51.3	53.2
5151	Kamalia-Waghi A	132	5.4	4.8	4.9	5	5.2	5.4	5.7	5.9	6.2	6.4	6.7
2292	WAGHI ADDA (P)	132	0	0	0	0	0	0	0	0	0	0	0
948	PIR MAHAL	132	35.5	31.8	32.2	32.9	34	35.1	36.4	37.7	39.1	40.5	41.9
5152	Pir Mahal-Waghi	132	14.2	12.7	13.1	13.7	14.4	15.1	15.9	16.7	17.6	18.4	19.3
2293	RASOOLPURA (P)	132	0	0	0	0	0	0	0	0	0	0	0
673	KHURRIANWALA	132	72	64.4	64.9	66.1	67.4	68.8	70.6	72.4	74.3	76.2	78.2
5134	Khurrianwala-Ra	132	7.5	6.7	6.8	7	7.3	7.5	7.8	8.1	8.4	8.7	9
2293	RASOOLPURA (P)	132	0	0	0	0	0	0	0	0	0	0	0
862	BANDALA	132	65.4	58.5	59.1	60.2	61.4	62.6	64.1	65.7	67.4	69.1	70.8
5153	Bandala-Rasoolp	132	5.6	5	5.1	5.3	5.4	5.6	5.8	6	6.2	6.4	6.6
	Total DISCO:		**4819**	**4319.4**	**4411.8**	**4551.8**	**4723.4**	**4903.8**	**5106.8**	**5322.7**	**5548.1**	**5778.7**	**6017.4**

Table 1- 24: Energy (kWh) and Maximum Demand (kW) of Substations for Year 2025-26 (Base Forecast)

SR No.	Grid Number	Name of Grid Station	kV	Unit	Domestic	Commercial	Public Lighting	Small Industry	M&L Industries	Tubewell		Bulk	Total of Grid Station	Power Factor (%)	Reactive-Power (Mvar)
										Private	Public				
1	1018	103/RB CHUDRIWALA	132	kWh	30296	970	0	509	315011	69	0	0	346855	0.93	23.00
				kW	9881	369	0	58	54992	18	0	0	58788		
2	1010	126 S.B SARGODHA	132	kWh	52797	3722	0	1566	175241	344	0	17	233687	0.93	29.00
				kW	17220	1416	0	179	63050	92	0	16	73775		
3	1248	132 KV NO. 2 M3 (FIE	132	kWh	0	20	0	0	88728	0	0	0	88748	0.93	16.00
				kW	0	6	0	0	40373	0	0	0	40379		
4	1264	132KV CHAK NO. 582/G	132	kWh	4859	105	0	102	0	967	0	0	6032	0.90	1.00
				kW	2219	60	0	12	0	386	0	0	2409		
5	442	18-HAZARI	132	kWh	67559	4152	0	873	3348	14882	0	0	90813	0.90	15.00
				kW	23370	1580	0	100	3800	4955	0	0	30425		
6	873	220KV LUDEWAL	132	kWh	3545	562	1	42	601	107	0	0	4858	0.91	1.00
				kW	899	160	1	5	236	29	0	49	1309		
7	2251	237 Satiana Road FSD	132	kWh	26953	1787	65	893	26528	1061	0	83	57369	0.92	5.00
				kW	7819	608	37	106	4987	283	0	77	12668		
8	1246	66KV ESA KHEL	66	kWh	24802	1851	0	113	983	952	0	0	28701	0.90	6.00
				kW	9763	880	0	13	2225	254	0	0	11822		
9	2290	66KV GOJRA RD JHANG	66	kWh	96100	11623	102	4187	25724	22900	0	59	160694	0.90	20.00
				kW	25850	3460	58	444	8079	5629	0	41	41384		
10	1249	66KV JAURA KALAN	66	kWh	9268	347	2	6	78	330	0	3	10034	0.90	2.00
				kW	4232	198	1	1	23	132	0	26	4151		
11	1243	66KV MITHA TIWANA	66	kWh	28799	2062	2	358	1177	1430	0	0	33827	0.90	7.00
				kW	10958	942	1	41	4055	381	0	0	14740		

SR No.	Grid Number	Name of Grid Station	kV	Unit	Domestic	Commercial	Public Lighting	Small Industry	M&L Industries	Tubewell		Bulk	Total of Grid Station	Power Factor (%)	Reactive-Power (Mvar)
										Private	Public				
12	915	A.A. SPINNING MILL	132	kWh	0	0	0	0	30129	0	0	0	30129	0.93	2.00
				kW	0	0	0	0	6256	0	0	0	6256		
13	704	A.E.C. CHASHMA	132	kWh	0	0	0	0	0	0	0	2019	2019	0.92	4.00
				kW	0	0	0	0	0	0	0	8965	8965		
14	2205	ADHA (P)	132	kWh	70421	8177	63	2696	17720	11215	0	32	110324	0.90	13.00
				kW	18281	2386	36	271	5602	2599	0	23	27737		
15	2203	ADHI KOT (P)	66	kWh	65501	6760	6	349	9281	2507	0	77	84480	0.90	11.00
				kW	18237	2270	3	40	3364	668	0	436	22516		
16	475	AGRI UNIVERSITY	132	kWh	231311	53994	1209	54934	161067	37	0	11708	514260	0.91	52.00
				kW	52811	13697	690	4703	47639	10	0	1150	114665		
17	227	AHMAD PUR SIAL	132	kWh	90714	5983	12	1072	4938	7267	0	0	109986	0.90	14.00
				kW	23012	1707	7	115	6317	1936	0	0	29784		
18	2201	ALLIED FSD (P)	132	kWh	144908	33825	757	34414	100903	23	0	7335	322165	0.91	33.00
				kW	33084	8581	432	2946	29840	6	0	722	71831		
19	1170	AMIN PUR	132	kWh	99605	2948	0	1564	5249	35325	0	0	144691	0.90	25.00
				kW	36679	1122	0	179	11277	9106	0	0	52526		
20	231	ASHIANA MILL	66	kWh	0	0	0	0	10488	0	0	0	10488	0.93	2.00
				kW	0	0	0	0	3906	0	0	0	3906		
21	2209	AWAGAT (P)	132	kWh	69242	5402	120	1871	51188	7971	0	263	136056	0.91	14.00
				kW	19920	1774	68	214	9290	2123	0	242	30267		
22	2220	BAGH (P)	132	kWh	33254	4773	39	1061	5176	5732	0	50	50086	0.90	6.00
				kW	8858	1422	22	104	2448	1309	0	54	13400		
23	2211	BAKKAR MANDI RD FSD	132	kWh	150843	14889	288	21219	136403	1249	0	3826	328717	0.91	31.00
				kW	38285	4163	164	1982	26588	313	0	941	68814		

