1. **What is mean by Maximum Demand?**

"Maximum Demand" in kilo-volt-amperes- In relation to any period shall, mean twice the largest number of kilo-volt-ampere-hours supplied and taken during any consecutive thirty minute blocks in that period.

2. **What are components affecting kVA demand?**

The two components decide kVA of the consumer i.e. kW & RkVA. RkVA further split in to RkVA LAG & RkVA LEAD. In earlier methodology RKVA lead component was not considered in calculation of KVA which is now considered. The determination of MD kVA is directly based on integration of kVAH over DIP (Demand integration period) of consecutive 30 min.

3. **What is Regulation Standard for MD Calculation?**

"IS 14697" is INDIAN STANDARD for AC static CT/PT operated Energy meters that specified about the Demand integration period i.e. 15 or 30 min.

CBIP's "guide on Static energy meters- Specification and testing" has mentioned two methods i.e. block & sliding window method for determination of the MD.
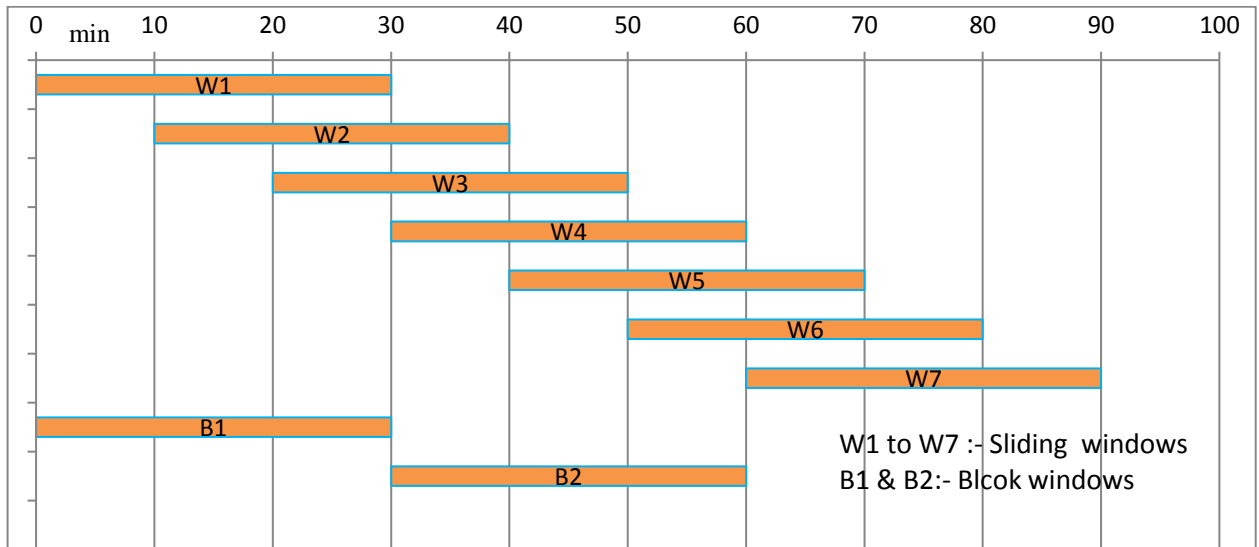
MERC (Electricity Supply Code and other Conditions of Supply) Regulation 2005 has defined maximum demand as "Twice the largest number of kilo Watt Hours (kWH) or kilo Volt Ampere Hours (kVAH) supplied and taken during any consecutive 30 min block in that period"

4. **What is block window method?**

In block window method the MD is determined over a fixed time slot of 30 min i.e. from 10:00 to 10:30 hrs., 10:30 to 11:00 hrs…..so on (shown as B1 & B2 time interval in the graph plotted below). The new Demand Integration Period (DIP) starts only after the end of previous DIP.

5. **What is sliding window method of MD Calculations?**

Sliding Window Method: In sliding window method determination of the MD is based on 30 min DIP (Demand Integration Period). Here the 30 min period is not fixed as in case of the block window. The 30 min demand integral period is sliding consecutively with 10 min sub-interval as explained below:

0 min 10 20 30 40 50 60 70 80 90 100

W1

W2

W3

W4

W5

W6

W7

B1

B2

W1 to W7 :- Sliding windows
B1 & B2:- Blcok windows

In sliding window method there will be four complete DIP and four overlapping partial 'DIP'. Hence for consumer with 1000 KVA load for 30min duration.

We can observe that B1=W1 & B2=W4

Example:

Consider a 30 min consecutive consumption with constant 1000 kVA load from period 10:15 to 10:45 Hrs

Time	Load (KVA)	ON Duration min	KVAH recorded (kva x min/60)	KVA MD (kvah X 2)	W1	W2	W3	W4	W5
10.00 to 10.10	0	0	0	0					
10.10 to 10.20	1000	5	83.33	166.66	500				
10.20 to 10.30	1000	10	166.66	333.34		833.33			
10.30 to 10.40	1000	10	166.66	333.34			833.33		
10.40 to 10.50	1000	5	83.33	166.66				500	
10.50 to 11.00	0	0	0	0					166.66

From above table & graphical representation it is observed that:

a. In block window method B1 & B2 would have recorded MD as per W1 & W4 respectively, i.e. 500 kVA

b. In sliding window Maximum of W1 to W6 is 833.33 KVA hence same will be recorded as Billing MD. Hence in sliding window method the load on the grid is determined more accurately.

6. Why method is changed from conventional block window method to Sliding window?

In block window method the demand recorded by the system was split into two blocks of time interval and hence the demand recorded by the system is much less than the actual peak loads on the system i.e. transformers, transmission lines & generation capacity. Hence

sliding window method was incorporated in new meters to determine demand more accurately.

7. In what way billing will be affected?

All HT / LT above 20 kW consumers will be billed as per the sliding window method for KVA MD after replacement of the old meters with new meters. There will be corresponding change in the demand charges which will be applicable based on the MD recording. In some cases it is possible that recorded demand may exceed the contract demand which may attract penalty charges. The demand with new meters will be more accurate than earlier meters due to both of following factors,

i. KVA definition change.

ii. MD integration Method (sliding Window instead of Block window).

In view of above consumers should monitor their demand against contract demand (CD) for any consecutive block.

8. What type of load affect consumer's recorded demand?

The demand with constant load is similar for both the methods. However if load pattern is of fluctuating nature i.e. short time peaks & lows – then demand recorded by sliding window method is realistic to average load on the network.

9. What happens if recorded demand exceeds contract demand?

- If the Maximum Demand (MD) recorded by meter exceeds in a billing period then consumer has to pay penalty charges at a rate of 1.5 times of the normal billing charges for the demand exceeded than his contract demand.

- Load Factor incentive will not be granted to those consumers if billed MD exceeds the contract demand.

10. What precaution should be taken by consumer?

I. Consumer should monitor peak demand loads i.e. Inconsistent loads which draw very high power but for short duration.

II. Consumer should re-calculate the contract demand based on the highest kVA consumption for consecutive 30 min block period.

III. Consumers should effectively control Power Factor (PF) to unity for ensuring optimum kVA billing Demand.