



Adams Cleveland Roosevelt Shultz

CASE STUDY

Bringing Real-Time Prioritization and Cost Awareness to Injection Management

10:00 AM 12:00 PM 02:00 PM 04:00 PM 06:00 PM 08:00 PM 10:00 PM 12:00 AM 02:00 AM



Nearshore Solutions

AI / ML
Custom Software

Development Expertise

Azure
Jupyter
PostgreSQL
Airflow
NEXT.js
TypeScript
Python

Outsourced Services

AI and ML Development
DevOps Engineer
Custom Software Development

BACKGROUND

A major midstream oil and gas company, managing a wide network of injection facilities, was looking for smarter ways to handle day-to-day operations. Their internal teams were often flying blind—relying on outdated heuristics, incomplete visibility, and manual coordination to decide where to send water, when, and how much. As demand patterns shifted and contract caps tightened, the stakes became higher—and so did the cost of inefficiency.

The company partnered with Azumo to bring clarity and automation to the decision-making process. Together, they built a dynamic, real-time platform that prioritized injection based on cost, capacity, and predicted impact—empowering teams with a single view of the truth.

THE CHALLENGE

Every day, the team needed to make quick decisions about where to route water for injection. But the inputs guiding these decisions—facility pressure, capacity, cost per barrel—were scattered across systems and spreadsheets, updated inconsistently, and never tied to a predictive strategy. When multiple clients were injecting into the same network, the lack of a prioritization protocol risked breaching contract limits, escalating costs, and blocking downstream activity.

More importantly, the team had no reliable way to simulate what would happen if volumes shifted. Would costs rise? Would pressure drop? Could a low-priority site actually handle more?

They needed a centralized system that could not only gather and visualize real-time operational data—but also suggest which facility to prioritize and why.

SOLUTION

Azumo designed and implemented a custom Injection Prioritization Platform that combined intelligent modeling with intuitive visual tools—allowing operators to make informed decisions in real time, simulate outcomes, and adapt on the fly. At the heart of the interface was a summary card showing the system's current recommendation. It highlighted the facility to prioritize, the available capacity, and the predicted cost per barrel—all computed based on live data and weighted inputs.

To support deeper exploration, the dashboard included a settings panel where users could fine-tune the importance of cost vs. capacity—immediately influencing the prioritization algorithm. The refresh rate could also be configured, enabling teams to control how often the data model updated.

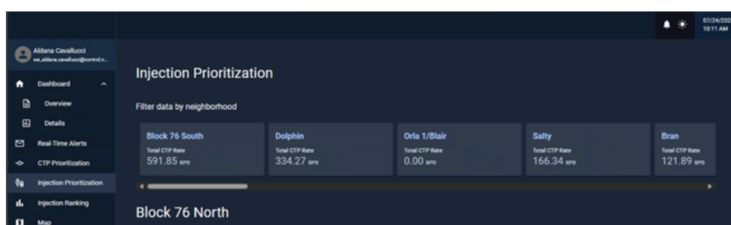


Fig. 1: Summary section showing top recommended facility, available capacity, and estimated cost per barrel.

Operators could also run simulations using a slider that projected the impact of increasing water intake at the most available facility—from 0% to 100%—before taking action.

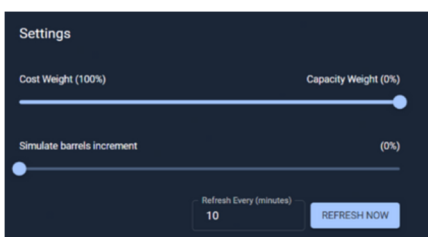


Fig. 2: Screenshot of the “Simulate Barrels Increment” feature, showing user-adjustable percentage input for testing volume increases.



CASE STUDY

SOLUTION

Below the fold, Azumo implemented a robust ranking table that showed detailed metrics per facility—including pressure, cost per barrel, OpEx and utilities estimates, available capacity, and daily injection volume. This provided teams with granular visibility across every site.

Facility Rankings							
Ranking	Facility	Pressure	Cost per barrel (\$/bbl)	Base Operational Costs	Utilities cost	Available Capacity Approx (bbl)	Injected today (bbl)
1	Roosevelt	1,973.69 PSI	\$0.1400	\$124,489.08	\$93,026.31	77,499.5 bbl	7,800.5 bbl
2	Cleveland	2,350.35 PSI	\$0.1700	\$268,055.03	\$187,628.03	110,819.5 bbl	11,780.5 bbl
3	Adams	0 PSI	\$0.2100	\$386,811.38	\$260,049.94	131,654.38 bbl	13,945.62 bbl

Fig. 3: Facility-level ranking table displaying pressure, cost, capacity, and model recommendations.

To capture operational trends over time, two key graphs were added:

The Facility Score Trend showed how prioritization scores had changed over the past 24 hours, offering insight into evolving network conditions.



The Frequency Trend flagged gaps or anomalies in pump activity—helping teams spot and investigate potential disruptions.

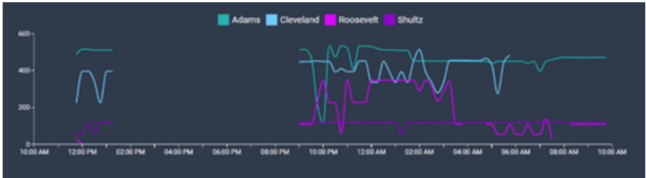


Fig. 5: Line graph showing historical trends in pump frequency with visible dropouts.

For more complex environments, Azumo built a secondary Injection Ranking View that allowed users to sort recommendations by neighborhood. This view supported broader decision-making across zones and allowed managers to act not just by facility, but by region.

Additional fields could be toggled on-demand, exposing even more insight: peak tank levels, energy approximations, contract risks, and more.

Behind the scenes, all of this was powered by a dynamic scoring engine that analyzed pressure, volume, cost, and thresholds to generate intelligent model actions—such as “increase,” “reduce,” or “maintain” injection for each site. These recommendations were clearly marked on screen, giving teams confidence and context without requiring additional interpretation.

RESULTS

The collaboration between the client and Azumo yielded immediate operational value. For the first time, teams had a unified dashboard that showed them exactly where to inject and why—based not on instinct or spreadsheets, but on real-time conditions and cost impact.

Simulations helped preempt bottlenecks, while the ranking table and score trends gave operators a shared language to guide daily standups and decision-making.

The ability to toggle custom weights gave stakeholders from finance, engineering, and operations tailored views into the same platform. And the visual alerts and action flags enabled fast response without drowning users in data.

By embedding business rules into a simple, operator-friendly platform, Azumo helped this midstream leader automate a core workflow that once relied on instinct, spreadsheets, and siloed communication. The Injection Prioritization Platform ensures fairness, accuracy, and operational discipline—reducing the risk of human error while preserving transparency and control.

This engagement highlights how thoughtful software design—when paired with deep process understanding—can turn complex operational challenges into manageable, scalable systems. As the client continues its digital transformation journey, this solution serves as a blueprint for applying intelligence to other high-impact workflows across the pipeline network.