SR No.	Grid Number	Name of Grid Station	kV	Unit	Domestic	Commercial	Public Lighting	Small Industry	M&L Industries	Tubewell		Bulk	Total of Grid Station	Power Factor (%)	Reactive-Power (Mvar)
										Private	Public				
24	862	BANDALA	132	kWh	61408	2996	0	1154	485789	633	0	0	551980	0.93	36.00
				kW	20029	1140	0	132	78886	169	0	0	90320		
25	526	BARANA	132	kWh	109086	11429	28	2292	7601	45614	0	0	176050	0.90	27.00
				kW	35579	4349	16	262	10687	12150	0	0	56738		
26	2212	BEHAL (P)	132	kWh	43180	2857	0	1100	2176	8991	0	0	58303	0.90	9.00
				kW	10954	815	0	126	5803	1942	0	0	17676		
27	242	BHABRA	66	kWh	3896	190	0	79	461	728	0	0	5354	0.90	1.00
				kW	1934	108	0	11	533	291	0	0	2589		
28	1991	BHABRA (P)	132	kWh	73859	3597	0	1490	8736	13798	0	0	101481	0.90	24.00
				kW	36658	2053	0	213	10121	5513	0	0	49102		
29	1192	BHAGTAN WALA	132	kWh	105185	10408	0	2058	21070	19126	0	90	157937	0.90	23.00
				kW	30019	3395	0	235	8050	5094	0	124	46916		
30	759	BHAKKAR	132	kWh	221888	24255	227	2953	11394	22691	0	495	283903	0.90	40.00
				kW	64948	8390	130	337	3176	6044	0	7986	81909		
31	243	BHALWAL	132	kWh	240427	24011	83	7307	95358	9265	0	15	376466	0.91	41.00
				kW	72226	8306	47	834	15061	2468	0	31	89077		
32	16	BHAMB	132	kWh	149024	11921	1	3515	11964	131582	0	11	308016	0.90	50.00
				kW	50035	4693	0	401	19657	40440	0	129	103821		
33	244	BHAWANA	132	kWh	104297	7241	4	1627	2140	118416	0	0	233726	0.90	36.00
				kW	34017	2755	2	186	13363	31542	0	0	73679		
34	1065	BHERA INDUSTRIAL	132	kWh	91879	11381	31	938	7112	687	0	376	112404	0.90	15.00
				kW	26221	3609	18	107	4940	183	0	142	31698		
35	595	CHAK JHUMRA	132	kWh	211119	13018	1	6002	57207	6953	0	68	294368	0.91	35.00
				kW	60251	4246	1	685	13876	1852	0	237	77090		

SR No.	Grid Number	Name of Grid Station	kV	Unit	Domestic	Commercial	Public Lighting	Small Industry	M&L Industries	Tubewell		Bulk	Total of Grid Station	Power Factor (%)	Reactive-Power (Mvar)
										Private	Public				
36	1134	CHANAB NAGAR	132	kWh	94178	15365	8	1031	2253	21447	0	327	134609	0.90	19.00
				kW	25002	4616	5	118	6768	5713	0	222	38199		
37	250	CHASHMA	132	kWh	39346	2777	1	391	1407	123	0	2703	46748	0.90	6.00
				kW	8983	634	0	30	312	22	0	3349	13330		
38	1214	CHEENA	132	kWh	36021	2159	0	501	1077	4546	0	0	44304	0.90	6.00
				kW	11748	822	0	57	809	1211	0	0	13182		
39	2218	CHHIDRU (P)	132	kWh	25975	1441	0	206	2679	29022	0	0	59323	0.90	8.00
				kW	8014	514	0	24	1745	7730	0	0	16224		
40	641	CHINIOT	132	kWh	226655	31976	367	7167	56801	78991	0	26	401982	0.90	49.00
				kW	58804	9360	209	701	19869	21040	0	1285	100142		
41	28	CHINIOT ROAD	132	kWh	285861	26710	445	9051	399982	136	0	1717	723901	0.92	54.00
				kW	70940	7260	254	939	52578	36	0	792	126160		
42	1985	CHINIOT-II (P)	132	kWh	43641	6157	71	1380	10937	15209	0	5	77400	0.90	9.00
				kW	11323	1802	40	135	3826	4051	0	248	19283		
43	255	CHUTIANA	132	kWh	110655	7288	84	1643	4291	10238	0	17084	151283	0.90	22.00
				kW	36091	2773	48	188	7265	2727	0	1505	45537		
44	2210	COLLEGE ROAD FSD (P)	132	kWh	60719	7624	167	3914	22569	98	0	319	95410	0.91	13.00
				kW	16559	2234	96	463	9748	29	0	122	27788		
45	1179	DARYA KHAN	132	kWh	35486	6190	21	2066	11544	467	0	9	55783	0.91	7.00
				kW	11574	2355	12	236	3502	124	0	88	16102		
46	458	DAUD KHEL	132	kWh	37027	2896	152	269	13399	2269	0	130	56141	0.91	7.00
				kW	10838	1102	87	31	5091	725	0	13	16098		

SR No.	Grid Number	Name of Grid Station	kV	Unit	Domestic	Commercial	Public Lighting	Small Industry	M&L Industries	Tubewell		Bulk	Total of Grid Station	Power Factor (%)	Reactive-Power (Mvar)
										Private	Public				
47	1874	DAUD KHEL CEMENT	132	kWh	0	0	0	0	183763	0	0	0	183763	0.93	29.00
				kW	0	0	0	0	82309	0	0	0	74078		
48	2204	DIJKOT (P)	132	kWh	47068	3664	98	3109	20472	193	0	13	74617	0.91	8.00
				kW	12089	1062	56	311	4945	40	0	8	17585		
49	618	FACTORY AREA	132	kWh	280272	72032	1141	19975	58783	28	0	5107	437338	0.91	48.00
				kW	66655	19123	651	1954	20768	7	0	1828	105438		
50	1177	FAISALABAD CITY	132	kWh	102555	52082	473	5803	101066	2	0	405	262387	0.92	34.00
				kW	26016	14863	270	662	40969	1	0	474	79093		
51	2262	FAROOQA (P)	132	kWh	54609	4892	4	1076	4453	14189	0	0	79223	0.90	11.00
				kW	17353	1707	3	123	2549	3894	0	0	23065		
52	275	FAZIL	132	kWh	36561	2766	0	360	24940	1465	0	0	66091	0.92	7.00
				kW	13912	1052	0	49	3484	468	0	0	17070		
53	1199	FIRST TREET	132	kWh	0	0	0	0	19486	0	0	0	19486	0.93	2.00
				kW	0	0	0	0	5413	0	0	0	5142		
54	1015	FLYING CEMENT CO	132	kWh	0	0	0	0	87645	0	0	0	87645	0.93	17.00
				kW	0	0	0	0	42748	0	0	0	42748		
55	1079	GARH FATEH SHAH	132	kWh	38485	1226	0	798	1178	66894	0	0	108582	0.90	16.00
				kW	10983	400	0	91	3374	21382	0	0	32607		
56	1256	GOHAR TEXTILE	132	kWh	0	0	0	0	28875	0	0	0	28875	0.93	2.00
				kW	0	0	0	0	4377	0	0	0	4377		
57	47	GOJRA	132	kWh	296161	26135	125	11207	90769	23019	0	32	447448	0.91	48.00
				kW	75130	7459	71	1097	22126	4841	0	11	105198		
58	2200	GOKHUWAL (P)	132	kWh	135777	13330	227	5225	178276	267	0	778	333880	0.92	27.00
				kW	34424	3784	129	562	26378	71	0	354	62418		

SR No.	Grid Number	Name of Grid Station	kV	Unit	Domestic	Commercial	Public Lighting	Small Industry	M&L Industries	Tubewell		Bulk	Total of Grid Station	Power Factor (%)	Reactive-Power (Mvar)
										Private	Public				
59	674	GROAT	132	kWh	0	0	0	0	0	0	0	29574	29574	0.92	2.00
				kW	0	0	0	0	0	0	0	3584	3584		
60	61	HAVELI B.SHAH	132	kWh	84930	6600	3	1363	10679	41464	0	0	145040	0.90	21.00
				kW	27701	2511	2	156	4580	13253	0	0	43382		
61	585	HEAD FAQIRIAN	132	kWh	91727	6684	0	2390	7068	3568	0	669	112106	0.90	25.00
				kW	33778	2935	0	327	19440	1140	0	532	52337		
62	2213	HYDER ABAD THAL (P)	132	kWh	15566	1924	0	173	1656	2538	0	0	21857	0.90	3.00
				kW	3949	549	0	20	2088	676	0	0	6554		
63	1110	IBRAHIM FIBRES	132	kWh	0	0	0	0	64426	0	0	0	64426	0.93	6.00
				kW	0	0	0	0	14793	0	0	0	14793		
64	824	INDUSTRIAL ESTATE	132	kWh	139982	7465	227	4599	253275	6998	0	4587	417133	0.92	38.00
				kW	39949	2435	129	525	43722	1864	0	4246	88227		
65	1100	INTERLOOP	132	kWh	0	0	0	0	35572	0	0	0	35572	0.93	9.00
				kW	0	0	0	0	23602	0	0	0	23602		
66	739	J.K.TECH MILLS.	132	kWh	0	0	0	0	29365	0	0	0	29365	0.93	5.00
				kW	0	0	0	0	13640	0	0	0	13640		
67	2206	JAHANIAN SHAH (P)	132	kWh	25908	1876	0	459	1918	3959	0	0	34119	0.90	5.00
				kW	7394	612	0	52	2039	1054	0	0	10037		
68	2214	JANDANWALA (P)	132	kWh	29614	2240	0	291	20201	1187	0	0	53532	0.92	6.00
				kW	11269	852	0	40	2822	379	0	0	13826		
69	73	JARANWALA	132	kWh	280100	23414	385	5900	55846	41345	0	33	407023	0.90	51.00
				kW	77987	7424	220	673	19932	11013	0	18	105542		
70	2202	JARANWALA RD NEW (P)	132	kWh	214254	33706	2537	6741	89360	543	0	0	347140	0.91	32.00
				kW	48916	8364	1448	577	13600	145	0	0	69398		

