

# Mapping an Entire Regional Energy Grid from Space in 72 Hours

— How We Saved an Energy Investor \$3.5M+ and Compressed a 6-Month Audit into 3 Days

THE CHALLENGE

## The Challenge

For major energy sector investors, entering an expansive new regional market means flying blind. Our client wanted to assess the commercial viability of acquiring assets across a multi-state grid territory, but local regulatory data was severely outdated and incomplete — leaving critical capital allocation decisions exposed to enormous informational risk.

To protect their investment, they needed to know the exact density of operational energy infrastructure across the target region and precisely how much power each asset was outputting. A manual audit of this magnitude was a logistical nightmare: requiring a massive fleet of helicopter flyovers, dozens of drone survey crews, and an army of data analysts manually scrubbing footage over a projected six-month timeline.

Moving forward without accurate, ground-truthed infrastructure data introduced extreme financial exposure. But waiting six months for a traditional consulting firm to complete a manual regional sweep meant losing the market acquisition window entirely. The client required a radically faster, fundamentally more precise method to map and quantify an entire region's energy production infrastructure — before a single dollar was committed.



**6 Months**

TRADITIONAL MANUAL AUDIT TIMELINE

**\$3.5M+**

CONVENTIONAL AUDIT COST OVERHEAD

## The Solution

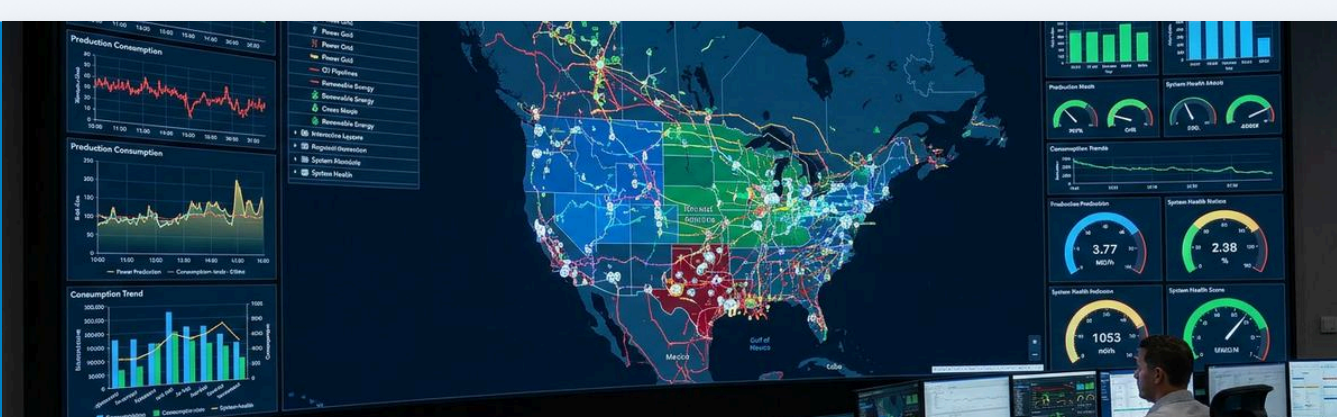
We deployed a fully managed Geospatial AI & Infrastructure Intelligence Pipeline that transforms raw multi-spectral satellite imagery and environmental data layers into a centralized, boardroom-ready map of the target region. Our automated platform abstracts the entire processing complexity — turning millions of unorganized satellite pixels into a clean, verified, and immediately actionable energy asset database.



**01**

**AUTONOMOUS GRID MAPPING ENGINE**

Processes raw regional satellite feeds through a multi-class computer vision detection pipeline to automatically identify, classify, and precisely map the physical boundaries of every active solar field, substation cluster, and distribution line segment within the target territory. Every discovered asset is tagged with geospatial coordinates, infrastructure class, estimated physical footprint, and operational status — building a living, verified registry of the entire regional grid from orbit.



**02**

**PHYSICS-TO-PIXEL CAPACITY MODEL**

Extracts hardware-level dimensional data directly from space-based imagery — calculating panel array geometry, string configurations, and physical tilt angles. These structural parameters are then cross-referenced with localized historical irradiance data, seasonal solar angle models, and real-time atmospheric conditions to compute current and projected megawatt generation output per asset. The result is a verified, physics-grounded production estimate for every infrastructure node in the mapped region.



**03**

**INTERACTIVE MARKET INGRESS DASHBOARD**

Synthesizes the full satellite detection output and capacity model results into a single, interactive intelligence dashboard. Executive teams receive a live, filterable map layer displaying verified generation capacity readings, newly discovered unlisted infrastructure assets, and localized market saturation levels — all accessible at a single glance. The platform compresses what would have been months of manual field reporting into a real-time, boardroom-ready strategic command surface.

## THE BUSINESS IMPACT

**\$3.5M+**  
FEASIBILITY COSTS SAVED

**1,100%**  
PIPELINE ROI (11X)

**2,500+**  
UNLISTED ASSETS DISCOVERED

**93.8%**  
INFERENCE PRECISION RATE

**72 HRS**  
FULL REGION AUDIT DELIVERY

*"The geospatial forecasting platform completely changed how we approach market expansion. Instead of spending millions on field surveyors and waiting months for a report, we had a live, accurate model of the entire region's energy infrastructure and true production capacity by day three."*

— CHIEF EXECUTIVE OFFICER & INVESTMENT PARTNER