



UNDERSTANDING MAXIMUM DEMAND CHARGES AND MEASURES TAKEN TO MANAGE COSTS



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1.0 INTRODUCTION

This booklet aims at providing information to assist ESCOM customers who are on Maximum Demand (MD) Tariff to understand how charges are raised and how they can save on their electricity bills

2.0 MAXIMUM DEMAND CUSTOMERS

Customers with a power requirement of more than 50 kilowatts are classified as large power users and as such, they are billed under Maximum Demand Tariff category. There were only 860 MD customer by end July 2022 as compared 559,000 non MD customers. However, MD customers account for 45% of electricity energy consumption and have huge impact on the electricity demand and capacity balance every time they switch On and Off their equipment.

3.0 APPLICABLE MD CHARGES

The following are the charges that are applicable to MD customers

3.1 Network Access Capacity Charge

Each MD customer is required to nominate/ declare the highest amount of power to drawn from ESCOM system in the medium and long term. This information is used for power sector investment and system operations planning. This power requirement is thus referred to as the declared network access capacity charge. The sizing of the electrical connection point between ESCOM and customer installation is designed to meet this power requirement ***This is a fixed charge that is raised regardless of the amount of power drawn by the customer. The rate as at July 2020 was MK 6,100 per kVA before tax***

3.2 Maximum Demand Charges

The Maximum Demand Tariff meters are used to record the customer's actual Highest power or Maximum Demand (MD) reading in a month. The recorded MD is based on any of the highest MD registered in a 30 minutes in the month. ***The chargeable MD is based on actual reading for the month and as such varies from months to month. The rate as at July 2022 was MK 10,600 per kVA before tax***

3.3 On Peak Unit Charges

This is a charge that is raised for the actual energy (kilowatt-hours) consumed during peak periods in a month. The energy is charged at high price to reflect the actual cost of providing a service during peak periods. Peak periods are from Monday to Friday from 7:00 hrs. to 12:00 hrs. and from 17:00 hrs. to 20:00 hrs. ***The rate as at end July 2022 was MK 142 per kilowatt-hour.***

Off Peak Unit Charges

This is a charge that is raised for the actual energy (kilowatt-hours) consumed during Off Peak periods in a month. The energy is charged at very low rate to encourage customers to shift production to off peak period. The Off Peak periods are from Monday to Friday from 00:00 hrs. to 07:00 hrs., from 12:00 hrs. to 17 :00 hrs. and from 20:00 hrs. to 24:00 hrs. All Saturday, Sundays and Public holidays are included as off peak period. *The cheap rate as of end July 2022 was only MK 46 per kilowatt-hour*

3.4 Network Access Capacity Charge Penalty

Charged for excess power drawn over the declared network capacity to discourage customers from drawing power that was not declared. The excess power is charged at 25% above the standard capacity charge rate.