SR No.	Grid Number	Name of Grid Station	kV	Unit	Domestic	Commercial	Public Lighting	Small Industry	M&L Industries	Tubewell		Bulk	Total of Grid Station	Power Factor (%)	Reactive-Power (Mvar)
										Private	Public				
71	1958	JHAKKAR (P)	132	kWh	57332	5034	3	3363	7679	35581	0	116	109108	0.90	17.00
				kW	18699	1915	1	384	7865	9477	0	24	34530		
72	79	JHANG ROAD	132	kWh	382194	34798	528	43239	353684	2013	0	11666	828121	0.91	81.00
				kW	96954	9931	301	4231	71526	459	0	3329	177395		
73	78	JHANG-1	132	kWh	230137	34978	322	7831	36195	46908	0	188	356560	0.90	46.00
				kW	59708	10238	184	766	18902	10710	0	142	95617		
74	856	JHANG-2	132	kWh	89370	6044	43	5359	40868	26587	0	22	168293	0.91	19.00
				kW	25505	1917	25	612	7815	7082	0	10	40817		
75	76	JOHARABAD	132	kWh	360122	36531	83	3332	84102	26677	0	996	511843	0.90	55.00
				kW	91355	10426	47	326	16282	6460	0	168	112557		
76	298	KALA BAGH	132	kWh	58262	3739	29	194	2270	24041	0	357	88890	0.90	13.00
				kW	16627	1219	16	22	3873	7115	0	124	26098		
77	1211	KALOOR KOT	66	kWh	40143	3297	33	246	1212	2384	0	40	47355	0.90	7.00
				kW	13093	1254	19	28	648	635	0	288	14368		
78	1021	KAMAL PUR	132	kWh	43104	1251	0	374	156941	15397	0	0	217067	0.92	16.00
				kW	12301	408	0	43	23520	4557	0	0	36746		
79	93	KAMALIA	132	kWh	129768	11393	6	7611	17382	80536	0	264	246959	0.90	38.00
				kW	42325	4335	3	869	17798	21452	0	54	78152		
80	2215	KHADIM STEEL MILLS	132	kWh	0	0	0	0	93381	0	0	0	93381	0.93	7.00
				kW	0	0	0	0	17619	0	0	0	17619		
81	1070	KHEWA	132	kWh	65352	4136	0	1679	2025	132898	0	0	206091	0.90	29.00
				kW	21315	1574	0	192	1890	40845	0	0	59234		
82	108	KHURRIANWALA	132	kWh	112829	16228	448	1954	505692	779	0	489	638419	0.93	42.00
				kW	35778	5789	256	223	68244	207	0	280	105238		

SR No.	Grid Number	Name of Grid Station	kV	Unit	Domestic	Commercial	Public Lighting	Small Industry	M&L Industries	Tubewell		Bulk	Total of Grid Station	Power Factor (%)	Reactive-Power (Mvar)
										Private	Public				
83	673	KIRANA	132	kWh	210130	44354	483	806	26669	940	0	5732	289113	0.90	42.00
				kW	63125	15343	276	92	14471	250	0	3074	86967		
84	908	KOT MOMIN (P)	132	kWh	51367	4574	11	1394	15433	4032	0	41	76853	0.91	10.00
				kW	17285	1694	6	167	4617	1289	0	37	22843		
85	1990	KOT SHAKIR	132	kWh	17044	1519	0	212	279	435	0	856	20345	0.90	2.00
				kW	4324	434	0	24	242	116	0	481	5058		
86	1230	KUD LATHI	132	kWh	74169	6555	5	1454	6118	18336	0	0	106637	0.90	15.00
				kW	23519	2267	3	166	3162	5053	0	0	30753		
87	115	LALIAN	132	kWh	103440	8667	79	1919	22358	60676	0	0	197139	0.90	27.00
				kW	29521	2827	45	219	12357	16162	0	0	55017		
88	976	LOWER CANAL RD FSD (	132	kWh	16202	1610	65	667	55932	84	0	237	74798	0.93	5.00
				kW	5230	592	37	76	7533	22	0	211	12626		
89	2208	LUDEWALA (P)	132	kWh	33897	5372	10	398	5747	1027	0	2	46453	0.91	6.00
				kW	8599	1533	5	45	2256	273	0	459	12513		
90	2223	LUNDIANWALA	132	kWh	38485	841	0	676	2537	31433	0	495	74466	0.90	16.00
				kW	18305	480	0	93	5444	13220	0	0	33787		
91	1101	M.T.M. MILLS	132	kWh	0	0	0	0	28730	0	0	0	28730	0.93	5.00
				kW	0	0	0	0	13630	0	0	0	13630		
92	649	MAKAR WAL	132	kWh	35772	988	0	123	4636	35707	0	0	77225	0.90	14.00
				kW	12761	418	0	17	8491	11413	0	0	29790		
93	352	MAMUNKANJAN	132	kWh	49954	4816	16	1161	3289	34944	0	0	94180	0.90	14.00
				kW	16772	1833	9	133	3832	10342	0	0	29628		
94	1140	MANJALA BAGH	132	kWh	91257	4994	0	1729	7819	73838	0	0	179638	0.90	27.00
				kW	32555	2112	0	219	5685	21853	0	0	56181		

SR No.	Grid Number	Name of Grid Station	kV	Unit	Domestic	Commercial	Public Lighting	Small Industry	M&L Industries	Tubewell		Bulk	Total of Grid Station	Power Factor (%)	Reactive-Power (Mvar)
										Private	Public				
95	421	MANKERA	132	kWh	19938	1778	11	36	17750	7836	0	0	47350	0.91	5.00
				kW	5690	564	6	4	2697	2087	0	0	9944		
96	322	MARI INDUS (P)	132	kWh	15411	913	0	43	719	1134	0	187	18407	0.90	2.00
				kW	3665	232	0	5	514	201	0	301	4426		
97	2222	MEHMOOD KOT	132	kWh	55288	4945	9	758	3563	3233	0	0	67796	0.90	10.00
				kW	18033	1882	5	87	1483	861	0	0	20115		
98	441	MIANWALI	132	kWh	153595	19992	289	1242	3111	51628	0	11631	241487	0.90	35.00
				kW	48705	6916	165	142	4185	13752	0	3221	73231		
99	134	MILLAT ROAD	132	kWh	35082	5403	0	2468	107232	948	0	0	151133	0.92	16.00
				kW	11442	2056	0	282	25117	253	0	0	37192		
100	1077	MOCHIWALA (P)	132	kWh	77845	5503	19	2533	23279	30308	0	11	139498	0.91	16.00
				kW	21588	1706	11	270	5773	8614	0	3	35055		
101	2254	MURID WALA	132	kWh	125632	9492	0	1574	7833	40057	0	0	184588	0.90	31.00
				kW	43459	3870	0	269	7818	16004	0	0	64279		
102	331	MUSA KHEL	66	kWh	28511	1602	0	89	870	12883	0	260	44216	0.90	7.00
				kW	10849	610	0	10	514	3432	0	200	14053		
103	1213	NAMAL (P)	132	kWh	9443	531	0	30	288	4267	0	86	14644	0.90	2.00
				kW	3593	202	0	3	169	1137	0	65	4653		
104	1966	NARWALA ROAD	132	kWh	246439	14759	463	42679	231325	4967	0	0	540632	0.92	44.00
				kW	65424	4434	264	3846	32858	1323	0	0	102742		
105	143	NIA LAHORE	132	kWh	101740	5525	0	1478	29741	29347	0	18	167848	0.90	20.00
				kW	29035	1802	0	169	8169	7817	0	4	42297		
106	334	NISHATABAD	132	kWh	258710	26104	696	14920	101945	116	0	1642	404133	0.91	41.00

