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**Understanding the Need and Dynamics of Social License
Development in the Pipeline Industry**

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Contents

Executive Summary 3

Industry Overview 4

The Need for Pipelines..... 4

The Approval Process 5

Understanding Social License Costs 8

 Smaller Lines 10

 Northern Gateway & Keystone XL..... 11

The Shifting of Values 13

 The Gulf Crisis 15

Risk Valuation and Social License 16

 A Social License Score 17

Acting on the Framework..... 20

Conclusion 22



Executive Summary

Pipeline networks are vital infrastructure needed for the success of the oil & gas industry in North America, a fact that is recognized by both industry and environmentalists. The universal recognition of this importance has resulted in pipeline companies getting caught in the middle of a fight between those who want to further develop resources, and those who wish to move North America towards a more sustainable energy future. As the amount of open opposition to carbon based energy intensifies, oil & gas based companies are finding it increasingly difficult to obtain a social license to operate.

A social license to operate can loosely be described as the unofficial granting of acceptance of a project by the local population and stakeholders.¹ Seeing as most aspects of a social license are intangible it is quite difficult to quantify, companies struggle to understand how to develop social license. Their failure to understand the underlying forces affecting their social license to operate, has resulted in many companies finding out only after the fact that they do not have one at all.

Historically, pipeline companies have used mainly economic and technical arguments when looking for approvals from everyone from regulators, politicians, landowners to the general public. As the presidential veto of Keystone XL showed, even in a very weak economy purely economic arguments are no longer good enough to carry the day. TransCanada had a social license problem and did not know it until their pipeline proposal was stopped in its tracks.

¹ Definition from: <http://sociallicense.com/>



When examining the dynamics of social licenses in relation to the regulatory approval process, there is a similarity to that of credit scores with lenders. Given this similarity, this paper will show how the traditional risk assessment mechanism of credit scores can be used as a framework for understanding the public perception of a firm's social license.

Given the adage of “you don't go to a bank to get credit, you either have it or don't when you walk through the door”, this paper then looks at some ways pipeline firms can go about developing the social score going forward.

Industry Overview

The Need for Pipelines

As the world energy demand continues to grow with increasing demand from industrializing countries, and with decreasing reserves of “easy” oil available, unconventional energy supplies are becoming increasingly important. Given that the province of Alberta is home to an estimated 170 billion barrels of oil reserves, representing about half of the privately available reserves in the entire world, it is not surprising that oil sands production is set to increase to over 3 million barrels a day by 2020.² With this planned increase in production, there will be a corresponding need to increase the transportation infrastructure required to deliver the oil from the remote northern Alberta oil sands deposits to markets all around the world.

Pipelines are the safest and most cost efficient way to carry crude oil or natural gas over land. If there were no pipelines available, to handle the delivery of 3 million barrels a day from

² Source: Alberta Energy, <http://www.energy.alberta.ca/oilsands/791.asp>



the oil sands would require over five thousand train cars or over fifteen thousand oil trucks.³ The logistics and carbon footprints of a scenario without pipelines would make further oil sands development uneconomical and unsustainable. While there is enough pipeline capacity to transport current levels of oil sands production, the expected production increases will soon overtake any spare capacity. Without more infrastructure, the Canadian Energy Research Institute (CERI) has predicted that the current pipeline infrastructure out of Western Canada will not be adequate to transport the forecasted oil sands volumes by as soon as 2015.⁴

The Approval Process

Historically, the approval process for pipelines in Canada, and North America has being straight forward; however, the drawn out process for the McKenzie valley pipeline, and now the intense political debate around TransCanada's proposed Keystone XL and Enbridge's Northern Gateway have highlighted the fact that this is no longer the case. The process of taking a pipeline from concept through construction is a very long and onerous process in Canada, and is showing signs of getting longer and tougher.

