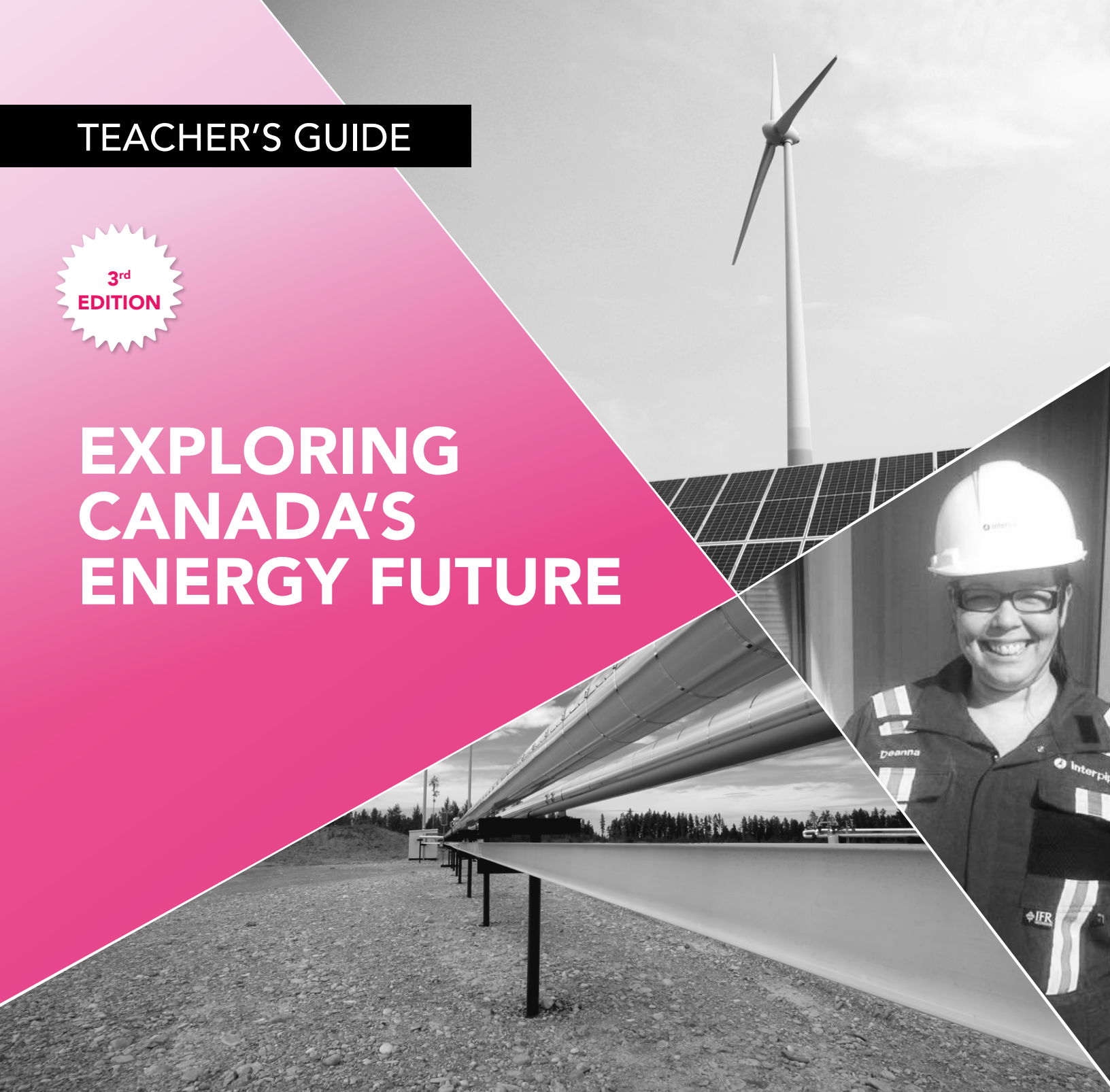


TEACHER'S GUIDE

3rd
EDITION

EXPLORING CANADA'S ENERGY FUTURE



A lesson plan for Canadian geography and science classes, grades 9 through 11



Contents

- 3 Overview
- 3 What is the Canada Energy Regulator?
- 4 Pedagogical approach
- 4 Tips for using the visualizations
- 6 Recommended resources
- 7 **ACTIVITY 1:** Canadian Energy Stories
- 11 **ACTIVITY 2:** Energy Fact Sleuths
- 18 **ACTIVITY 3:** Energy Entrepreneurs: Invest in This!
- 44 **ACTIVITY 4:** Careers at the Canada Energy Regulator: Employee Profiles
- 56 Appendix 1: Canada Energy Regulator Visualization Descriptions
- 57 Appendix 2: Portals to Geographical Thinking
- 58 Appendix 3: Data Sources
- 59 Appendix 4: Glossary

Photo credits (cover): Skyfire Energy Inc. (top) and Deanna Burgart (right).



Overview

ABOUT THIS RESOURCE

This guide has been created to support teachers in using the **Exploring Canada's Energy Future Interactive Tool** with their students available at www.cer-rec.gc.ca/energyfuturesdata.

This interactive tool allows users to explore how possible energy futures might unfold for Canadians over the long term. This analysis is not a prediction of what will take place, nor does it aim to achieve certain goals like Canada's climate targets. Rather, Exploring Canada's Energy Future employs economic and energy models to make projections — based on a certain set of assumptions — given past and recent trends related to technology, energy and climate policies, human behaviour, and the structure of the economy. The activities were developed by Beyond the Blackboard Educational Consulting (<http://beyondblackboard.ca/services.html>) for the Ingenium and the Canada Energy Regulator. In the 2nd Edition some content has been developed by Deanna Burgart. Deanna is a Cree/Dene woman from the Fond du Lac First Nation and award winning 'Indigeneer'.

This 3rd Edition of the Exploring Canada's Energy Future Lesson Plans contains updated content and images to reflect the new Energy Futures 2020 report and to align with new updates to the interactive tool. The report, which is linked from the interactive tool, offers additional background information about how the CER forecasts energy supply and demand trends, as well as how the energy system is being shaped by COVID-19 and ongoing innovations in energy technology and climate policy.

In our 2nd Edition of Exploring Canada's Energy Future we expanded on existing content to better include diverse Indigenous experiences, particularly in two sections — *Energy Entrepreneurs* and *Working at the CER*. Our aim is two-fold. We want to help Indigenous learners readily see themselves in these lessons. We also want to encourage non-Indigenous teachers and learners to really explore these stories and connect to the true breadth of Canada's complex energy mix. What does it look like to power hard-to-reach communities? How are new partnerships shaping the way that Canadian Indigenous Peoples engage in business in the energy sector? These are valuable and pertinent questions as we all consider Canada's Energy Future . . . and just a sampling of what can be explored in these lessons.

What is the Canada Energy Regulator (CER)?

The [Canada Energy Regulator](http://www.cer-rec.gc.ca) (CER) is an independent national energy regulator. Its role is to regulate, among other things, the construction, operation, and abandonment of pipelines that cross provincial or international borders, international power lines and designated interprovincial power lines. The CER also regulates the imports of natural gas and exports of crude oil, natural gas liquids, natural gas, refined petroleum products,



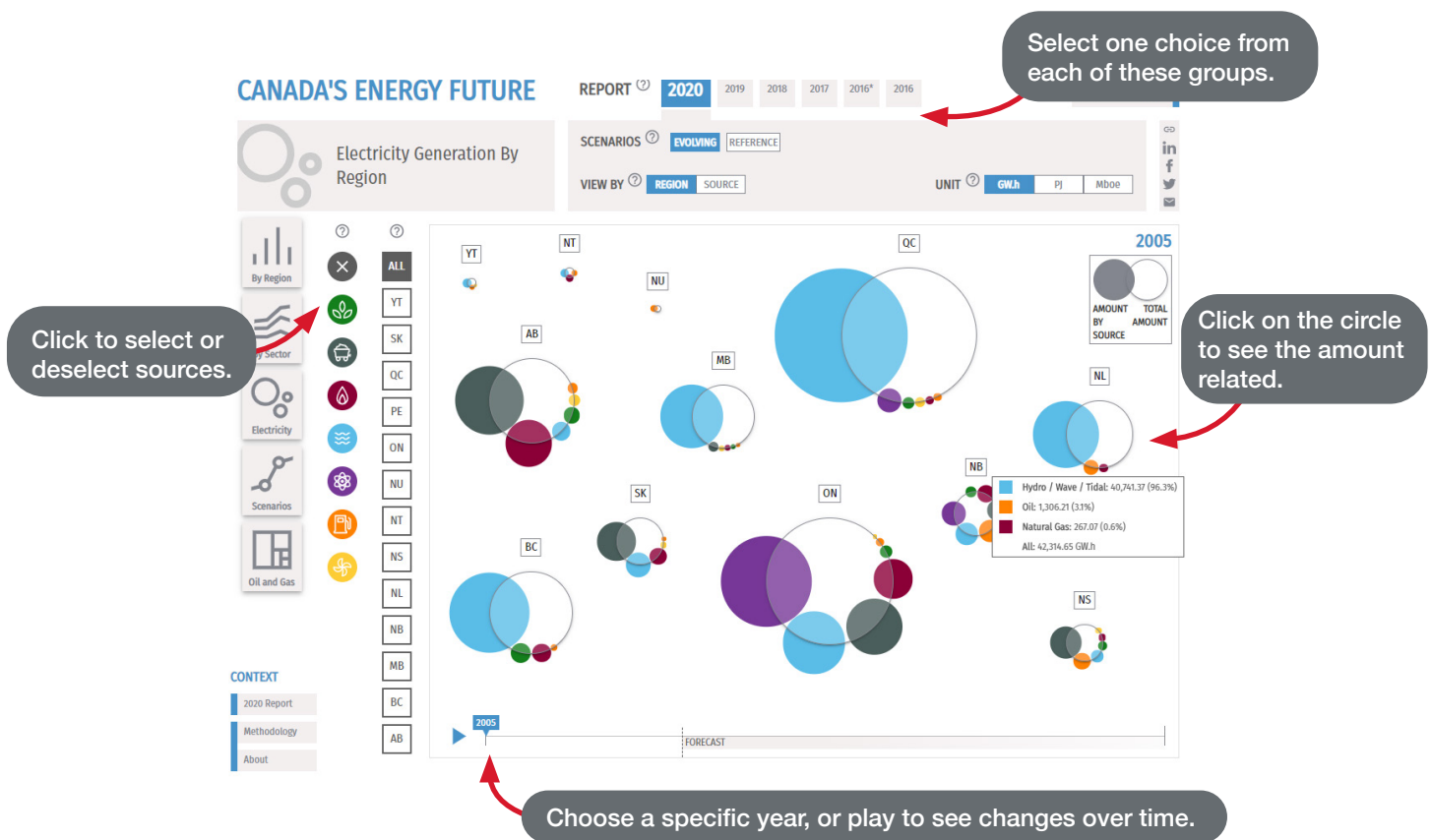
and electricity, as well as oil and gas exploration and production activities in certain areas. In addition, the CER is charged with providing timely, accurate, and objective information and advice on energy matters.

