
Foundry —For Renewables



SOLUTION OVERVIEW

—WHITEPAPER

PALANTIR
TECHNOLOGIES

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Overview

Changes in climate and energy policy paired with shifts in supply and demand are causing disruptions to energy systems across the globe. Renewable energy generation is at the core of this transition.

Investing and empowering the energy sector to sustainably optimize performance, production, and scale must become a transformational effort to innovate for the future.

Data is at the heart of this revolution. Renewable power generation is highly dependent on weather and site conditions, which are ever-changing, and the process outputs large-scale data that is often difficult to integrate, visualize, or leverage.

Additionally, the renewables data landscape is often siloed: stakeholders work from a range of data source systems, so often face knowledge gaps that can lead to lengthy unplanned downtime, performance deviations, and profitability losses.

However, these challenges can be addressed using robust data integration models and feedback loops across the entire business. With an integrated, real-time view of operations, renewables organizations can streamline operations, optimize decision-making, and drive business success throughout the energy revolution.



The Foundry Solution

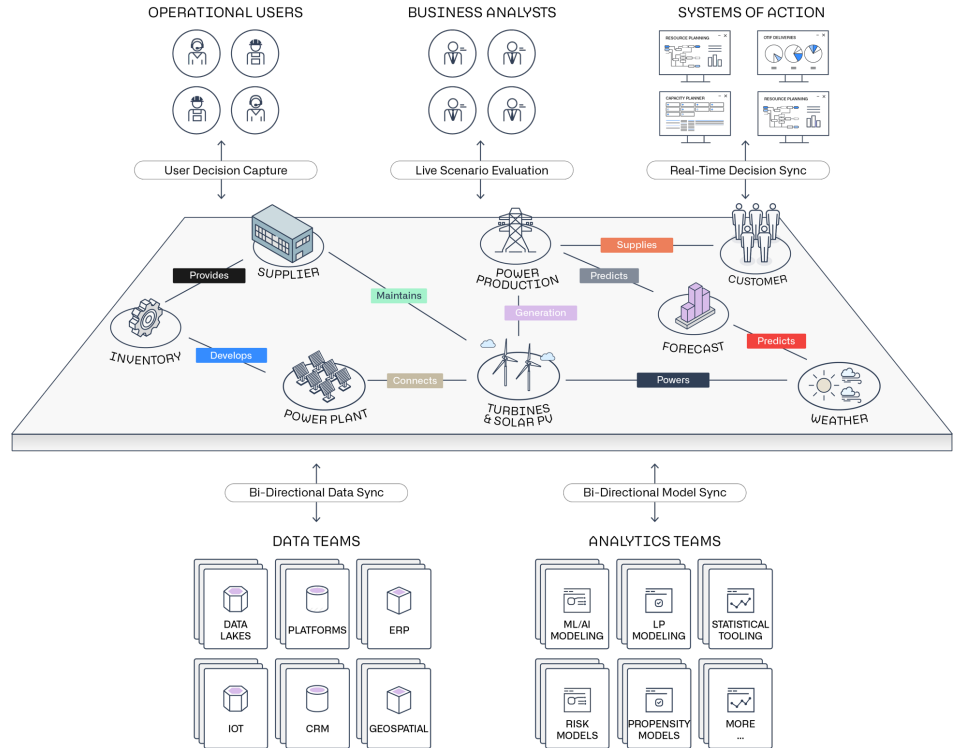
Palantir Foundry integrates and transforms data from sensors, IoT, third-party sources, ERP and financial systems, unlocking analysis across the enterprise by creating a high-fidelity digital twin.

Users can explore their data assets, run simulations, configure custom alerts and quickly build and deploy flexible applications by leveraging a common semantic layer including asset details, financial portfolios, maintenance, inventory, sensor data, and more.

Foundry connects analytics to operations to empower end users, enable decision-making alignment across business units, and drive robust, collaborative transformation through the entire value chain.

FIGURE 01.

Foundry's open architecture enables continuous feedback loops. This facilitates rapid improvement of analytics and compounding use case delivery.



Renewable Solution Offerings

01 Operations

- Asset 360
- Plant Performance
- Production Optimization

02 Machine Learning

- Production Forecasting
- Prospective Site Planning

03 Maintenance

- Inventory Management
- Plant Downtime Minimization
- Maintenance Allocation & Planning

04 Financial & Energy Markets

- Trading Decision Optimization
- Sentiment Analysis

Operations

Asset 360

Plant Performance

Production Optimization

Asset 360 ↘

- Combines structured data, user-entered data, and sensor data in a single, intuitive application, providing full visibility into the hierarchy of assets (country, portfolio, plant, element) and delivering a consolidated “view of the world” for end users
- Enables users to collaborate on the same data asset across the business and to make data-driven decisions at both the granular and group level
- Feeds decisions back for smarter operations over time

Plant Performance ↘

- Evaluate health and performance, comparing budgeted versus actual production levels
- Perform detailed drill downs and root cause analysis of problems to conduct data-driven maintenance prioritization
- Maximize returns and profitability and facilitate reporting on this ROI to investors

Production Optimization ↘

- Integrate third party fluid dynamics models to produce predictions of wind wake losses in real time and then optimize these predictions by pushing data back to control systems on the edge
- Analyze turbine blade or solar strings and inverters time series data at scale and create KPIs to detect underperforming blades or modules and adjust any misalignments or anomalies

Machine Learning

Production Forecasting

Prospective Site Planning

Production Forecasting ↘

- Integrate satellite data and power plant data – performance and technology types – to predict the production of potential new sites
- Establish a starting point for preventive maintenance to help reduce plant downtime and optimize performance, outputs, and overall asset profitability

Prospective Site Planning ↘

- Integrate satellite data, inverter technology, and existing plant data to predict the production of potential new sites
- Rapidly assess prospects and compare potential production levels to better inform the site acquisition process

Maintenance

Inventory Management

Plant Downtime Minimization

Maintenance Allocation & Planning

Inventory Management ↘

- Track the availability and lifecycle of parts
- Manage supply and demand, replacements, and maintenance needs across sites
- Organize and optimize supply chain logistics

Plant Downtime Minimization ↘

- Create custom alerts to proactively identify and address issues and develop alternative plans to maximize performance
- Evaluate the lifecycle of parts and leverage models to forecast prospective deficits in production ahead of downtimes, shifting from reactive to proactive mitigation and reducing eventual downtime costs

Maintenance Allocation & Planning ↘

- Identify and track portfolio-wide issues and incidents
- Optimize downtime windows for maintenance through automated maintenance planning

Financial & Energy Markets

Trading Decision Optimization

Sentiment Analysis

Energy Trading Decision Optimization ▾

- Track price fluctuations across different energy markets
- Compare production levels, demand levels, and market prices to optimize energy arbitrage and decision-making

Sentiment Analysis ▾

- Analyze and categorize open-source data into segments (paragraphs, sentences, and entities)
- Leverage external deep learning libraries to run sentiment analyses, keeping users informed of positive, negative or neutral news

Conclusion

The use cases described above – operations, machine learning, maintenance, and financial and energy markets – are just a few of the ways that Foundry can support the renewable energy transition.

The ultimate objective of Palantir’s renewables offering is to bring key stakeholders together into one source of truth and to empower data-driven decision-making. The collaboration between engineering, finance, and procurement teams within Foundry helps optimize distributed energy resources, asset management, and operations.

The different outcomes that can be unlocked through this digitalization will drive transparency into renewable energy organizations, reducing local optimization across competing objectives, achieving better overall outcomes and transforming siloed teams into a data enabled enterprise.