The crux of the problem is the fact that in Canada, neither the Federal or Provincial governments are given explicit jurisdiction over the environment. Instead, each is given some authority over environmental issues through sections 91 and 92 of the constitution.⁵ Given that

³ Source: Canadian Energy Pipeline Association (CEPA). Available online at <http://www.cepa.com/pipelines-101/pipelines-overview/why-pipelines>

⁴ Canadian Energy Research Institute, "Canadian Oil Sands Supply Costs and Development Projects (2011-2045)"

⁵ Section 91 gives, among other things, the Federal Government Jurisdiction over Navigation and Shipping, Seacoast and Inland Fisheries, and Indians and the Land Reserved for Indians. Section 92 gives, among other things, the Provincial Government Jurisdiction over Management and Sale of Public Lands, Local Works and Undertakings. Section 92(a) gives the Provincial Government Jurisdiction over the development of non-renewable resources, forestry resources and electrical energy.



the broad scope of the environment overlaps many of these granted exclusive jurisdictions, the development of Canadian environmental laws and approval regimens have been done on a largely uncoordinated and piecemeal basis.

In Alberta the approval processes are largely guided by the provincial Environmental Protection and Enhancement Act (EPEA) and the federal Canadian Environmental Assessment Act (CEAA). While there are differences between the two pieces of legislation, they both share a common theme of weighing of the economic, environmental and societal elements of a project and then making a determination if it is in the public interest. All of these different elements are very relevant and can be directly observed in the review of a project; however, regulators shy away from a perspective or a priori weighting of factors, and do not precisely define the public benefit or public good of a project, which has led to a scope creep in the regulatory process (Doucet, 2012).

This scope creep in regulatory approval can be observed through the number of departments and ministries that have a role in environmental approvals. The Government of Alberta admits in its own Regulatory Enhancement Project Technical Report (2010), that for its strategic natural resources policy there are in fact six departments, with nine policies, twenty eight outcomes and 191 sub-outcomes involved⁶. The federal government uses the National Energy Board (NEB) to oversee pipeline regulations but it is almost never the only agency involved in the process⁷ (Doucet, 2012). With the soft definition of national interest and the

6 The Government of Alberta's Energy Industry overview can be found at http://authorizationsguide.ercb.ca/intro_agencies.ht

7 Some of the involved Federal agencies are the Canadian Environmental Assessment Agency, Fisheries and Oceans Canada, Transport Canada, Environment Canada and the Canadian Transportation Agency



numerous agencies required in any approval, it is not surprising that there is increasing levels of frustration with the process.

The quagmire that is the Canadian regulatory system has created significant cost to companies who wish to build projects in Canada. The costs of attaining regulatory approval are proprietary and vary between companies, but the general rule of thumb is about three to five percent of capital costs.⁸ This range is being pushed higher as approval processes drag out and force companies to carry approval costs longer, and delay potential revenues for years. In fact, the current process in Canada can take over five years from the time a proponent starts work on an EIA before it has the necessary approvals to put shovels in the ground.⁹

With an increasingly environmentally conscious population, it can be expected that pipeline projects will continue to face lengthy approval processes as they will be held to increasingly higher environmental and social standards going forward. In fact, Gunningham, Kagan, and Thornton (2002) argue that the scope of the legal license can also be expanded as a result of its interaction with the social license, as the social pressures on legislators and regulators feed through in terms of enactment, monitoring and enforcement of regulation.

As the scope of regulators changes and expands with regard to the social issues surrounding pipeline development, the unofficial social license to operate will play a significant role in achieving acceptance from government, landowners and the public at large. Recognizing

⁸ Not meant to be an absolute range. The range estimate is from unofficial observations and through communications with the Canadian Energy Pipeline Association

⁹ The Canadian Association of Petroleum Producers (CAPP) has estimated that the detailed work required for fulfilling the terms of reference can take in a proponent over a year. If the project requires a joint panel review,



this challenge, for companies to reduce the burden of gaining approvals it will be important for them to look for ways in which they can improve their social standing with other stakeholders.

While most responsible companies can accept the fact that there are legitimate environmental concerns around the energy industry, they also desire a regulatory process that is more consistent and streamlined. Five years is a long time in an industry that is known for the high volatility. While many companies are able to hedge away some of their exposure to commodity prices, the boom and bust cycle of the oil patch is still a major factor in the timing of investment decisions. The length of time it takes for project assessment and approval reduces the window for many of these investments. This is a concern that should be, and is, a growing concern to government. Both the federal and provincial governments have openly expressed concerns over the current framework of the approval process. The Government of Alberta has undertaken a Regulatory Enhancement Review, which delivered several recommendations to help streamline the approval process and the Federal Government has created the Major Projects Management Office (MPMO) to help facilitate large, cross ministry projects. While these initiatives will help with approval process, the major issue facing pipeline companies, and the carbon based energy sector, is that of their social license.