SR No.	Grid Number	Name of Grid Station	kV	Unit	Domestic	Commercial	Public Lighting	Small Industry	M&L Industries	Tubewell		Bulk	Total of Grid Station	Power Factor (%)	Reactive-Power (Mvar)
										Private	Public				
				kW	65629	7450	397	1703	19257	31	0	698	90407		
107	853	NO.1 M3(FIEDMC)	132	kWh	66	1554	80	13	264245	8	0	0	265966	0.93	22.00
				kW	22	591	46	1	55972	2	0	0	56635		
108	1107	NOOR PUT SETHI (IESC	132	kWh	11394	1066	0	163	4759	238	0	0	17621	0.91	4.00
				kW	4336	406	0	19	4025	63	0	0	7964		
109	597	NUSHERA SAKESAR (P)	66	kWh	52939	4753	1	671	769	3142	0	438	62712	0.90	9.00
				kW	16333	1644	1	77	1704	837	0	388	18886		
110	2207	OLD THERMAL	132	kWh	78638	22303	1411	695	6019	0	0	668	109735	0.90	15.00
				kW	17954	5535	806	60	7683	0	0	612	31016		
111	339	OLD THERMAL	132	kWh	361037	100257	1897	11814	105765	11	0	6098	586879	0.91	62.00
				kW	82429	25433	1083	1349	30793	3	0	2108	136037		
112	431	PAEC C-3 C- 4	132	kWh	0	0	0	0	0	0	0	1518	1518	0.92	2.00
				kW	0	0	0	0	0	0	0	4657	4657		
113	1098	PAEC CHASHMA (MIANWA	132	kWh	0	0	0	0	0	0	0	22225	22225	0.92	5.00
				kW	0	0	0	0	0	0	0	11967	11967		
114	779	PAEC-C-11	132	kWh	0	0	0	0	0	0	0	1207	1207	0.92	4.00
				kW	0	0	0	0	0	0	0	8377	8377		
115	983	PAF BASE MUSHAF	132	kWh	0	0	0	0	0	0	0	30339	30339	0.92	4.00
				kW	0	0	0	0	0	0	0	8228	8228		
116	1158	PARCO	132	kWh	0	0	0	0	1543	0	0	0	1543	0.93	0.00
				kW	0	0	0	0	711	0	0	0	711		
117	1232	PIONEER	132	kWh	0	0	0	0	126391	0	0	0	126391	0.93	16.00

SR No.	Grid Number	Name of Grid Station	kV	Unit	Domestic	Commercial	Public Lighting	Small Industry	M&L Industries	Tubewell		Bulk	Total of Grid Station	Power Factor (%)	Reactive-Power (Mvar)
										Private	Public				
		CEMENT		kW	0	0	0	0	41661	0	0	0	41661		
118	703	PIPLAN	132	kWh	150120	10224	39	1457	7867	8154	0	112	177973	0.90	23.00
				kW	39853	3071	22	156	7272	2036	0	28	47195		
119	160	PIR MAHAL	132	kWh	212197	18048	19	4316	42915	92874	0	1	370371	0.90	50.00
				kW	62111	5887	11	493	21521	24738	0	4	103288		
120	948	QUAID ABAD	132	kWh	87148	7617	2	1268	23920	29225	0	4983	154162	0.90	18.00
				kW	22610	2174	1	145	6992	7784	0	2390	37887		
121	598	RAFHAN	132	kWh	0	7	0	0	49989	0	0	0	49995	0.93	3.00
				kW	0	3	0	0	6732	0	0	0	6734		
122	701	RAJANA (P)	132	kWh	59369	4812	2	1452	7188	24828	0	25	97678	0.90	15.00
				kW	19302	1803	1	186	5338	7823	0	5	31013		
123	1957	RAKH DAGRAN	132	kWh	95522	5835	6	476	3119	6641	0	2	111600	0.90	16.00
				kW	27261	1903	3	54	6603	1769	0	63	33891		
124	333	RASOOLPUR (P)	132	kWh	17835	2039	49	317	98909	142	0	53	119345	0.93	8.00
				kW	5706	734	28	36	14550	38	0	30	19614		
125	2293	REFHAN MAIZE JRW	132	kWh	0	0	0	0	395	0	0	0	395	0.93	3.00
				kW	0	0	0	0	7978	0	0	0	7978		
126	890	RODU SULTAN (P)	132	kWh	77785	6229	8	1046	4625	8757	0	0	98450	0.90	15.00
				kW	25884	2370	5	119	2852	2714	0	0	30550		
127	2217	S.PUR NOON	132	kWh	66132	5579	0	777	8671	9817	0	0	90977	0.90	13.00
				kW	20970	2055	0	89	3881	2615	0	0	26648		
128	523	SAMUNDRI	132	kWh	274718	22181	813	5543	31979	6196	0	0	341430	0.90	42.00
				kW	78401	7235	464	633	6990	1650	0	0	85835		

SR No.	Grid Number	Name of Grid Station	kV	Unit	Domestic	Commercial	Public Lighting	Small Industry	M&L Industries	Tubewell		Bulk	Total of Grid Station	Power Factor (%)	Reactive-Power (Mvar)
										Private	Public				
129	984	SAMUNDRI ROAD (P)	132	kWh	186123	14488	352	13051	81783	1128	0	0	296924	0.91	22.00
				kW	42494	3675	201	993	3410	200	0	0	48425		
130	2221	SAR-LUDEWALA	132	kWh	86335	8120	19	1005	11173	530	0	310	107492	0.90	11.00
				kW	19711	1931	11	76	3323	94	0	294	22897		
131	524	SARAI MOHAJAR (P)	132	kWh	47061	4964	44	523	9938	7420	0	85	70035	0.90	9.00
				kW	13710	1694	25	60	1759	1976	0	1370	18535		
132	2219	SARGODHA	132	kWh	286355	56351	271	4979	25319	6184	0	14173	393633	0.90	53.00
				kW	81722	18379	155	568	17962	1647	0	878	109181		
133	363	SARGODHA-IV (P)	132	kWh	101783	12619	55	1201	20554	1737	0	2456	140405	0.91	15.00
				kW	25541	3605	31	110	4516	429	0	817	32392		
134	1997	SATIANA	132	kWh	96199	4359	0	1865	81654	7580	0	0	191657	0.92	17.00
				kW	27454	1422	0	213	13645	2019	0	0	40277		
135	947	SATIANA ROAD	132	kWh	179470	18889	1414	3193	82132	676	0	0	285775	0.91	33.00
				kW	49969	6534	807	365	23235	180	0	0	72981		
136	1012	SCARP COLONY	132	kWh	89353	6557	364	4923	254699	376	0	1844	358115	0.92	26.00
				kW	29143	2495	208	562	34234	100	0	1715	61611		
137	867	SHAH PUR	132	kWh	137761	9696	31	2248	14805	25304	0	41	189886	0.90	26.00
				kW	40324	3459	18	257	9335	6740	0	133	54238		
138	957	SHAHBAZ KHEL	132	kWh	39510	1677	1	328	2805	16785	0	16	61122	0.90	8.00
				kW	11276	547	1	37	2758	3530	0	1060	17287		
139	1168	SHAHKOT (LESCO)	132	kWh	9656	252	0	108	104950	137	0	0	115102	0.93	9.00
				kW	3674	96	0	12	21433	36	0	0	22727		
140	192	SHAMAS	132	kWh	1	0	0	0	5664	2	0	0	5666	0.93	1.00
				kW	0	0	0	0	1953	1	0	0	1954		