3.5 Power Factor Penalty

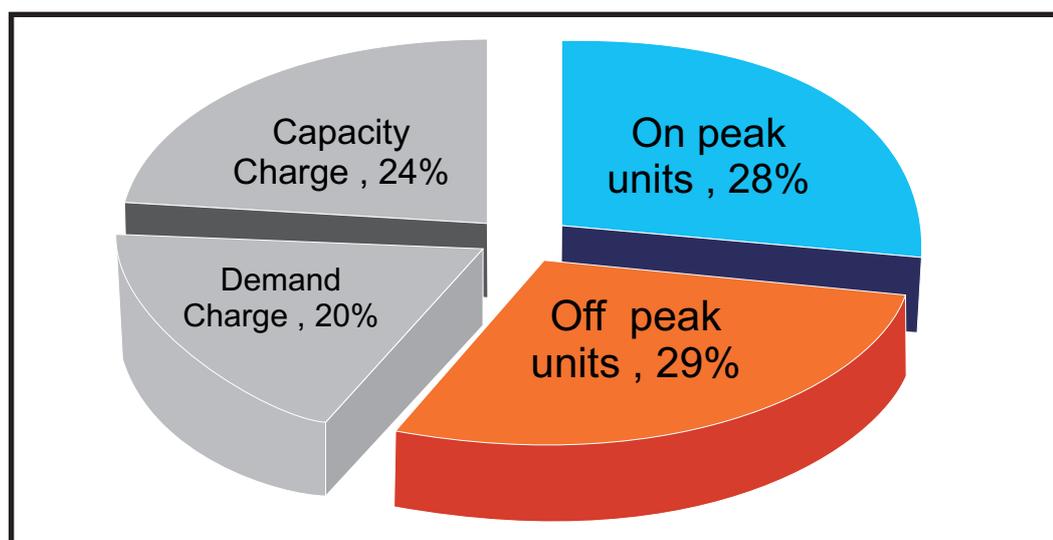
Charged where the customer has drawn more reactive power leading to a poor or in-efficient power factor ratio of less than 0.90. Customers are thus motivated to save power and bills by installing equipment for improving power factor. The 25% penalty is charged over and above the MD charge.

4.0 AVERAGE ANNUAL BREAKDOWN COST OF MD CHARGES

The combined fixed network access charges and variable MD charges account for around 42% of total industrial average customer bill. These charges can account for 30% to 70% for individual customers depending on how the customer sizes his / her plan and plant utilization / operation period.

Despite the fact that 75% of the energy is consumed during off peak period, the contributions of cost are almost the same at around 28%. This is due to the fact that off peak unit charges are 300% cheaper than on peak unit charge

Average contributions of different charges to Custome bill



5.0 MEASURES TAKE TO MANAGE ELECTRICITY COSTS

MD customers can manage electricity costs and make some good savings by taking the following measures

Step 5.1 Seek Technical Assistance from Competent Electrical Contractors

Customers should seek technical assistance from competent persons during the design and planning stage for a new electrical installation. Estimation of ESCOM bills based on the designs, plant sizing and operations should be made at this stage before committing to proceed with the project. ESCOM can be consulted at this stage before financial commitment is made.

Step 5.2 : Review the sizing of Customer Installation and Utilization

It is advisable to have a smaller rated plant that runs for longer period than high rated plant that operates for short period. Table 1 below shows that the same production can be carried out with much lower declared capacity and actual demand if the operations are carried out over longer period. The customer in this respect can save over 50% combined MD and Capacity charges.

Table 1: Plant Sizing

Plant Description	Unit	Customer 1	Customer 2	Customer 3	Customer 4
Actual Maximum Demand (MD)	KVA	400	200	160	100
Declared Capacity	KVA	420	210	168	105
Average Operating hrs. per day	Hours / day	2	4	5	8

Step 5.3: Shift operations to Off-Peak Period

Off Peak energy rates are ~300% cheaper than On Peak energy rates. The off peak period account for about 80% of the time in a month. Shifting most of the operations Off peak period can save the customer huge sums. Water boards and irrigation projects can easily shift to off peak production.

Step 5.4 Implement Special Time of use tariff

By permanently shifting most of high power consumption equipment from on peak to off peak can reduce bills though a negotiated time of use (ToU) Maximum Demand Tariff contract with ESCOM. ESCOM will provide discounts on MD and Capacity charges. As shown in table below, the net saving on Capacity and MD Charge will be around 38%. In return, ESCOM will save 300 KVA to be supplied to other customers during peak period while minimizing the impact of load shedding