Understanding Social License Costs

Most aspects of social license are intangible and are often quite difficult to quantify, and as a result many companies are struggling to understand the value of developing a social license.

which can add an additional 12 months, it can take up to 39 months for the review and approval stages. See online at <http://www.capp.ca/library/presentations/Pages/default.aspx>



The failure in recognizing the underlying forces that drive social license has led many companies to find out after the fact that they do not have one at all. However, this failure has presented some insights into social license development, as the costs associated with project delays and regulatory approvals are tangible and provide measurable data. The examinations of costs pipeline projects incur in an effort to gain regulatory approval show the importance of developing social credit.

Although the Keystone XL and Northern Gateway pipelines represent the largest projects in terms of size and scope, they are not the only pipelines that are facing increased scrutiny and could benefit from an investment into social license development. In fact, even pipelines that are not subject to regulatory review are encountering issues with their social license. In order to understand all the issues around pipeline development, it is important to understand the scale of Alberta's infrastructure.

Not including nationally regulated pipelines, there is still over 425,000 km of pipeline right of ways in Alberta, with new construction adding 10,000 to 15,000 km more a year.¹⁰ As a result of construction practices along with the length of the network, pipelines have a larger cumulative footprint than all of the wellsites, oil sands developments and coal mines in Alberta combined.¹¹

¹⁰ Source: Alberta Environment, "The Evolution of Conservation and Reclamation on Pipelines in Alberta"

¹¹ Source: Alberta Environment, "The Evolution of Conservation and Reclamation on Pipelines in Alberta"



Smaller Lines

Most of this footprint is made up of class II pipelines, (index value less than 2,690),¹² and are not subject to the onerous approval process of that bigger pipelines like Keystone and Northern Gateway. However, the absence of the formal regulatory approval process does not mean these pipelines are not experiencing their share of social license problems, most of which stem from direct interaction with landowners.

Given the nature of mineral ownership structure in Alberta, land owners and mineral rights holders are often different for the same land location. This conflict of interest creates is natural source of contention, but knowing that the Surface Rights Board has the authority to grant access, it has traditionally behooved parties to come to a mutual agreement first. However, as environmental and social concerns grow, negotiations become more difficult as land owners are concerned with more than just financial compensation. Although companies can use the Surface Rights Board and legally gain access, doing so without a social license is at the detriment to their reputation.

The value of reputational capital has been observed in studies of the Pulp and Paper mills where managers were motivated “less by avoiding regulatory violations per se than by avoiding anything that could give you a bad name. If you are going to run the mill in the community you have got to live with them.” (Gunningham, Kagan, & Thornton, 2002). Proponents of pipelines should heed the lessons learned from the pulp and paper industry, as the reputational capital of a

¹² Index value is determined by project length (in km) multiplied by the outside pipe diameter (in mm)



company can strongly influence the financial costs associated with landowner relations. A poor reputation or relationship with local landowners will eventually manifest itself into higher transactional costs.

If a company has to go to a surface rights board it is almost guaranteed that they will pay high land rents in compensation for access. Secondly, going to the Surface Rights Board takes time, usually about 12 to 18 months. The delays not only add costs to the project, but they also limit the productivity of the company. If a company has to fight with land owners every time it needs to tie in wells, the delays could eventually lead to missing production targets, which could potentially negatively affect share prices. While this should be a concern to pipeline proponents to focus closer on developing social license, the business need to develop social license is even greater when examining the larger projects.

