WORKSHOP SUMMARY REPORT

GETTING TO 'GO'

Removing regulatory barriers to energy innovation

CANADAWEST FOUNDATION
NATURAL RESOURCES CENTRE

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1. Introduction

Innovation and technological development are racing ahead in Canada's energy sector. But despite the potential benefits to business and society, innovative technology is often not adopted. Why not? The simple answer is that innovation often carries too much risk – financial, technical, market, and – not least of all – regulatory. This can result in "a race to be second," where companies jockey to be second in line to adopt an innovation, reaping the benefits relatively early while devolving the costs, risks and timeline onto the first adopter.

The Canada West Foundation is undertaking a series of research and convening activities, *Getting to 'Go': Removing regulatory barriers to energy innovation*, to address key questions in the context of energy innovation:

- What are the basic goals of regulation? Going back to first principles, we need to revamp our understanding of our regulations and their purpose. We regulate products and services in the public interest, but to what end? Health? Safety? Security? The efficient functioning of markets?
- How do we ensure responsible outcomes without stifling the adoption of innovations necessary to achieve our environmental, economic and social goals? What are the barriers and opportunities in our regulatory process and culture for the adoption of innovations? Can we square both a prevention and promotion mindset?
- Who does it best elsewhere, and how? What is being done in other jurisdictions and even other sectors that can be applied to reduce the regulatory barriers to energy innovation adoption?

The goal of this series is to make recommendations for a regulatory environment that:

- accomplishes its key public interest goals;
- does so cost effectively and in a timely fashion;
- is nimble, adaptable, technology agnostic; and
- has the culture and resources to support ongoing adoption of innovations.

On January 30, 2019, approximately 30 people gathered in Calgary to participate in a one-day "Hon. James A. Richardson Discovery Roundtable" workshop[1] on the regulatory environment for innovation in the energy sector. The workshop, hosted jointly by the Canada West Foundation and the Energy Futures Lab, brought together participants from provincial regulators in Saskatchewan, Alberta and British Columbia, small innovative companies, large energy incumbents, business accelerators and others. The purpose was to enable participants to engage in frank and solution-focused discussions on the ways in which the regulatory environment can inhibit or incentivize technological innovation in the energy sector.

This report presents a summary of the thoughts and ideas brought forward by the participants to address this problem. This report comprises preliminary information that will be used to inform the Canada West Foundation's forthcoming work on this topic. Our full report will be forthcoming later in 2019.

[1] We would like to thank the Richardson Foundation for their support.

The Canada West Foundation is an independent, non-partisan public policy think tank that focuses on the policies that shape the West, and by extension, Canada. Through our evidence-based research and commentary, we provide practical solutions to tough public policy challenges facing the West, and Canada as a whole, at home and on the global stage.

