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CASE STUDY / **TRANSMISSION SYSTEM REINFORCEMENT**

ADDRESSING ELECTRIC SUPPLY RELIABILITY WITH INTEGRATED PROJECT DELIVERY

A Canadian transmission utility undertook a major program to reinforce the transmission system for current residents and prepare for anticipated commercial and industrial expansion. An engineer-procure-construct (EPC) delivery method managed the complexities of these large-scale brownfield projects.

EARLY STAKEHOLDER ENGAGEMENT STREAMLINES CONSTRUCTION

Stakeholder involvement informed constructability solutions, minimizing the outage impact on local communities.

PROJECT STATS

CLIENT
AltaLink

LOCATION
Calgary, Alberta

COMPLETION DATE
December 2017

$110K
FIRST NATIONS CONTRACTS

25%
COST SAVINGS

CHALLENGE

Throughout the past two decades, Alberta, Canada, experienced significant growth in population. Oil sands and the associated job creation contributed to this population influx. This active growth drove the need for additional electrical power to the province's residential, commercial and industrial sectors.

An assessment by the Alberta Electric System Operator considered the short- and long-term growth projections and determined that the transmission system needed to be reinforced in Leduc, Parkland and Strathcona counties, as well as the Greater Edmonton area. These reinforcements needed to focus on improving the reliability of the electric supply and preparing for future expansion.

AltaLink Management Ltd., the incumbent transmission utility, took on this South and West of Edmonton Area Transmission Development Program. As AltaLink's longtime partner, our team supported this program execution through an EPC delivery method.

The transmission expansion included upgrading several brownfield projects, whether it was a substation or transmission line. This type of work often presents a higher level of complexity and taxes the safety and operations. AltaLink was also dedicated to executing the construction with minimal outages to the local communities.

SOLUTION

AltaLink identified the need for new facilities and upgrades at six sites. For a program of this scale, AltaLink chose EPC project delivery to minimize the associated risks and gain a single source of accountability for the program. Such large-scale programs often run over budget or experience significant schedule delays. With an EPC contract, AltaLink gained cost and schedule certainty. Our EPC approach also gave AltaLink direct access to our breadth of experience, which was critical to navigating the program complexities.

As the EPC contractor, we began to identify constructability challenges and engage with stakeholders from the moment we began the initial facility application. This early engagement established AltaLink's presence in

communities and began building relationships with key stakeholders that supported the four-year program. Establishing such relationships, especially with those on-site, helped plan for program construction and establish commitments to communities in terms of program schedule and scope.

When project opponents arose through the Alberta Utilities Commission (AUC) hearing committee, our team was there to defend engineering design, and when necessary, adjust design specifications to accommodate community requests and AUC decisions.

As part of the program's community involvement, our team sought to successfully qualify First Nations companies and awarded $110,000 worth of contracts to companies that delivered service ranging from security to catering. We also participated in the Enoch Cree Nation Job Fair and hired staff to support this part of the program.

As always, safety was a large component of this program. Our team identified safety hazards during structure replacement, relocation and foundation installations. A risk analysis informed design and construction decisions, mitigated risks and supported field personnel coordination.

RESULTS

Given the complexity and community impact of this program, our ability to execute efficiently, safely and on schedule was critical. Upon completion, the program installed over 40 kilometers of transmission lines, ranging between 138-kV and 240-kV, as well as two new 240-/138-kV substations with alterations at over 10 remote ends. These reinforcements improve the reliability and capacity of the area's electric supply and were delivered with minimal disruption to the communities they impacted.

Our early collaboration with AltaLink coupled with our ability to seamlessly integrate construction considerations into the design led to the completion of this work one month ahead of schedule at approximately 25% below the program's estimated costs.

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