Northern Gateway & Keystone XL

The original cost estimates of Enbridge's Gateway pipeline was \$4 billion in 2005, with a projected completion date of 2010. At present, the projected completion date has slipped back until 2017, and assuming approval from the review panel, will cost \$6.6 billion.¹³ Michal Moore, a senior fellow at the University of Calgary's Institute for Sustainable Energy, Environment and Economy estimates that delays caused by court challenges, tougher environmental safeguards for the federal review may add as much as 30% to Enbridge's \$6.6-billion price tag.¹⁴ The \$1.98 billion of additional costs is much higher than the estimated 3-5%

¹³ Source: Legal Post, (Jan 9, 2012) "Enbridge faces rising costs as Northern Gateway hearings start" Bloomberg News

¹⁴ Source: Legal Post, (Jan 9, 2012) "Enbridge faces rising costs as Northern Gateway hearings start" Bloomberg News



of capital costs required for environmental assessment and approvals, and probably cannot be completely attributed to lacking social support. To get a baseline minimum of costs associated with social license it is perhaps better to focus directly on cost of delays.

Using the seven years of delays from the original estimated completion date, (2017 from 2010), we can calculate the cost of delayed revenues. With an expected capacity of 525,000 barrels per day and toll rate of \$3.21 per barrel, revenues from Northern Gateway could be over \$585 million per year.¹⁵ Knowing that Enbridge has operated their liquids pipelines at an approximate 30% margin,¹⁶ and if we adjust for spare capacity and factor in a few weeks of maintenance, Gateway represents a yearly after tax income of about \$170 million to Enbridge. With a weighted average cost of capital of 4.00% the seven year delay in revenue represents a loss of \$40 million.¹⁷ For every additional year of delay, Enbridge effectively loses \$6.5 million just in delayed revenues. While these costs are not insignificant, they are just the tip of the iceberg of problems stemming from social license.

Using the estimate of 3-5% of capital required in the approval process, firms are having to invest large sums of money up front. Five percent of Northern Gateway's six billion dollar capital construction costs translate to an investment of \$300 million. Seeing as this investment is sunk into operations and has no tangible asset attached to it, it is effectively a \$300 million bet that their project will get approved. As the size of these gambles grow, it is easy to see why it is becoming increasingly important that companies understand the nature of all the determining

¹⁵ Data from Enbridge's Northern Gateway website, <http://www.northerngateway.ca/>

¹⁶ Calculated from the 2011 Enbridge Annual Report. Enbridge's mainline earned \$178 million from \$618 million in revenue in the 6 months prior to Dec 31, 2011, representing a 28.8% margin

¹⁷ WACC is an effective 5 year rate calculated using book values from the 2011 annual statement



factors behind their approvals. A better understanding of these factors would not only benefit the operations in Canada, but also proposals in the United States; which TransCanada, in their quest to build the Keystone XL pipeline, is finding out the hard way.

While the process of regulatory review is somewhat different in the USA, it is similar in the fact that there remains a need to determine if a project is in the “national interest”. Like the weighting of factors in a Canadian review, the dynamics of what is in the national interest are open to interpretation. Not recognizing the politics behind the final issuance of the required presidential permit, TransCanada is now paying for their ignorance of social license, and in a big way.

TransCanada’s confidence in the eventual approval of the Keystone pipeline led them to start investing in the required construction materials on top of their sunk regulatory costs. At the time of Obama’s presidential veto, TransCanada had \$1.9 billion dollars invested into Keystone XL. An amount which First Energy Capital’s Steve Paget estimates costs them \$29 million per every quarter of delay, and that an eighteen month delay could cost TransCanada \$1 billion in capital costs.¹⁸ With the sheer magnitude of these costs, it begs the question of why they were not able to see these potential pitfalls.

The Shifting of Values

While it is easy to see the costs of not having social license in hindsight, what is driving the increasing need to develop it? Not even three years ago, the need for social license for a

¹⁸ Source: Canada Stockwatch (Nov. 14, 2011), “TRP FP says TransCanada may face \$1-billion in added costs”



pipeline project was nowhere near the level it is at now. To illustrate this, in August, 2009, the United States approved and issued a presidential permit to Enbridge for their Alberta Clipper pipeline project to carry Canadian crude to refineries in the Chicago area. In their approval the U.S. State Department stated:

“Allowing construction of the 450,000 barrel per day line serves U.S. interests by adding secure oil supplies from outside the OPEC nations at a time when political tensions in some producing regions threaten to interfere with oil shipments. The department found that the addition of crude oil pipeline capacity between Canada and the United States will advance a number of strategic interests of the United States.”¹⁹

If we examine this statement, it is easy to understand why TransCanada may have thought they would be able to get approval. First of all, it was made by the same administration that was to review TransCanada’s application for Keystone; thus, it seems logical that their pipeline proposal would be viewed in the same light. Especially given that the “political tensions in some producing regions” have degraded farther from where they were in 2009. With the conflicts surrounding the Arab spring and tensions with Iran and the Strait of Hormuz, Canadian supply seems to make even more strategic sense now. So what is the driving force behind America’s reluctance to approve a new pipeline? For that answer, one can look to how the events of the spring/summer of 2010 changed the relative weighting balance of the economic, social and environmental factors in approvals.

