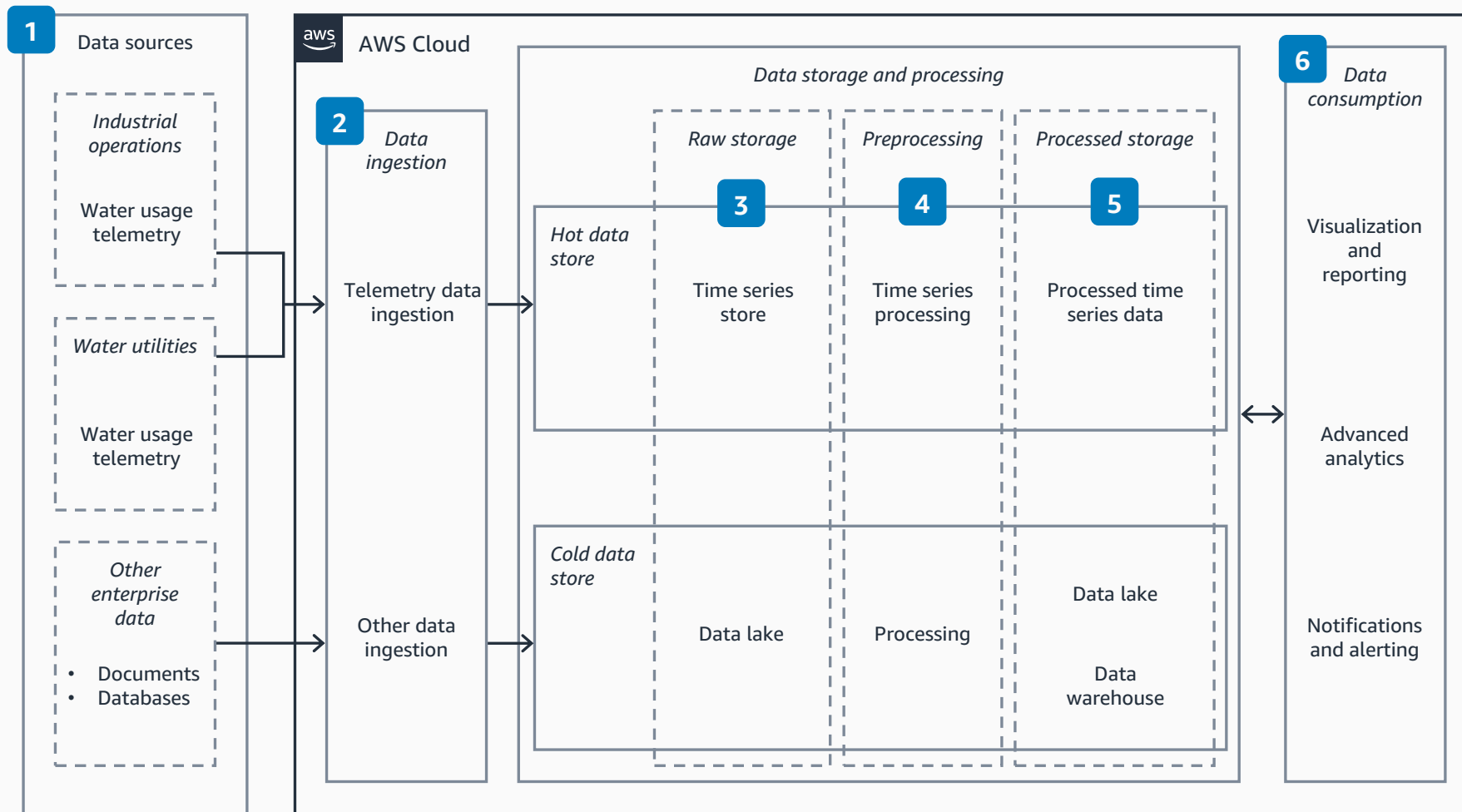


Guidance for Water Use Efficiency on AWS

This architecture diagram shows how you can collect, monitor, and optimize telemetry data for water use efficiency. These steps provide an overview of the data workflow. For more details about the different stages of the data workflow, refer to the following architecture diagrams.

