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**EXPERIENCE  
FOSSIL FUELS**



**ENERGY  
EDUCATION  
TOOL KIT**

**BY INSIDE EDUCATION**



# EXPERIENCE FOSSIL FUELS

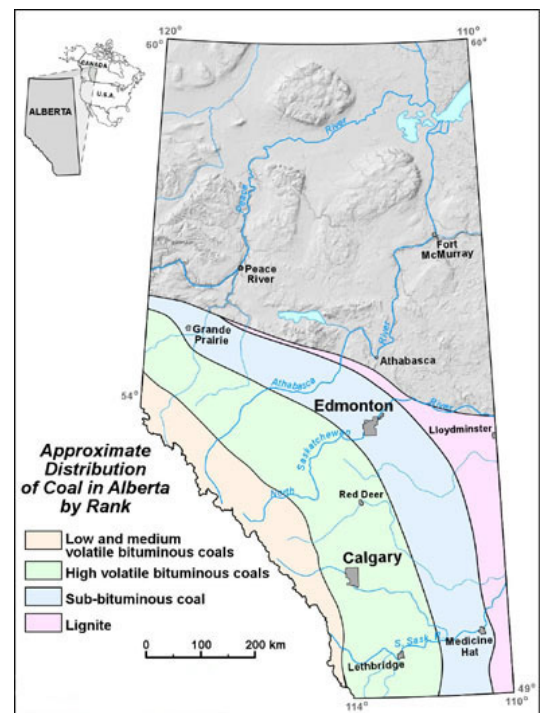
## GUIDING QUESTIONS

- What are fossil fuels?
- Where are fossil fuels found in Alberta?
- How do we extract energy from fossil fuels?
- What resources do we mine in Alberta?

Fossil fuels are formed from the buried, fossilized remains of plants and animals that lived millions of years ago. The fossil fuels found in Alberta are **coal**, **oil** and **natural gas**. Albertans have relied on fossil fuels for many decades. Oil and natural gas are found nearly everywhere in Alberta and we have industries to find, extract and process these resources, making fossil fuels a big part of the Alberta economy. The extraction, processing and use of these resources releases greenhouse gases that contribute to climate change.

## COAL

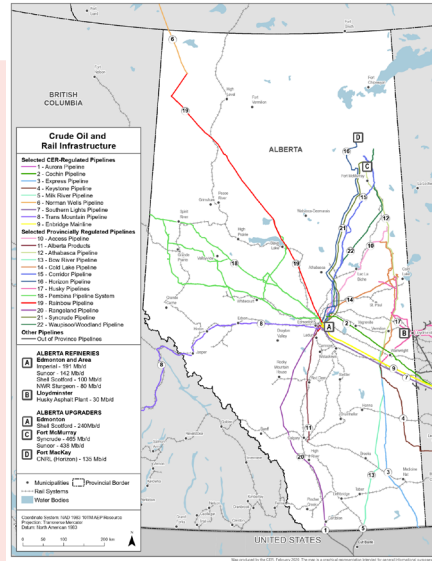
Coal-bearing formations underlie nearly half of Alberta, and Alberta has 9 coal mines. 78% of Alberta's mined coal is **thermal coal**, which is used for electricity generation. The remaining 22% is **metallurgical coal**, which is used to produce materials such as steel. Most coal is extracted using surface mining, which includes strip mining (*reclamation can be carried out throughout the mining process*) and open pit mining (*once the pit has been mined, it is backfilled and resurfaced*). In 2018, the government of Canada announced it would phase out coal-fired electricity by 2030 because the burning of coal releases greenhouse gases that contribute to climate change.



Alberta coal distributions (Credit: Alberta Energy Regulator/Alberta Geological Survey)

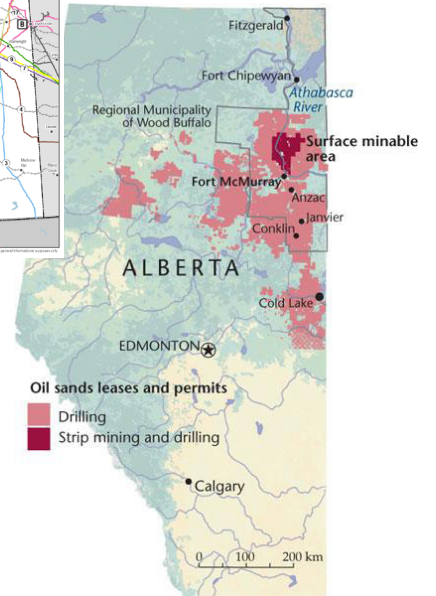
# OIL

Canada is the 4th largest oil producer in the world and is home to some of the largest oil reserves. Western Canada accounts for 95% of the country's total crude oil production, most of which is exported to other countries. Crude oil can be made into petroleum products such as gasoline, diesel, jet fuel and plastics. Crude oil is transported through Canada using pipelines and rail, and to overseas markets using tankers.