PEDAGOGICAL APPROACH

The activities in this guide have been designed to promote small group and whole class discussion on factors that affect energy consumption and production trends, anchored in evidence provided by the online tool. The development of media literacy skills has also been targeted by demonstrating how different stakeholders can use the information to support their own energy “stories.” As such, the guide seeks to highlight the nature of geographical thinking, which is more than memorizing facts and figures. Rather, students are asked to analyze elements of time, place, and energy through various economic, political, technological, cultural, and environmental lenses.

TIPS FOR USING THE VISUALIZATIONS

Take a few moments to show the students the salient features of the visualization, such as:



NAVIGATION: individual aspects can be selected (e.g. provinces/territories, sectors, energy sources, etc.) and, in some cases, the timeline can be manipulated to see how the story changes over time.

VARIED UNITS: when students are comparing one visualization to the next, they should ensure that the units are comparable (e.g. both should be in Petajoules or both in GWh).



SCENARIOS: discuss the importance of providing a reference scenario, as well as scenarios that account for technological innovation and policies such as carbon taxing. While there is always a reference case included, scenarios differ for each report. For instance, the scenarios from the 2020 report include:

The **Evolving Scenario (Evolving Energy System Scenario)** considers the impact of increasing action on climate change throughout the projection period. It builds upon current climate and energy policies with a hypothetical suite of future policy developments.

The **Reference Scenario** provides a baseline outlook with a moderate view of energy prices and economic growth, and climate and energy policies announced at the time of analysis.

TIPS FOR USING THE VISUALIZATIONS

If a scenario is not specified in an activity, students should use the Evolving Scenario.

The screenshot shows the 'CANADA'S ENERGY FUTURE' website interface. The main title is 'Electricity Generation By Region'. The interface includes a 'REPORT' dropdown set to '2020', 'SCENARIOS' set to 'EVOLVING', and 'VIEW BY' set to 'REGION'. A 'Download Data' button is visible in the top right. A legend on the right shows energy sources: Hydro / Wave / Tidal (40,741.37 (96.3%)), Oil (1,306.21 (3.1%)), and Natural Gas (267.07 (0.6%)), with a total of 42,314.65 GW.h. The interface also features a 'CONTEXT' menu with links to '2020 Report', 'Methodology', and 'About'.

Callout boxes provide the following instructions:

- Select the ? icon to learn more about the possible choices.
- Click to download the data for the graph shown.
- Click on these icons to explore all the Energy Future Visualizations.
- Click on these links to go to the EF Report or learn more about this tool in the methodology.
- Click to copy URL, share on social media or email.

EXPANDABLE GLOSSARIES: use the question marks next to titles to display definitions and concepts.

DOWNLOADABLE DATA: data can be downloaded to manipulate in Excel or to paste into a document.

SHAREABLE LINKS: persistent links can be copied and pasted to display information combinations created by the students. Selecting the copy URL icon provides a short bit.ly link.



Recommended Resources

Canada's Energy Future: This visualization is based on the CER's flagship publication that outlines the key assumptions made in developing the models, as well as five key findings with respect to possible future trends.

Recent Climate Policy Developments: This resource describes many recent climate policy developments — at both the provincial and federal levels — used in the analysis of Canada's Energy Future 2020.

Provincial and Territorial Energy Profiles: This resource explores Canada's diverse and evolving energy systems by providing facts on energy production, use, transformation, transportation, and trade. These profiles illustrate the diversity of our energy systems and provide information to engage in discussions about energy in Canada.



ACTIVITY 1: CANADIAN ENERGY STORIES

OVERVIEW	Students look at the <i>Electricity Generation</i> visualization (bubbles) for a specific province/territory and attempt to make sense of the information they are seeing. Note that the data can be manipulated and viewed in a number of ways using the online tool. Note as well that ‘electricity generation’ refers to the energy being produced in the province and is different from the energy being consumed (see the province of PEI for example) Extension activities propose sample questions for exploring the <i>Energy Demand by Sector</i> and <i>Energy Demand by Region</i> visualizations.
LEARNING OUTCOMES	<ul style="list-style-type: none"> Recognize that provinces and territories have different energy stories Ability to manipulate CER visualization tools to have the energy stories emerge
MATERIALS	<ul style="list-style-type: none"> Student handout: Activity 1: Canadian Energy Stories Computer access (One computer per two to three students)
CER VISUALIZATION(S)	<ul style="list-style-type: none"> Explore Electricity Generation (bubbles) https://bit.ly/2TUW1Y8 Energy Demand by Sector (extension) https://bit.ly/3mNo9IV Energy Demand by Region (extension) https://bit.ly/324nc7i
WHAT TO DO	<ol style="list-style-type: none"> Assign one province/territory per group of two or three students. Ask students to explore the Electricity Generation visualization for their province/territory and answer the questions on the handout. (5–10 min) <ul style="list-style-type: none"> What is happening? In a few lines, summarize your province or territory’s energy story. What surprised you? What caught your attention? Does changing the scenario (Evolving, Reference) change the trajectory? How? Does focusing on one energy source in particular change the story? How? Pair students from another province to further their analysis. Point out that provinces can be compared by selecting one or many provinces (5–10 min) What are some similarities? Brainstorm some hypotheses to explain the similarities. What are some differences? Brainstorm some hypotheses to explain the differences. Are these trajectories etched in stone? Why or why not? Students share their findings with the class. (2–3 min per province/territory).
HOMEWORK	<ul style="list-style-type: none"> Ask students to research a question that arose during the activity (e.g. In Alberta, why do Solar and Wind grow more quickly into the future in the Evolving scenario compared to the Reference scenario?). Provide a resource list to help them along. Ask students to provide one fun fact about the energy demand or production in their province or territory for a bonus mark (Provincial & Territorial Energy Profiles).

TEACHER TIP

When all energy sources are shown at once, smaller energy productions such as renewables are not highlighted. By focusing on one energy source in particular, we are better able to see its trend. Example: Solar/Wind for Electricity Generation

<https://bit.ly/3jZuP4I>

TEACHER TIP

Read the CER’s [Recent Climate Policy Developments](#) and the feature article [Canadian innovations continue to shape the future of energy](#) to help support your students with their answers.



EXTENSION ACTIVITIES**TEACHER TIP**

Availability of resources, provincial climate policies, economic growth, and adoption of technological innovation may all influence trajectories.

TEACHER TIP

When all energy sources are shown at once, smaller energy productions such as renewables are not highlighted. By focusing on one energy source in particular, we are better able to see its trend. Example: Biofuels & Emerging Energy in the Northwest Territories: <https://bit.ly/3mPJ4v1>

- Find another province/territory that has a similar trajectory to yours. Can you brainstorm reasons why this might be?

ENERGY DEMAND BY SECTOR VISUALIZATION

- Take a look at the Energy Demand by Sector visualization. Does focusing on one sector in particular (residential, commercial, industrial, transportation) change the story?
- Does focusing on one energy source in particular change the story?
- Which sector uses the most oil products? In Canada, transportation is the most heavily reliant on oil. In fact, Canada is the third-largest consumer of oil per person among the world's most economically-advanced countries.
- Why would Canada consume more oil than most other countries? The transportation sector accounts for 60% of Canadian oil demand. The relatively sparse population, number of vehicles on the road, and the long distances across which people and goods must be transported may explain Canada's relatively high transportation fuel consumption per capita.

ENERGY DEMAND BY REGION VISUALIZATION

- Think about energy demand in your province or territory. Would you expect energy demand to increase, decrease, or stay the same over time? *Students may suggest that it will increase with an increase in population.*
- Take a look at the Energy Demand by Region visualization. Does the trend correspond with what you were thinking? Is a province's energy demand always proportional to its population? **TIP:** Find the province/territory populations on the Statistics Canada website.
- Can you provide hypotheses for why energy demands may decrease or stabilize, even though the population is increasing? *Energy demand in Canada may peak and start a decline within the next 40 years. The overall decrease in demand is primarily due to conservation efforts, improvements in energy efficiency (e.g. light bulbs such as LED which use up to 85% less energy thanks to LED and CFL technologies, appliances such as refrigerators and freezers, which comprise up to 12% of household energy use, have also become more energy efficient both at the residential and industrial levels). Energy demand will depend on policies such as climate change targets, environmental regulations, electric vehicle subsidies, and carbon taxing.*

REFERENCE MATERIALS FOR STUDENTS

- [Provincial & Territorial Energy Profiles](#)

PORTALS TO GEOGRAPHICAL THINKING

- spatial significance
- patterns and trends
- interrelationships
- geographical perspective
- evidence and interpretation



Team members: _____

Assigned province/territory: _____ Date: _____

WHAT TO DO?

1. Open the Exploring Canada's Energy Future Electricity Generation visualization (<https://bit.ly/2TUW1Y8>).
2. Select only your province or territory.
3. Scroll along the timeline to see your province or territory's energy story emerge. Then discuss the following questions:

What is happening? In a few lines, summarize your province or territory's energy story.

What surprised you? What caught your attention?

Was there a moment in time where things started to change?

Does changing the scenario (Evolving, Reference) change the trajectory? How?

4. Pair up with students from another province or territory and compare your analyses.

What are some similarities? Brainstorm some hypotheses to explain the similarities.

Possible reasons: _____

What are some differences? Brainstorm some hypotheses to explain the differences.

Province/Territory: _____ Province/Territory: _____

Possible reasons: _____

Are these trajectories guaranteed? Why or why not?

ACTIVITY 2: ENERGY FACT SLEUTHS	
OVERVIEW	Students use the CER visualizations to support or refute the statements made about energy demand and production in Canadian provinces and territories.
LEARNING OUTCOMES	<ul style="list-style-type: none"> • Identify the information available through the CER visualization tool • Manipulate the visualization tool to find evidence that supports their claim • Employ media literacy skills to determine fact from fiction
MATERIALS	<ul style="list-style-type: none"> • Slides template (access to the same document for all of the teams) with provincial/territory statements • Computer access (easier to manipulate on computers/laptops than on tablets) • Projector
CER VISUALIZATION(S)	<ul style="list-style-type: none"> • All may be used
WHAT TO DO	<ol style="list-style-type: none"> 1. Download the slides template and upload to a file-sharing platform, such as Google Slides or Microsoft Office 365 (this will make it easier for students to present their findings). 2. Demo the activity with the example slide. Point out the copy URL button to shorten the link when embedding it in the presentation. Teach the students how to take a screenshot with a screenshot program so they can include a static image of the visualization. Remind them that they can use any visualization, or a combination of visualizations to make their argument. (5 min) 3. Assign one province or territory per group of two or three students (total: 14 groups). Each slide contains true and false statements regarding energy in a specific province or territory. 4. Students read through short market snapshots for their assigned province/territory, then use the CER data visualizations (using the 2020 Report year and selecting the Evolving Scenario) to prove or refute the statement. (20 min) 5. Students copy the URL link for their evidence (from the copy URL button) and paste it under the relevant statement. The students should all be working simultaneously on the same document. 6. Students present their work to the class using a single Google Slides document. (20 min)
PORTALS FOR GEOGRAPHICAL THINKING	<ul style="list-style-type: none"> • Spatial significance • Patterns and trends • Interrelationships • Geographical perspective • Evidence and interpretation

TEACHER TIP
 Snapshots have been rated on a scale of one (easiest) to three (challenging) to enable task differentiation.

