

Case Study: Innovative Pipeline Strategies

Background or Context

In Alberta, the installation of pipelines is one of the largest industrial land disturbance activities in the oil and gas industry. Today, there are more than 400 000 kms of pipelines installed throughout Alberta and they continue to expand at a rate of approximately 12-16 000 kms per year.

At times, traditional pipeline construction methods have resulted in significant challenges; such as, soil degradation through erosion and salvage operations, incomplete ditch-line compaction, ditch-line settlement, severed fields, soil compaction and crop delays. All of these challenges contribute to increasing cumulative effects on the environment and lead to strained relationships between industry, government, and landowners. These concerns were typically addressed from an adversarial perspective; in fact it was the culture for stakeholders to *not* work in a partnership capacity. This adversarial relationship meant that landowners concerns were addressed after a complaint was made, even though many of the concerns raised were ongoing issues.

AENV would respond to the complaint by issuing Directions of an Inspector, which would describe remedial action the operator would be **required** to take to address the concerns. Thus, concerns were only addressed on a case by case basis after the damage was done, resulting in expensive restoration costs and increased liabilities. Because proactive solutions were yet to be developed, a sub industry formed to remedy the damages resulting from traditional pipelining practices, as these problems were very common.

The process to address landowner complaints further alienated stakeholders from each other, and the directions given by AENV did not result in pervasive changes to pipelining construction practices. AENV typically responded to these issues by implementing more rules and regulations, which did not address the root of the problem—lack of trust between stakeholders. Therefore, there was no incentive to work together to develop shared environmental outcomes, technology, and tools to address pipeline construction challenges. A shift in culture was imperative to address these complex issues and create solutions that address the root causes.

Communication Strategy

Partners in Resource Excellence (PRE) started on a grass roots level. Over the years, AENV compliance staff realized that in order to influence change beyond its organization, it would have to change its own thinking and move from a command and control approach to one that inspires and motivates operators toward economic and environmental excellence. Because of this shift in thinking, AENV compliance staff began developing cooperative relationships with industry and stakeholders. This created a climate whereby people were free to develop innovative resource solutions for the challenges the industry faced.

A series of board room and on site meetings were held, and key relationships were built which led to the development of innovative tools, technologies, and best practices. A demonstration video was produced and distributed across Alberta to promote Innovative Pipeline Strategies (IPS). In addition, a group consisting of a representative from AENV, Devon Canada, and Stratus Pipelines presented IPS to numerous stakeholders including: Alberta Sustainable Resource Development (ASRD), landowner groups, oil & gas companies, surface rights groups, land agents, consultants, land use planners, other government jurisdictions, and pipeline contractors. Attendance at numerous conferences and on site- demonstrations have been a very successful means of communication and this is on-going.

Major Issues Identified Jointly with Government and Industry

Through the PRE model, Alberta Environment and stakeholders recognized there were opportunities to reduce environmental liabilities and improve the economic return for all stakeholders.

The **major issues** identified were **lack of**:

- Communication and collaboration between all stakeholders.
- Clearly defined outcomes.
- New construction technology to reduce the environmental and cumulative impacts of pipeline construction.
- Pipeline construction education to understand how to address construction challenges.

The **specific issues** identified were:

- Planning with stakeholder participation.
- Excessive surface soil disturbance, which led to wider right of ways and increased land acquisition costs.
- Excessive ditch size in relation to pipeline diameter (e.g., 36 inch ditch for 3 inch pipeline).
- Incomplete replacement of spoil into the ditch, which led to ongoing trench line subsidence and expensive restoration costs.
- Weed issues.
- Slow return time to farmland.
- Excessive removal of trees.

The overall objective is to address these issues without imposing additional legislative requirements. Rather there is an incentive to strive for economic and environmental excellence through collaboration, education, and the development of new tools technologies and best practices.

Solutions Identified Jointly by Government and Industry

Through PRE, Alberta Environment and industry openly communicated about their challenges and solutions. This led to developing and prototyping numerous construction tools, technology, and best management practices.

Alberta Environment dedicated one full time equivalent position for an initial 2 year term with the objective of developing a new way forward that would enhance the industry's ability to address the issues identified above.

The other solution identified by all stakeholders was the need for **education**. In response to this need, PRE is partnering with Woodland Operations Learning Foundation to develop and deliver the Innovative Pipelining Strategies Education module for forested lands in Alberta. This program is still under development. In addition to this program, PRE developed an educational video and works with ARSD to train forest officers in the Reclamation Training Program (i.e., Reclamation 100 & 200).

Results

The effect of collaborating with stakeholders to identify environmental solutions without fear of reprisal and the building of trust between AENV and stakeholders was instrumental in achieving economic and environmental excellence. PRE has resulted in a cultural shift—from adversarial to collaborative—between government, industry and landowners. Stakeholders see themselves as equal partners in a process where continuous improvement is fostered and recognized. No longer does the government need to prescribe the rules; rather, stakeholders develop standards that far exceed minimum legislative requirements and are based on an excellence model.