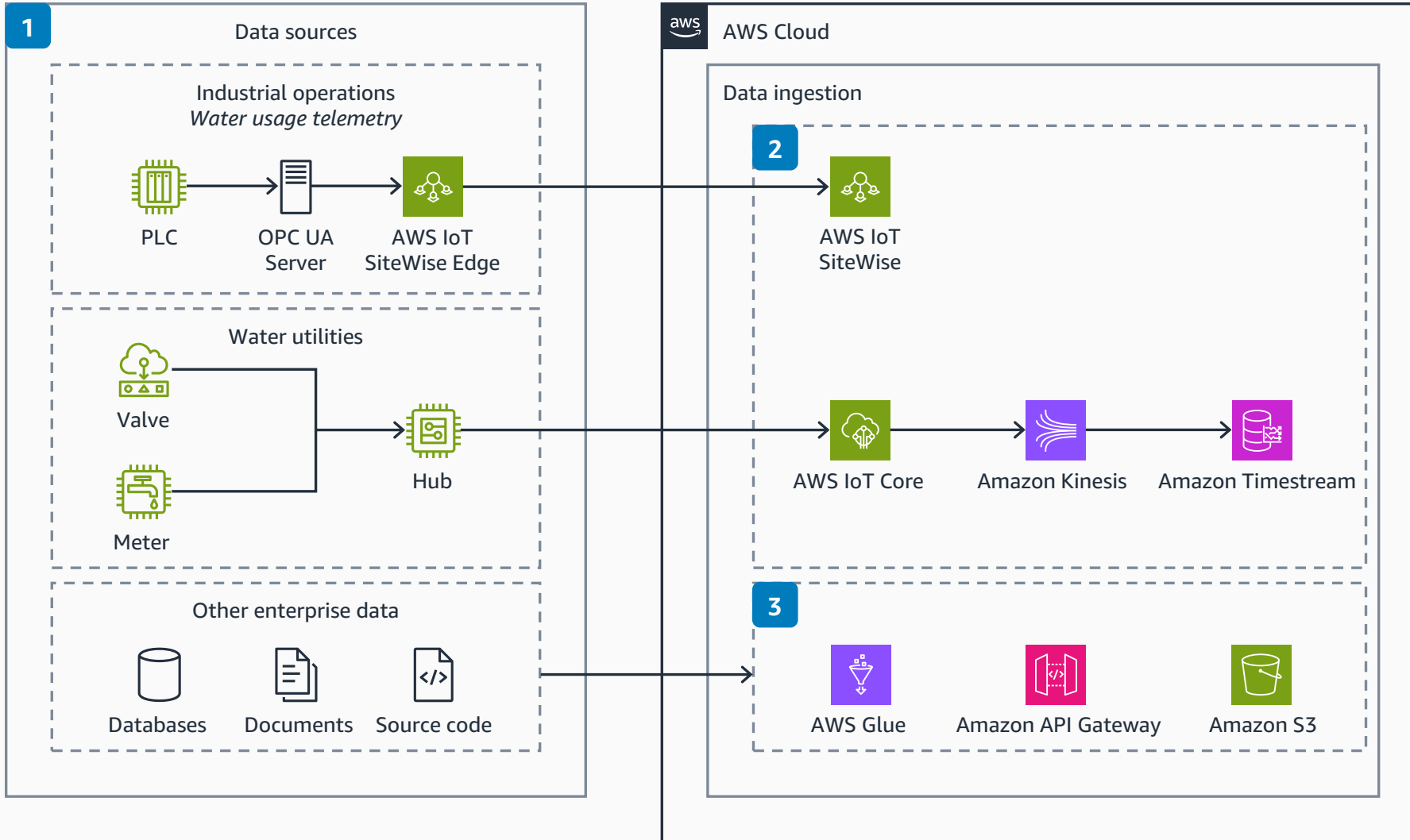


- 1 Collect water usage telemetry data from industrial operations and water utilities.
- 2 Ingest telemetry data and any other relevant enterprise data into the cloud.
- 3 Store the raw telemetry for water consumption in a hot data store, and store the other enterprise data in a cold data store, such as a data lake.
- 4 Process raw telemetry data and other enterprise data.
- 5 Store the processed water usage telemetry data in the hot data store. Store the other processed enterprise data in a data lake or a data warehouse, based on data consumption patterns.
- 6 Extract actionable insights on water consumption and efficiency through tools such as a real-time dashboard or a custom web application. Use advanced analytics to optimize and forecast water consumption. You can also set up notifications when anomalies are detected.



Guidance for Water Use Efficiency on AWS

This architecture diagram shows how you can collect, monitor, and optimize telemetry data for water use efficiency. These steps provide a more detailed description about data sources and ingestion. Follow the steps in this diagram to deploy Part 1 of the Guidance.