SR No.	Grid Number	Name of Grid Station	kV	Unit	Domestic	Commercial	Public Lighting	Small Industry	M&L Industries	Tubewell		Bulk	Total of Grid Station	Power Factor (%)	Reactive-Power (Mvar)
										Private	Public				
141	371	SHOR KOT CITY	132	kWh	201929	14942	305	3032	23289	46725	0	0	290222	0.90	38.00
				kW	57628	4873	174	346	12385	12446	0	0	79067		
142	373	SILLANWALI RD. SARGO	132	kWh	68856	12399	67	1097	6378	3999	0	2614	95410	0.90	13.00
				kW	20167	4104	38	125	4138	1092	0	283	26952		
143	2226	SITARA CHEMICAL	132	kWh	0	0	0	0	305339	0	0	0	305339	0.93	21.00
				kW	0	0	0	0	53853	0	0	0	53853		
144	648	STEAM POWER STATION	132	kWh	168021	50588	389	4430	75870	57	0	13	299368	0.91	34.00
				kW	50475	17500	222	506	14153	15	0	29	74610		
145	1147	SUMANDRI ROAD	132	kWh	298484	23232	681	18505	128500	643	0	159	470203	0.91	66.00
				kW	85184	7577	389	2347	57284	190	0	104	145421		
146	205	SWANS ROAD (P)	132	kWh	46712	3938	43	383	2185	17866	0	1698	72825	0.90	10.00
				kW	14038	1342	24	44	2310	4177	0	1123	21311		
147	2250	T.T.SINGH	132	kWh	259836	26494	16	5580	38369	4598	0	1252	336144	0.90	43.00
				kW	78057	8895	9	562	8528	1081	0	1744	88988		
148	918	TALIB WALA	132	kWh	158024	26790	162	1903	49363	5325	0	8758	250324	0.91	29.00
				kW	45098	8738	92	217	8414	1418	0	2378	63039		
149	601	TANDLIAN WALA	132	kWh	237706	12111	95	3894	20203	88296	0	68	362372	0.90	51.00
				kW	69578	3950	54	445	12642	23519	0	81	104755		
150	459	TARIQ ABAD	132	kWh	80265	4293	23	3882	21656	0	0	0	110119	0.91	13.00
				kW	19495	1140	13	443	8049	0	0	0	27683		
151	1236	THEKRIWALA	132	kWh	162226	13451	0	9305	232337	11280	0	11	428610	0.92	37.00
				kW	48734	4798	0	1062	37669	3004	0	5	85746		
152	953	TRAG	132	kWh	57229	4296	0	387	1929	27464	0	8038	99342	0.90	17.00
				kW	19797	1691	0	53	7531	8128	0	1938	35224		

SR No.	Grid Number	Name of Grid Station	kV	Unit	Domestic	Commercial	Public Lighting	Small Industry	M&L Industries	Tubewell		Bulk	Total of Grid Station	Power Factor (%)	Reactive-Power (Mvar)
										Private	Public				
153	395	VAC	132	kWh	14447	767	35	179	164980	659	0	0	181066	0.93	16.00
				kW	4712	292	20	20	37234	175	0	0	40331		
154	995	WAN BUCHRAN	132	kWh	33140	1838	0	263	3418	37028	0	0	75687	0.90	10.00
				kW	10225	656	0	30	2227	9863	0	0	20701		
155	2292	103/RB CHUDRIWALA	132	kWh	33252	1064	0	512	337693	72	0	0	372593	0.93	25.00
				kW	10845	405	0	58	59197	19	0	0	63472		
156	581	126 S.B SARGODHA	132	kWh	56766	4083	0	1609	187366	392	0	17	250232	0.93	31.00
				kW	18515	1554	0	184	67383	104	0	16	78979		
		Total		GWh	1	0	0	0	0	0	10	10	18820		
				MW	1	1243	132	0	0	0			3279		