New Tools, Techniques & Technology Developed

A product of PRE is the identification of solutions that are a win-win for all stakeholders. Thus, PRE led to numerous inventions of innovative excavation and specialized soil salvage buckets, compaction wheels, and finishing blades that addressed common pipeline construction challenges. These tools and finding new uses for existing technology led to the development of best management practices. The PRE process has inspired contractors and consultants to continuously improve these practices and technologies.

As a result of the PRE, Devon Canada is the first company to change their internal policies to reflect the objectives of Innovative Pipeline Strategies in Canada.

Environmental Results

- 3rd party assessment reported that the Devon Canada Jackfish II Interconnecting Pipeline was successful in **reducing the environmental footprint** compared to traditional pipelining construction.

- 5-30% reduction in right of way widths.
- 5-30% reduction of the forest removed.
- 80-90% reduction in soil disturbance.
- 100% spoil replaced to its original position.
- 100% natural recovery.
- 80-100% reduction of soil and water erosion.

Economic Results

Cost Savings of Innovative Pipelining Strategies:

- On average small inch diameter right of ways during winter construction the savings can result in as much **\$15-25/ meter** in final clean-up costs and an additional **\$10-40/meter** in the event of ditch-line subsidence on summer and winter constructed projects.
- Devon Canada's Jackfish project finished ahead of schedule and saved **\$1.4 million**.
- Forest removal, right of way preparation, ditch line excavation, final clean up and reclamation costs decrease.

Other Benefits:

- IPS is becoming the **competitive edge** in the pipelining industry.
- Potential to streamline approval requirements.
- Increased trust between oil and gas companies and stakeholders.
- Working towards building regional, provincial and global trust with environment and the oil and gas industry.
- Inspired contractors to become innovative and has resulted in many additional new tools and best practices.
- Collaboration with manufacturers and other industry partners within the community.
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Learning

The PRE approach shows AENV approval and regulatory staff the success that can be achieved by building partnerships, identifying shared outcomes, and developing innovative resource solutions to address industry challenges. PRE's working model can often replace the traditional compliance model of command and control with a framework that enables stakeholders to work collaboratively together.

Learning has not only occurred in AENV. Industry continues to actively share their successes and challenges with the entire industry.

As a result of the PRE program, the development and construction of the Evergreen Centre for Resource Excellence and Innovation was made possible. This centre is used to educate, demonstrate, and conduct research. It will continue to expand and provide a unique way to showcase and communicate innovative resource solutions with all levels of the industry and Albertans.

Comparing traditional and new communication methods

<p>CONVENTIONAL COMMUNICATION APPROACH USED</p>	<p>NEW COMMUNICATION APPROACH USED</p>
<p>1. Stakeholder approached government with application that is assessed on a case by case basis.</p>	<p>AENV has taken a proactive approach and engages the industry through the sharing of successful IPS projects. Each completed project provides additional learning that is used to continually improve subsequent projects and continues to inspire new innovative solutions.</p>
<p>2. Industry operating under the assumption that meeting minimum standards of approval is the measure of success.</p>	<p>AENV through dialogue and collaboration inspires industry toward mutually agreed upon outcomes of economic and environmental excellence.</p>
<p>3. Violation initiates reactive first contact.</p>	<p>Ongoing proactive communication between AENV and stakeholders is reflective of a partnership whereby these concerns are usually addressed proactively so violations do not occur in the first place and if there is an issue that comes up, there is positive way to address it.</p>
<p>4. AENV establishes their authority (i.e., using a command and control approach) and sets the context of the discussion based on prescriptive legislation.</p>	<p>AENV develops important relationships through dialogue and focus on identifying mutually agreed upon outcomes. AENV assists stakeholders to understand that striving for minimum standards will result in not meeting their intended economic outcomes.</p>
<p>5. Identify and investigate the violation and quotes minimum standards.</p>	<p>Through partnerships with AENV's stakeholders, outdated pipeline construction practices were identified and AENV worked collaboratively with stakeholders to invent new tools, technology and best practices.</p>
<p>6. Initiate an enforcement order or action to compel the minimum standard.</p>	<p>The stakeholders involved in the IPS process have succeeded because AENV has inspired and has focused stakeholders towards building partnerships and organizational learning that is leading to innovative resource solutions without the</p>

	fear of enforcement order or action.
7. AENV communication with industry is over.	<p>PRE's ongoing communication with industry is essential in identifying areas of improvement and success. Partners In Resource Excellence includes a recognition program that consistently recognizes and reinforces environmental excellence and inspires industry towards innovation and innovative resource solutions.</p> <p>AENV and Industry are regularly being invited to present the IPS approach all across Alberta and into British Columbia.</p>
8. Process repeats itself—link back to step two; no formal partnerships are made.	<p>Once understood and actively practiced PRE is self reinforcing as it inspires stakeholders towards learning, innovation and enhanced profitability.</p> <p>Partnerships become an essential element of success and continually expand as the success inspires others towards economic and environmental excellence.</p>