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	• 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	• 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)	• All may be used
WHAT TO DO	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	• 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.

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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	**Population (BC, 2038)** https://apps.cer-rec.gc.ca/ftrppndc/dflt.aspx?GoCTemplateCulture=en-CA and **Population (AB, 2038)** https://apps.cer-rec.gc.ca/ftrppndc/dflt.aspx?GoCTemplateCulture=en-CA and **Total Energy Demand by Region (AB and BC, 2038)** https://bit.ly/32a0udF
2	AB	In 2020, approximately 90% of electricity in Alberta is produced from fossil fuels.	T	**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
1	BC	BC is expected to produce more electricity from renewables than from natural gas and oil combined during the entire projection.	T	**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
2	BC	BC is expected to be the province with the highest demand for electricity in the transportation sector by 2050.	F	**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.
1	MB	Manitoba is one of the top producers of natural gas in Canada.	F	**Gas Production by Region (MB)** https://bit.ly/3898NdK Correct answer: Manitoba does not produce natural gas.

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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.

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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/2I8MlGS 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

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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/3jZ4V1I 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

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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.

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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/3k2I44O 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