TEACHER TIP
 Although sample visualizations have been provided in the key to support or refute the statement, students may manipulate the tool differently to come up with similar conclusions.

TEACHER TIP
 The links provided in the table below are for your information. Many of the links would provide students with the answer without having to manipulate data.



ACTIVITY 2: ENERGY FACT SLEUTHS – TEACHER KEY

LEVEL	PROV	STATEMENT	TRUE/ FALSE	VISUALIZATION
2	AB	In 2038, BC and Alberta will have similar population totals. Their total energy demand will therefore be very similar.	F	<p>Population (BC, 2038) https://apps.cer-rec.gc.ca/ftppndc/dfit.aspx?GoCTemplateCulture=en-CA and Population (AB, 2038) https://apps.cer-rec.gc.ca/ftppndc/dfit.aspx?GoCTemplateCulture=en-CA and Total Energy Demand by Region (AB and BC, 2038) https://bit.ly/32a0udF</p>
2	AB	In 2020, approximately 90% of electricity in Alberta is produced from fossil fuels.	T	<p>Electricity Generation (AB, 2020) https://bit.ly/3erB549 See Provincial and Territorial Energy Profiles - AB https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-alberta.html</p>
1	BC	BC is expected to produce more electricity from renewables than from natural gas and oil combined during the entire projection.	T	<p>Electricity Generation (BC, 2050) https://bit.ly/3mZ713b See Provincial and Territorial Energy Profiles - BC https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-british-columbia.html</p>
2	BC	BC is expected to be the province with the highest demand for electricity in the transportation sector by 2050.	F	<p>Energy Demand by Sector (Transportation, Electricity, 2050) https://bit.ly/3pomc84 Correct answer: Ontario has the highest demand for electricity in the transportation sector in 2050.</p>
1	MB	Manitoba is one of the top producers of natural gas in Canada.	F	<p>Gas Production by Region (MB) https://bit.ly/3898NdK Correct answer: Manitoba does not produce natural gas.</p>



ACTIVITY 2: ENERGY FACT SLEUTHS – TEACHER KEY

LEVEL	PROV	STATEMENT	TRUE/ FALSE	VISUALIZATION
1	MB	Solar/wind electricity generation in MB is projected to take up a larger share of the total generation mix in 2050 compared to 2020.	T	Electricity Generation (MB, 2020 and 2050) https://bit.ly/3k2gYuC See Provincial and Territorial Energy Profiles - MB https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energyprofiles-manitoba.html
1	NB	Most of New Brunswick's electricity is expected to be generated by nuclear by 2050.	T	Electricity Generation (NB, 2050) https://bit.ly/2I4wCsg
2	NB	Generation from solar/wind power in New Brunswick is projected to increase from none in 2005 to approximately 5% of total generation in 2050.	F	Electricity Generation (NB, Solar/Wind, 2005 and 2050) https://bit.ly/2I4wCsg Correct answer: It is projected to increase to approximately 29% of total generation by 2050. See Provincial and Territorial Energy Profiles - NB https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-new-brunswick.html
1	NL	Newfoundland and Labrador generate approximately 97% of their electricity from hydro sources in 2020. It is projected to produce even more electricity from hydro resources in 2050.	F	Electricity Generation (NL, Hydro, 2020 and 2050) https://bit.ly/2I8g4jp Correct answer: While the projected amount of hydro generated in 2050 is larger than in 2020, the percentage of hydro in the generation mix is projected to decrease in 2050.
1	NL	In 2020, the largest sector for energy demand in Newfoundland and Labrador was industrial. In 2050, the CER projections show residential will be the largest sector for energy demand.	F	Energy Demand by Sector (NL, Industrial and Residential, 2020 and 2050) https://bit.ly/367MHFE Correct answer: It will still be industrial. See Provincial and Territorial Energy Profiles – NL https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-newfoundland-labrador.html
1	NS	Although coal was the main source of electricity generation in 2005, hydro is expected to take the lead by 2050.	F	Electricity Generation (NS, 2005 and 2050) https://bit.ly/3jS4buM Correct answer: Solar/Wind is expected to take the lead by 2050.



ACTIVITY 2: ENERGY FACT SLEUTHS – TEACHER KEY				
LEVEL	PROV	STATEMENT	TRUE/ FALSE	VISUALIZATION
1	NS	Natural gas production in Nova Scotia was terminated at the end of 2018.	T	Gas Production by Region (NS, 2018) https://bit.ly/2GrBgjo
3	NU	In 2020, almost all of Nunavut's electricity is generated from importing diesel fuel.	T	Oil Production by Region (NU, 2020) https://bit.ly/2I8MIGS and Total Demand by Region (NU, 2020): https://bit.ly/38aR4Th and Total Electricity Generation (NU, 2020) https://bit.ly/2TTOmZZ Note: "Total electricity generation" is the total electricity generated within the province, regardless where the fuel comes from. In this case, it is interesting to note that importing diesel is its main fuel source. Shorter ice road access caused by climate change has major implications for diesel transportation. See The ice roads of Northern Canada are disappearing (CBC) https://www.cbc.ca/radio/day6/episode-335-100-days-of-sean-spicer-disappearing-ice-roads-beatles-live-retro-futurism-at-expo-67-and-more-1.4084549/the-ice-roads-of-northern-canada-are-disappearing-1.4084560
1	NU	Nunavut's largest consuming sector for electricity in 2020 is transportation. This is expected to still be true in 2050.	F	Energy Demand by Sector (NU, Transportation, Electricity, 2020 and 2050) https://bit.ly/38GAKK7 Correct answer: the commercial sector is the largest consuming sector for electricity in Nunavut during the projection period. See Provincial and Territorial Energy Profiles - Nunavut https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-nunavut.html
2	NT	In 2020, natural gas production in the Northwest Territories represents more than 10% of Canadian natural gas production.	F	Gas production by Region (NT, 2020) https://bit.ly/2I8P2Z3 Correct answer: It accounts for less than 1% of Canadian natural gas production. See Provincial and Territorial Energy Profiles - NT https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-northwest-territories.html



ACTIVITY 2: ENERGY FACT SLEUTHS – TEACHER KEY

LEVEL	PROV	STATEMENT	TRUE/ FALSE	VISUALIZATION
3	NT	The Government of NWT's Draft 2030 Energy Strategy drafted in 2017 proposed the installation of wind turbines in Inuvik to reduce reliance on diesel generation.	T	Energy Generation (NT, Solar/Wind) https://bit.ly/3kZHs1f See Provincial and Territorial Energy Profiles - NT https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-northwest-territories.html
3	ON	In 2020, about 97% of electricity in Ontario is produced from zero-carbon emitting sources.	T	Electricity Generation (ON, 2020) https://bit.ly/38cpS6H See Provincial and Territorial Energy Profiles - ON https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-ontario.html
1	ON	A sharp increase in energy demand is forecasted in Ontario between 2020 and 2050.	F	Total Energy Demand by Region (ON, 2020 and 2050) https://bit.ly/3kZxzk6 Correct answer: A decrease in energy demand in ON is forecasted for the projection period.
2	PE	PEI generates enough electricity to meet its own electricity demand.	F	Total Energy Demand by Sector (PE, 2020) https://bit.ly/2GsUwx0 and Electricity Generation (PE, 2020) https://bit.ly/3oWo0F1 Hint: remind students to keep units the same (petajoule vs. GW.h vs. Mboe/d) Correct answer: PEI does not generate enough electricity to meet its own electricity demand.
2	PE	PEI's electricity generation from solar/wind is predicted to more than double between 2020 and 2050.	T	Electricity Generation (PE, Solar/Wind, 2020 and 2050) https://bit.ly/2GsDZJq
1	QC	In 2020, hydroelectric stations generate most of Quebec electricity. Solar/Wind is the second-largest source of electricity generation in Quebec.	T	Electricity Generation (QC, 2020) https://bit.ly/3jZ4V1l See Provincial and Territorial Energy Profiles – QC https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-quebec.html



ACTIVITY 2: ENERGY FACT SLEUTHS – TEACHER KEY

LEVEL	PROV	STATEMENT	TRUE/ FALSE	VISUALIZATION
1	QC	Quebec will be significantly increasing its nuclear energy production by 2050 compared to 2005 levels.	F	Electricity Generation (QC, 2005 and 2050) https://bit.ly/367AaC7 Correct answer: Nuclear energy is no longer produced as of 2013.
2	SK	Renewables' share of the electric capacity mix in Saskatchewan is projected to grow substantially between 2020 and 2050.	T	Electricity Generation (SK, 2020 and 2050) https://bit.ly/32eQmR5 See Provincial and Territorial Energy Profiles - SK https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-saskatchewan.html
2	SK	In 2020, Saskatchewan is Canada's second-largest producer of oil, behind Alberta.	T	Oil Production by Region (SK, 2020) https://bit.ly/3mVCenU See Provincial and Territorial Energy Profiles - SK https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-saskatchewan.html
1	YT	In 2020, Yukon has significant commercial crude oil production.	F	Oil Production by Region (YK, 2020) https://bit.ly/3mVCenU Correct answer: Yukon does not produce crude oil.
2	YT	In 2020, Yukon's total energy demand was the smallest in Canada.	F	Total Energy Demand by Region (2020) https://bit.ly/34YrDCd Correct answer: Nunavut's total energy demand was the smallest in Canada in 2020.
2	ALL	In 2020, energy demand for the residential sector increases, while energy demand for all other sectors (industry, commercial and transportation) decrease from the year prior (2019).	T	Energy Demand by Sector (ALL, 2019 and 2020) https://bit.ly/32cSetD In 2020, actions to reduce the spread of COVID-19 changed energy demand patterns in Canada. Residential energy use increased as people spent more time in their homes, while all other sectors decreased compared to 2019. See Energy Futures 2020 Chapter on the Effects of COVID-19 .



ACTIVITY 2: ENERGY FACT SLEUTHS – TEACHER KEY

LEVEL	PROV	STATEMENT	TRUE/ FALSE	VISUALIZATION
2	ALL	Ontario ranked at the top in Canada in terms of its total amount of installed solar/wind generation in 2020. Between 2007 and 2020, the solar/wind generation of Ontario has grown over 30 fold.	T	Electricity Generation (ALL, Solar/Wind, 2007 and 2020): https://bit.ly/3jZ0Mdx See Provincial and Territorial Energy Profiles - Canada https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-canada.html
1	ALL	In 2020, Alberta is the largest producer of crude oil in Canada, accounting for approximately 80% of total production.	T	Oil Production by Region (ALL, 2020) https://bit.ly/3k2l44O See Provincial and Territorial Energy Profiles - Canada https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-canada.html



ACTIVITY 3: ENERGY ENTREPRENEURS: INVEST IN THIS!

