

## 1.Total & Average Daily Energy Consumption by Zone:

MySQL Workbench

Local instance MySQL80 x BSC1 x

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

datadigger  
datadigger1  
datadigger2  
datatransformer  
inventory\_db  
product1  
retailsalesdb  
retailsalesdb1  
saless  
smartcity\_db  
Tables  
Views

Administration Schemas

Information

Schema: smartcity\_db

Query 1 x

```
3  
4 • select * from smartcityenergy;  
5  
6 • SELECT  
7     Zone,  
8     SUM(EnergyConsumed_kWh) AS Total_Consumption,  
9     AVG(EnergyConsumed_kWh) AS Avg_Daily_Consumption  
10    FROM SmartCityEnergy  
11    GROUP BY Zone;  
12
```

Result Grid

Zone	Total_Consumption	Avg_Daily_Consumption
North	40617.240000000005	534.4373684210527
Central	43640.560000000001	589.7372972972975
South	41683.210000000014	578.9334722222225
West	56704.000000000001	550.5242718446602
East	46227.51	616.3668

Result 2 x

Output

Action Output

#	Time	Action	Message	Duration / Fetch
10	16:53:41	select * from smartcity_db LIMIT 0, 1000	Error Code: 1146. Table 'smartcity_db.smartcity_db' doesn't exist	0.031 sec
11	16:54:50	select * from smartcityenergy LIMIT 0, 1000	400 row(s) returned	0.016 sec / 0.000 sec
12	16:57:17	SELECT Zone, SUM(EnergyConsumed_kWh) AS Total_Consumption, AV...	5 row(s) returned	0.031 sec / 0.000 sec

Object Info Session

Type here to search

25°C

ENG 4:59 PM  
US 2/17/2026

## 2. Top 5 Highest Energy Consuming Consumers:-

MySQL Workbench

Local instance MySQL80 x BSC1 x

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

datadigger  
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product1  
retailsalesdb  
retailsalesdb1  
saless  
smartcity\_db  
Tables  
Views

Administration Schemas

Information

Schema: smartcity\_db

Query 1 x

```
15 • SELECT  
16     MeterID,  
17     ConsumerType,  
18     SUM(EnergyConsumed_kWh) AS Total_Usage  
19    FROM SmartCityEnergy  
20    GROUP BY MeterID, ConsumerType  
21    ORDER BY Total_Usage DESC  
22    LIMIT 5;  
23  
24
```

Result Grid

MeterID	ConsumerType	Total_Usage
MTR00399	Residential	999.22
MTR00139	Industrial	998.56
MTR00366	Residential	995.35
MTR00268	Residential	995.16
MTR00299	Industrial	993.18

Result 3 x

Output

Action Output

#	Time	Action	Message	Duration / Fetch
11	16:54:50	select * from smartcityenergy LIMIT 0, 1000	400 row(s) returned	0.016 sec / 0.000 sec
12	16:57:17	SELECT Zone, SUM(EnergyConsumed_kWh) AS Total_Consumption, AV...	5 row(s) returned	0.031 sec / 0.000 sec
13	17:02:41	SELECT MeterID, ConsumerType, SUM(EnergyConsumed_kWh) AS Total...	5 row(s) returned	0.016 sec / 0.000 sec

Object Info Session

Type here to search

25°C

ENG 5:03 PM  
US 2/17/2026

### 3. Monthly Trend of Consumption :

The screenshot shows the MySQL Workbench interface. The 'Query 1' editor contains the following SQL code:

```
20 GROUP BY MeterID, ConsumerType
21 ORDER BY MeterID, ConsumerType
22 LIMIT 5;
23
24 -- Monthly Trend of Consumption
25 SELECT
26 YEAR(Date) AS Year,
27 MONTH(Date) AS Month,
28 SUM(EnergyConsumed_kWh) AS Monthly_Consumption
29 FROM SmartCityEnergy;
```

The 'Result Grid' shows the following data:

Year	Month	Monthly_Consumption
2025	1	19800.289999999997
2025	2	14675.250000000004
2025	3	17886.65
2025	4	17390.540000000005
2025	5	19781.09

The 'Action Output' pane shows the execution of the query:

#	Time	Action	Message	Duration / Fetch
12	16:57:17	SELECT	Zone, SUM(EnergyConsumed_kWh) AS Total_Consumption, AV...	5 row(s) returned 0.031 sec / 0.000 sec
13	17:02:41	SELECT	MeterID, ConsumerType, SUM(EnergyConsumed_kWh) AS Total...	5 row(s) returned 0.016 sec / 0.000 sec
14	17:04:17	SELECT	YEAR(Date) AS Year, MONTH(Date) AS Month, SUM(EnergyCon...	14 row(s) returned 0.000 sec / 0.000 sec

### 4. Average Cost per Zone :-

The screenshot shows the MySQL Workbench interface. The 'Query 1' editor contains the following SQL code:

```
28 SUM(EnergyConsumed_kWh) AS Monthly_Consumption
29 ORDER BY MeterID, ConsumerType
30 GROUP BY YEAR(Date), MONTH(Date)
31 ORDER BY Year, Month;
32
33 -- Average Cost per Zone
34 SELECT
35 Zone,
36 AVG(EnergyConsumed_kWh * TariffRate) AS Avg_Cost
37 FROM SmartCityEnergy;
```