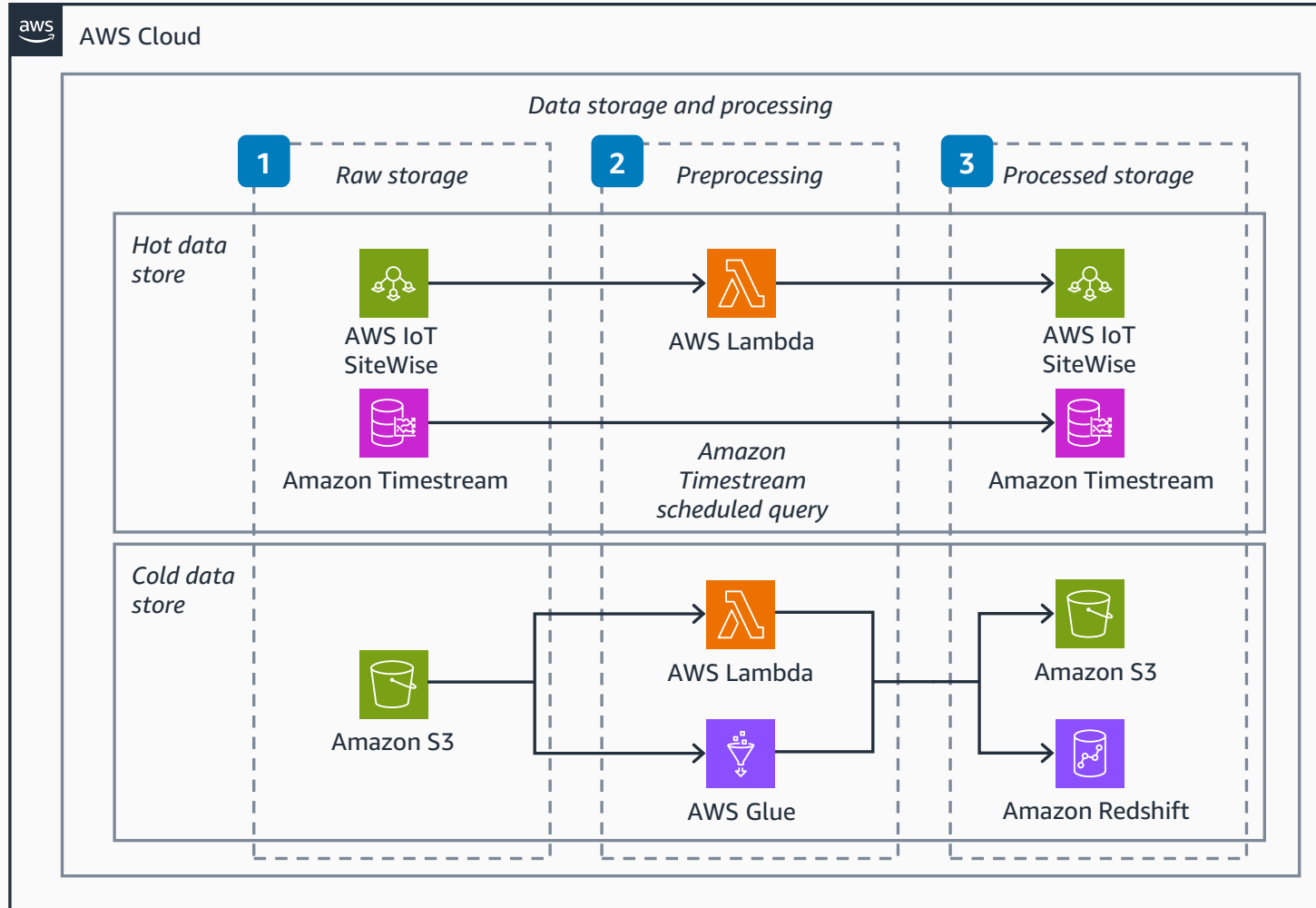


- 1** To collect water usage telemetry data, use either an open platform communications (OPC) Unified Architecture (UA) server with **AWS IoT SiteWise Edge** in an industrial operations setting or a purpose-built water meter using FreeRTOS in a water utility setting.
- 2** **AWS IoT SiteWise** or **AWS IoT Core** ingests the water usage telemetry data and moves it to **Amazon Kinesis** and **Amazon Timestream**.