OVERVIEW	Students represent various stakeholders and must convince the investors to invest in their idea rooted in CER visualizations. The idea can either be based on the current trend or by arguing that their idea could significantly change the trajectory.
LEARNING OUTCOMES	<ul style="list-style-type: none"> Recognize that a visualization tool may be manipulated to support arguments from various stakeholders Provide scientific evidence to support a decision to pursue an idea and to persuade an audience
MATERIALS	<ul style="list-style-type: none"> Activity description and stakeholder profiles, including judging rubric (double-sided) CanGeo Energy IQ map found at https://energyiq.canadiangeographic.ca
WHAT TO DO	<ol style="list-style-type: none"> In groups of 2 or 3, provide students with a stakeholder profile as well as a copy of the CanGeo Energy IQ map (link above). There are 16 stakeholder profiles. Explain that each group will have to make a “pitch” to the investors (one or several teachers) to invest in an idea that is supported by one or more CER visualizations. The idea can either be based on the current trend or by arguing that their idea could significantly change the trajectory. The Entrepreneurs use the evaluation sheet to rate the ideas.
EXTENSION ACTIVITIES	<ul style="list-style-type: none"> Assign students in the class to be investors for their classmates, in order to stimulate participation. Each investor receives an evaluation sheet and is encouraged to ask questions. The audience (other students) may choose to support (if alliance is possible to their service or product) or argue against the idea. Have students record their pitch in a two-minute video. Pair up with another group and record a mini Energy Entrepreneurs episode: each group pitches their idea to the other team’s investors. Although they may include comedic relief, the investors must provide at least 2–3 reasons why they choose to support or not to support an idea. Share the episodes in class with popcorn!
CER VISUALIZATION(S)	<ul style="list-style-type: none"> All may be used
REFERENCE MATERIALS FOR STUDENTS	<ul style="list-style-type: none"> Canadian Geographic’s Provincial/Territorial Energy Snapshot Infographic CER Energy Market Snapshots Provincial and Territorial Energy Profiles Hydro Quebec, Comparison of Electricity Prices

TEACHER TIP

Students will be more motivated if they get to choose their own profile. Although more than one group may choose a profile, their interpretation of it will be different.



PORTALS TO GEOGRAPHICAL THINKING	<ul style="list-style-type: none"> • spatial significance • patterns and trends • interrelationships • geographical perspective • evidence and interpretation • ethical judgement
---	---

Below are the profile descriptions along with some suggested questions and ideas, to inspire students in their brainstorming session (should they require inspiration!). **Note that ‘Indigenous’ and ‘Nation’ are inclusive of First Nations, Métis and Inuit.**

<p>1. RECRUITING INDUSTRY: You are a staff recruitment company seeking an investment to develop a database that will connect Indigenous businesses, professionals, and students with potential employers and clients in the energy industry.</p>	<p>Think about the needs of energy companies. What kinds of jobs are there? What kinds of Indigenous businesses, entrepreneurs, and individuals could meet these needs? What important things should be considered to support Indigenous individuals and businesses in a culturally safe and relevant way as they engage in energy sector business? How will you make money on this investment?</p>
<p>2. EXTRACTION EQUIPMENT MANUFACTURER: You are currently an oil rig manufacturer seeking to expand your business to develop equipment for a new industrial sector.</p>	<p>Which areas have high energy consumption by the industrial sector? Which industries might these be?</p>
<p>3. LEED ARCHITECT: You are a young architect who has been working on LEED projects (Leadership in Energy and Environmental Design) for the past five years. You are seeking an investment from the investors to build a model commercial building that encourages sustainable practices design.</p>	<p>Which areas have high electricity and heating prices? Which areas have tight energy production vs. demand? These are areas where an incentive to introduce energy efficiencies is the highest.</p>
<p>4. PIPELINE SERVICES: You are an Indigenous entrepreneur seeking an investment to purchase equipment to supply the oil and gas pipeline companies working on major projects near your community. You currently have construction equipment to participate in building the pipeline(s). You want to purchase pipeline maintenance equipment to support the pipeline operator companies (different from the construction companies) throughout the life of the pipeline.</p>	<p>What will you need to learn about to make good on your new business plans? How will you identify who to talk to in the pipeline operations companies? (The pipeline construction companies that you have existing relationships with are not the same ones that will operate the pipelines). How will you learn what you need to do to qualify to work with these companies?</p>
<p>5. CRYPTOCURRENCY START-UP: You are an entrepreneur looking to start a cryptocurrency mining datacentre. You are asking the investors to invest in your start-up.</p>	<p>Where are there cheap electricity prices and abundant sources with low demand? That means that you have room to demand a lot more without putting pressure on the system to increase prices (cryptocurrency requires large amounts of electricity).</p>
<p>6. ELECTRIC VEHICLE MANUFACTURER: You are an electric vehicle manufacturer who has had a lot of success in California. You are asking the investors to invest in a charging station pilot project in a specific area of Canada.</p>	<p>Which provinces provide the most/best incentives to buy EVs? Which seem most aggressive with regards to lowering the carbon footprint? Add prices of gasoline and electricity to create an appealing story where demand would switch from hydrocarbons to electricity in transportation by virtue of price differential.</p>



<p>7. RENEWABLE ENERGY PROJECTS: You are an Indigenous company seeking an investment to develop and launch a solar farm project in your community, currently powered by diesel.</p>	<p>What benefits and barriers are there to a project like this? What kinds of things would you need to think about to get support from your community leadership and citizens? What kind of skills will you need to build for people in your community to operate a solar farm?</p>
<p>8. ENVIRONMENTAL ENTERPRISE: You seek an investment to develop a product or offer a service that benefits the environment. Your idea could have national potential or could target a specific province or territory.</p>	<p>Are there places that could benefit from lowering their carbon footprint?</p>
<p>9. INDIGENOUS ENGAGEMENT AND CONSULTATION SERVICES: The government of Canada requires energy companies to consult with Indigenous communities about development projects. You are a small Indigenous consulting group in a remote northern community seeking to expand your services and online presence. To better connect with the energy companies' supply chain departments, you're seeking investment to hire and train staff in Calgary, Alberta, where your target clients' head offices are.</p>	<p>What elements go into the online presence you are trying to fund? (Website, social media, marketing?) How will you ensure a return on the investment? (Where is the income growth potential in this?) How will you decide which companies to promote your services to?</p>
<p>10. OIL AND GAS PRODUCER: You have had much success in Western Canada and are looking to expand your business in another Canadian territory or province.</p>	<p>Where are current resources (oil and gas) located? Are there some provinces that don't produce oil and gas whereas their neighbours do? Perhaps this is a good place to discuss the emergence of fracturing technology to develop unconventional resources.</p>
<p>11. INDIGENOUS ENGINEERING AND INFRASTRUCTURE: You are an Indigenous-owned engineering firm committed to incorporating your worldviews and perspectives into your design and construction. You work in many Indigenous communities that are not your own. When going into a new community, it is important to you that your work reflects the perspectives and values of that community. You are pitching to develop a 'best practices' guide to inform Indigenous and non-Indigenous engineering firms about how to do this work.</p>	<p>What kinds of questions will you ask the leaders, Elders and knowledge-keepers of the Nation before proceeding with your design? Who will you meet with to gather this information? How will you communicate with the Nation as you progress with your project?</p> <p>How will you convince investors who may or may not be Indigenous themselves that this is a critical step to take?</p>
<p>12. TRANSPORTATION COMPANY: Your company is looking to expand its business and provide transportation of energy products from areas of supply to potential areas of demand. For example, you can build pipelines to move natural gas and crude oil, and power lines to move electricity.</p>	<p>Finding matches between high-production areas with high demand areas. Or combining ideas that will create higher demand growth (policymaker groups suggesting policies that will create economic growth) and this group would ensure that energy was delivered to or from to complete the circle. Could they even expand into the transportation of people?</p>
<p>13. RENEWABLE ENERGY DEVELOPER: Your company has had much success in developing solar, wind, algal, geothermal, and tidal energy projects in Norway and India. You are looking for an investment from the Entrepreneurs to develop a new renewable energy project in a specific province in Canada.</p>	<p>Look at demand growth combined with solar radiation and wind maps. Combine renewable energy projects with Smart Grids technology for inserting renewable energy into existing grids. Are there articles that relate to technologies not yet being used, such as algal-based energy?</p>



<p>14. INDIGENOUS ENTERPRISE: You are an entrepreneur based in an Indigenous community. Use the visualization tool to justify creating a product or service with a positive impact on Indigenous communities.</p>	<p>There are numerous examples in Canada where Indigenous communities have entered into relationships with energy producers/providers to achieve best results for their communities. You can look for examples and use them for this exercise.</p>
<p>15. ENVIRONMENTAL NGO: You are a non-governmental organization that seeks to promote environmental conservation with respect to energy production and consumption. You are seeking funding from the Entrepreneurs' not-for-profit fund, to further your cause in either a specific province or territory (or nationally).</p>	<p>The visualizations would help choose areas of interest where improvements can be made. For instance, examine Northern Canada where the use of hydrocarbons is prevalent. Focus on how technology and adaptation of new energy technologies to northern conditions will advance sustainability in the North.</p>
<p>16. INDIGENOUS COMMUNITY ENVIRONMENTAL MONITORING: You are an Indigenous-owned environmental monitoring company committed to incorporating Traditional Indigenous Knowledge into community-led environmental monitoring programs to support the energy industry and protect the environment. When going into a new community, it is important to you that the program is community-led and that you can build a sustainable process that continues once you leave. You need new cash resources to create the templates for this kind of programming.</p>	<p>How will you approach the Elders and Knowledge Keepers? What kinds of questions will you ask them in order to develop this kind of monitoring program? What traditional practices might you consider that are specific to that Indigenous community? What role will knowing about these play in your planning?</p>
<p>17. DATA VISUALIZATION DESIGNER: You are looking for an investment in your new business creating data visualizations, to help companies share and analyze their information.</p>	<p>Looking at the regions that have either high production and/or high demand, you would identify where and if there is a concentration of headquarters and capital cities for provincial governments. These are likely to be the best markets for data visualization services.</p>
<p>18. INDIGENOUS ENERGY POLICY SPECIALIST: You are an energy policy specialist with a background in Indigenous rights and law. You want to build your organization and train others to work in this area, advising government and industry on how to implement the Truth and Reconciliation Calls to Action into their business and day-to-day work. You are looking for a growth investment.</p>	<p>Read Action #92, dealing with business and reconciliation, in the Truth and Reconciliation Calls to Action. What kinds of services could you provide that can help businesses in the energy sector answer these Calls to Action?</p>
<p>19. POLICYMAKER: You are a policymaker looking for an investment in a specific sector to stimulate economic growth, or to speed up/slow down predicted trends in your province or territory.</p>	<p>There is much that can be done if you can combine the different sources' production and demand with data on prices and population. For instance, abundant electricity generation combined with low demand and low prices could be a good spot to develop "computing clouds." Note that the scenarios reflect policies that are already in place, hence, the analysis has to take this into consideration.</p>



20. INDIGENOUS BRANDING AND MARKETING

SPECIALIST: You are an Indigenous-owned business that specializes in marketing and promotional materials for the energy industry. You are pitching to grow your company and promote yourself to a wider audience.

How could you increase your reach to the energy industry throughout Canada? You are currently doing a lot of work with oil and gas companies but would like to diversify to other energy companies. What other kinds of energy companies could you market to?



Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: RECRUITING INDUSTRY

You are a staff recruitment company seeking an investment to develop a database that will connect Indigenous businesses, professionals, and students with potential employers and clients in the energy industry.

