

Intel Data Center Energy Analysis using SQL & Tableau

Project Overview

This project analyzes energy data to determine the best location for Intel's new data center. The focus is on net energy production, the percentage of renewable energy, and dependency on fossil fuels. SQL was used to query the dataset, and Tableau was used to create visualizations showing energy trends in different regions.

Objective

The goal of this analysis was to evaluate energy efficiency by comparing net energy production and renewable energy usage to find the most suitable location for Intel's data center. The analysis focused on:

- Regions that produce more energy than they consume.
- The balance between renewable energy and fossil fuel dependency.
- Energy trends in different regions of the United States.

Dataset

The dataset used in this project includes information about:

- **Regions:** U.S. electric service areas such as Northwest, Texas, and Midwest.
- **Net Energy Production:** The total energy generated minus the total energy demand.
- **Renewable Energy Sources:** Energy from wind, solar, and hydropower.
- **Fossil Fuel Sources:** Energy from coal, petroleum, and natural gas.

Dashboards Created

1. Net Production Analysis

- Key Metrics: Net energy production by region.
- Visualization: A bar chart ranking regions based on energy surplus and deficit.

2. Renewable Energy Analysis

- Key Metrics: Percentage of total energy coming from renewable sources.
- Visualization: A bar chart ranking regions by the highest percentage of renewable energy.

3. Energy Source Trends

- Key Metrics: Weekly trends in energy production by source.
- Visualization: A line chart comparing energy production from renewable sources and fossil fuels over time.

Insights

- The **Northwest region** produces the most renewable energy and has an energy surplus.
- The **Texas and Central regions** generate a high amount of energy but still depend heavily on fossil fuels.
- **California** has a high percentage of renewable energy but also has an energy deficit, meaning it consumes more energy than it produces.