- 3** **Amazon API Gateway** and **AWS Glue** ingest other static enterprise data, such as site metadata. **Amazon Simple Storage Service (Amazon S3)** stores this data.



Guidance for Water Use Efficiency on AWS

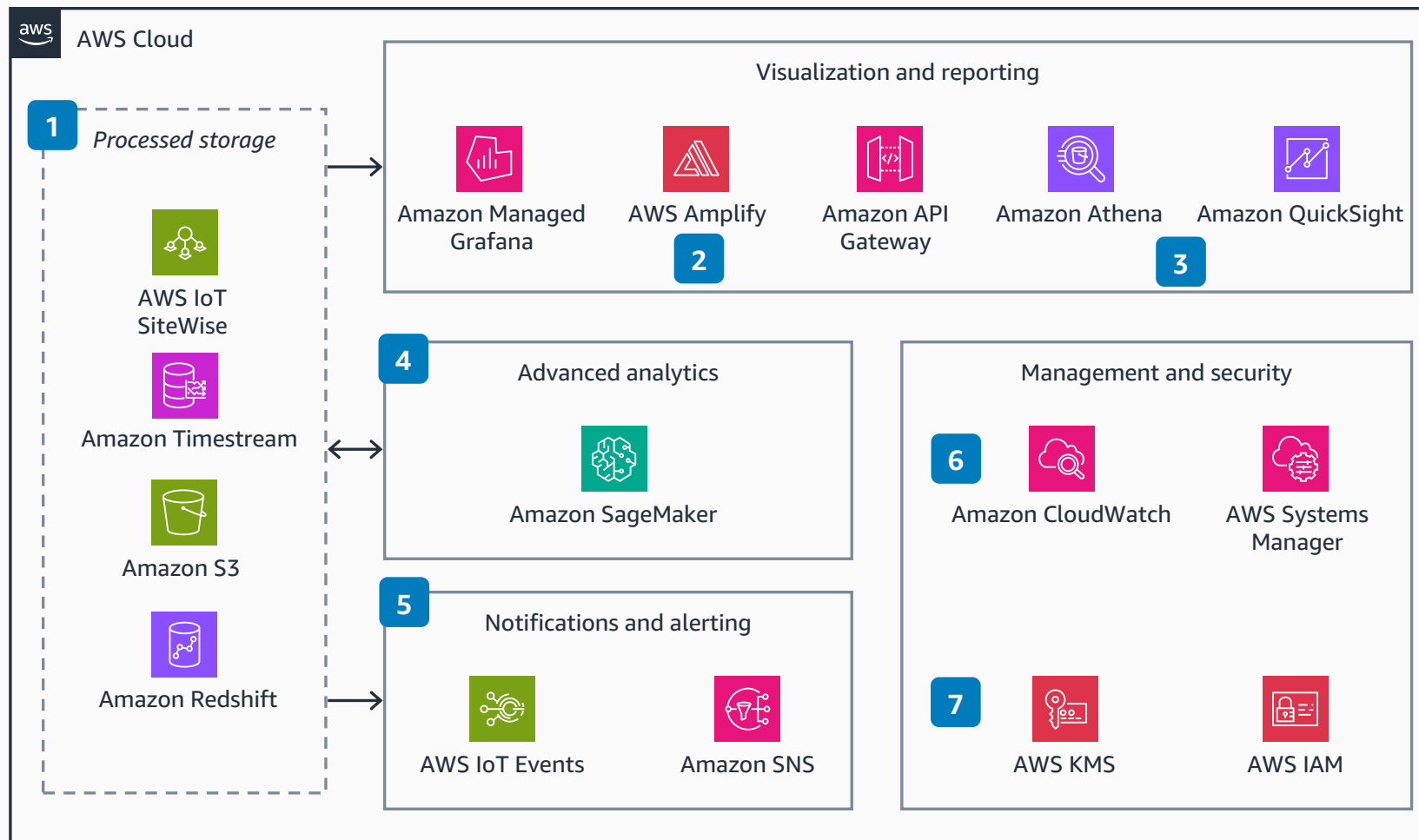
This architecture diagram shows how you can collect, monitor, and optimize telemetry data for water use efficiency. These steps provide a more detailed description about storing and processing data in hot and cold storage. Follow the steps in this diagram to deploy Part 2 of the Guidance.



