Pathways to Net Zero

Opportunities for Canada in a Changing Energy Sector
Led by

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Change is in the Atmosphere
"Global oil demand to hit pre-COVID level next year: IEA" – BNN Bloomberg, June 11, 2021

"Silver lining: Biden’s scrapping of Keystone pipeline allows Canada’s Trudeau to move on" - Reuters, January 20, 2021

"Canada's oil sands producers form alliance to achieve net-zero emissions by 2050" – Reuters, June 9, 2021

"Saudis Dismiss Call to End Oil Spending as ‘La La Land’ Fantasy" – Bloomberg, June 1, 2021

"Elizabeth May Says ‘Oil Is Dead,’ Compares Industry’s Fate To Blockbuster Video"– Huffington Post, May 8, 2020

"Ottawa enters legal battle over Enbridge’s Line 5 pipeline" Globe and Mail, May 12, 2021

"Wind Turbine Blades Can’t Be Recycled, So They’re Piling Up in Landfills"– Bloomberg Green, February 5, 2020

"No new oil, gas or coal development if world is to reach net zero by 2050, says world energy body" The Guardian, May 18, 2021
Jurisdictions – BC, Alberta, Saskatchewan, and Federal

Project types – hydrogen, geothermal, clean fuels

Commercial Framework

Regulatory Framework
The Scaffolding of Transition

Commercialization Framework
- Policies, targets, legislation, taxes, strategies and direct or indirect funding
- Rapidly evolving

Regulatory Framework
- Old rules, new rules and how the "new energy" industries will operate
Commercialization Framework

Policies
- UNFCCC
- Paris Agreement
- Pan-Canadian Framework

Emissions Reduction Targets

Federal targets:
- A moving target: is it 30%, 36% or 45% below 2005 levels by 2030?
- Net-zero by 2050

Provincial targets:
- British Columbia: 40% below 2007 levels by 2030 and an 80% reduction by 2050; possible net-zero commitment
- Alberta: 50% below 1990 levels (relative to provincial GDP) by December 31, 2020
- Saskatchewan: reduce GHG emissions by 12 million tonnes by 2030
Emissions Pricing

**Federal Emissions Pricing**

- *Greenhouse Gas Pollution Pricing Act*: current plan is to increase the price on emissions until it reaches $170 in 2030
- *SCC Reference*: establishing minimum national standards of GHG price stringency to reduce GHG emissions is valid federal action
- Provinces must either enact their own equivalent regimes or the federal regime will apply

**Provincial Emissions Pricing**

- British Columbia: *Carbon Tax Act and Greenhouse Gas Industrial Reporting and Control Act*
- Alberta: *Technology Innovation and Emissions Reduction Regulation*
- Saskatchewan: *Management and Reduction of Greenhouse Gases Act*
Private Sector Commitments

- Changing investment practices and the rise of ESG
  - Canadian pension funds
  - $70 trillion global Net-Zero Finance Alliance
- Activist shareholders
  - Proxy advisors (ISS updates)
  - Engine No.1
- Risk management and the Equator Principles
  - Project finance and lending practices
- Net Zero
  - Oil Sands Pathways to Net Zero initiative
Clean Fuel Standards

A part of the commercialization framework that mandates a reduction of GHG emissions for liquid fuels

- Accomplished through
  - Carbon intensity reduction targets
  - Minimum renewable content blended into liquid fuels
  - Creating a secondary market of tradeable credits for industry participants
- Provincial regimes, with federal standard to come
### Provincial Rules in Place

<table>
<thead>
<tr>
<th>British Columbia</th>
<th>Renewable and Low Carbon Fuel Requirements Regulation</th>
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<tbody>
<tr>
<td>• Increasing carbon intensity reduction requirements, set at 10.19% for 2021</td>
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<tr>
<td>• Requirement to include 5% renewable content in gasoline</td>
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<td>• Requirement to include 4% renewable content in diesel</td>
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<tr>
<th>Alberta</th>
<th>Renewable Fuel Standard Regulation</th>
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<td>• Requirement to include 5% renewable content in gasoline</td>
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<tr>
<td>• Requirement to include 2% renewable content in diesel</td>
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<tr>
<th>Saskatchewan</th>
<th>Renewable Diesel Act</th>
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<tr>
<td>• Requirement to include 7.5% ethanol in gasoline</td>
<td></td>
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<tr>
<td>• Requirement to include 2% renewable content in diesel</td>
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Federal Clean Fuels Standard Coming Soon