** Note that 'Indigenous' and 'Nation' are inclusive of First Nations, Métis and Inuit.*

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories? How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business? Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: EXTRACTION EQUIPMENT MANUFACTURER

You are an oil rig manufacturer seeking to expand your business to develop equipment for a new industrial sector.

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories? How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business? Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: LEED ARCHITECT

You are a young architect who has been working on LEED projects (Leadership in Energy and Environmental Design) for the past five years. You are seeking an investment from the investors to build a model commercial building that encourages sustainable practices design.

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories?
How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business?
Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: PIPELINE SERVICES

You are an Indigenous entrepreneur seeking an investment to purchase equipment to supply the oil and gas pipeline companies working on major projects near your community. You currently have construction equipment to participate in building the pipeline(s). You want to purchase pipeline maintenance equipment to support the pipeline operator companies (different from the construction companies) throughout the life of the pipeline.

** Note that 'Indigenous' and 'Nation' are inclusive of First Nations, Métis and Inuit.*

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories?
How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business?
Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: CRYPTOCURRENCY START-UP

You are an entrepreneur looking to start a cryptocurrency mining datacentre. You are asking the investors to invest in your start-up.

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories? How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business? Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: ELECTRIC VEHICLE MANUFACTURER

You are an electric vehicle manufacturer who has had much success in California. You are asking the investors to invest in a charging station pilot project in a specific area of Canada.

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories? How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business? Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: RENEWABLE ENERGY PROJECTS

You are an Indigenous company seeking an investment to develop and launch a solar farm project in your community, currently powered by diesel.

** Note that 'Indigenous' and 'Nation' are inclusive of First Nations, Métis and Inuit.*

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories?
How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business?
Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: ENVIRONMENTAL ENTERPRISE

You seek an investment to develop a product or offer a service that benefits the environment. Your idea could have national potential or could target a specific province or territory.

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories?
How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business?
Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: INDIGENOUS ENGAGEMENT AND CONSULTATION SERVICES

The government of Canada requires energy companies to consult with Indigenous communities about development projects. You are a small Indigenous consulting group in a remote northern community seeking to expand your services and online presence. To better connect with the energy companies' supply chain departments, you're seeking investment to hire and train staff in Calgary, Alberta, where your target clients' head offices are.

** Note that 'Indigenous' and 'Nation' are inclusive of First Nations, Métis and Inuit.*

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories?
How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business?
Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: OIL AND GAS PRODUCER

You have had much success in Western Canada and are looking to expand your business in another Canadian territory or province.

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories? How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business?
Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: INDIGENOUS ENGINEERING AND INFRASTRUCTURE

You are an Indigenous-owned engineering firm committed to incorporating your worldviews and perspectives into your design and construction. You work in many In-digenous communities that are not your own. When going into a new community, it is important to you that your work reflects the perspectives and values of that community. You are pitching to develop a 'best practices' guide to inform Indigenous and non-Indigenous engineering firms about how to do this work.

** Note that 'Indigenous' and 'Nation' are inclusive of First Nations, Métis and Inuit.*

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories?
How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business?
Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: TRANSPORTATION COMPANY

Your company is looking to expand its business and provide transportation of energy products from areas of supply to potential areas of demand. For example, you could build pipelines to move natural gas and crude oil, and power lines to move electricity.

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories?
How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business?
Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: RENEWABLE ENERGY DEVELOPER

Your company has had much success in developing solar, wind, algal, geothermal and tidal energy projects in Norway and India. You are looking for an investment from the investors to develop a new renewable energy project in a specific province in Canada.

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories? How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business? Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: INDIGENOUS ENTERPRISE

You are an entrepreneur based in an Indigenous community. Use the visualization tool to justify creating a product or service with a positive impact on Indigenous communities.

** Note that 'Indigenous' and 'Nation' are inclusive of First Nations, Métis and Inuit.*

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories?
How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business?
Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: ENVIRONMENTAL NGO

You are a non-governmental organization that seeks to promote environmental conservation with respect to energy production and consumption. You are seeking funding from the investors' not-for profit fund to further your cause, either nationally or in a specific province or territory.

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories?
How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business?
Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: INDIGENOUS COMMUNITY ENVIRONMENTAL MONITORING

You are an Indigenous-owned environmental monitoring company committed to incorporating Traditional Indigenous Knowledge into community-led environmental monitoring programs to support the energy industry and protect the environment. When going into a new community, it is important to you that the program is community-led and that you can build a sustainable process that continues once you leave. You need new cash resources to create the templates for this kind of programming.

** Note that 'Indigenous' and 'Nation' are inclusive of First Nations, Métis and Inuit.*

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories?
How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business?
Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: DATA VISUALIZATION DESIGNER

You are looking for an investment in your new business creating data visualizations, to help companies share and analyze their information.

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories?
How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business?
Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: INDIGENOUS ENERGY POLICY SPECIALIST

You are an energy policy specialist with a background in Indigenous rights and law. You want to build your organization and train others to work in this area, advising government and industry on how to implement the Truth and Reconciliation Calls to Action into their business and day-to-day work. You are looking for a growth investment.

** Note that 'Indigenous' and 'Nation' are inclusive of First Nations, Métis and Inuit.*

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories? How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business?
Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: POLICYMAKER

You are a policymaker looking for an investment in a specific sector to stimulate economic growth, or to speed up/slow down predicted trends in your province or territory.

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories?
How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business?
Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Many stakeholders use the Canada Energy Regulator's data visualization tool to inform their decisions, from entrepreneurs to policy makers. In this challenge, your team must come up with an idea to implement in a specific province or territory, using the visualization tool to convince the investors to invest in your idea.

WHAT TO DO?

1. Read your stakeholder profile.

STAKEHOLDER PROFILE: INDIGENOUS BRANDING AND MARKETING SPECIALIST

You are an Indigenous-owned business that specializes in marketing and promotional materials for the energy industry. You are pitching to grow your company and promote yourself to a wider audience.

** Note that 'Indigenous' and 'Nation' are inclusive of First Nations, Métis and Inuit.*

2. Find out more about the energy profiles of various Canadian provinces and territories by using the following resources:
 - [Canadian Geographic's Provincial/Territorial Energy Snapshot Infographic](#)
 - [CER Energy Market Snapshots](#)
 - [Provincial and Territorial Energy Profiles](#)
 - [Hydro Quebec, Comparison of Electricity Prices](#)
3. Brainstorm ideas with your team.
4. Create a two to five-minute presentation, including images from the visualization tool and other sources, to convince the investors to invest in your idea. **TIP:** you may want to see if you can build alliances with other stakeholders to increase your desirability factor.

HELPFUL HINTS FOR INSPIRATION

- Think about what you want to see in the future. Do you want to change the trajectories? How can you do that?
- Do you see anything in the current trajectories that you can use to make plans for the future?
- What are the current resources available in your province of choice?
- What might there be in other provinces that could be in your province of choice?
- Do you know of things that are working in other countries that might work in Canada?
- What types of businesses already operate in your province of choice?
- Why is your chosen province the most profitable for this business? Why is Canada a good place to start this business?
- Who will be your clients/customers?
- Who will benefit from your business?
- Will anyone be against this business or suffer hardship because of it?

Team members: _____

Stakeholder Profile: _____ Due by: _____

Remit this rubric to the investors on pitch day

CRITERIA	LEVEL 1 Does not meet expectations	LEVEL 2 Minimally meets expectations	LEVEL 3 Fully meets expectations	LEVEL 4 Exceeds expectations
VIABILITY OF PRODUCT, SERVICE OR INVENTION (30%)				
Identifies a specific need to be addressed, a gap to be filled or a problem to be solved.				
Describes strategies that produce a positive, lasting impact on their target market.				
Clearly identifies and describes their target market.				
CREATIVITY AND INNOVATION (30%)				
Demonstrates a clear action plan.				
Demonstrates creativity and innovation in identifying strategies to meet the need, to fill the gap or or to solve the problem.				
COMMUNICATION AND PURSUASIVENESS (40%)				
Effectively uses evidence from the CER's visualization tool to support the idea.				
Effectively uses existing information relating to province or territory of choice to justify the idea.				
Presents a clear, concise, creative and informative sales pitch targeted to the Entrepreneurs.				
Effectively uses branding (company name, logo, taglines) to present a professional image.				
Creates a memorable and effective closing (call to action).				

NOTES:

ACTIVITY 4: CAREERS AT THE CANADA ENERGY REGULATOR: WHAT'S THEIR BACKGROUND?

OVERVIEW	This activity is designed to illustrate non-conventional jobs at the Canada Energy Regulator that represent a variety of educational trajectories. Students may be surprised by the many different types of people hired by the CER, including artists, communication specialists, writers and engineers.
LEARNING OUTCOMES	<ul style="list-style-type: none"> • Recognize that scientific institutions require contributions from people with a variety of backgrounds and interests. • Discover various entry points into employment in the science and technology field, contributing to their job search skills development.
MATERIALS	<ul style="list-style-type: none"> • Sticky notes (3-4 per student) • Sharpie markers • One set of CER Employee Profiles to post around the room (large print) • One set of CER Employee Profiles per group (small print)
CER VISUALIZATION(S)	None
WHAT TO DO?	<ol style="list-style-type: none"> 1. With the class, brainstorm what kinds of jobs might be available at the Canada Energy Regulator. Write these on individual sticky notes and post on the board. Sort them into general categories. 2. Split students into groups representing the general categories above. What education or experience would be required for that type of job? Write these on individual sticky notes and post on the board. 3. Do the profiles created represent the abilities and interests of everyone in the room? Which kinds of jobs are represented? Which are absent? 4. Post the large print profiles around the room and ask students to roam and read. Did anything surprise them? 5. Hand out one set of Canada Energy Regulator Employee Profiles per group. After looking at the profiles, do they see some of the “absent” categories from Step 3? Did anything surprise them?
HOMEWORK/ EXTENSION	<ol style="list-style-type: none"> 1. Find the Careers page of the Canada Energy Regulator (Home > About Us > Careers) 2. Are you eligible for the Federal Student Work Experience Program? Optional: give students some time to create an account with the FSWEPP or negotiate with your school's career counseling program 3. Which social media platforms might CER jobs appear on? Twitter, LinkedIn (specified in the Careers page) 4. What does the CER expect to see in your cover letter? Name of position, position ID number, and to list how you meet the essential qualifications listed on the Statement of Merit Criteria. 5. What does the CER expect to see in your CV? Profile (language, skill and attitude highlights), Formal Education, Work Experience (Career Summary), Volunteer Experience, Professional Development, Awards (and recognition), Other Requested Information (e.g. citizenship,) 6. What is the difference between formal education and professional development? Formal education represents a degree-granting program such as high school and college diplomas and university degrees. Professional development represents workshops, individual courses and institutes you have attended to develop skills and abilities related to the position. PD includes personal development workshops such as teambuilding and communication skills.



ACTIVITY 4: CAREERS AT THE CANADA ENERGY REGULATOR: WHAT'S THEIR BACKGROUND?

MEET: **Alison**

EDUCATION: Bachelor of Elementary Education

EXPERIENTIAL/ON THE JOB EDUCATION: Hands-on learning through job shadowing and “on the job” training/courses

WHERE WERE YOU BORN? Rocky Mountain House, AB

WHAT'S YOUR FAVOURITE ANIMAL: Dogs – We just adopted a dog from Alberta Animal Rescue Crew Society and named her Spirit.

