Product Requirements and Specification Document (PRD)

Project Name

EcoWatt - Energy Consumption Dashboard

Description

Develop an interactive Tableau dashboard for a utility provider to monitor energy usage, identify peak demand periods, and analyze cost breakdowns. The dashboard will support business research and operational decision-making through data-driven insights.

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1. Objectives

Objective	Description
Monitor Energy Usage	Visualize real-time and historical energy consumption
Identify Peak Demand	Highlight periods of highest energy demand
Analyze Cost Breakdowns	Display cost components and trends over time
Enable Interactive Analysis	Allow users to filter and drill down by time and other variables

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2. Stakeholders

Role	Responsibility
Product Owner	Define requirements, approve delivery
Data Analyst	Data preparation, validation
Tableau Developer	Dashboard implementation
Business Users	End users, provide feedback

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3. Functional Requirements

ID	Requirement
FR1	Display total energy consumption (kWh) over selectable time ranges
FR2	Visualize peak demand periods (hourly/daily/weekly)
FR3	Show cost breakdowns (fixed, variable, taxes, etc.)
FR4	Provide interactive time filters (date range, granularity)
FR5	Enable drill-down by customer segment, region, or meter
FR6	Export dashboard views to PDF and Excel

FR7	Responsive layout for desktop and tablet

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4. Non-Functional Requirements

ID	Requirement
NFR1	Dashboard loads within 5 seconds
NFR2	Data refreshes daily (or as scheduled)
NFR3	Secure access (role-based permissions)
NFR4	Compliant with company data privacy policies

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5. Data Requirements

Data Element	Source	Notes
Energy Usage (kWh)	Utility DB	Aggregated by time, region, segment
Cost Components	Billing System	Fixed, variable, taxes, surcharges
Time Stamps	Meter Data	For filtering and trend analysis
Customer Segments	CRM/ERP	For drill-down and segmentation

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6. Dashboard Specifications

Layout

- **Header:** Project title, date/time, user info
- **Main Panels:**
  - **Energy Usage Trend:** Line/bar chart with time filters
  - **Peak Demand:** Heatmap or bar chart by time interval
  - **Cost Breakdown:** Pie or stacked bar chart
- **Filters:** Date range, region, customer segment
- **Export/Download:** PDF, Excel

Interactivity

- Clickable charts for drill-down
- Hover tooltips with detailed metrics
- Synchronized filters across all panels

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7. User Stories

ID	As a…	I want to…	So that…
US1	Analyst	View energy usage trends	Identify consumption patterns

US2	Manager	See cost breakdowns by region	Optimize operational costs
US3	Operator	Filter data by time and segment	Investigate anomalies
US4	Executive	Export dashboard views	Share insights with stakeholders

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8. Success Criteria

- Dashboard meets all functional requirements
- Loads within 5 seconds with current data
- Users can filter, drill down, and export data
- Positive feedback from pilot users

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9. Technology Stack

Component	Technology
Dashboard	Tableau
Data Source	SQL/CSV/Excel
Data Integration	Tableau Data Prep
Access Control	Tableau Server

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10. Milestones & Timeline

Milestone	Target Date
Requirements Finalized	Week 1
Data Preparation	Week 2
Dashboard Prototype	Week 3
User Testing	Week 4
Final Delivery	Week 5

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11. Open Issues / Risks

- Data quality and completeness
- User access and permissions setup
- Timely data refresh and integration

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12. Appendix

Example Tableau Pseudocode

```
// Energy Usage Trend
SELECT date, SUM(energy_kwh)
FROM usage_data
WHERE date BETWEEN [StartDate] AND [EndDate]
GROUP BY date

// Cost Breakdown
SELECT cost_type, SUM(amount)
FROM billing_data
WHERE date BETWEEN [StartDate] AND [EndDate]
GROUP BY cost_type
```

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