6. EMERGING TECHNOLGIES IMPACT ON FORECAST

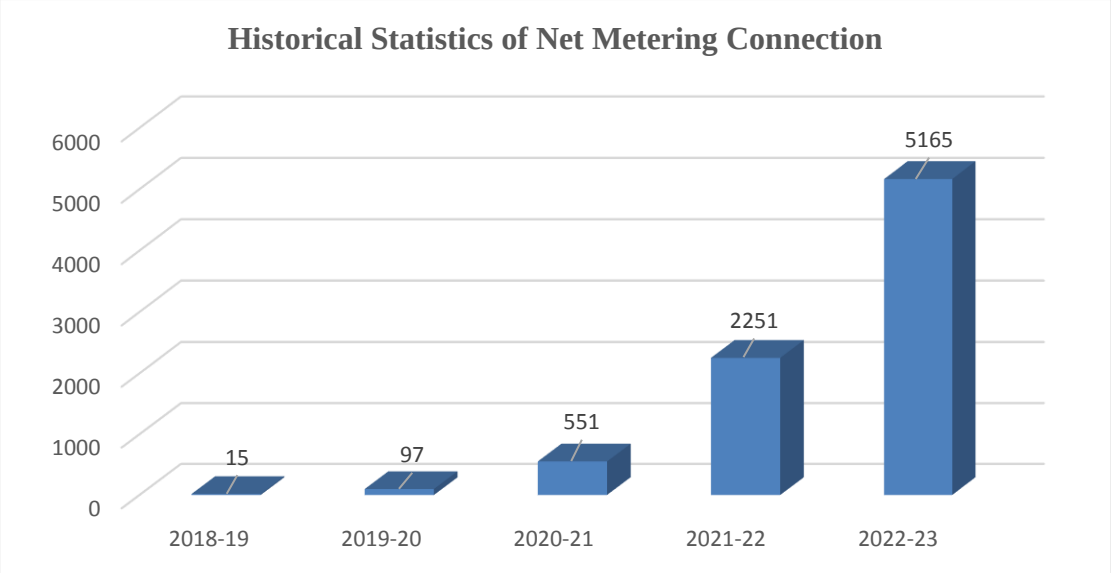
6.1. Net Metering

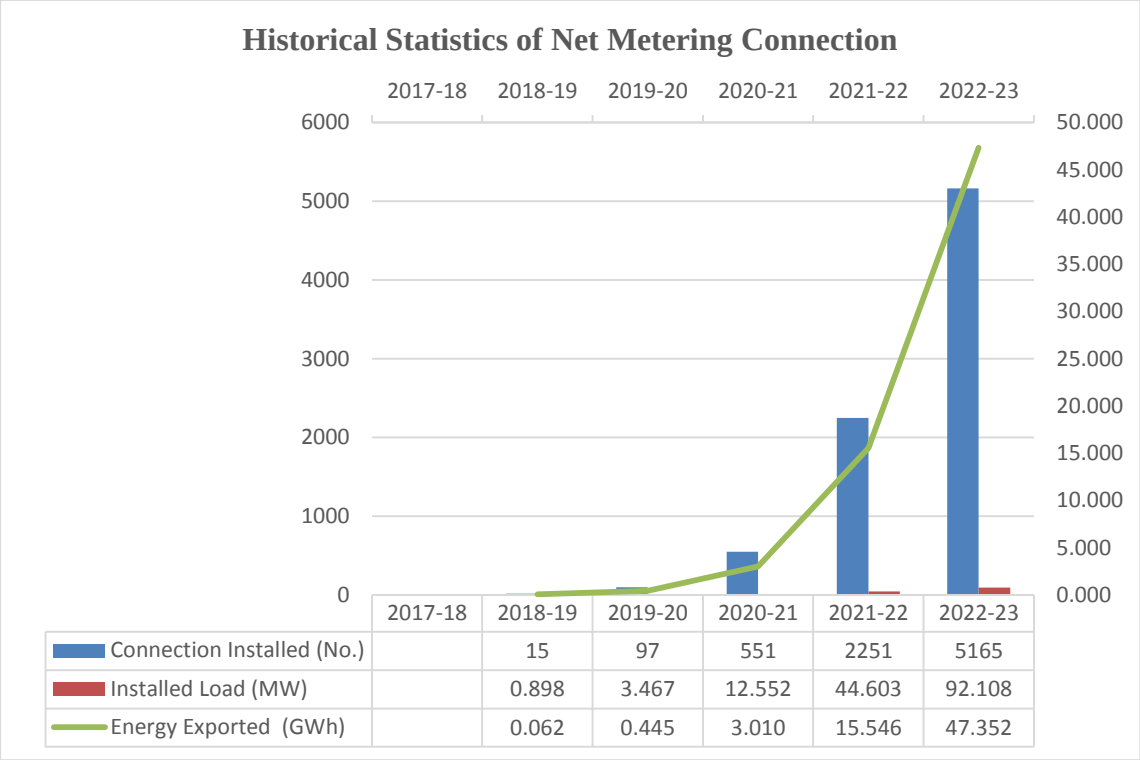
Net Metering is an incentive scheme for consumers of an electric grid related to Distributed Generation, typically through renewable energy sources. Net Metering aims at maximizing the utilization of a renewable system installed at the consumer's premises through off-taking power through the electric grid at hours when the production of the system exceeds the consumer's own consumption. A consumer who installs an on-site renewable energy generator, primarily for reducing his own grid consumption, is now allowed to supply any surplus energy units from his installation to the electricity grid. These units are recorded and are later on "Net-off" (i.e., subtracted) against the units consumed from the grid. In this way, a Net Metering scheme provides an incentive to consumers to install decentralized renewable energy systems as it gives them the certainty that they will benefit from any electricity produced through the system, either through own consumption or through feeding it into the grid.

The Government of Pakistan promotes investment in the generation of small scale distributed renewable energy, through the Alternative Energy Development Board (AEDB), based on Net Metering concept. The National Electric Regulatory Authority (NEPRA) announced the official Distributed Generation and Net Metering Regulations on 1ST September 2015. As per these regulations, any customer of the electric grid can avail the possibility of Net Metering for small-scale renewable energy installations of up to 1 MW.

6.1.1. Net Metering in FESCO

There has been a continuous increase in the number of Net Metering consumers within FESCO. The figure has surged from 15 consumers in 2018-19 to 5,165 consumers in 2022-23, with the installed load also rising significantly from 0.898 MW to 92.108 MW during the same period. The most remarkable growth has occurred in the past year, with the number of Net Metering consumers escalating from 2,251 to 5,165.





The energy exported by Net Metering consumers has increased from 15.546 GWh to 47.352 GWh from period 2021-22 to 2022-23.

Table 6-1: Historical statistics of Net Metering connections

Historical Statistics of Net Metering Connection			
Year	**Connection Installed (No.)**	**Installed Load (MW)**	**Energy Exported (GWh)**
2017-18			
2018-19	15	0.898	0.062
2019-20	97	3.467	0.445
2020-21	551	12.552	3.010
2021-22	2251	44.603	15.546
2022-23	5165	92.108	47.352

6.1.2. Net Metering Forecast Methodology

As per regulatory requirements, the demand forecast should incorporate the anticipated impact of Net Metering in the coming years. With the increasing number of Net Metering consumers, there is a corresponding decrease in energy demand from the national grid. However, it's important to note that the timing of FESCO's peak demand, indicates that Net Metering will have a minimal impact on FESCO's peak demand. This is because FESCO's peak demand occurs during the daytime, and Net Metering cannot compensate for this nighttime load since solar PVs generate zero power during nighttime hours. Therefore, we assume that Net Metering will primarily impact energy projections rather than peak demand.

6.1.3. Assessment of additional new consumers and generation facility

In this step, we have analyzed historical data pertaining to Net Metering, specifically focusing on the increasing number of Net Metering connections, sanctioned load, and energy exported by Net Metering consumers. Notably, there has been an exponential surge in customers, sanctioned load, and energy exports. This

remarkable growth can be attributed primarily to rising tariffs and the growing awareness among the general public regarding the advantages of Net Metering.

Furthermore, it's important to note that the pace of Net Metering expansion is expected to persist unless there is a drastic shift in government policy concerning Net Metering. However, due to the relatively limited maturity of Net Metering data, making precise future assessments based solely on historical data presents challenges.

For the purpose of forecasting, we have established a benchmark using the number of new consumers and their load in the base year. It's worth highlighting that the number of consumers has witnessed substantial growth, increasing from 2,251 to 5,165 in the

past year. This upward trend continues in the early months of 2023-24. As a result, we predict that Net Metering connections will continue to grow exponentially in the coming years before eventually reaching a state of saturation.

Following this initial phase, we anticipate the number of new connections to remain constant for the subsequent five years

6.1.4. Energy Production Forecast

In the calculation of energy production from Net Metering, a yearly plant factor of 17% for PV systems has been adopted, aligning with the IGCEP 2022 (Draft) report. New consumers projected in step-1 are assumed to gradually connect throughout the year, with their energy production divided into monthly increments to determine the annual total. The full energy impact from these additional consumers is expected in the following year, and this cycle repeats for each subsequent year.

For PV systems in Net Metering, energy generation is divided into two segments:

1. self-utilization
2. Export to the National grid

To calculate the split between these segments, data was collected from Net Metering consumers with sanctioned loads as of June 2021. GEPCO possesses information on the exported units from these consumers during 2021-22. Export plant factors were calculated based on the installed generation capacity of each consumer. Analysis of the export plant factor histogram revealed that most Net Metering consumers have an export plant factor clustered around 8%.

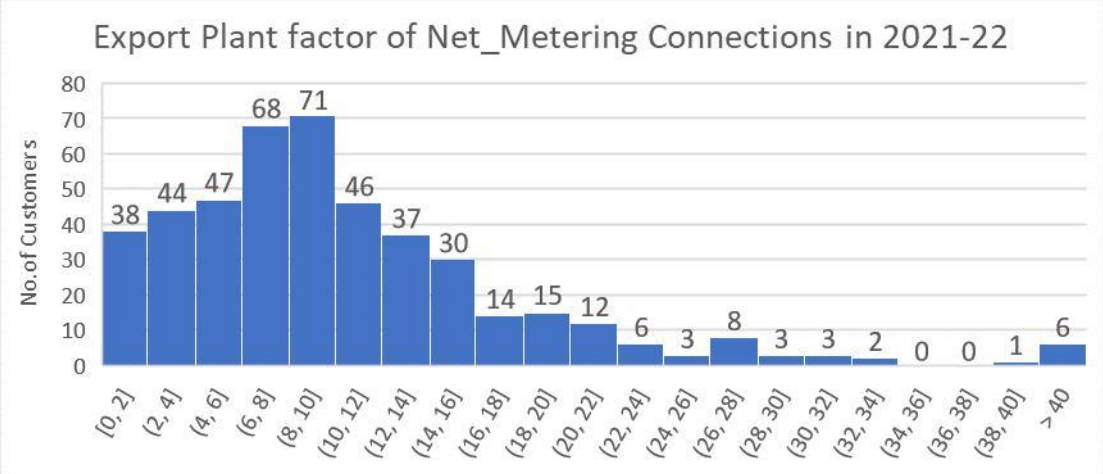


Figure 6-2: Histogram of plat factor against export units of Net Metering consumers

The export to the national grid plant factor has been calculated at 8%, representing 47% of the total energy generated by PV systems in Net Metering. The remaining 9% of the plant factor, which accounts for 53% of the energy produced, is assumed to be self-utilized by Net Metering consumers. Consequently, this assumption leads to a reduction in energy sales, as 53% of the total energy produced is considered self-utilized by consumers. Conversely, the purchase of energy from the system will decrease by the total energy to be generated (at a 17% plant factor) by PV systems of Net Metering consumers, taking into account transmission losses. This approach effectively divides

FESCO Demand Forecast 2022-23 to 2031-32

The energy production into segments for self-use by consumers and export to the national grid, influencing both the sale and purchase of energy from the system accordingly.

