

Smart City Energy Analytics Dashboard – Insights Report

This document presents the key insights derived from the Smart City Energy Analytics Dashboard developed using Power BI. The dashboard analyzes smart meter data to support energy monitoring, planning, and decision-making for smart city infrastructure.

1. Project Objective

The objective of this project is to analyze smart city energy consumption data and present interactive insights using Power BI. The dashboard helps stakeholders understand energy usage patterns, outage impact, cost estimation, and meter health across different zones and consumer types.

2. Key Insights

2.1 Overall Energy Consumption

- The total energy consumption across all zones is significantly high, indicating growing energy demand.
- Industrial consumers contribute the highest share of total energy usage, followed by commercial and residential consumers.

2.2 Monthly Energy Consumption Trend

- Monthly trend analysis shows fluctuations in energy consumption across the year.
- Certain months show peak demand, indicating seasonal or operational variations.
- Zone-wise comparison highlights areas with consistently higher consumption.

[Insert Screenshot: Monthly Energy Consumption Line Chart]

2.3 Energy Consumption by Zone

- The geo heatmap visual clearly identifies high energy-consuming zones.
- Central and industrial zones show higher consumption compared to others.
- This insight helps in targeted infrastructure planning and load balancing.

2.4 Consumer Type Analysis

- Industrial consumers have the highest energy usage due to heavy machinery and operations.
- Commercial consumers show moderate usage, while residential consumers have comparatively lower consumption.

2.5 Power Outage Analysis

- Total outage minutes indicate the reliability of the power supply.
- Some zones experience higher outage durations, highlighting the need for maintenance and upgrades.

[Insert Screenshot: KPI – Total Outage Minutes]

2.6 Cost Estimation Insight

- The total estimated energy cost is calculated using dynamic tariff rates.
- This helps authorities forecast billing, optimize tariffs, and plan cost-saving measures.

2.7 Meter Health Monitoring (Conditional Formatting)

- Conditional formatting highlights faulty meters in red and active meters in green.
- High outage durations are visually flagged, enabling quick identification of problem areas.
- This improves response time for maintenance teams.

3. Conclusion

The Smart City Energy Analytics Dashboard successfully transforms raw smart meter data into actionable insights. Through interactive visuals, slicers, and conditional formatting, the dashboard supports efficient energy management, infrastructure monitoring, and strategic planning for smart cities.

4. Tools Used

- Power BI Desktop
- DAX (Data Analysis Expressions)
- CSV Dataset
- Bing Maps for Geo Visualization

WattWatch: Analyzing Urban Energy Consumption for Smarter Cities

226.07K

Total Consumption (kWh)

48K

Total Outage Minutes

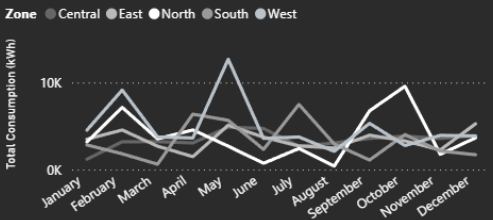
1.45M

Total Estimated Cost (₹)

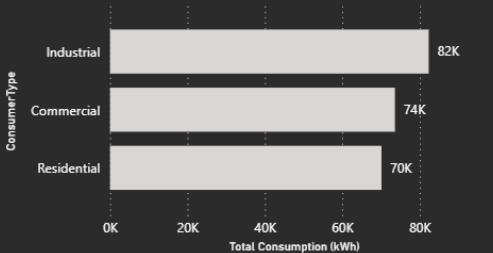
99.11

Avg Peak Usage (kWh)

Monthly Energy Consumption Trend



Energy Usage by Consumer Type



Energy Consumption by Zone



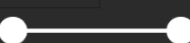
Consumer Type Filter

- ☐ Commercial
- ☐ Industrial
- ☐ Residential

Date

03-01-2025

31-12-2025



Zone Filter

- ☐ Central
- ☐ East
- ☐ North
- ☐ South
- ☐ West

WattWatch:

226....

Total...

48K

Total Outaq...

1.45M

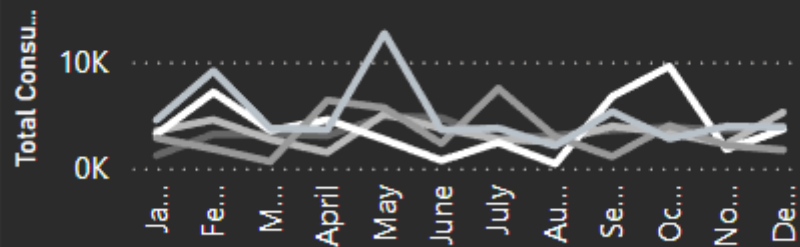
Total...

99.11

Avg Peak...

Monthly Energy Consumption Trend

Zone ● Central ● East ● North ● South ● West



Energy Consumption by Zone

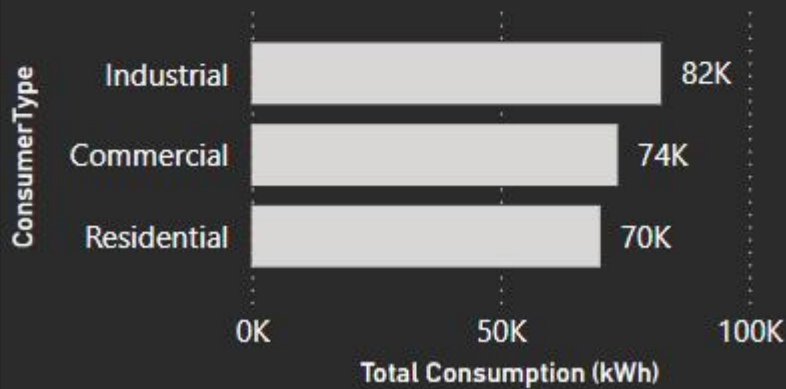




Energy Consumption by Zone



Energy Usage by Consumer Type



Consumer Type Filter







Consumer Type Filter

- ☐ Commercial
- ☐ Industrial
- ☐ Residential

Date

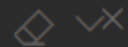


03-01-2025 

31-12-2025 



Zone Filter



- ☐ Central
- ☐ East
- ☐ North
- ☐ South
- ☐ West