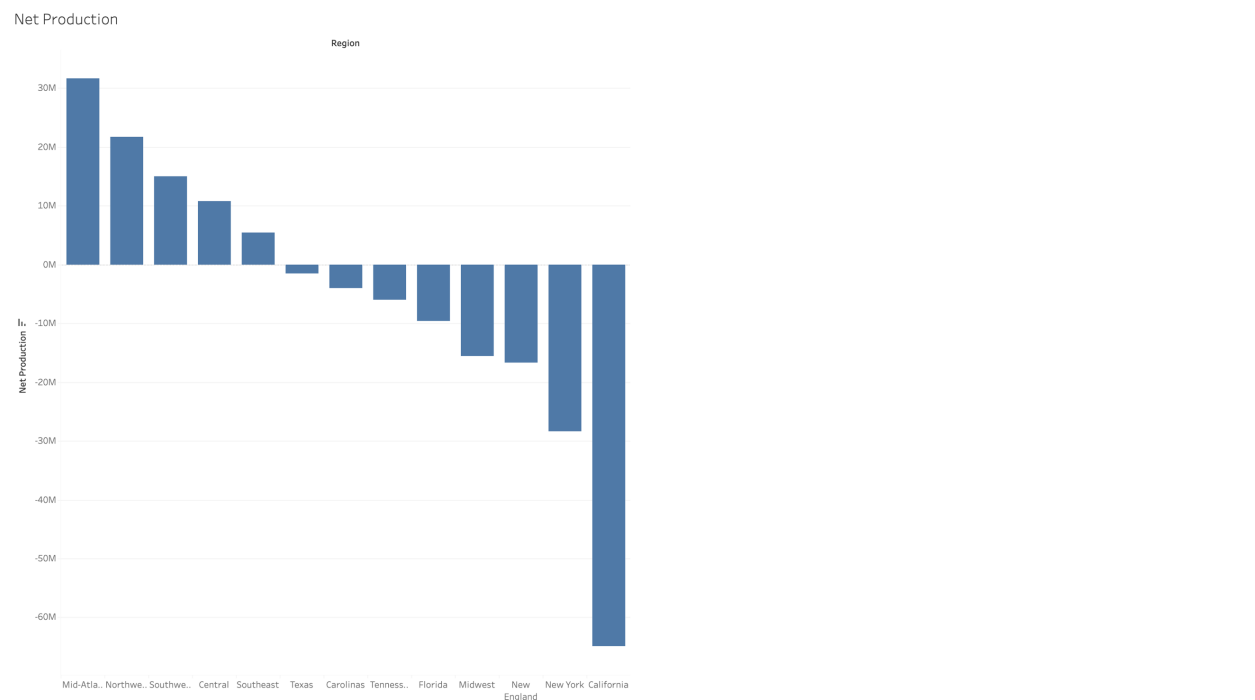
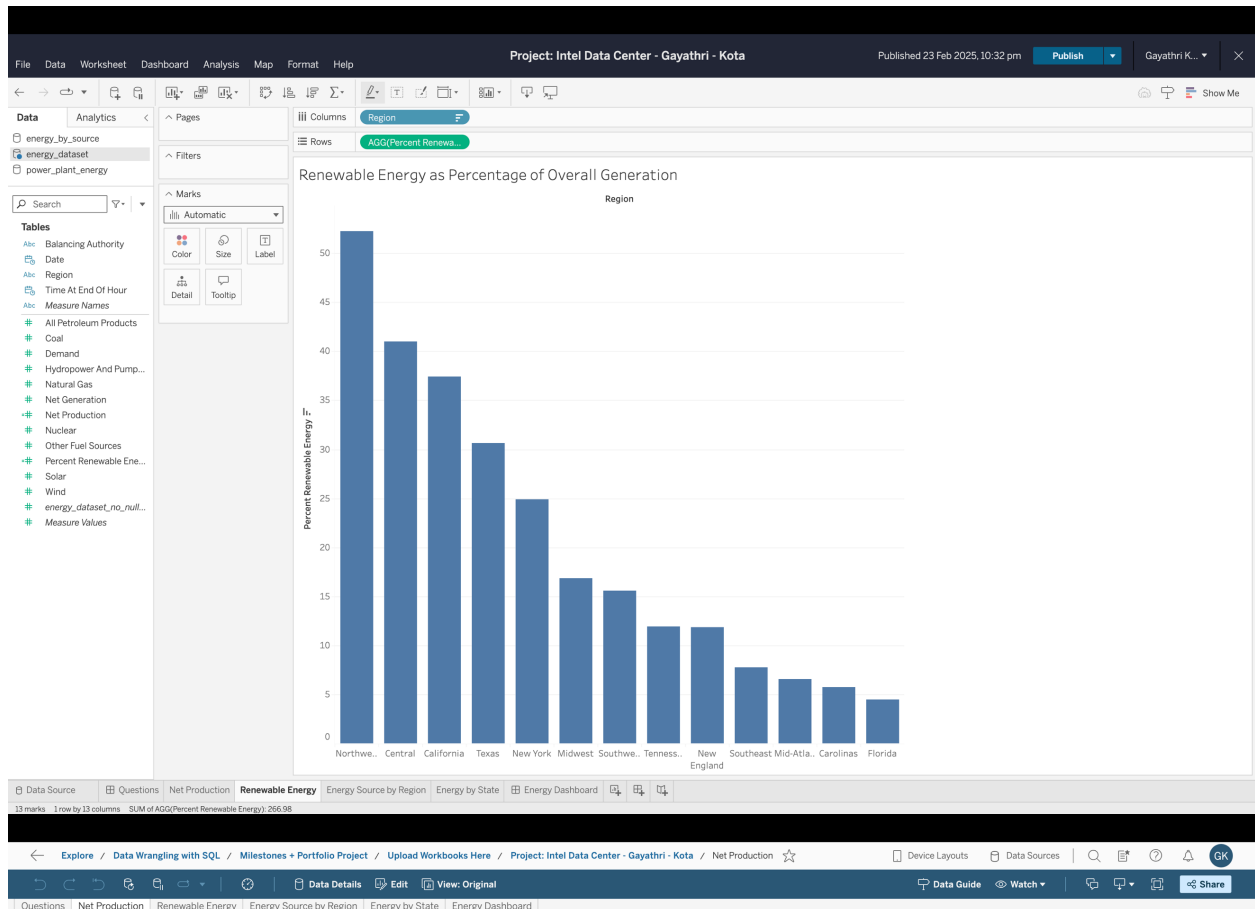
Business Impact and Recommendations

