To prepare a Power BI dashboard for visualizing energy consumption trends and making future predictions, here are some potential questions a data analyst should consider:

1. Understanding the Data

- What are the key metrics that need to be tracked for energy consumption (e.g., daily, weekly, monthly energy usage)?

- Are there any seasonal patterns in energy consumption over the years?

- How is energy consumption affected by external factors like temperature, humidity, or weather conditions?

2. Visualizing Trends

- How does energy consumption vary across different building types (e.g., CBQ, SNCO, MOQ, SOQ)?

- Which time periods (hours of the day, days of the week, months) show peak or low energy usage?

- How can we visualize historical energy consumption to identify long-term trends?

- Can we use line charts or area charts to compare the energy usage across different buildings or over time?

3. Forecasting and Predictive Analysis

- What forecasting models (e.g., linear regression, exponential smoothing) can be applied to predict future energy consumption based on historical data?

- How can we include weather conditions (temperature, humidity) in predictive models to estimate energy usage more accurately?

- What variables or features (e.g., appliance usage, occupancy levels) are most correlated with changes in energy consumption?

- Can we use a time-series model to predict energy usage for the next month or year?

4. Comparative Analysis

- How does energy consumption in one block compare to another over the same time period?

- How does the energy consumption of homes with higher occupancy rates compare to homes with lower occupancy?

- Can we create heat maps to visualize the geographic spread of energy consumption across different blocks?

5. Anomaly Detection

- Are there any sudden spikes or drops in energy consumption that seem unusual? What caused these anomalies?

- How can we set up alerts in the dashboard to detect when energy consumption exceeds a certain threshold or deviates from the forecast?

6. Interactive Filters

- What filters can be applied to view energy consumption by date, weather condition, building type, or other variables?

- Can users drill down to see energy consumption at hourly, daily, weekly, and monthly levels?

- Can we enable users to filter by building type (CBQ, SNCO, MOQ, SOQ) and room type (single bedroom vs. multiple bedrooms)?

7. Energy Efficiency Insights

- Are there any specific buildings or blocks that consume significantly more energy than others? Why?

- How can we visualize energy efficiency across buildings, and what recommendations can we make to reduce energy consumption?

- How does appliance usage relate to overall energy consumption, and which appliances contribute most to energy usage?

8. Visualization Types

- What visualization types (bar charts, line graphs, heat maps, scatter plots) will best represent the data for energy consumption trends?

- Should the dashboard include comparison charts (e.g., year-over-year, month-over-month) to visualize how energy consumption changes over time?

- Can we create KPIs (Key Performance Indicators) to summarize the key metrics (e.g., average energy consumption per building, maximum and minimum usage)?

9. User Interaction and Customization

- How can we allow users to input different scenarios (e.g., increase in occupancy or temperature) and see the impact on predicted energy consumption?

- Can users interact with the dashboard by adjusting parameters (e.g., date range, weather conditions) to see real-time updates of energy consumption predictions?

10. Sharing Insights

- How can the dashboard be set up for sharing insights with stakeholders (e.g., via reports, email notifications)?

- Should there be an option to export data or visualizations to Excel or PDF for deeper analysis?

These questions will help guide the development of a comprehensive Power BI dashboard, allowing for effective data visualization, trend analysis, and predictive modeling in the context of energy consumption.