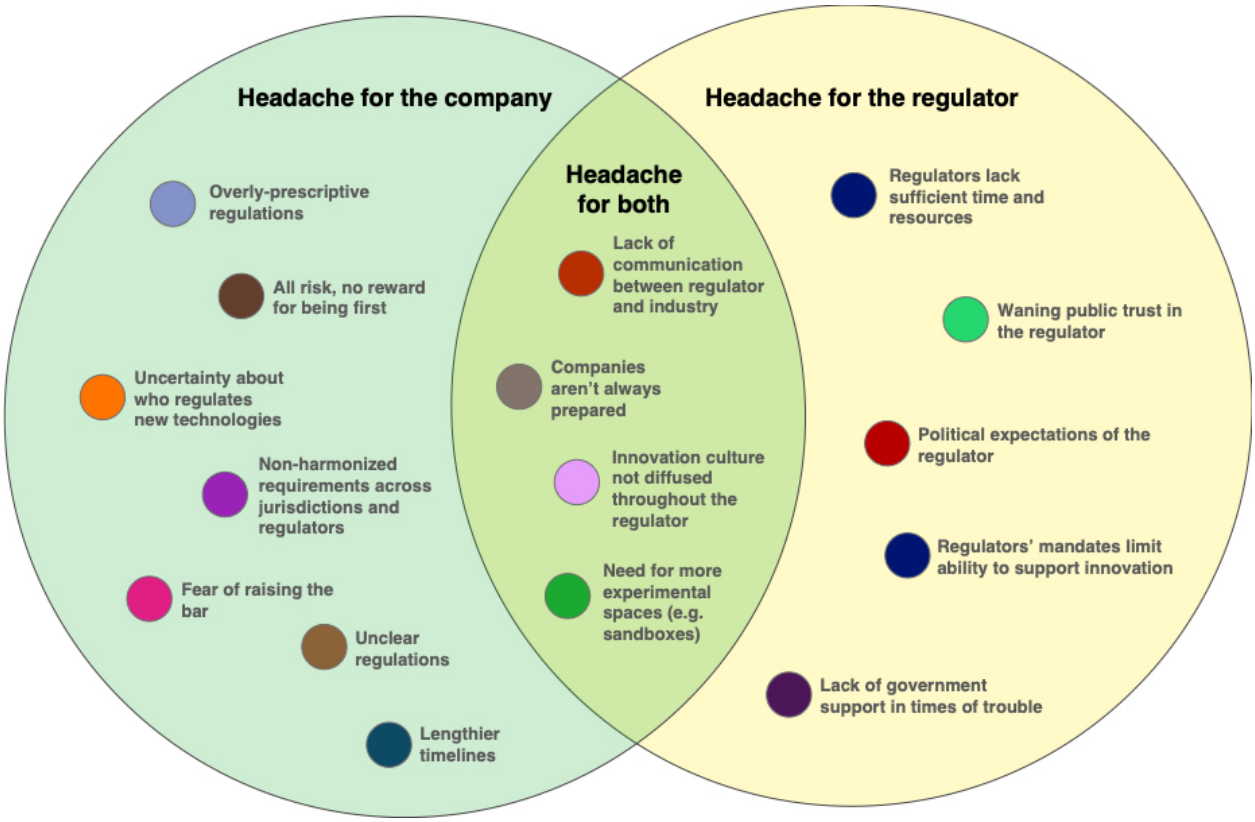
The Energy Futures Lab (EFL) is an Alberta-based, multi-interest collaboration designed to accelerate the development of a “fit for the future” energy system. The EFL brings together a cohort of influential leaders to address current and emerging energy challenges, and generate opportunities to identify, test and scale new initiatives and collaborations.

2. Hurdles faced by energy innovators and energy regulators

There are number of key hurdles that energy innovators and energy regulators may face when attempting to introduce innovation. These hurdles—which workshop participants helped identify and define—are described in this section. Not all innovators or adopters of innovation will face the same hurdles. This is due at least in part to the fact that complexity of innovation can vary enormously. Some innovations are like a better mousetrap – a specialized and discrete improvement that can be slotted into existing ways of operating. In other cases, innovation can consist of an entire new system that requires complex coordination of interdependent parts to function, and that must be adopted in its entirety, or not at all.

Figure 1 summarizes all the hurdles identified, along with an indication of who primarily experiences each challenge. Some represent headaches that primarily are experienced by the companies introducing innovation; others represent pressures that energy regulators themselves face. The three hurdles that workshop participants identified as the most important were: a) overly prescriptive regulations; b) the need for more experimental spaces such as sandboxes; and c) the need for the regulator to have sufficient time and resources to develop expertise on new technologies. Interestingly, these three hurdles were also ranked by participants as among the most solvable among the issues identified. In future reports, we will explore potential solutions that could help address these challenges.

Figure 1: Overview of hurdles faced by companies introducing innovation, and by energy regulators



1. **Overly prescriptive regulations**

   Overly prescriptive regulations are focused on rules and standards rather than performance and outcomes. This lack of flexibility comprises one of the most important barriers to introducing innovation. In a prescriptive environment, companies fear introducing technology that has not been previously tested and approved – or may be outright barred from doing so.