WHAT'S YOUR FAMILY LIKE? Growing up, my family did a lot of skiing, hiking, canoeing and camping. We even did a 9-week trip to Europe when I was in grade 7, which was amazing! I am also Métis – I'm learning about my family history and Indigenous Ways of Knowing and to be proud of my heritage.

TITLE: Compensation Advisor (Pay and Benefits – Human Resources)

WHAT WAS YOUR FAVORITE SUBJECT IN GRADE SCHOOL? A construction class in high school.

WHAT WAS YOUR VERY FIRST JOB EVER? I worked at Sobeys in the bakery and cake department.

FIRST JOB AFTER GRADUATING? After high school, I did a youth volunteer program called Katimavik, where I travelled and worked in three provinces with 10 other youth from all over Canada. Afterwards, I joined Katimavik's head office in Montreal, working in participant recruitment.

WHAT DO YOU STILL WANT TO LEARN ABOUT? I want to improve my French and learn more about Indigenous cultures and traditions.

WHAT IS THE MOST INTERESTING THING ABOUT YOUR JOB: Every day is different, fast-paced, and challenging, and I'm always learning something new. I love having a career with the Federal Public Service because opportunities are plentiful – you can have 25 different jobs over your career with one employer! There are so many interesting positions in all departments, located across Canada and even overseas.

HOW DID YOU COME TO WORK FOR THE CER? I have worked with the Government of Canada for almost 8 years. I started with Parks Canada as a Heritage Presenter during summer breaks between university semesters. After graduating, I secured a term position and I have been with the Federal Government ever since. The CER is my fourth governmental department, and I have been working here for 1.5 years. I love it!



**ACTIVITY 4: CAREERS AT THE CANADA ENERGY REGULATOR:
WHAT'S THEIR BACKGROUND?****MEET: Amadou**

TITLE: Engineer, Pipeline Integrity Management

EDUCATION: B.Sc. in Mechanical Engineering, M.Sc. in Industrial Engineering

WHAT WAS YOUR FAVORITE SUBJECT IN GRADE SCHOOL? Physics.

TRAINING AND EXPERIENCE: Training in pipeline integrity management, application assessment, compliance verification activities (e.g. field inspection, implementation assessment and audit), and incident investigation.

WHAT DO YOU WANT TO LEARN? I'd like to continuously improve my skills, stay on top of current technical trends and do more leadership development training.



WHERE WERE YOU BORN? Mali, Africa

WHAT'S YOUR FAVOURITE ANIMAL: Doves

HOW DID YOU COME TO WORK AT THE CER? Through the Canada Energy Regulator's (CER) online job posting and application portal.

WHAT IS THE MOST INTERESTING THING ABOUT YOUR JOB? Working within an interesting, dynamic, knowledgeable engineering team to continuously find solutions to challenging pipeline integrity issues across Canada.

FIRST JOB AFTER GRADUATING: I was the service workshop technical lead for a Caterpillar dealer in Mali, Africa.

WHAT WAS YOUR VERY FIRST JOB EVER? I was a machine tool operator helper (lathe machine and milling machine).



ACTIVITY 4: CAREERS AT THE CANADA ENERGY REGULATOR: WHAT'S THEIR BACKGROUND?

MEET: **Amanda**

TITLE: Communications Officer

EDUCATION: BA in Public Relations from Mount Royal University

WHERE WERE YOU BORN? Venezuela

WHAT'S YOUR FAVOURITE ANIMAL: Pandas! They're very cute and seem so huggable (although I heard they aren't).

WHAT'S YOUR FAMILY LIKE?

We're very close to each other. My dad is pretty quiet, but my mother is short and sassy. My brother is a teacher and extremely intelligent. My sister is a smart, creative person who just had her first child! My extended family is a lot of fun – they like to have loud dance parties with Caribbean music. My boyfriend is shy and respectful and makes me laugh as no one else can.



WHAT WAS YOUR FAVORITE SUBJECT IN GRADE SCHOOL? If I had to pick one, it would be social studies. I'm passionate about history.

WHAT WAS YOUR VERY FIRST JOB EVER? My first job was at Rexall Pharmacy as a front store clerk when I was 16.

FIRST JOB AFTER GRADUATING? CER! After graduating in November 2018, I was hired as a term at the CER (then NEB) a few weeks later. I feel extremely fortunate.

WHAT DO YOU STILL WANT TO LEARN ABOUT? Learning about the CER, staff, stakeholders, Indigenous communities and how to incorporate reconciliation into my work and life.

WHAT IS THE MOST INTERESTING THING ABOUT YOUR JOB:

Working in media relations is always exciting because I get to help communicate the CER's story to the public. The most interesting part of my job is the potential to make changes within the communications field, using my knowledge and talent.

HOW DID YOU COME TO WORK FOR THE CER? I started as a student in January 2018. I worked really hard during my student term and made relationships throughout the office, which was key to getting my position later.



ACTIVITY 4: CAREERS AT THE CANADA ENERGY REGULATOR: WHAT'S THEIR BACKGROUND?

MEET: **Andrea**

TITLE: Market Analyst/Project Manager – Energy Futures

EDUCATION: Business Administration at UPEI, Masters in Public Administration at Dalhousie University

WHAT WAS YOUR FAVORITE SUBJECT IN GRADE SCHOOL?
Global development

WHERE WERE YOU BORN?
Summerside, PEI

WHAT WAS YOUR VERY FIRST JOB EVER? Movie theatre

WHAT'S YOUR FAMILY LIKE? My family is not typical. Divorced parents and half siblings on both sides. People have stuck very close to home, and mostly live in PEI. I was the first person in my family (Mom's side) to go to university and grad school.

FIRST JOB AFTER GRADUATING? A Policy Analyst at Western Economic Diversification Canada in Edmonton, a federal regional economic development agency.

WHAT'S YOUR FAVOURITE ANIMAL? Giraffe

WHAT IS THE MOST INTERESTING THING ABOUT YOUR JOB? The most interesting thing about my job is working in several areas and learning about various parts of the CER's work at once. I'm a Project Manager, but also do natural gas market analysis. Part of my job is also doing regulatory work and providing market analysis and expertise to Commissioners during our hearing processes. At the CER, you have the opportunity to work on different kinds of projects all the time with people from around the organization. I stay interested in my job because my work is always changing and I'm constantly learning from my co-workers.

WHAT DO YOU STILL WANT TO LEARN ABOUT? I currently manage the CER's flagship report, Energy Futures. It's a very complex and technical report. I'd like to continue to work on Energy Futures to build my competency around Canadian energy supply and demand forecasts and how climate policy is shaping the energy landscape. I would also like to continue to work on hearings and get that in-depth, technical knowledge of the companies and pipelines we regulate. This is where you really build your expertise in energy markets.

HOW DID YOU COME TO WORK FOR THE CER? I moved to Calgary in 2009 after grad school and decided my goal was to work at the Canada Energy Regulator (then the National Energy Board). In grad school, I became very interested in energy, particularly the oil sands, and incorporated that into some of my graduate work. Because of my background working for the federal government as a student for almost four years, the CER seemed like the perfect for me: it integrated my federal government experience and education with my interest in energy. It was the recession, so I took a job in Edmonton with Western Economic Diversification. A couple years later, I got a job offer from the CER! At that time, I was working for the Petroleum Technology Alliance Canada (PTAC), an industry association in Calgary, as Manager of Technology Development.



ACTIVITY 4: CAREERS AT THE CANADA ENERGY REGULATOR: WHAT'S THEIR BACKGROUND?

MEET: **Andria**

TITLE: Environmental Specialist, Inspection Officer; Environmental Protection team, Field Operations.

EDUCATION: Bachelor of Science (Honours) in Marine Biology and Oceanography (Dalhousie University, 2006), Masters of Marine Management (Dalhousie, 2016).

WHAT WAS YOUR FAVORITE SUBJECT IN GRADE SCHOOL?
Math

EXPERIENTIAL/ON THE JOB EDUCATION: The Inspection Officer path involves a lot of on-the-job learning from more experienced IOs including learning about pipeline construction and mitigation measures to protect the environment

WHAT WAS YOUR VERY FIRST JOB EVER? Lifeguard

WHERE WERE YOU BORN? Toronto, Ontario

FIRST JOB AFTER GRADUATING? Outreach Specialist at Discovery Centre (Halifax NS; science centre). I traveled to elementary schools around the city and did curriculum-based hands-on science activities with students.

WHAT'S YOUR FAVOURITE ANIMAL? I love all animals, with some exceptions (like spiders) but I think as a group the octopus is one of my favourites (can't narrow down to be species level though); I'm impressed with their intelligence and camouflage abilities.

WHAT IS THE MOST INTERESTING THING ABOUT YOUR JOB? I learn something new almost daily and I love traveling to parts of the country that I might not otherwise see.

HOW DID YOU COME TO WORK FOR THE CER? I moved to Calgary from Halifax in 2011 and saw the CER (then the NEB) job posting in 2012. I applied and qualified and was in a pool for about a year before I was hired. I was attracted by the work/life balance, benefits and a chance to serve Canadians and see the country.

WHAT DO YOU STILL WANT TO LEARN ABOUT? No specific subject matter comes to mind, but when there's an opportunity to learn anything I jump at it.



ACTIVITY 4: CAREERS AT THE CANADA ENERGY REGULATOR: WHAT'S THEIR BACKGROUND?

EDUCATION: BA in Law & Society and a History minor from the University of Calgary

EXPERIENTIAL/ON THE JOB EDUCATION: Indigenous engagement-focused training as well as conferences on the subjects I love. Also, regulatory and safety training.

MEET: **Angelina**

TITLE: Indigenous Engagement Specialist

WHAT WAS YOUR FAVORITE SUBJECT IN GRADE SCHOOL? I have always loved Social Studies, learning about history and politics.

WHAT WAS YOUR VERY FIRST JOB EVER? Working at my school library.

FIRST JOB AFTER GRADUATING? CER! Receptionist/document control person in a law office downtown.

WHAT DO YOU STILL WANT TO LEARN ABOUT? Everything and anything! I love learning about other cultures, as well as sharing my First Nation history and culture with others.

HOW DID YOU COME TO WORK FOR THE CER? Before applying to the CER, I worked with and supported Indigenous communities in conducting Environmental Assessments for about eight years. I took the position with CER because the role entailed working with Indigenous peoples across Canada.

WHAT IS THE MOST INTERESTING THING ABOUT YOUR JOB: I feel like I'm learning and experiencing new things every day. Like when I meet someone new and share information, or when they teach me something that I did not know before. Life is a long journey!

WHERE WERE YOU BORN? I was born in Treaty 7 Territory (Calgary). My dad is from Kainai Nation (also known as the Blood Tribe) and my mom is from Tsuut'ina Nation.

WHAT'S YOUR FAVOURITE ANIMAL: Cat cuddles are the best.

WHAT'S YOUR FAMILY LIKE? I have a very big family: two brothers and two sisters! With five of us growing up and very close in age, there was the odd sibling disagreements but the older and older you get the more and more you appreciate and love all of your family time. My mom and dad live near to me in Calgary, so I visit them and my grandma as much as possible. I have a daughter who just turned 3 years old, whom I love with my whole heart. It is very important to me that my daughter Stella knows her roots and where she comes from. Appreciating and acknowledging our ancestors is a beautiful lesson that I learned as a child – one that I will make sure my “girly” learns too!



