



AI-enabled Pipeline Power Optimization for an Energy Company



Problem

A leading energy infrastructure company relied on a highly manual, spreadsheet-based process to estimate pipeline power and energy costs for monthly operating schedules. The workflow offered limited visibility into power, peak-risk, and cost implications while schedules were being built or revised, making it difficult to optimize **flow rates, batch sequencing, and pump station power settings** in a coordinated way. Cost estimation often took **1-2 weeks per schedule**, limiting rapid what-if analysis and scenario planning and slowing operational decision-making.

The underlying logic sat inside a highly complex Excels/VBA models with a few hundred thousand cells, tens of complex excel workbooks and macros, making it difficult to validate, scale, or operationalize.



Approach



Re-engineered legacy Excel/VBA logic into a modular Python-based engine, preserving the core business logic while making the model transparent, scalable, and easier to validate



Reduced simulation turnaround from days to <10 seconds through code vectorization, enabling planners and capacity teams to test 15+ operating scenarios in less than 45 secs within the same decision window



Added cost-aware optimization levers beyond simulation, including batch resequencing to generate lower-cost schedule alternatives and pump station power-limit optimization to reduce avoidable power costs



Automated alert aggregation and reduced handoffs across workflows, replacing manual review of hundreds of hourly intervals with a compiled summary of alerts in seconds



Unified previously siloed workflows across scheduling, capacity optimization, and rates-related decision support through a common engine for hydraulics and power-cost analysis

Results and Impact

99%+

faster
schedule-to-cost
turnaround

\$3M+

annual power cost
savings potential

15+

flow rate scenarios
evaluated within
seconds in one
decision cycle vs
weeks in the legacy
workflow



About Straive

At Straive, we operationalize Data Analytics and AI for global enterprises and work with several Fortune 500 companies. We don't just build top-tier data analytics and AI solutions— we integrate them seamlessly into your core workflows. This approach drives enhanced efficiency, improves user experience, and boosts client revenue, setting you apart from the competition.

Straive serves clients in various industries, including Banking and Financial Services, GCC, Retail and CPG, Media, Sports and Entertainment, EdTech, Science and Research, Logistics and Supply Chain, Education, and Pharmaceutical and Life Sciences.

Our strategically positioned resource pool operates in ten countries: the Philippines, India, the United States, Nicaragua, Vietnam, the United Kingdom, Singapore, South Africa, UAE, and Canada.