¹⁹ Source: Reuters Canada (Aug 20, 2009), “US Approves Alberta Clipper Pipeline Project”



The Gulf Crisis

On the morning of April 20, 2010 there was an explosion on the Deepwater Horizon offshore oil rig in the Gulf of Mexico, and what followed was one of the worst environmental disasters in history. The terrible situation was made even worse for the resource industry because the blowout was broadcast live on CNN. Every day for three months, people watched an estimated fifty thousand barrels a day of crude oil gush into the Gulf of Mexico.²⁰ As efforts to cap and contain the blowout failed, belief in the “invincibility of technology” was decimated, and the energy industry’s social license to operate effectively revoked.²¹ The consequences of this crisis on the energy sector are strikingly similar to that of the effect the subprime mortgage crisis had on credit markets.

The subprime crisis tore a gaping hole in bank business models, eliminated volume and income while limiting asset liability management options and largely reducing available credit (Whalen, 2008). The reduced liquidity in the credit markets made it difficult for even those who were financially solid and had good credit histories. Through no fault of their own, many responsible investors were forced to deal with the negative fallout from the financial crisis.

This is the situation pipeline proponents are finding themselves in now. Although they had no part in the BP Gulf Disaster, they are caught in an industry that has very little “social credit” available. The increased regulatory costs facing pipeline projects are a function of the reduced appetite for environmental risk, which is attributable to the destroyed social credit of the entire energy industry.

²⁰ Data from Wikipedia, http://en.wikipedia.org/wiki/Deepwater_Horizon_oil_spill



The problems arising in this scenario are that the risks are seen as high when, in fact, the risks are relatively low. In the case of a proposed pipeline, where the risks are well known and easily testable, emotionally based arguments lead them to be over emphasized. This error is a type of discriminatory error in credit scoring models, referred to as β -error, which relates to when low-rated firms should be rated higher. (Blochlinger & Leippold, 2006) Potential losses resulting from this type of error include the loss or rejection of projects that are “in the national interest” through overly burdensome approval requirements.

It is important to realize that no energy project comes without risks, environmental impacts, and trade-offs. Society needs to have a conversation about whether or not some risks are too high, how best to mitigate those risks, and what to do if and when an accident occurs; but the conversation must also yield a result that is in the best interest of society and provide a plausible path forward (Ladislaw & Pumphrey, 2011). As the political debate rages over the risks and benefits of pipelines, there is no way to estimate how long, if ever, this discriminatory error may resolve itself. Therefore, if pipeline proponents wish to find the path forward, they can they need to start by taking actions that reduce their firm specific risk.

Risk Valuation and Social License

As stated earlier, the cost of gaining approvals for the pipeline industry are about 3-5% of capital costs, and are the costs of the ‘due diligence’ required before a project can commence. As the costs of approval rise with the increased public concern over energy projects, they are effectively acting as a discount rate for the project. The higher the level of opposition the public

²¹ “Invincibility in Technology” is a term from Bob Page in his description of the Macondo Blowout



has towards a project, the higher the pre-approval costs are becoming. By viewing the approval costs as a sort of discount rate, the CAPM model then offers some explanation on how to firms can control their costs.

CAPM tells us that project risk is a result of a risk free rate plus their firm specific risk multiplied by the market risk premium.²² Of the variables in the CAPM model, an individual firm only has direct influence over its beta (β), and if they can lower this multiplier they can potentially achieve some cost savings. The question then becomes: what actions can a firm take to lower its risk in comparison to its competitors? The answer this paper offers is to increase its “credit rating”.

The focus is not to improve its standing with Standard & Poor’s, though that would also help, but instead the focus needs to be on restoring their social credit that was so damaged by the fallout of the BP spill.

