

CASE STUDY

# Accelerating Power Delivery Through a Collaborative EPC Approach

Load growth projections drove a power cooperative to take a bold approach to add new simple-cycle and reciprocating engine generation capacity. Through a trust-based engineer-procure-construct (EPC) partnership and the overlapping of development, engineering and self-perform construction, the team advanced a complex brownfield expansion quickly while maintaining cost control and a strong safety culture, resulting in an approximately 560-megawatt addition to Pioneer Generation Station that was delivered on time and under budget.



## Challenge

In early 2022, Basin Electric Power Cooperative, a not-for-profit generation and transmission cooperative, faced a significant challenge. With near-term load growth in the Bakken region of northwest North Dakota projected to increase by over 300 megawatts (MW) compared to previous forecasts, it was determined that additional new generation was required by the summer of 2025.

The timeline compounded the challenge. A traditional, multiyear development cycle was not viable. Basin Electric needed a solution that could move from concept to execution at an accelerated pace without sacrificing cost control or reliability.

## Project Stats

### Client

Basin Electric Power Cooperative

### Location

Williston, North Dakota

**~560**

megawatts of generation capacity added

**3K+**

pipe spools fabricated off-site

**1M**

consecutive work hours without a recordable incident

Site conditions at Pioneer Generation Station Phase IV (PGSIV) added further complexity. The new facilities would be constructed within and around an operating plant, effectively creating a greenfield-scale expansion on a brownfield site. This would require careful coordination to maintain ongoing operations while advancing construction safely and efficiently. With an aggressive schedule and a complex jobsite, maintaining a strong safety culture across all teams and contractors would also be critical to project success.

## Solution

To meet these challenges, Basin Electric selected Burns & McDonnell through a streamlined, qualifications-based process designed to move at the pace the situation required. This approach called for a higher level of trust than a traditional procurement model, prioritizing alignment and shared goals. Together, we adopted an engineer-procure-construct (EPC) contract approach with an open to closed book model that emphasized transparency and collaboration. This decision enabled work to begin immediately, with engineering and procurement activities advancing in parallel. Basin Electric completed the land purchase adjacent to the existing facility early in the project, accelerating site readiness. Early efforts also included securing environmental and preconstruction permits to allow site development activities to progress alongside design and procurement.

The generation solution paired two Siemens F-class simple-cycle gas turbines with six 18-MW Wärtsilä reciprocating internal combustion engines in separate facilities, providing flexible, responsive power that could be deployed quickly. Early procurement decisions played a critical role in maintaining schedules. To avoid supply chain challenges that could delay equipment delivery by a year, the purchases of turbine and reciprocating engine equipment were made in September 2022 before final project costs were fully defined. This required exceptional trust between Basin Electric and the project team. It helped avoid significant schedule delays and secured access to constrained manufacturing capacity.



Execution relied heavily on self-perform construction and fabrication strategies, with self-perform work covering below-grade utilities, duct banks, piping systems, structural steel erection, and major mechanical and electrical equipment installation. Construction began in March 2023, with first steel set within five months, reflecting the accelerated pace enabled by early decisions. More than 3,000 pipe spools and 100 tons of structural steel were fabricated off-site, reducing congestion on the active plant site and accelerating installation once materials arrived. This approach also improved quality control and minimized rework.

Working within a brownfield environment required detailed planning and sequencing. New generation assets were installed in parallel, nearly half a mile apart at opposite ends of the existing facility, increasing logistical complexity. The team coordinated closely with plant personnel to maintain safe and continuous operations while integrating new systems. In addition, the project required integrating technologies from multiple original equipment manufacturers, necessitating a unified controls approach to connect new generation assets with existing infrastructure.

With a major piece of long-lead equipment set to arrive months later than planned due to supply chain disruptions, the collaborative EPC framework enabled the team to resequence work without affecting the overall completion date. This flexibility was a direct result of the open to closed book model and shared commitment to project outcomes.

The project's most profound success was its transformative safety culture. Project leadership implemented a sitewide cultural shift centered on strengthening a people-first safety philosophy. This approach emphasized individual accountability and empowered every worker to take ownership of jobsite safety. The team at PGSIV did not just build a power plant; it built a blueprint for a safer, more engaged workforce.

## Results

The Pioneer Generation Station Phase IV project was completed in October 2025, meeting its targeted in-service timeline despite schedule pressures. The facility added approximately 560 megawatts of natural gas-fired, responsive generation capacity, strengthening grid reliability across the region.

The complex project was completed within its compressed schedule and well under budget. The progressive EPC approach, combined with self-perform construction and early procurement, enabled the team to stay on schedule while maintaining cost discipline.

Safety outcomes reflected the effectiveness of the project's cultural transformation. The team achieved more than 1 million consecutive work hours without a recordable incident, and the project finished with a total recordable incident rate of 0.54. These results demonstrate how a focus on safety can significantly improve performance, even on fast-paced, high-complexity projects.

Beyond schedule, cost and safety metrics, the project established a model for delivering large-scale generation in a constrained time frame. By aligning all stakeholders around shared goals and leveraging a collaborative EPC structure, the team demonstrated that speed, flexibility and accountability can coexist on complex infrastructure projects.

The Pioneer Generation Station Phase IV project stands as a clear example of how an integrated, self-perform approach can help utilities respond to the urgent demands of today's power market while maintaining high standards for execution and safety.

## About Burns & McDonnell



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