- Developed under *Canadian Environmental Protection Act* 1999 and *Environmental Violations Administrative Monetary Penalties Act*
  - Creates obligations for liquid fuel producers, importers and refiners
  - Will establish a credit market with options for compliance actions:
    - Undertaking projects that reduce the lifecycle carbon intensity of fossil fuels (e.g.: Carbon sequestration and renewable electricity)
    - Supplying fuels with a lower carbon impact (e.g.: blending biofuels with conventional fuels)
    - Switching from internal reliance on conventional fuels and integrating lower-carbon fuel sources (e.g.: hydrogen, electrical power)
- Currently published in draft form, expected in force by the end of 2022
- Overlap with provincial regimes is expected
Regulating the Pathway—Frameworks for the Future

Success of energy transition turns on development and deployment of new technologies, and the fit between policy, legal and regulatory frameworks

- Clean fuels—adaptation of existing fuel production frameworks, expansion of regulatory regime around biofuel production
- Geothermal—new industry requiring new policies, laws and regulations
- Hydrogen—adaptation of existing upstream and midstream regulation
Regulatory Framework – Clean Fuels

- Frameworks evolving around second-generation biofuels
- Applicable Regulations depend on:
  a) Jurisdiction
  b) Stage of fuel production
- Suppliers of biofuel feedstock vs blending downstream
- Clean fuels legislation "layered" over existing fuel production and waste management laws
- Exciting opportunities abound, success depends on harmony between technology, policy and regulations
Geothermal Power in Canada

- Geothermal power development is increasing in Canada
- Recent investments have demonstrated interest from established energy companies
- Geothermal can generate baseload and deployable power
- Provides potential advantages specific to Western Canada, but faces real commercial challenges
Regulatory Framework – British Columbia

- Governed by the Geothermal Resources Act

"geothermal resource" means the natural heat of the earth and all substances that derive an added value from it, including steam, water and water vapour heated by the natural heat of the earth and all substances dissolved in the steam, water or water vapour obtained from a well, but does not include

(a) water that has a temperature less than 80°C at the point where it reaches the surface, or

(b) hydrocarbons;

- Ownership of Geothermal Resources is vested with the Government of British Columbia

- Royalties are specifically contemplated
Regulatory Framework – Alberta

- Governed by the *Geothermal Resource Development Act*
  - Geothermal rules have not yet been released by the AER
  - "geothermal resource" means natural heat from the earth that is below the base of groundwater protection
- Vests the right to explore for, develop, recover and manage geothermal resources with the owner of *mineral title*
  - Creates potential issues for the acquisition of a geothermal license
- Does not address royalties
Regulatory Framework - Saskatchewan

- No specific legislative framework in place for geothermal projects
- Permit applications are processed through the Integrated Resources Information System
- No statutory definition of geothermal resources; no definitive statement of ownership of geothermal resources
Royalties on Geothermal Power

- Two leading geothermal nations, Iceland and New Zealand, do not charge royalties to geothermal project proponents
- Is there a theoretical or moral basis for charging royalties on geothermal power
- Possible alternative royalty structures
  - Depletion beyond point of sustainability
  - Rental principle
Commercialization of Hydrogen

**Strategies:**
- Federal: the Hydrogen Strategy for Canada
- British Columbia: the British Columbia Hydrogen Study
- Alberta: the Natural Gas Vision and Strategy

**Common themes among the strategies and studies:**
- A focus on regional advantages and competencies
- Strategic partnerships and jurisdictional cooperation
- Policy and regulatory harmonization; standardization
- De-risking pilot projects and early investments
Regulation of Hydrogen

Jurisdictional Matters

- Any hydrogen industry will be primarily regulated at the provincial level.
- Interprovincial transportation and exports to be federally regulated; possible impact assessments.

Primary Regulators

- Given the similarities and overlap between hydrogen and the natural gas industry, existing federal and provincial regulators will likely continue to be involved.
The Regulatory Framework

• Currently subject to existing provincial statues and regulations that govern:
  • Environmental assessments
  • Facilities
  • Pipelines
  • Carbon capture and storage
  • Water use

In some cases, this is a "square peg round hole" approach and some ambiguity exists in the current regulatory framework.
Thank you
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