2. **All risk, no reward for being first**

   There is substantial risk for attempting to be first in innovation – it costs more, takes longer, and the outcome is unknown. When a regulator has to approve the innovation, this adds an extra layer of uncertainty. For some innovations, there is a market reward. But for many innovations that are intended to solve environmental problems, there is no clear market reward, and there is also no regulatory reward – just additional time and cost. If the market won't reward the innovation, and the regulator won't reward the innovation, why would a company bother?

3. **Uncertainty about who regulates new technologies**

   When a new technology is developed, there may be uncertainty around how it should be classified, and thus which regulator has authority. Even within a regulator, there can be artificial divisions that divide workload into different streams (e.g., energy, forestry, parks). Technology and innovation often don't fit neatly into these arbitrary boxes. Often this means the innovator will not be able to receive a binary yes/no response from the regulator, and instead will wander into a "grey area" where nobody can provide an answer. Examples of new technologies that face this issue in Western Canada include energy storage, tidal energy, biogas and some forms of geothermal energy.

4. **Conflicting and /or duplicative requirements across jurisdictions and regulators**

   Many regulatory requirements are not harmonized across agencies or jurisdictions, which can lead to confusion and duplication of effort. In some cases, the multiple regulators involved in permitting different aspects of an energy project in a single jurisdiction don't even speak to one another.

5. **Fear of raising the bar**

   Introducing a new and better technology may result in the requirement for it to be used uniformly, even when it is not cost-effective or suitable to do so.

6. **Unclear regulations**

   In an attempt to be flexible and accommodating to innovation, the language of regulations can sometimes be confusing or unclear.

7. **Lengthier timelines**

   Because something that is new doesn't have a proven track record, there may be lengthy delays while the regulator grapples with assessing its suitability.

8. **Lack of communication between regulator and industry**

   Two-way communication between the regulator and industry is critical. The regulator needs to help industry understand what is required. At the same time, industry needs to keep the regulator in the

loop on what is coming up, so it can prepare. Both need to have conversations about their respective roles in promoting innovative technologies.

9. Companies aren't always prepared

Some companies – especially those that are smaller and/or new – may not have sufficient knowledge or resources to prepare the type of information and evidence that the regulator requires in order to be assured that the innovation will not harm the environment or public health.

10. Innovation culture not diffused throughout the regulator

Supporting innovation requires an intentional, committed cultural shift within the regulator. This requires diffusing throughout the regulator, and not just within certain departments or at the executive level. Without full diffusion of an innovation-focused or outcomes-based culture, the success of any particular application depends on whose desk it lands on.

11. Need for more experimental spaces

Experimental spaces – or "sandboxes" – allow regulators to work closely with a project proponent on an unproven innovative technology to test its effectiveness and impacts. Right now, the use of sandboxes appears to be the exception rather than the norm.

12. Regulators lack sufficient time and resources

The regulator needs to develop sufficient technical expertise to be able to properly understand and assess the innovation. This takes time and also requires sufficient resource in terms of money and people. This poses a particular challenge at this time, as pay cuts and/or tight budgets make it difficult to attract or keep key staff with technical knowledge.

13. Waning public trust in the regulator

There appears an increasing lack of public trust in regulators. A variety of "facts" are available, and most people don't have deep technical knowledge. This has led to a loss of "true and factual information" that is widely accepted by the public, and has contributed to people losing trust in regulators as authorities.

A regulator can also feel pressured by public expectation of what a regulatory experience should look like; and anything that appears too "easy" or too "cozy" may undermine the legitimacy of the regulator.

14. Political expectations of the regulator

Innovation should be a non-partisan issue – but it isn't always. Different governments have different expectations for regulators, as well as different political preferences. When a new government is voted in, there may be a period of uncertainty for a regulator – or its mandate may change. In addition, a regulator is sometimes used by political leaders for political ends – this undermines the independence of the regulator and makes it hard to maintain credibility.