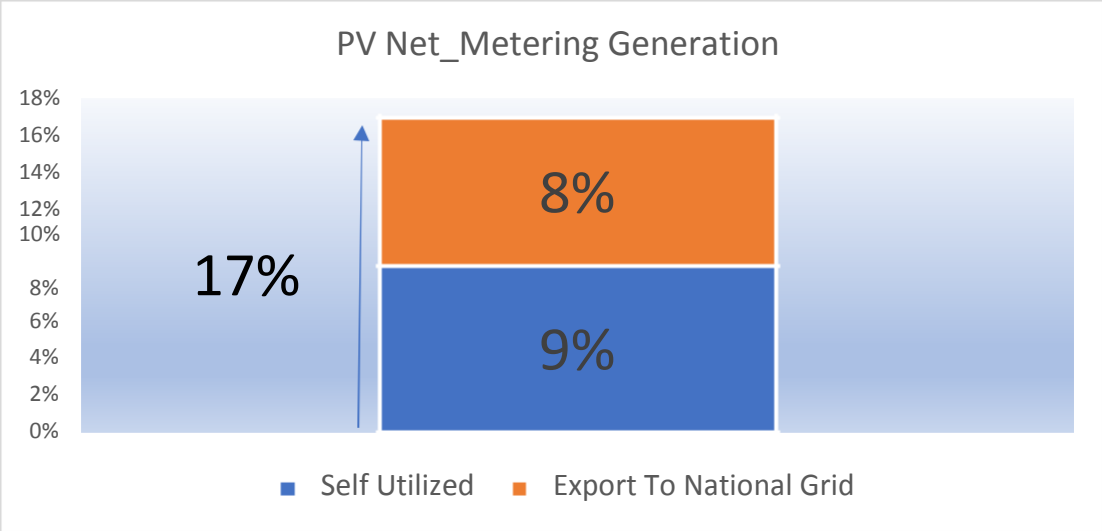
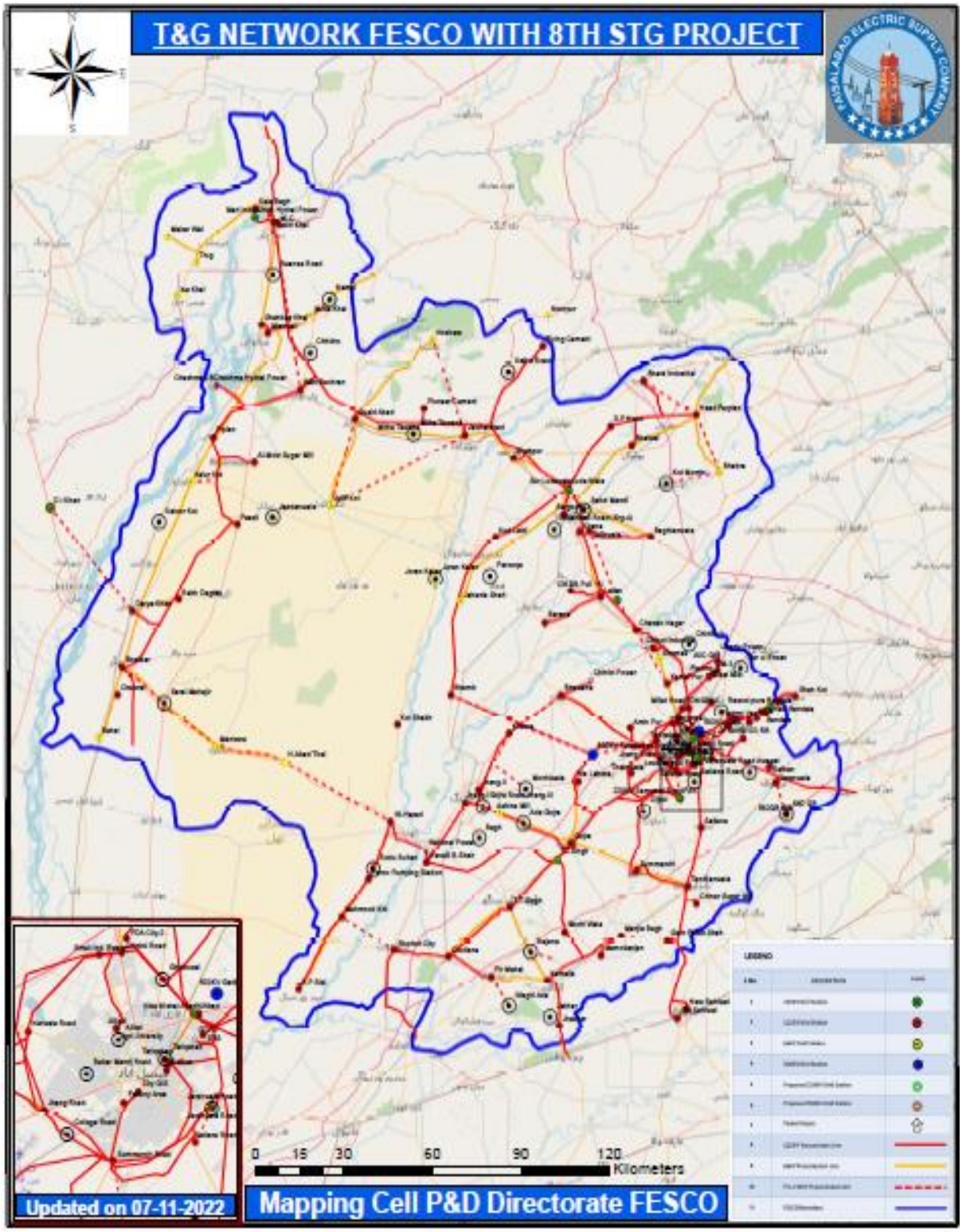