The 'Result Grid' shows the following data:

Zone	Avg_Cost
North	3253.6178921052624
Central	3481.614428378378
South	3359.6199347222228
West	3409.388183495144
East	3642.8594706666663

The 'Action Output' pane shows the execution of the query:

#	Time	Action	Message	Duration / Fetch
13	17:02:41	SELECT	MeterID, ConsumerType, SUM(EnergyConsumed_kWh) AS Total...	5 row(s) returned 0.016 sec / 0.000 sec
14	17:04:17	SELECT	YEAR(Date) AS Year, MONTH(Date) AS Month, SUM(EnergyCon...	14 row(s) returned 0.000 sec / 0.000 sec
15	17:06:51	SELECT	Zone, AVG(EnergyConsumed_kWh * TariffRate) AS Avg_Cost FRO...	5 row(s) returned 0.031 sec / 0.000 sec

## 5. Meters with Highest Outages :

The screenshot shows MySQL Workbench with a query window open. The query is as follows:

```
37 AVG(EnergyConsumed_kWh * TariffRate) AS Avg_Cost
38
39 GROUP BY Zone;
40
41 -- Meters with Highest Outages
42 SELECT
43     MeterID,
44     SUM(OutageMinutes) AS Total_Outage
45 FROM SmartCityEnergy
46 GROUP BY MeterID
```

The result grid shows the following data:

MeterID	Total_Outage
MTR00374	120
MTR00157	120
MTR00185	120
MTR00190	120
MTR00023	120

The output window shows the following messages:

#	Time	Action	Message	Duration / Fetch
14	17:04:17	SELECT	YEAR(Date) AS Year, MONTH(Date) AS Month, SUM(EnergyCon...	14 row(s) returned 0.000 sec / 0.000 sec
15	17:06:51	SELECT	Zone, AVG(EnergyConsumed_kWh * TariffRate) AS Avg_Cost FRO...	5 row(s) returned 0.031 sec / 0.000 sec
16	17:08:49	SELECT	MeterID, SUM(OutageMinutes) AS Total_Outage FROM SmartCityE...	5 row(s) returned 0.016 sec / 0.000 sec

## 6. Zones with Lowest Energy Efficiency :-

The screenshot shows MySQL Workbench with a query window open. The query is as follows:

```
47 ORDER BY Total_Outage DESC
48
49
50 -- Zones with Lowest Energy Efficiency
51 SELECT
52     Zone,
53     SUM(EnergyConsumed_kWh) AS Total_Usage,
54     SUM(OutageMinutes) AS Total_Outage
55 FROM SmartCityEnergy
56 GROUP BY Zone
```

The result grid shows the following data:

Zone	Total_Usage	Total_Outage
West	56704.000000000001	6317
East	46227.51	4270
Central	43640.560000000001	4868
South	41683.210000000014	4896
North	40617.240000000005	4558

The output window shows the following messages:

#	Time	Action	Message	Duration / Fetch
15	17:06:51	SELECT	Zone, AVG(EnergyConsumed_kWh * TariffRate) AS Avg_Cost FRO...	5 row(s) returned 0.031 sec / 0.000 sec
16	17:08:49	SELECT	MeterID, SUM(OutageMinutes) AS Total_Outage FROM SmartCityE...	5 row(s) returned 0.016 sec / 0.000 sec
17	17:10:00	SELECT	Zone, SUM(EnergyConsumed_kWh) AS Total_Usage, SUM(Outa...	5 row(s) returned 0.016 sec / 0.000 sec

## 7. Weekday vs Weekend Usage :-

The screenshot displays the MySQL Workbench interface. The left sidebar shows the 'SCHEMAS' panel with a tree view of databases, including 'smartcity\_db'. The main editor window shows a SQL query titled 'Query 1' with the following code:

```
-- Weekday vs Weekend Usage
SELECT
CASE
WHEN DAYOFWEEK(Date) IN (1,7) THEN 'Weekend'
ELSE 'Weekday'
END AS DayType,
AVG(PeakUsage_kwh) AS Avg_Peak_Usage
FROM SmartCityEnergy
GROUP BY DayType
```

The 'Result Grid' tab is active, showing the following data:

DayType	Avg_Peak_Usage
Weekday	27.112132867132846
Weekend	28.481929824561394

The bottom panel shows the 'Output' tab with 'Action Output' selected, displaying a log of SQL actions and their execution times.

#	Time	Action	Message	Duration / Fetch
16	17:08:49	SELECT MeterID, SUM(OutageMinutes) AS Total_Outage FROM SmartCityE...	5 row(s) returned	0.016 sec / 0.000 sec
17	17:10:00	SELECT Zone, SUM(EnergyConsumed_kWh) AS Total_Usage, SUM(Outa...	5 row(s) returned	0.016 sec / 0.000 sec
18	17:11:22	SELECT CASE WHEN DAYOFWEEK(Date) IN (1,7) THEN 'Weekend'	2 row(s) returned	0.063 sec / 0.000 sec

The Windows taskbar at the bottom shows the system clock as 5:11 PM on 2/17/2026, with a temperature of 25°C.