**ACTIVITY 4: CAREERS AT THE CANADA ENERGY REGULATOR:
WHAT'S THEIR BACKGROUND?****MEET: Jason****TITLE:** Graphic Designer**EDUCATION:** International Academy of Design. Toronto, ON**WHERE WERE YOU BORN?**
Blind River, ON**WHAT'S YOUR FAVOURITE ANIMAL?** I don't really have a favourite animal**WHAT IS THE MOST INTERESTING THING ABOUT YOUR JOB?**
I get to work with some awesome people!**HOW DID YOU COME TO WORK FOR THE CER?** I was working in a print shop in Edmonton and a friend of mine who lived in Calgary stumbled across a job application for the CER (then NEB) and said I should apply. I had a job interview a few weeks later with some awesome people who have long since retired. I've been here 18 years and I'll probably put in at least another 13 (according to when I can retire).**WHAT WAS YOUR FAVORITE SUBJECT IN GRADE SCHOOL?** I didn't really like high school that much. I just barely graduated. I would have to say band or art.**FIRST JOB AFTER GRADUATING?** Hockey News Magazine. Literally, after 5 minutes of my final exam I was headhunted to start work the same afternoon color correcting the faces of goalies for their year-end magazine. I went from making \$8 an hour in a hardware store to making \$25 an hour. When I received my first paycheck I almost wept.**WHAT WAS YOUR VERY FIRST JOB EVER?** Flipping burgers at Peggy Sue's Diner in Brandon, Manitoba

ACTIVITY 4: CAREERS AT THE CANADA ENERGY REGULATOR: WHAT'S THEIR BACKGROUND?

EDUCATION: Certificate of Arts and Sciences and Fish and Wildlife Technician Diploma from the College of the North Atlantic. Bachelor of Science in Restoration Ecology from the British Columbia Institute of Technology.

EXPERIENTIAL/ON THE JOB

EDUCATION: I was a Heavy Equipment Operator at Detoncho Training Academy in Yellowknife, NT. I also was a Camp Manager/ Conservation Officer at the Tundra Ecosystem Research Station for Government of the Northwest Territories in the Environment and Natural Resources Division located in Daring Lake.

WHAT'S YOUR FAVOURITE ANIMAL: I love all animals, insects and biota. If I must choose, it would be a Raven.

WHERE WERE YOU BORN? Fort McMurray, AB, Canada.

WHAT'S YOUR FAMILY LIKE?

My mother is Denesuline (Chipewyan) from the Northwest Territories, and my father is from Newfoundland (Irish descent). I'm close with my family and have inherited many valuable traits and characteristics from both sides.

MEET: Lucas

TITLE: Environmental Specialist – Environmental Protection

ROLE: Environmental Inspection Officer/ Conservation Officer (In training)



WHAT WAS YOUR FAVORITE SUBJECT IN GRADE SCHOOL? Social Studies.

WHAT WAS YOUR VERY FIRST JOB EVER? In high school, I worked as a part-time grocery store clerk, stocking shelves and unloading freight.

FIRST JOB AFTER GRADUATING? After graduating high school, my first full-time job was an administrative assistant for the Public Service Alliance of Canada (PSAC).

WHAT DO YOU STILL WANT TO LEARN ABOUT? Eventually, I would like to complete a Master's Degree, furthering my education and becoming a leader in the environmental field.

WHAT IS THE MOST INTERESTING THING ABOUT YOUR JOB?

I get to travel all over Western Canada and visit communities that I would probably never visit if I didn't work as an Inspection Officer at the CER.

HOW DID YOU COME TO WORK FOR THE CER? I saw a job posting on the Government of Canada Job website and applied. After passing the screening exam, I rented a board room from the local employment office and interviewed for the job via teleconference. What happened next is fairly obvious – I was selected for the position.



ACTIVITY 4: CAREERS AT THE CANADA ENERGY REGULATOR: WHAT'S THEIR BACKGROUND?

EDUCATION: MSc Oil and Gas Engineering, BSc Chemical Engineering

MEET: **Negar**

TITLE: Engineer

WHAT WAS YOUR FAVOURITE SUBJECT IN GRADE SCHOOL? Persian Literature and Creative Writing

EXPERIENTIAL/ON THE JOB EDUCATION: Various industry courses. Some examples include: Defect Assessment in Pipelines, Pipeline Geohazard Management, Pipeline Integrity Management, Incident Investigation – DNV, Directional Drilling, Formation Evaluation, Geomagnetic Referencing.

WHAT WAS YOUR VERY FIRST JOB EVER? I worked as a co-op student (process engineer) for one summer in a food factory outside Tehran, Iran.



FIRST JOB AFTER GRADUATING? Process Engineer

WHERE WERE YOU BORN? Tehran, Iran

WHAT'S YOUR FAVOURITE ANIMAL? Owl

WHAT'S YOUR FAMILY LIKE? I am married to a South African and we have two beautiful children.

WHAT IS THE MOST INTERESTING THING ABOUT YOUR JOB? The people I work with across the organization and the diverse nature of the projects that we get to work on in my new team (Research and Innovation).

WHAT DO YOU STILL WANT TO LEARN ABOUT? Too many things! But on top of my list are learning about Canadian indigenous culture and history, sharpening my leadership skills and playing a music instrument.

HOW DID YOU COME TO WORK FOR THE CER? Before I joined the CER, I was a drilling engineer working on onshore and offshore projects. I travelled and worked globally for 15 years after my graduation in 2000. I completed my Master's Degree in 2014 and applied for an engineering position that had just opened up at the CER. I joined the CER (then NEB) in 2015 as an Engineer in Pipeline Integrity team.



ACTIVITY 4: CAREERS AT THE CANADA ENERGY REGULATOR: WHAT'S THEIR BACKGROUND?

MEET: **Rohini**

TITLE: HR Assistant

EDUCATION: BComm. Human Resources and B.A Psychology

WHAT WAS YOUR FAVORITE SUBJECT IN GRADE SCHOOL?
Science

WHAT WAS YOUR VERY FIRST JOB EVER? Teaching kindergarten kids in India (math, English, Hindi and drawing)

FIRST JOB AFTER GRADUATING?
Canada Energy Regulator

WHAT DO YOU STILL WANT TO LEARN ABOUT? Labour Relations, Workforce Planning, Employee Relations, Organizational Culture, Health and Safety, Leadership roles, and Change Management. I am sure there are more areas but for now this is all I can think off...

WHAT IS THE MOST INTERESTING THING ABOUT YOUR JOB? The variety of HR disciplines that I get to explore- Learning and Development, Awards and Recognition, Workforce Planning, Staffing, Performance Management, Top 100 (Communications/Employee Morale). There is always something to do since this role requires holistic thinking of the organization. Especially in this time of change and transition, we have more exciting projects that are all priority. We have new leadership as well and so far, they have been very supportive and strategic. I also enjoy engaging, interacting and working with employees across the organization, from different departments.



EXPERIENTIAL/ON THE JOB EDUCATION: E-learning (created orientation courses for the CER)

WHERE WERE YOU BORN?
Calgary, AB

HOW DID YOU COME TO WORK FOR THE CER? I started off as a co-op student in 2012 and then kept coming back as a casual a few times, a contractor (to provide e-learning services) and now a term with the CER.

WHAT'S YOUR FAMILY LIKE? I have a small family but they are truly the best. My cute mom lives in India with my sweet grandmother. My twin brother lives in Calgary downtown. Even though my family is scattered and we may not see each other in person that often, we do love each other and support each other. My grandparents played a huge role in my life when I lived in India. I lived in India with them from grade 1-grade 5. My brother works at EY in the valuations team and my mom is a professor. My grandma owns and is the principal of a kindergarten school. My grandpa was a sweet gentle supportive pillar of the family. He used to work in the mines in India.

WHAT'S YOUR FAVOURITE ANIMAL? My last name Singh means a lion so naturally I am attracted to this fearless, majestic creature. A lion is definitely one of my favorite animals, because it's protective of its family and fearless. This goes with tigers and wild cats as well. My favorite animal changes in relation to how I feel in life at that moment. I love elephants as well because of their gentle nature.



ACTIVITY 4: CAREERS AT THE CANADA ENERGY REGULATOR: WHAT'S THEIR BACKGROUND?

EDUCATION: Bachelor of Business Administration and a Certificate in Petroleum Land Management from Mount Royal University.

EXPERIENTIAL/ON THE JOB

EDUCATION: I can't say enough about the value of "on-the-job" education and learning from colleagues. I also find that travelling contributes enormously to my own personal growth – it's helped me to appreciate different perspectives and lifestyles.

WHERE WERE YOU BORN?

Born and raised outside of Rocky Mountain House, AB (Treaty 6).

WHAT'S YOUR FAMILY LIKE?

Hardworking, social, friendly and outdoor lovers! Growing up, we spent a lot of time outdoors, giving me a connection and appreciation for nature. They also are competitive and have great senses of humour.

WHAT'S YOUR FAVOURITE ANIMAL:

I have two! My traditional name means Butterfly Woman, so I often look to the metamorphosis that butterflies experience during times of change. It reminds me of how beautiful and necessary change can be. I grew up with horses, and have always found their spirit very calming and safe. The bond you can create with a horse is pretty magical.

MEET: Victoria/Apanakii

(My traditional name in Blackfoot is Butterfly Woman)

TITLE: Indigenous Engagement Specialist – Socio-Economics

WHAT WAS YOUR FAVORITE SUBJECT IN GRADE SCHOOL?
Social studies.

WHAT WAS YOUR VERY FIRST JOB EVER? Pumping gas at a Shell gas station all through high school. I loved that job! It actually helped me to get my foot in the door when I started at Shell.

FIRST JOB AFTER GRADUATING?

I worked on my business degree in the evenings throughout my career, so technically the Canada Energy Regulator is my first job since I graduated this spring.

WHAT DO YOU STILL WANT TO LEARN ABOUT? Right now, I want to learn more about leadership and effective strategies in public participation. I'm a forever student!

HOW DID YOU COME TO WORK FOR THE CER?

I really wanted to get a new perspective on the energy industry. After working in the private sector for 12 years, I was ready to bring that knowledge to the public sector and begin working for a better Canada instead of a company's bottom line. I felt that I could help build bridges and relationships between the CER and Indigenous communities. I like to say the job found me and it's truly an honour to do this work.

WHAT IS THE MOST INTERESTING THING ABOUT YOUR JOB:

I meet people from all over and from all backgrounds. The brilliant and inspiring minds that I get to work with at the CER, coupled with memorable experiences when I'm out in Indigenous communities makes this feel like a dream job. As Project Manager for the CER's Indigenous Awareness initiatives, I'm able to keep learning and appreciating my culture, as well as find cool, educational opportunities for staff to build upon their knowledge and cultural skills. It's a pretty amazing thing to be able to witness their own journeys of reconciliation!



Appendix 1: Canada Energy Regulator Visualizations

1. EXPLORE BY REGION: ENERGY DEMAND AND GENERATION BY REGION

- Compare historical and projected energy supply and demand data from across Canada's provinces and territories.

