Measure Definitions, Solar Energy Analytics

This document defines the key analytical measures used in the Solar Energy Analytics Business Intelligence model. These measures are derived from the Fact Solar Energy table and its associated dimensions (**Date**, **Location**, **Weather**) within the star schema. They are designed to support **performance analysis**, **trend evaluation**, and **decision-making** related to solar energy production.

Measure Name	Definition	Calculation Logic	Business Relevance
Total Energy Produced	Total amount of solar energy generated over a selected time period and location.	`SUM(energy_delta_wh)`	Measures overall production performance and allows comparison across regions and time periods.
Average Solar Irradiance	Average level of global horizontal irradiance received during a selected period.	`AVG(ghi)`	Indicates the solar potential of a site and helps assess suitability for solar installations.
Year-over-Year Energy Growth (YoY)	Percentage change in total energy production compared to the same period in the previous year.	`(Energy(Current Year) - Energy(Previous Year)) / Energy(Previous Year)`	Evaluates long-term growth trends and the impact of strategic or environmental changes.
Month-over-Month Energy	Percentage change in energy production	`(Energy(Current Month) - Energy(Previous`	Detects short-term variations, seasonal effects, and

Growth (MoM)	compared to the previous month.	`Month)) /`
		`Energy(Previous`
		`Month)`
			operational performance changes.

Downtime Rate	Proportion of time intervals with no effective sunlight for energy generation.	`COUNT(isSun = 0) /`
		`COUNT(total`
		`intervals)`
			Assesses operational risk related to weather conditions and helps estimate reliability of production.

Notes:

- All time-based measures rely on the Dim_Date dimension to enable temporal analysis (daily, monthly, yearly).

- Measures are aggregated from the Fact_Solar_Energy table and can be sliced by location and weather conditions.

- These measures directly support the KPIs and analytical questions defined in the business understanding phase of the project.