



Architecture Diagrams

# Data Lake Architecture for Renewable Energy



# Data Lake Architecture for Renewable Energy: Architecture Diagrams

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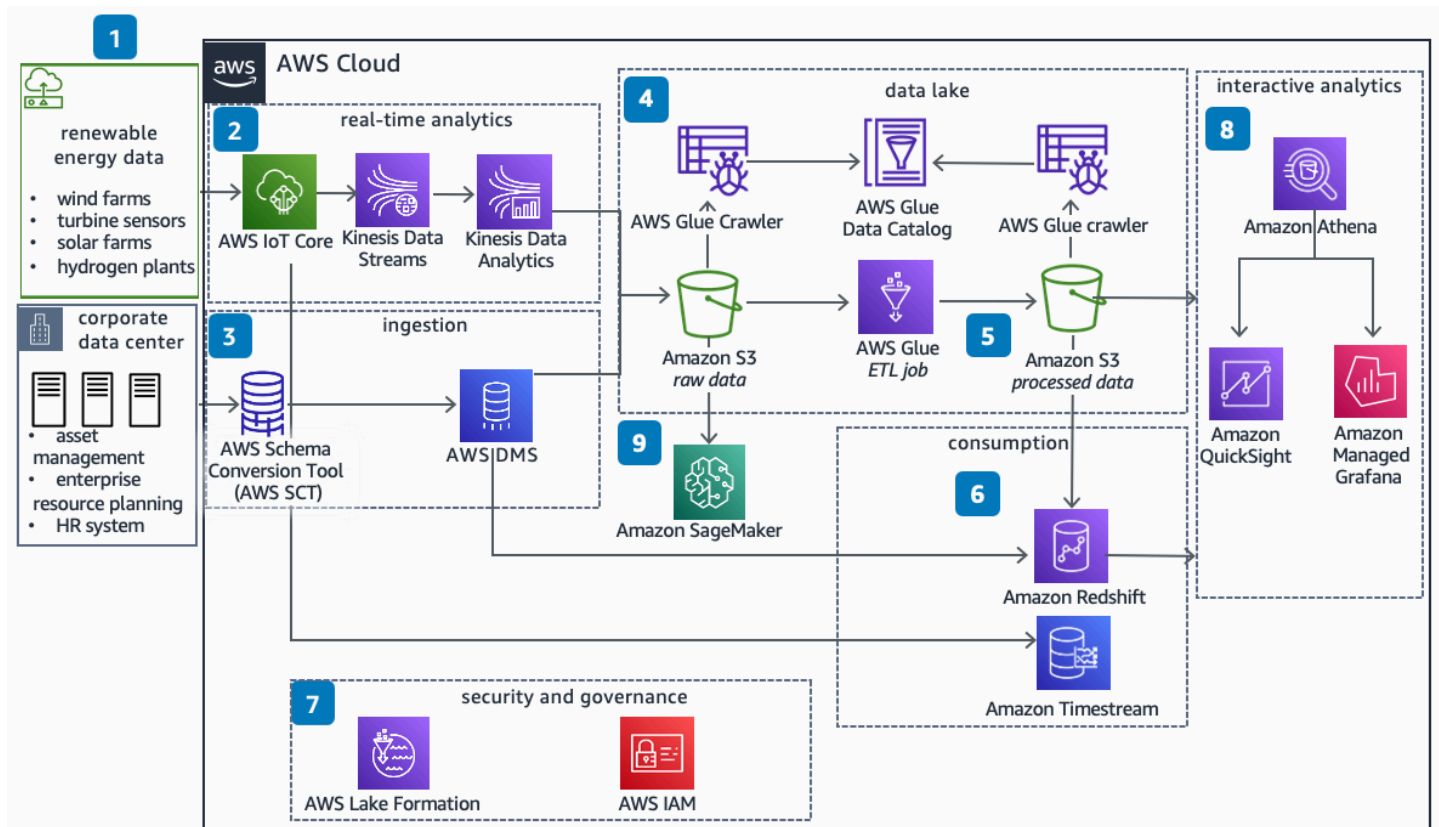
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# Data Lake Architecture for Renewable Energy

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This architecture enables you to build a renewable energy data lake that includes telemetry data from IoT devices, and business application data for near real-time monitoring. It also enables you to visualize data and make predictions with machine learning (ML) models.

## Data Lake Architecture for Renewable Energy Diagram



1. Renewable energy data is ingested into **AWS IoT Core** with MQ Telemetry Transport (MQTT) protocol.
2. Using AWS IoT rules engine within **AWS IoT Core**, telemetry data is routed to **Amazon Timestream** and **Amazon Simple Storage Service (Amazon S3)** through **Amazon Kinesis Data Streams**. Use **Amazon Managed Service for Apache Flink** to transform and analyze streaming data in near real-time.

3. The schemas for the on-premise databases are discovered and converted by the **AWS Schema Conversion Tool** (AWS SCT). The data is moved by **AWS Database Migration Service** (AWS DMS) to **Amazon S3** and **Amazon Redshift**.
4. Data stored in **Amazon S3** is crawled by **AWS Glue crawler**. The schemas are discovered and the **AWS Glue Data Catalog** is populated with this metadata.
5. **AWS Glue** extract, transform, load (ETL) jobs process, transform, and enrich the raw data, and output it in an **Amazon S3** processed bucket.
6. Schemas and tables are then created in **Amazon Redshift**. Using the COPY command, data is loaded into **Amazon Redshift** tables. Business logic data transformations can then be performed by stored procedures.
7. The **AWS Glue Data Catalog**, **AWS Lake Formation**, and **AWS Identity and Access Management** (IAM) are used to provide centralized security and governance.
8. **Amazon Athena**, **Amazon QuickSight**, and **Amazon Managed Grafana** visualize data and build dashboards and reporting.
9. Use raw datasets with **Amazon SageMaker** to train and deploy machine learning models.

## Download editable diagram

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## Further reading

For additional information, refer to

- [AWS Architecture Icons](#)
- [AWS Architecture Center](#)
- [AWS Well-Architected](#)

## Diagram history

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Change	Description	Date
<a href="#">Initial publication</a>	Reference architecture diagram first published.	October 26, 2022

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