VARIABLES: total demand (used by all four sectors); supply (electricity generation, oil production, gas production [includes both energy used in the province and energy for export]), province; scenario (evolving, reference); static year (2005–2050)

2. EXPLORE BY SECTOR: ENERGY DEMAND BY SECTOR

- Explore how energy demand and how energy source mixes from different sectors have evolved in recent history, and how they are projected to evolve in the Energy Futures scenarios.

VARIABLES: sector (total demand, residential, commercial, industrial, transportation), province, source (bio-fuels and emerging energy [includes biomass, hydrogen, ethanol and biodiesel], coal, electricity [includes nuclear, hydro, wind and solar, thermal generation from natural gas, coal and oil], natural gas, oil products), scenario (evolving, reference), static year (2005–2050)

3. SCENARIOS: COMPARE SCENARIOS

- Directly compare the scenarios. Explore the impact of key uncertainties on future energy trends, including technological development, climate policy initiatives such as carbon pricing, or higher or lower energy prices.

VARIABLES: total demand, supply (electricity generation, oil production, gas production [includes both energy used in the province and energy for export]); province, scenario (evolving, reference); static year (2005–2050)

4. EXPLORE ELECTRICITY: ELECTRICITY GENERATION

- Compare the relative amount of electricity generated by various energy sources throughout the provinces and territories for a given year.
- Switch between two views: one that compares the amount of electricity generated by each source for each region, and one that compares the amount of electricity generated by each region for each source.

VARIABLES: province, source (biomass and geothermal, coal, natural gas, hydro, nuclear, oil, solar and wind), scenario (evolving, reference) year (2005–2050)



5. EXPLORE OIL AND GAS: OIL AND GAS PRODUCTION

- Explore oil and gas production across the provinces and territories for a given year.
- Switch between two views: one that compares the amount of oil or gas production by type for each region, and one that compares the production of oil or gas by region for each type.
- Use the timeline to compare actual vs. projected years and see how production changes and is projected to change over time.

VARIABLES: supply (oil production, gas production); types of for oil production (c5+ (pentanes plus), condensate, conventional heavy, conventional light, in situ bitumen, mined bitumen); types of for gas production (coalbed methane, conventional, shale, solution gas, tight); province, scenario (evolving, reference); static year (2005-2050)

Appendix 2: Portals to Geographical Thinking

The following excerpt from Sharpe, Bahbahani and Huynh’s *Teaching Geographical Thinking* (p. 4–6, 2016) has been used to guide the activity development for this resource.

A major step in embedding geographical thinking is to make the curriculum problematic, so that the study of geography poses challenges to think through problems rather than supplying lists of information to be remembered. Based on Peter Seixas’ Teaching historical Thinking approach, the Critical Thinking Consortium approach proposes six concepts that serve as portals to turn the factual content of geography into a subject for analysis. These six concepts are not “content”—although they have to be taught to students—they are sources of questions that invite and support students to think critically about what they are learning.

SPATIAL SIGNIFICANCE. At the heart of any geographical analysis or representation lies the question of importance. It is a core question in geographer Charles Gritzner’s definition of geography, “What is Where, Why There, and Why Care?” Answering the question of “why care?” requires consideration of the other core questions, “what is where?” and “why there?”

PATTERNS AND TRENDS. This portal raises the question: *What can we conclude about the variation and distribution of geographical characteristics over time and space?*

INTERRELATIONSHIPS. This portal raises the question: *How do human and natural factors and events connect with and influence each other?*

GEOGRAPHICAL PERSPECTIVE. The key question in understanding the geography of a place is: *What are the human and physical features and identities, as understood through various lenses, that characterize a place?*

EVIDENCE AND INTERPRETATION. This portal raises the questions: *What information can be used as evidence to support ideas about geography, and how adequately does the geographical evidence justify the interpretations offered?*

Students often approach data from a naïve perspective, assuming that they are accurate, relevant, and free of distortions. To encourage a more critical analysis of data — the source of all subsequent interpreta-



tions—we must invite students to examine their accuracy, precision and reliability. This includes analyzing three kinds of sources:

- Primary sources, which provide the raw data for geographical information and knowledge;
- Secondary sources, which are geographical reports not drawn directly from the object of study; and
- Tertiary sources, which provide overviews of information based largely on secondary sources.

ETHICAL JUDGMENT. The central question invoked by ethical judgment is: *How desirable and responsible are the practices and outcomes associated with particular geographical actions and events?* Ethical judgments encompass various lenses—including economic, environmental, cultural, political and historical—and various group and regional perspectives.

REFERENCE:

Sharpe, B., Bahbahani, K., Huynh, N.T. (2016) *Teaching Geographical Thinking*. The Critical Thinking Consortium (TC²) and The Royal Canadian Geographical Society.

Appendix 3: Data Sources

DATA SOURCES FOR ENERGY DEMAND

The primary source for historical energy demand data is Statistics Canada’s Report on Energy Supply and Demand and associated data tables. These values are disaggregated at an end-use level using NRCan’s National End-use Database. The dataset is also supplemented with data from Environment and Climate Change Canada, and various provincial and territorial sources such as the Alberta Energy Regulator, BC Hydro, Alberta Electric System Operator, and Ontario’s Independent Electric System Operator.

DATA SOURCES FOR ELECTRIC GENERATION

The primary source for electric generation data comes from Statistics Canada. It is supplemented by additional data from provincial governments, utilities, and system operators, as well as industry associations (such as CanWEA and CanSIA).

DATA SOURCES FOR CRUDE OIL AND NATURAL GAS PRODUCTION

Data for crude oil and natural gas production comes from a variety of sources. These include CER analysis of Divestco well data, provincial and territorial governments, the Alberta Energy Regulator, and Canadian Association of Petroleum Producers.



Appendix 4: Glossary

See also the [Energy Information Program Glossary](#) for detailed definitions

ENERGY SOURCES

CRUDE OIL: contains conventional light and heavy crude oil, condensate, oil sands bitumen (mined and in situ).

OIL PRODUCTS: Includes refined petroleum products and natural gas liquids. Specifically this includes: motor gasoline, diesel, aviation fuel, light fuel oil, kerosene, heavy fuel oil, propane, butane, ethane, petroleum coke, still gas, and non-energy products such as lubricants, asphalt, and petrochemical feedstocks.

NATURAL GAS: Production refers to dry marketable gas production. Total consumption of gas includes some non-marketed producer consumption. In Canada, it is produced from conventional, tight, shale, and coal bed methane resources, as well as produced along with crude oil production (also known as solution or associated gas).

COAL: Includes coal, coke, and coke oven gas.

ELECTRICITY: End-use electric energy that is generated from a variety of sources and technologies. Includes generation primary electricity sources such as nuclear, hydro, wind and solar, and thermal generation from other fuels such as natural gas, coal, and oil.

HYDRO: Amount of electricity generated by hydro power plants.

NUCLEAR: Amount of electricity generated by nuclear power plants.

BIOMASS/GEOTHERMAL: Includes solid biomass fuels such as wood pellets, as well as geothermal sources.

BIOFUELS & EMERGING ENERGY: Includes biomass, hydrogen, ethanol and biodiesel.

SOLAR/WIND: Includes electricity generated using photovoltaic systems or concentrated solar thermal systems generated by wind turbines.

ENERGY UNITS

PETAJoule: A measure of energy that is a quadrillion (10^{15}) joules. According to Statistics Canada, a petajoule is the approximate amount of energy it takes to run the Montreal Metro for one year.

BARREL OF LIGHT OIL EQUIVALENT (BOE): A measure of energy normalized to the equivalent energy content of a barrel of light crude oil. One barrel of light oil equivalent is equal to 6.123 gigajoules.

GW.H: A measure of electric energy that is a billion (10^9) watt hours of electric energy per year. One GW.h is equal to 0.0036 petajoules and 0.0016 MBOE/d.



VOLUMETRIC UNITS

THOUSAND BARRELS PER DAY (MB/D): Number of barrels of crude oil produced per day.

THOUSAND CUBIC METRES PER DAY ($10^3\text{M}^3/\text{D}$): Number of cubic metres of crude oil produced per day. One barrel of oil is equal to 0.159 cubic metres.

BILLION CUBIC FEET PER DAY (BCF/D): Number of cubic feet of natural gas produced per day.

MILLION CUBIC METRES PER DAY ($10^6\text{M}^3/\text{D}$): Number of cubic metres of natural gas produced per day. One cubic foot of natural gas is equal to 0.0283 cubic metres.

SECTORS

RESIDENTIAL: This is the energy consumed by Canadian households. It includes energy used for space and water heating, air conditioning, lighting, large appliances, and other energy-using devices like televisions and computers.

COMMERCIAL: A broad category including offices, stores, warehouses, government and institutional buildings, utilities, communications, and other service industries. It also includes energy consumed by street lighting and pipelines. Buildings use energy for space and water heating, air conditioning, lighting, appliances and other devices. Pipelines use energy to power pumps or compressors that move oil and natural gas through pipelines.

INDUSTRIAL: This sector includes manufacturing, forestry, fisheries, agriculture, construction, mining, and oil and natural gas extraction. In 2013, 81 per cent of industrial energy was consumed by a number of energy-intensive industries like iron and steel, aluminum, cement, chemicals and fertilizers, pulp and paper, petroleum refining, mining, and oil and natural gas extraction.

TRANSPORTATION: Includes passenger and freight on-road transportation, as well as air, rail, marine, and non-industrial off-road travel, such as recreational all-terrain vehicles and snowmobiles. Demand in the transportation sector includes foreign energy used on Canadian soil, airspace, and waters.

SUPPLY AND DEMAND CATEGORIES

TOTAL DEMAND: The total energy used in the four sectors of Canada's economy: residential, commercial, industrial, and transportation. Includes the use of electricity, natural gas, and petroleum products such as gasoline, coal, and renewable fuels. Also referred to as end-use or secondary demand, it does not include the energy used to generate electricity.

ELECTRICITY GENERATION: The amount of electric energy produced by transforming other forms of energy. In Canada, electricity is generated from hydro, other renewables like wind and solar, and thermal sources like natural gas and coal, and nuclear power.

OIL PRODUCTION: The amount of crude oil produced in Canada. Crude oil is produced from various areas using different technologies. This includes mined and in situ bitumen from the oil sands, conventional light and heavy oil produced in the Western Canadian Sedimentary Basin, condensate, and oil produced from off-shore platforms on the east coast.



NATURAL GAS PRODUCTION: The amount of marketable natural gas produced in Canada. Natural gas is produced from various areas using different technologies. This includes tight, shale, coal bed methane, conventional, and natural gas produced along with oil from oil wells (also called associated or solution gas).

SCENARIOS

Each edition of the various CER Energy Futures reports uses several scenarios to explore how possible energy futures might unfold for Canadians over the long term. Energy Futures 2020 includes two core scenarios that explore potential outcomes for the Canadian energy system over the next 30 years.

EVOLVING

The Evolving Energy System Scenario considers the impact of increasing action on climate change throughout the projection period. It builds upon current climate and energy policies with a hypothetical suite of future policy developments.

REFERENCE

The Reference Scenario provides a baseline outlook with a moderate view of energy prices and economic growth, and climate and energy policies announced at the time of analysis.

