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Energy production forecasting and optimization

This workflow automatically collects weather and system data, generates optimized energy production forecasts, and adjusts operational parameters to maximize renewable energy output and efficiency.

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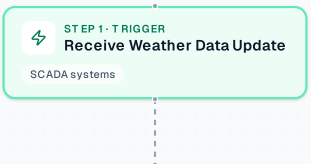
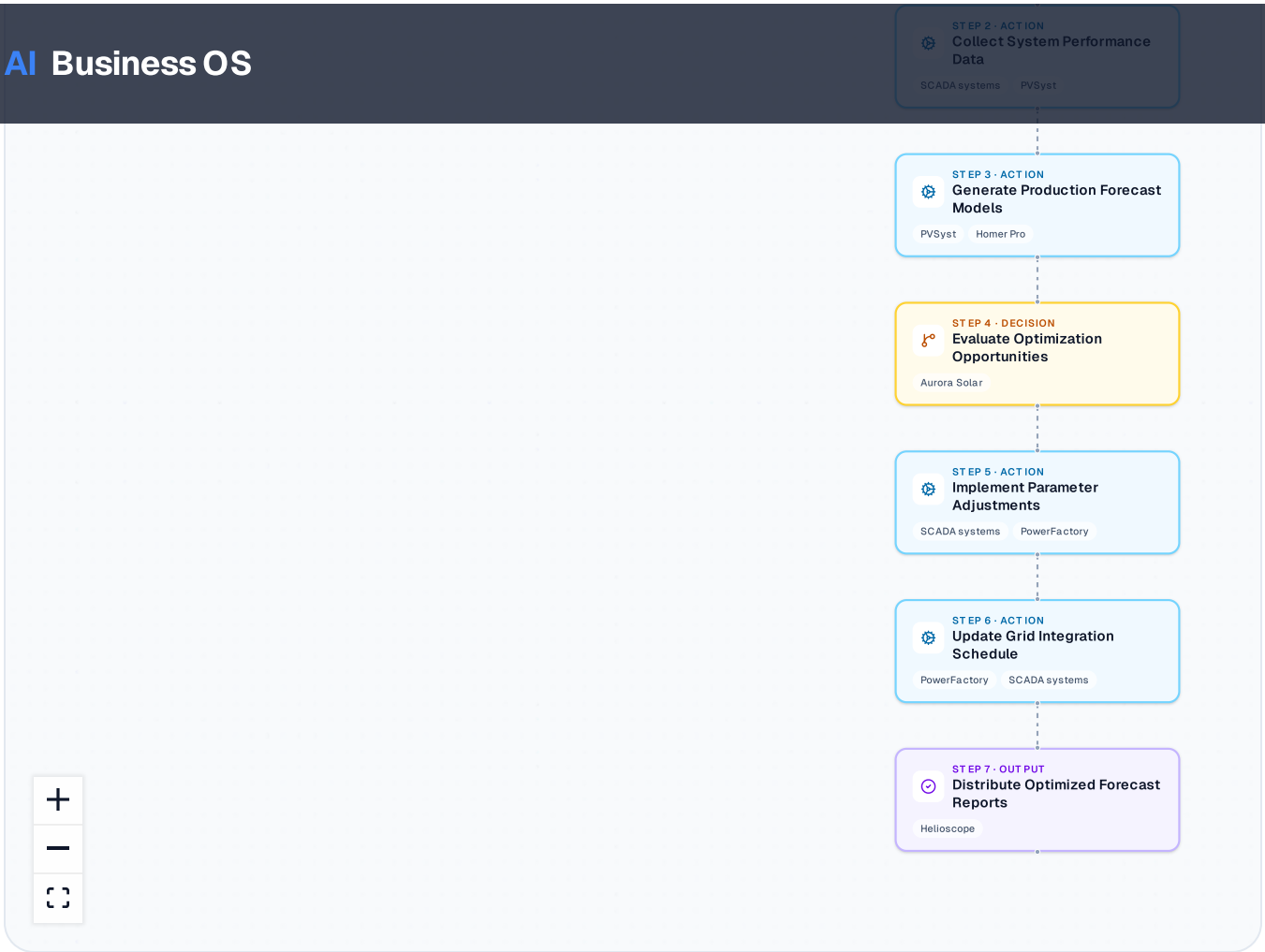
WORKFLOW TRIGGER
Daily weather forecast data becomes available at 6 AM

Visual Flow

Each node represents an automated step. Connections show how data and decisions move through the workflow.





Step-by-Step Breakdown

Detailed explanation of each automated stage in the workflow.

1

TRIGGER

Receive Weather Data Update

Weather forecast and real-time meteorological data triggers the forecasting workflow. System automatically pulls solar irradiance, wind speed, temperature, and cloud coverage predictions.

2

ACTION

Collect System Performance Data

Gather current operational metrics from solar panels, inverters, and energy storage systems. Historical performance data is retrieved to establish baseline efficiency patterns.

SCADA systems | PVSyst

3

ACTION

Generate Production Forecast Models

AI algorithms process weather data and system metrics to create 24-48 hour energy production forecasts. Multiple scenarios are modeled based on different weather probability outcomes.

PVSyst | Homer Pro

4

DECISION

Evaluate Optimization Opportunities

System determines if current operational parameters can be adjusted to improve forecasted output. Decision branches based on whether optimization potential exceeds 5% efficiency gain.

Aurora Solar

5

ACTION

Implement Parameter Adjustments

Automatically adjust panel tracking angles, inverter settings, and energy storage charging schedules. Grid integration parameters are optimized for peak demand periods.

SCADA systems PowerFactory

6

ACTION

Update Grid Integration Schedule

Coordinate with utility grid systems to optimize energy delivery timing. Peak production forecasts are aligned with grid demand and pricing structures.

PowerFactory SCADA systems

7

OUTPUT

Distribute Optimized Forecast Reports

Generate and distribute production forecasts, optimization recommendations, and grid integration schedules to operations teams. Automated alerts are sent for significant forecast changes.

Helioscope

Outputs

- 24-48 hour energy production forecast

- Optimized operational parameter settings
- Grid integration delivery schedule

Key Metrics

- Forecast accuracy percentage
- Energy output optimization gain
- Grid integration efficiency rating

Tools & Integrations

- SCADA systems
- PVSyst
- Homer Pro
- Aurora Solar
- PowerFactory
- Helioscope

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