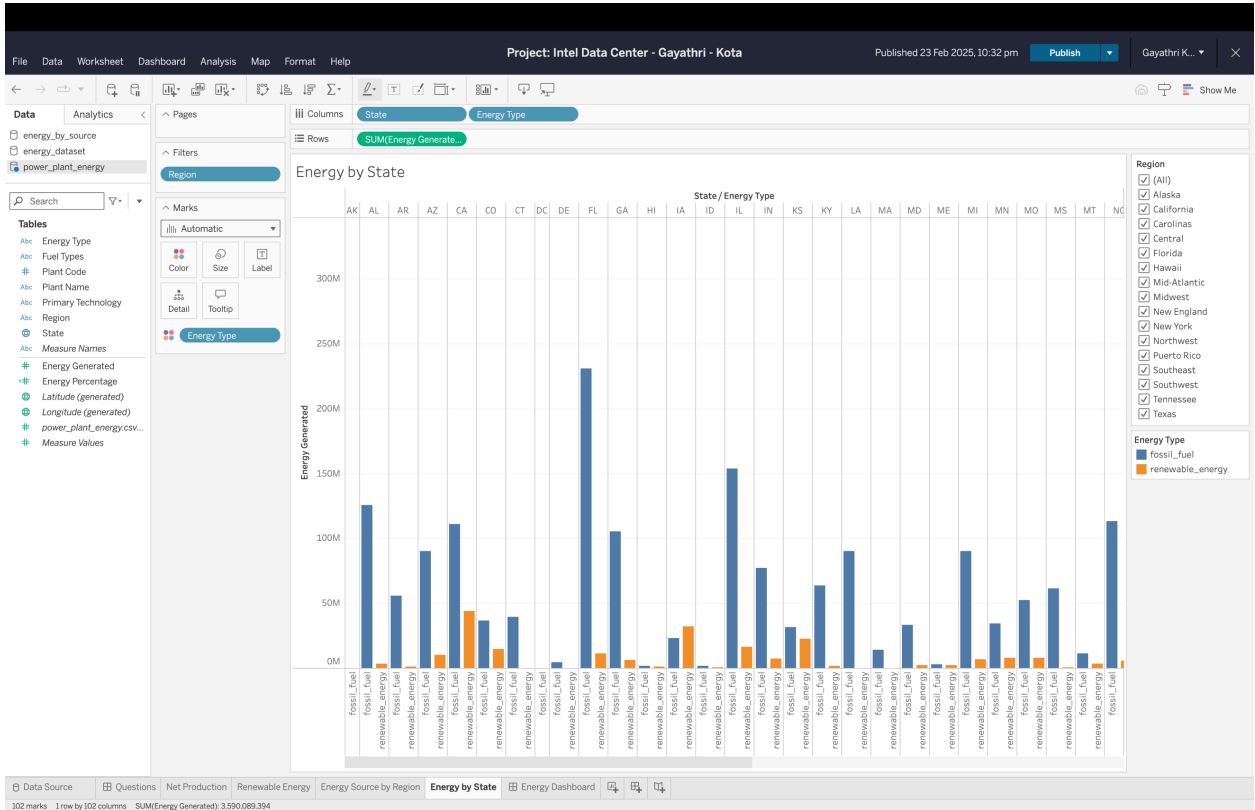
- **Sustainability:** Choosing a location with a high percentage of renewable energy will ensure long-term efficiency and cost savings.
- **Energy Security:** Selecting a region with an energy surplus will provide a stable power supply for the data center.
- **Cost Efficiency:** Reducing reliance on fossil fuels aligns with Intel's sustainability goals and helps lower operational costs.

Conclusion

Based on energy availability and sustainability, the **Northwest region (Washington/Oregon)** is the best choice for Intel's new data center. This location offers a reliable, renewable, and cost-effective power supply while supporting Intel's environmental initiatives.

Check out my Tableau visualizations below

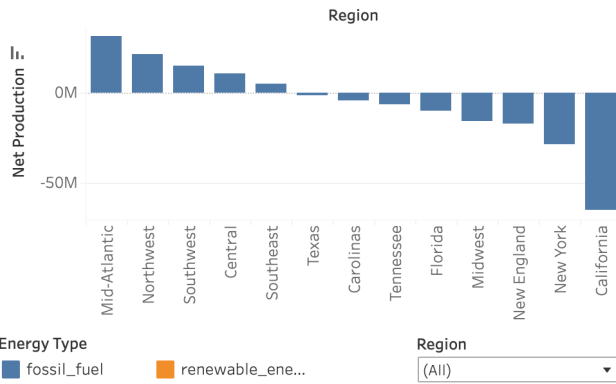




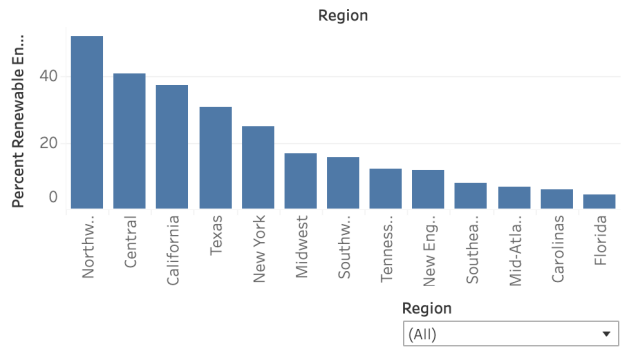
Dashboard Created:

Energy Dashboard

Net Production

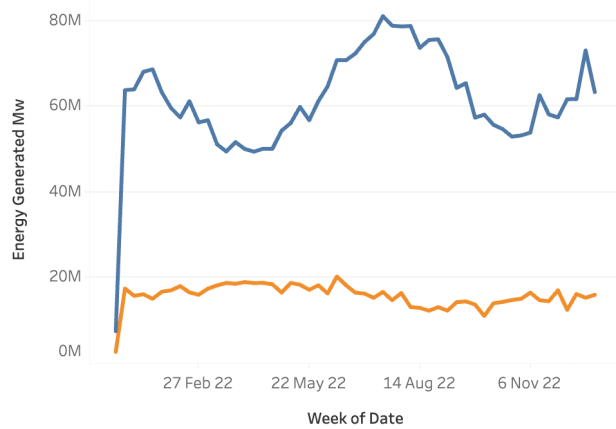


Renewable Energy as Percentage of Overall Generation



Energy Type
■ fossil_fuel ■ renewable_ene...
 Region: (All)

Energy Source by Region



Energy by State