15. Regulators' mandates limit ability to support innovation

Regulators' mandates are set out in legislation, and unless innovation (or any desirable outcome, such as reducing GHG emissions) is specifically supported, the way in which a regulator is required

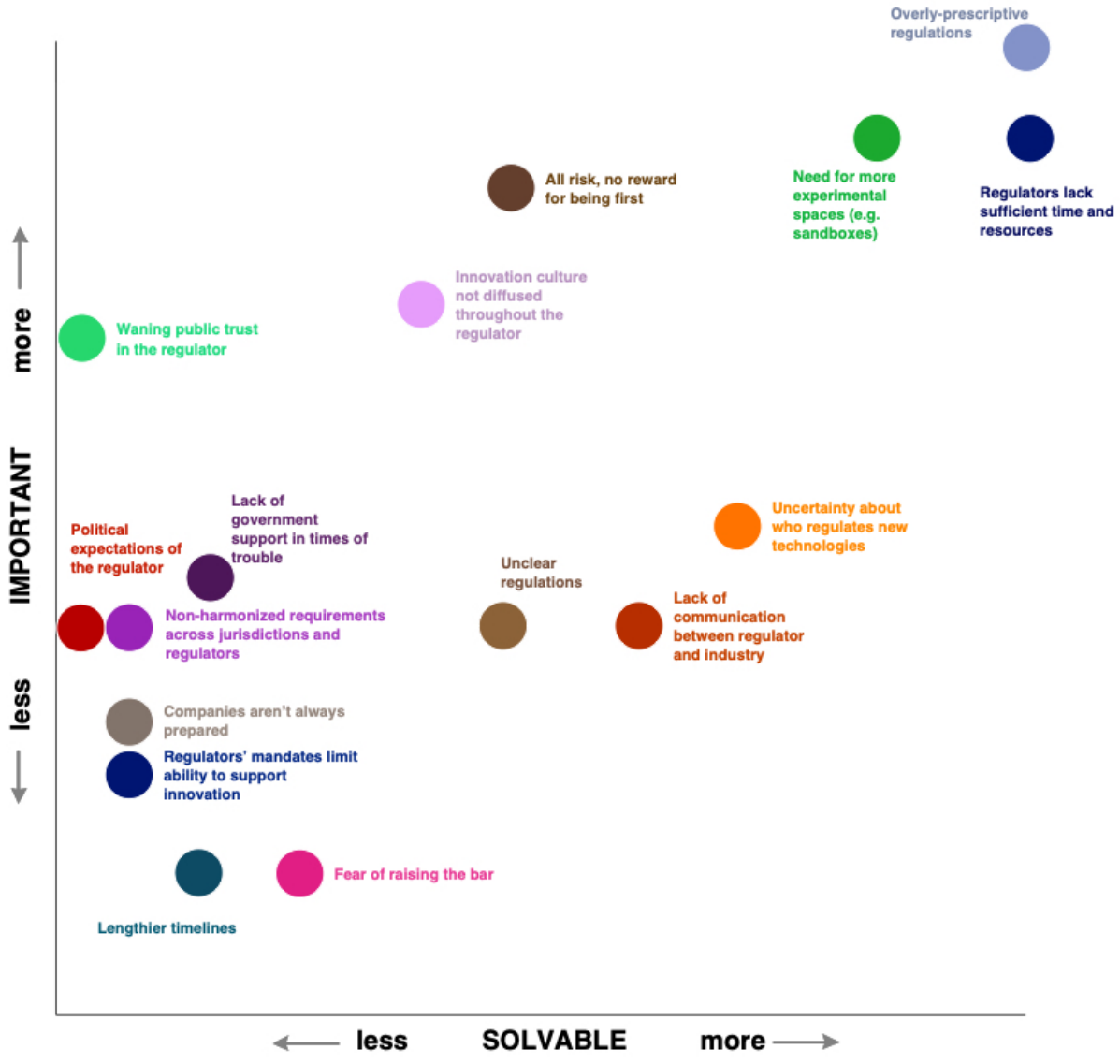
to operate may undercut its ability to positively promote innovative approaches. Given resource constraints, it can be difficult for regulators to justify the deployment of resources to innovation efforts that are outside of the defined regulatory jurisdiction or legislative scheme.