A Social License Score

If we accept the fact that a social license shares some characteristics with a credit score, it will help if to first understand what goes into forming a credit score. While there are several different agencies that preform credit rating services, the main components in determining a credit score are: payment history (35%); length of credit history (15%); new credit (10%); types

²² The CAPM formula is $R_i = R_f + \beta \times \text{MRP}$ where R_i is the discount rate, R_f if the risk free rate, β is the firms risk compared to the market and MRP is the market risk premium



of credit used (10%); and debt (30%).²³ Using this framework, we can take these components of a credit score and compare them to the equivalent measures of a pipeline company.

In the traditional credit formula, types of credit used describes the different forms of loans one has, such as credit card debt, lines of credit and mortgages. In the terms of a social license score, this would be akin to a pipeline company's range of business. Their score would be higher if their operations are focused on pipelines, as compared to being a diversified energy company with a wide range of operations. The assumption in this would be that the narrower the focus of the company is, the more likely it would be to achieve high performance measures.

New credit describes any issuances of new credit, and in a social license context would describe the number of new proposals or acquisitions the company has made. If the energy company had recently applied for and received approvals for new projects, or acquired existing pipelines, its score would be affected.

In both the traditional credit score and the social score, the length of credit history is merely the length of time you have had some credit. For a pipeline company this would be from the date of their first approval to the present. The greater the history, the stronger the credit score will be.

The second most important factor in determining a credit score is the amount of outstanding debt. As a debt to equity ratio increases it will correspondingly reduce a credit rating. Because of this the capital structure of a company will directly affect both its credit rating

²³ Components and ratios are based on Fair Isaac Corporation's FICO credit score formula. Available online at http://www.businessweek.com/magazine/content/05_48/b3961124.htm



and its social rating, but its social rating must also include the size of its environmental footprint. In the case of pipeline companies, their total footprint can be simply calculated by using the length of the line and the width of the right of way. The larger the pipes and the more extensive the network, the larger the effective burden the pipeline company would be carrying, and thus increase liabilities. Currently in Alberta, the total footprint of pipelines is larger than all of the wellsites, oil sands developments and coal mines combined.²⁴

The final and most important part of a credit score is payment history. Anyone who consistently pays all of their bills on time will undoubtedly have a good credit rating. The effective payments that a pipeline company has in developing a social license that of compensation for right of ways, the costs of the repair and restoration of disturbed land, and compensation for damages resulting from construction or spills. Like having minimum payments on an outstanding loan or credit card, a pipeline company has to abide by the minimum standards set out in legislation and regulations. Failure to live up to regulations will result in fines, sanctions and thus reduce social license; akin to somebody losing credit due to having perpetually late and/or missing payments. If a company voluntarily chooses to go beyond legislative requirements in their dealings with other stakeholders, they should start to develop a stronger social license.

The combination and summing of all these factors would go into the so called social credit score of a company. While calculating an actual number for the social scores would make for an interesting research project, that is not the intent this paper. Instead, the idea of a social

²⁴ According to Don McCabe at Alberta Environment, there is 425,000 km of pipeline in Alberta, not including



license score is to create a framework that offers insights into how a pipeline proponent best go about developing its social license.

Acting on the Framework

Using the above components as the determining factors of a social license rating, it is clear that the debt burden and payment history are the most important factors in determining ratings, and thus should be the focus of pipeline proponent's improvement efforts.

Looking at the payment history section of credit ratings, it seems logical to look for ways to increase compensation to stakeholders. Some companies are already doing this and Enbridge has even gone as far as offering a 10% equity stake in the Northern Gateway pipeline, which represents \$280 million in net income over the next 30 years, to First Nation and Aboriginal communities that the line effects.²⁵ Yet despite the large investments, Enbridge is still facing thousands of interveners for the approval process. Similarly, Keystone XL did not get delayed because its compensation to land owners was inadequate. These situations illustrate that while proper financial compensation is important to maintaining a firm's social approvals, the issue around social license will not simply be solved through increasing compensation to land owners. This makes sense when you remember that the energy industry's social license collapsed due to an environmental disaster, not because they did not pay their bills.

water and waste water, rural gas or NEB pipelines, with an average right of way of 12 meters, which represents approximately 1,250,000 acres of disturbed land by pipelines.

