plugging into the future: an exploration of electricity consumption patterns using tableau

DATE	28-02-2026
TEAM ID	LTVIP2026TMIDS89110
PROJECT NAME	plugging into the future: an exploration of electricity consumption patterns using tableau
MAXIMUM MARKS	4 MARKS

7.1 FUNCTIONAL AND PERFORMANCE TESTING

1. Functional Testing

Goal: Verify that all Tableau dashboards, charts, filters, and interactions work correctly.

Key Areas to Test:

1. **Data Accuracy & Validation**
   - Check that electricity consumption values match the source data.
   - Verify calculations: peak vs off-peak, per capita usage, percentage changes.
   - Test aggregations across time periods (hourly, daily, monthly).
2. **Filters and Parameters**
   - Time filters: Selecting specific dates or months should update all visuals consistently.
   - Sector or region filters: Dashboard should refresh correctly when changing sectors (residential, commercial, industrial) or regions.
   - Scenario parameters: E.g., temperature changes or forecast projections must update charts properly.
3. **Interactive Elements**
   - Tooltips display correct data and context.
   - Hover or highlight actions work across charts (e.g., selecting a day in heatmap highlights line chart points).
   - Legends update dynamically when filters are applied.
4. **Dashboard Navigation**
   - Story points follow correct sequence in Tableau Story.
   - Navigation buttons or sheet tabs work correctly without broken links.

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5. **User Interface & Layout**
    - Titles, KPIs, and charts are correctly aligned and readable.
    - Colors and fonts match the design guidelines (e.g., futuristic neon theme).
    - Visuals remain legible on different screen sizes and resolutions.

2. Performance Testing

Goal: Ensure dashboards load quickly, respond smoothly, and scale with large datasets.

Key Areas to Test:

1. **Data Volume Handling**
    - Test with full electricity datasets (e.g., multiple years of hourly smart meter data).
    - Verify dashboard response when aggregating millions of rows.
2. **Load Times**
    - Target: dashboards should load in ≤5 seconds for main visuals.
    - Time filters or parameter changes should refresh charts in ≤2 seconds.
3. **Concurrency / Multi-User Testing**
    - If hosted on Tableau Server or Tableau Online, test multiple simultaneous users.
    - Verify there's no performance degradation under load.
4. **Query Optimization**
    - Ensure calculated fields, table calculations, and data blending don't cause delays.
    - Optimize data extracts instead of live connections when possible.
    - Reduce complex nested calculations on high-volume datasets.
5. **Responsive Performance**
    - Test dashboards on different devices: desktop, tablet, and mobile.
    - Ensure interactive elements remain usable and responsive.

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