16. **Lack of government support in times of trouble**

    Finally, regulators need political leadership to "watch their backs" if problems arise. Knowing that government will back them up when there are problems can help regulators get over the fear of being first.

Not all the hurdles identified above are equally important – nor are they all equally solvable. Through an interactive exercise, the workshop participants ranked each of the identified problems in terms of their importance and solvability. The results are shown in Figure 2.

Figure 2: Ranking of "hurdles" by importance and solvability



3. A deeper dive into three key challenges

Several key topics were selected for participants to examine in more depth. Specifically, participants were asked to consider what the nature and component parts of the problem are; what the main obstacles / challenges are; and what are some ideas that could lead towards a solution. The results of each group's deliberations are shown below. The statements below have not been verified or validated; they represent the perceptions of the people who contributed to each group's discussion.

A. How to enhance cross-jurisdictional acceptance / harmonization

There are cases when a project faces conflicting and irreconcilable rules across different jurisdictions – or challenges and conflicts with different regulators, agencies or ministries in the same jurisdiction. This group looked at how regulations can be harmonized across agencies or jurisdictions to better enable the uptake of new technologies.

- Non-harmonization can manifest in the form of a lack of common standards, different frameworks, different development times, or different communication strategies.
- From the perspective of the regulator / government, other jurisdictions (within Canada as well as outside) may be seen as competitors – using timelines and low barriers as economic drivers to attract business.
- Some issues are inherently cross-jurisdictional, such as methane or pipelines.
- Awareness and communication are the keys to harmonization. There needs to be a regular communication mechanism – this could be built from the Western Regulatory Forum with a subgroup of innovation. Relationships will also have to be renewed as changes in personnel and policy occur over time.
- Provinces benefit by reducing duplication of effort. Rather than each province writing their own standards, jurisdictions should instead refer to what has been developed by other sections/jurisdictions. This creates flexibility; forces jurisdictions to talk to each other, work together, and harmonize; and provides clarity on current regulations.
- Canada could take a completely different approach to risk and innovation – "embracing its place in the innovation space" could take the form of encouraging people to test risky innovations in other countries with lower regulatory barriers, and then bring the technology back to Canada to take it to scale. This is a different approach to innovation / regulation – with our regulators jockeying to be the "first to be second."

B. How to eliminate the first-mover disadvantage

As described earlier in this report, the first mover in an innovation space usually takes on the bulk of the risk, whereas second movers benefit from previous success/credibility. This can disincentivize innovation.

- There are incentives that could help encourage first movers. These include financial incentives in the form of deferred or lessened taxes, financial rewards or flow-through shares. Alternatively, it could take the form of intellectual property rights, which can be added to the book as an asset. IP would be an asset to the first-moving company, although it may not provide a benefit

to the "greater good" overall. The government can also get creative about what incentives look like – such as the vouchers for priority review issued by the US Food and Drug Administration.[2]

- Innovators are looking for clarity on priority areas from the government and the regulator. What are the 10 most desired areas for innovation? What sorts of innovation will be acceptable – and perhaps even more important, what will not be acceptable? How can proposed innovation align with government strategy for GHG emissions, for economic diversification, etc.? The work that Emissions Reduction Alberta has been doing is a good example of creating opportunities to align government policy needs with industry needs.

- The regulator itself needs to be incentivized to take on a proactive role (rather than a reactive role) with respect to innovation. Otherwise, innovation may be at odds with the regulator's mandate.

- One obstacle that can be overcome is innovators lacking an understanding of the regulatory and/or policy landscape. This lack of knowledge can put their innovations in limbo. Resources exist to help with this, but innovators don't always know about them. Similarly, innovators need to understand if it is possible to negotiate with the regulator when there are new and unproven technologies that are intended to meet the regulator's overall outcomes and objectives.

- Innovators can learn from one another. It would be useful to have storytelling opportunities within innovation communities – hearing about when innovation goes right and why, and also cautionary tales that innovators can learn from.