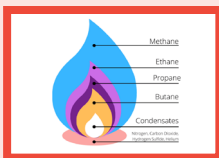
Alberta's Crude Oil and Rail Infrastructure (credit: Canada Energy Regulator)

Alberta's Oil Sands (credit: Steven Fick/Canadian Geographic)

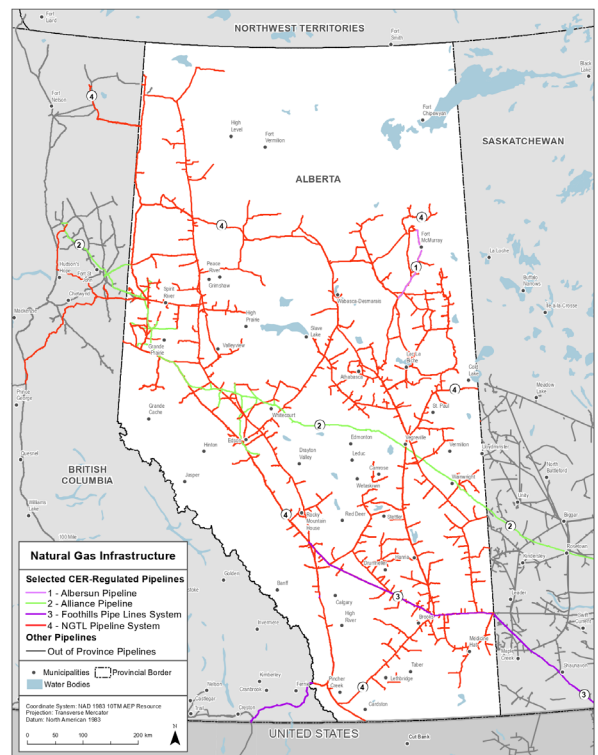


# NATURAL GAS

Alberta and B.C. produced 97% of Canada's natural gas in 2018. Once the natural gas is extracted and processed in western Canada, pipelines carry it to markets in central/eastern Canada and the U.S. Natural gas can be used for heating and transportation, and made into products such as propane (for cooking), electricity, fertilizers, and more.



Alberta's natural gas pipelines. The NGTL Pipeline System in Alberta gathers and carries natural gas from the Western Canadian Sedimentary Basin to domestic and export markets. It is 24,568km in length. (credit: Canada Energy Regulator)



## MATERIALS FROM KIT

- Mining Posters
- Scavenger Hunt
  - Under the Earth
  - Experience the Energy

## MATERIALS FROM CLASSROOM

- Chromebook loaded with PetroLMI videos
  - > <https://www.insideeducation.ca/energy-education-tool-kit>

## TRY THESE ACTIVITIES

- **Mining Posters: Use the 4 mining posters to complete the “Under the Earth” Scavenger Hunt!**
- **Watch PetroLMI’s Experience the Energy 360° videos and complete the “Experience the Energy” Scavenger Hunt!**



## CONSIDER ...

In general, the world is transitioning away from fossil fuels and toward more renewable and alternative energy sources. What are the opportunities of fossil fuels? What are the challenges?

## CONNECT ...

Fossil fuels generate most of our electricity, fuel most of our cars, and produce many of the items we use on a daily basis. Think of 5 ways you’ve used fossil fuels in the last 24 hours.

## LEARN MORE ...

Check out Inside Education’s Oil Sands & Petroleum Field Trip Videos to learn more about how we produce fossil fuels in Alberta.

> <https://www.insideeducation.ca/oil-sands-field-trips>

> <https://www.insideeducation.ca/petroleum-field-trips>

How are deposits of fossil fuel resources found in the first place? Do some research to find out. What technologies help with this process?