

Requirement Document: Invoicing Module for Asset Managers in Renewable Resources

Introduction:

The Invoicing Module is a key component for generating Power Purchase Agreement (PPA) invoices tailored to asset managers in the renewable energy sector. The system ingests raw data related to power generation and consumption from third-party systems, such as Snowflake, and processes it to produce accurate and actionable information for invoicing.

Functional Requirements:

1.Data Integration:

- The system shall pull raw data (e.g., power generation, consumption, and market prices) from external systems like Snowflake.
- The system shall support multiple data formats, including CSV and JSON.
- The system shall utilize APIs for real-time data ingestion where applicable.

2. Data Transformation:

- The system shall cleanse and normalize raw data to ensure consistency.
- The system shall apply business rules and calculations to derive metrics such as net power generated and total consumption.

3.Invoice Generation:

- The system shall generate detailed invoices in compliance with PPA terms.
- The system shall support custom pricing models and dynamic rate calculations.
- Invoices shall include itemized details and summary metrics.

4.Audit and Reporting:

- The system shall maintain a complete audit trail for data transformations and invoice generation.
- The system shall provide both summary and detailed reports for stakeholders.
- Reports shall be exportable in formats such as PDF and Excel.

5.Error Handling:

- The system shall identify and log discrepancies or incomplete data during ingestion and processing.
- The system shall generate alerts for manual review in case of errors.

6.Scalability and Performance:

- The system shall handle large datasets efficiently without performance degradation.
- The system shall support concurrent processing of data ingestion and invoice generation tasks.

Non-Functional Requirements:

1. Usability:

- The system interface shall be intuitive and user-friendly for non-technical users.

2. Reliability:

- The system shall ensure 99.9% uptime for critical processes.

3. Security:

- The system shall enforce strict access controls to protect sensitive data.
- Data in transit and at rest shall be encrypted using industry-standard protocols.

4. Maintainability:

- The system shall support modular updates to business rules without significant downtime.

Stakeholder Requirements:

Asset Managers:

- Access detailed and accurate invoices.
- Receive timely notifications for discrepancies in data.

Administrators:

- Configure PPA terms and pricing models.
- Monitor system performance and logs.

Dependencies:

- External data sources such as Snowflake for raw data ingestion.
- APIs for integration with third-party systems.
- Cloud infrastructure for scalability and performance.

Assumptions:

- All required data from Snowflake will be available and accessible in the required formats.
- Business rules and PPA terms are predefined and agreed upon by stakeholders.

Risks:

- Data inconsistencies due to incomplete or corrupt inputs.
- Scalability challenges under peak data loads.
- Misalignment of business rules and technical implementation.

Conclusion:

The Invoicing Module aims to deliver a robust, scalable, and accurate solution for managing PPAs in the renewable energy sector. By meeting the outlined functional and non-functional requirements, the module ensures reliability and efficiency in invoice generation for asset managers.