- 1** After **AWS IoT SiteWise** or **AWS IoT Core** ingests the raw water usage telemetry data, store it in a hot data store like **AWS IoT SiteWise** or **Timestream**. Store your other enterprise data in a cold data store, such as a data lake on **Amazon S3**.
- 2** Process the raw water usage telemetry data using **AWS Lambda** or a **Timestream** scheduled query, and process the other enterprise data using **Lambda** and **AWS Glue**.
- 3** Store the processed water usage telemetry data in a hot data store, such as **AWS IoT SiteWise** or **Timestream**. Store your other processed enterprise data in a data lake on **Amazon S3** or a data warehouse such as **Amazon Redshift**.

Guidance for Water Use Efficiency on AWS

This architecture diagram shows how you can collect, monitor, and optimize telemetry data for water use efficiency. These steps provide a more detailed description about processing and storing data for visualization and analytics. Follow the steps in this diagram to deploy Part 3 of the Guidance.



- 1** **AWS IoT SiteWise** or **Timestream** stores processed water usage telemetry data in a hot data store. A data lake on **Amazon S3** or a data warehouse such as **Amazon Redshift** stores your other processed enterprise data.
- 2** Build a real-time dashboard or custom application to visualize and monitor your water usage and efficiency using **Amazon Managed Grafana** or **AWS Amplify**. Enable third-party data consumption through RESTful APIs using **API Gateway**.
- 3** Your company's business analysts can also directly query water usage data for custom metrics using **Amazon Athena** and create business intelligence reporting using **Amazon QuickSight**.
- 4** Predict and optimize water consumption through advanced analytics using **Amazon SageMaker**.
- 5** Set up alerts for anomaly detection using **AWS IoT Events** and **Amazon Simple Notification Service (Amazon SNS)**.
- 6** Using **Amazon CloudWatch**, you can monitor the overall health and performance of your application. **AWS Systems Manager Parameter Store** stores and manages configuration data across the application.
- 7** Secure your data and application with **AWS Key Management Service (AWS KMS)** and **AWS Identity and Access Management (IAM)**.