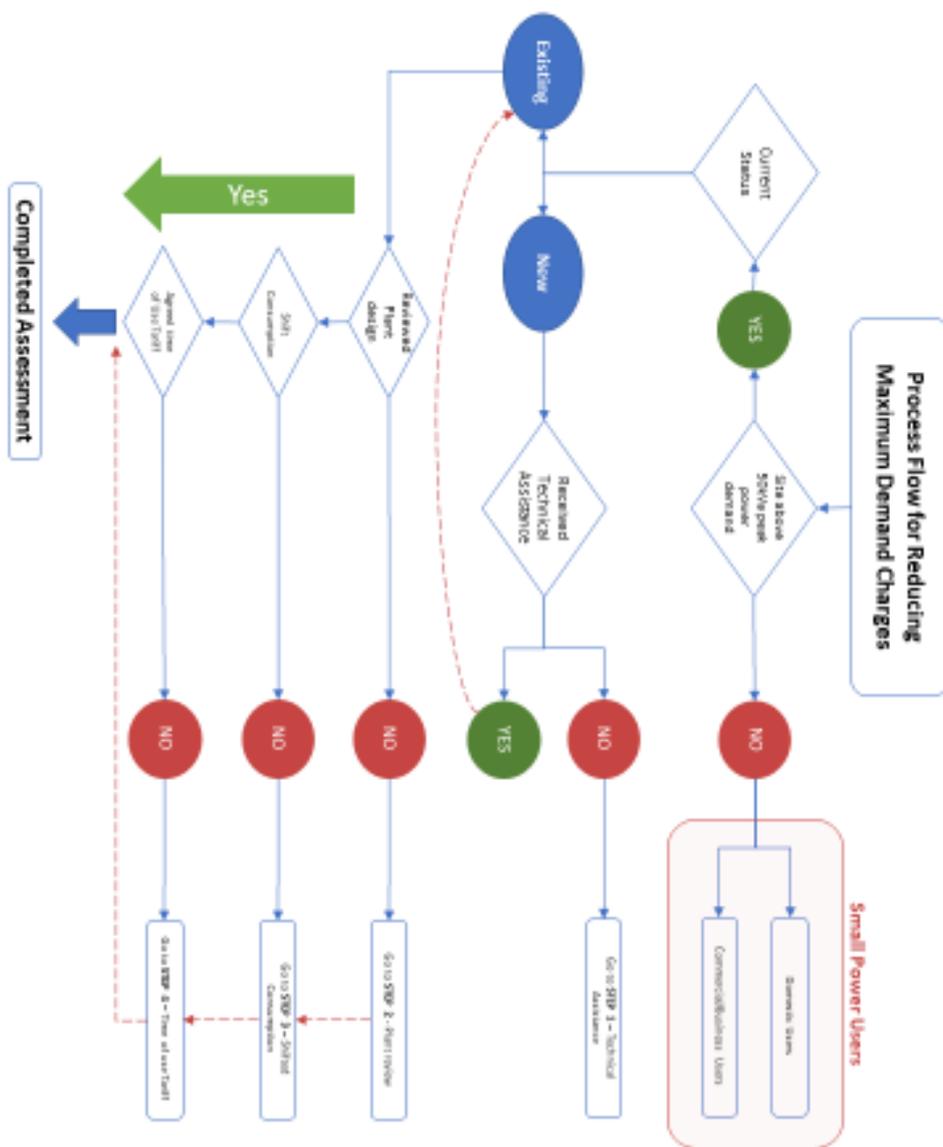
	Existing	Tariff Time of Use Tariff		Savings
		On Peak	Off Peak	
MD Reading in KVA	400	100	300	300
MD Charge per KVA	10,600	10,600	5,300	3975
MD Charges in MK	4,240,000	1,060,000	1,590,000	
Total Charge	4,240,000		2,650,000	1,590,000
Net Savings %				38%

Step 5 .6 : Avoid Paying Penalties

Cost reduction can be achieved through proper declaration of network access capacity. Customers can avoid penalty charges for under-declaration or overpayments for over declaration. Customers are recommended to seek technical assistance if needed

Similarly, customers can avoid paying power factor penalties by monitoring and managing reactive power using power factor correction equipment for installations that use most electrical motors.

FLOW CHART FOR STEPS TO BE TAKEN



Please contact 0888950117 or 0999385556 in case of questions or clarifications.