C. What an optimal regulatory experience looks like for energy innovation

The regulator is in a position where it has to satisfy many different – and sometimes competing – interests: the expectations of the public, the political will of the government of the day, the need of business for an expeditious and fair process, as well as the safety and security of the environment and society at large. How can the regulator best support energy innovation without sacrificing any of these interests?

- An optimal regulatory experience will require solving the other problems mentioned here – in particular, the first mover disadvantage and enhancing cross-jurisdictional harmonization.
- There is a need for open conversations and communication between innovators and regulators to help all sides understand the challenges, manage expectations, identify roles and responsibilities and assess risk. However, in some jurisdictions, there is no "safe space" in which to have these conversations – the innovator has too much self-interest and the regulator can have the appearance of tainted decision-making.
- Transparency is a key challenge faced by the regulator. Transparency means different things to different stakeholders; and there's a difference between, for example, sharing difficult and data-heavy PDFs on the regulator's website versus sharing details in a way that is understandable to the public.

[2] For a full description of the FDA's priority review voucher program, see the Canada West Foundation's upcoming report on *Getting to Go*, to be published in the spring of 2019.

- Regulators don't have an agreed-upon methodology to assess risks. This means it is difficult to help educate applicants on how risk will be assessed. There are also different risk appetites between departments within government. B.C. is looking into identifying an impartial third-party to assess new innovations that are new/unfamiliar to the regulator
- The regulator could provide critical support to innovators by establishing a concierge office to help with navigating the system – helping to manage expectations and navigate departments and interdepartmental challenges. There are examples of this – for example, B.C. has the "Major Investments Office," and for a while, the Netherlands ran a "front-runner desk" service.
- There is a difference between small and major innovations; and a different process may be needed for each.
- Innovation "sandboxes" are ideal; they allow for all sides to experiment, learn and make mistakes with adverse consequences being limited in scope and scale.

4. Conclusion

The January 30 workshop provided an opportunity for people involved in energy innovation to have frank and open conversations with people involved with energy regulation. The discussions that occurred highlighted several "big picture" lessons.

The first is that opportunities for connection and collaboration are welcome and provide value. Not only is it useful for innovators to speak with regulators, but there is value in innovators learning from other innovators, and regulators holding discussions with other regulators. There is a flip side to this, however. Because different regulators – as well as different innovators – are in different places in their journeys, not everyone will derive benefit from the same conversations. Any future interaction should be focused in its intention in order to provide maximum value to the participants.

Second, there is no consensus over the magnitude of the problem. While some people believe that regulation can represent a major hurdle for energy innovation, others think that the "regulatory piece" is less important – although there will always be ways to improve the regulatory experience, the real problems with energy innovation lie elsewhere. Almost everyone agrees, however, that regulation is only one piece of the puzzle – innovation happens in a larger ecosystem that has numerous drivers and constraints.

The Canada West Foundation and the Energy Futures Lab hope to provide additional opportunities in the future to continue these conversations for as long as they are useful. Throughout 2019, we plan to continue publishing reports and case studies on this topic – and to hold additional workshops and roundtables that engage innovators, regulators and others who are instrumental to the successful adoption of innovation in developing solutions.

Appendix: Workshop Participants

The following organizations were represented at the workshop.

- Alberta Energy Regulator
- Alberta Utilities Commission
- Atco
- BC Environmental Assessment Office
- BC Oil & Gas Commission
- Canada West Foundation
- Clean Resource Innovation Network
- CNRL
- Common Ground Energy
- E3 Metals
- Emissions Reduction Alberta
- Energy Futures Lab
- Envirotek Remediation
- Government of Alberta – Natural Resources Research Strategy Unit & Clean Innovation Office
- GP Joule
- Mount Royal University
- Saskatchewan Resource Council
- Saskatchewan Dept of Energy & Resources
- Suncor
- Terrapin
- The Alberta ReGeneration Project
- Titanium Corporation
- Other (did not wish to be disclosed)