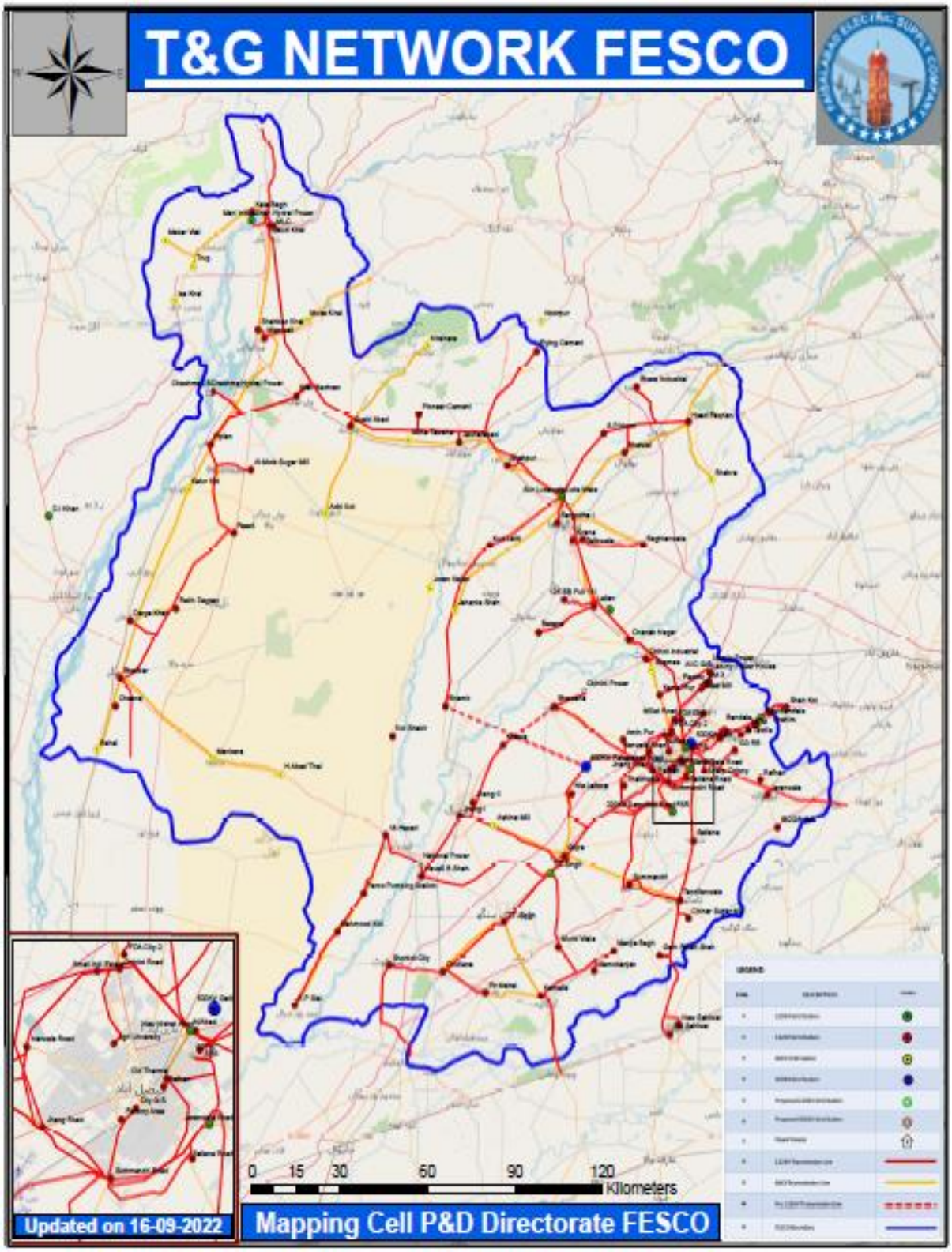
Figure 6-3: Net Metering Generation Plant Factor

MTLF 26: Updated demand forecast (recorded) after incorporating impact of Net Metering

Year	Energy Sale		Distribution Losses		Energy Received at 11 kV	Peak Demand at 11 kV	Transmission Losses		Energy Sent out at 132 kV	Load Factor	Peak Demand at 132 kV
	(GWh)	G.R	(GWh)	(%)	GWh	MW	(GWh)	(%)	(GWh)	(%)	(MW)
2022-23	14615		1280	8.03	15942	3165	107	0.67	16049	57.5	3186
2023-24	13611	-6.9	1188	8.06	14799	2966	99	0.67	14898	56.5	3012
2024-25	14139	3.9	1234	8.05	15373	3089	103	0.67	15476	56.3	3136
2025-26	14818	4.8	1294	8.04	16112	3244	108	0.67	16220	56.2	3293
2026-27	15596	5.2	1361	8.03	16957	3413	114	0.67	17071	56.3	3464
2027-28	16459	5.5	1437	8.02	17895	3606	120	0.67	18015	56.2	3660
2028-29	17385	5.0	1518	8.40	18902	6894	127	0.11	19029	61.1	3869
2029-30	18362	5.6	1603	8.01	19965	4029	134	0.67	20099	56.1	4088
2030-31	19523	6.3	1704	8.01	21227	4289	143	0.67	21370	56.1	4352
2031-32	20731	6.2	1810	8.00	22540	4561	151	0.67	22692	56.0	4627
2032-33	22014	6.2	1922	8.00	23936	4849	161	0.67	24097	55.9	4918
Ave. Growth (2023-2033)	4.18%				4.15%	4.36%			4.15%		4.44%

Figure 1- 10: Distribution Network Map (FESCO)




T&G NETWORK FESCO
0 15 30 60 90 120
Kilometers
Updated on 16-09-2022
Mapping Cell P&D Directorate FESCO

Disclaimer

1. *The data collected on 40 formats from different departments / agencies including MIS, CSD, PMU, P&D, DCC (DPC), PD Const., PD GSC, SE GSO, SE Ops, XEN Ops, SDO Ops, civic authorities, industrial estates etc. being the owner of the data are primarily responsible. However, MIRAD FESCO has made every reasonable effort to ensure the quality of the information, however, the accuracy, completeness and/or appropriateness of the information, forecast and assumptions may not be realized as expected.*
2. *This report does not include all the information that an investor, participant or potential participant or any department may require and does not amount to recommend for any investment.*
3. *Anyone proposing to use the information given in this report should independently verify and check its accuracy, completeness and suitability for the relevant purpose and obtain independent and specific advice from the concerned departments/ subject matter expert(s).*
4. *This report does not constitute legal or business advice and should not be relied upon as a substitute for obtaining detailed advice on Law, Rules, Regulations, Codes, Guidelines, Policies and procedure of Federal and (or) Provincial Govts or Regulator(s).*
5. *Pending / Planned Load of housing societies and economic / industrial zones is based upon available data provided by the concerned civic authorities as well as other Federal and Provincial agencies. Volume and timeline of this planned load largely depends upon development progress of similar nature schemes.*
6. *This forecast is prepared mainly for Transmission and Distribution Network planning to be incorporated with TSEP (Transmission System Expansion Plan) of NTDC and is also used for estimate of Capacity Obligation of FESCO as required by NEPRA and Market Commercial Code (MCC) to ensure security of supply for its consumers. However, this forecast is not designed to meet short-term operational needs i.e., day-ahead, week-ahead, month-ahead requirements etc. Monthly peak demand forecast provided in this report is indicative in nature due to limitation of PMS model. The actual monthly demand may vary vis-à-vis this forecast mainly due to economic factors, religious/ cultural festivities and climate change.*
7. *Existing PMS Model is sale based, whereby, forecast of demand (MW) is derived from sale (GWh) by applying load factors and co-incidence factors. Accuracy of forecasted peak demand is dependent upon these load factors and co-incidence factors. Accurate calculation of these factors is only possible with availability of hourly demand data. With availability of this hourly demand data, peak demand calculations will be more accurate.*
8. *PMS model is a combination of end-use and trend model and is not based upon regression / economic factors. This model does not have the capability to incorporate economic factors such as GDP, Electricity Prices, CPI, Recession etc., for forecast of electricity demand. If any drastic change occurs in economic factors, accuracy of Load Forecast will be affected.*
9. *Although, current economic situation has resulted in negative growth in demand at the start of this fiscal year with respect to year before base year, incorporating these observations in the demand forecast will drastically effect accuracy of forecast for future years, due to limitations of PMS model.*
10. *Initiative of Net-Metering has emerged recently and no reliable data is available for actual generation of distributed solar PV generation / off-grid solar roof tops. Only available data is spill-over (excess) generation of net-metering consumers. Forecast of Net-Metering cannot be performed accurately due to non-availability of extensive data set.*

11. *The forecasted growth of different categories including domestic, commercial, industry and tube well may not be treated as economic growths in the said sectors.*
12. *Any delay in execution of STG projects (i.e., New Grids, Additional / Aug. of Power Transformers) may lead to overloading of existing grids during the forecasted period.*
13. *MIRAD FESCO is in collaboration with LUMS by signing a MoU to improvise MTLF in order to replace the existing language and model based on the hourly demand data of 11 kV feeders as available with LDA project of USA-ID and historic sales data of MIS to achieve accuracy, modernization and user-friendly interface by using latest technology and approach.*

ENERGY AND DEMAND FORECAST

CENTRAL POWER PURCHASING AGENCY
GUARANTEE LIMITED