²⁵ Source: Enbridge's Northern Gateway website, <http://www.northerngateway.ca/aboriginal-engagement/benefits-for-aboriginals/>



Given that pipeline proponents are suffering increased burdens largely due to the reduced appetite for environmental risk, to re-establish and develop their social credit, the pipeline industry needs to reduce its environmental footprint. Of the two major factors that determine the footprint of a pipeline, length and the width of the right of way, only width is truly variable. If pipeline companies can reduce the average width of right of ways, they would correspondingly reduce their overall impact on the environment and the amount of environmental debt they carry towards their score.

Typical pipeline right of way widths in Alberta are 15 to 18 meters, and larger right of ways can be up to 45 meters wide.²⁶ The required width of the right of way is directly correlated with size of the proposed line and the terrain on which it is crossing.²⁷ The amount of space required is largely dependent on the room required for the storage and piling of removed dirt from the ditching process, and as size of the line increases there is usually a corresponding increase in the amount of spill material created. Simply put, the more dirt that is displaced in construction, the more room that is needed and the harder it is to fit everything back into the ditch original ditch.²⁸ As it turns out, there are several Innovative Pipeline Strategies (IPS) that can substantially reduce the impact of pipelines.

Especially for the smaller class II pipelines, better construction practices can substantially reduce the size of right-of-way required for pipeline installation. Techniques as simple as using a narrower bucket to minimize dirt displacement, and packing any displaced dirt back into the

²⁶ Source: Alberta Environment, <http://environment.alberta.ca/02260.html>

²⁷ Different soil types have different bulking factors (bulking factor = volume after excavation/volume before excavation). For example, clay has a bulking factor of about 1.4 which means it swells after excavation by about 40%. Sand has a bulking factor of about 1.05.



ditch to avoid feathering across the right of way, have reduced right of way requirements from fifteen to fewer than three meters.²⁹ If that 80% reduction in land disturbance is applied to the 15,000 km of new pipeline construction, it would reduce the footprint of pipelines by 45,000 acres in one year alone.

While there are some increased extra costs of associated with innovative pipeline practices, mostly with the packing of the ditch, they are offset by the efficiency gains in reduced material handling.³⁰ In fact, companies that have implemented IPS strategies have noted that the difference in pipeline tenders has been almost negligible.³¹ Given the similar construction costs, the value in implementing IPS is in the avoiding of negative externalities associated with the land disturbance, such as reduced crop yields, increased remediation costs, and of course the reduction of the environmental burden pipelines are carrying.

Conclusion

The economic benefits accruing from voluntary over-compliance is not a new theory, and there have been studies that indicate that in the presence of publicly available information, minimum environmental standards will be over-met (Arora & Gangopadyay, 1995). Their model, which studied the pulp and paper industry, argues that the over meeting of minimum standards are natural outcomes where consumers have developed an awareness, strong enough to

²⁸ This is a result of the soil swell factor and displacement because of the buried pipe.

²⁹ Source: Alberta Environment, <http://environment.alberta.ca/03624.html>

³⁰ Costs of packing ditch line are about \$2 per m³, but can vary depending on dirt composition

³¹ This statement is a result of several conversations with pipeline companies about their unofficial construction costs



affect their buying habits.³² Using this study as a framework, if we assume that approval decisions are correlated with normal buying habits, it offers a theoretical explanation for why it may be beneficial for pipeline companies to over-meet the requirements of their stakeholders.

It is important to note that there is not one single remedy that will solve the problems pipelines are having with social license development. Some solutions like IPS, which have shown promise with smaller projects, may not produce the same benefits when they are scaled up to larger pipelines. And even if the benefits did transfer, the reduction of the environmental footprint of pipelines will not instantly end all the opposition to their development. The important take away from the social license score framework is that there are many things that pipeline companies can, and should, do better. For the industry to move forward, the status-quo is no longer good enough. In that sense, hopefully some of the ideas and frameworks around developing social license discussed in this paper that can help in the effort to find the path forward.

³² Arora and Gangopadhyay also argue that this effect is higher in developed countries where higher income levels lead to increased demands for environmental quality



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