INTRODUCTION TO OIL SANDS

CAPP
CANADA'S OIL & NATURAL GAS PRODUCERS

INDUSTRY CHARACTER

Photo Courtesy of: Cenovus, Christina Lake, Alberta

GLOBAL NEED FOR ENERGY

All forms of energy are needed to support a growing world population and improve quality of life. As global energy demand increases, 27 per cent of this demand will be met by oil in 2040, the largest single source of energy. Canada can help meet this need with its abundant natural resources.

Source: International Energy Agency, 2016

GROWTH IN GLOBAL ENERGY DEMAND

27 per cent of this demand will be met by oil in 2040.

SIZE AND SCALE

Canada has the third largest oil reserves in the world with 96 per cent of these reserves located in the oil sands. Canada's oil sands deposits are found in the Athabasca, Peace River and Cold Lake regions in Alberta and Saskatchewan. Oil sands that are found at the surface are located near Fort McMurray, while oil sands found deeper underground (or in situ) are located in other areas and account for 97 per cent of the total oils ands area.

- Active mining footprint: 904 km^2
- Oil sands mineable area: 4,800 km^2
- Oil sands area with potential for development: 142,000km^2

A POWERFUL SOURCE OF ENERGY

Moving us, heating us and creating jobs, Canada's oil sands benefit all Canadians.

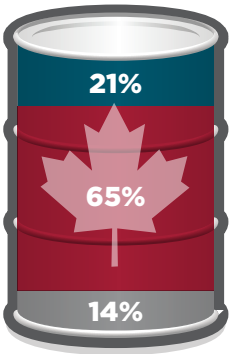
Water Sand Bitumen

WHAT ARE OIL SANDS?

Oil sands are a mixture of sand, water and bitumen – a thick, heavy oil that must be heated to be extracted.

FUELLING EVERYDAY LIFE

AVERAGE OUTPUT FROM A BARREL OF OIL (%), CANADA



Products including propane, asphalt and petro-chemical feedstocks

Transportation including gasoline, diesel and jet fuel

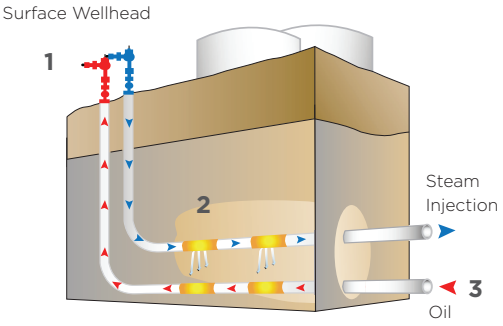
Other including heavy and light fuel oil

Source: CFA 2017

OIL SANDS ARE RECOVERED USING TWO METHODS

IN SITU DRILLING:

80 per cent of reserves are recovered using this method for deposits located more than 70 metres below the ground. Drilling is more energy-intensive, but allows for a smaller footprint.



STAGE 1:
Horizontal wells are drilled based on the location of bitumen deposits.

STAGE 2:
Steam is injected underground to liquefy the bitumen.

STAGE 3:
Bitumen is pumped to the surface through a recovery well.

MINING:

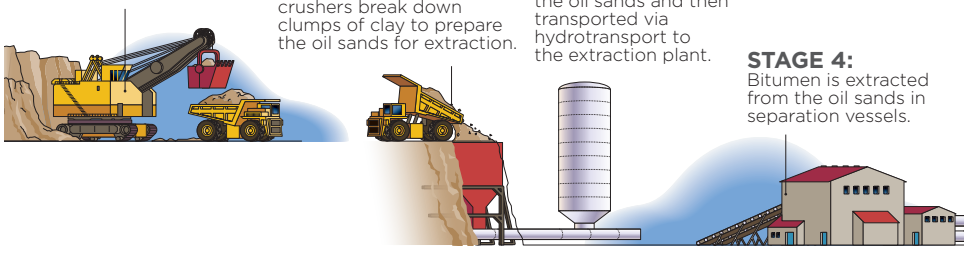
20 per cent of reserves must be recovered using this method in areas where the oil sands are located closer to the surface.

STAGE 1:
Large shovels scoop the oil sands into trucks.

STAGE 2:
crushers break down clumps of clay to prepare the oil sands for extraction.

STAGE 3:
Hot water is added to the oil sands and then transported via hydrotransport to the extraction plant.

STAGE 4:
Bitumen is extracted from the oil sands in separation vessels.



INDUSTRY CHARACTER

MORE THAN 6,000 EVERYDAY PRODUCTS ARE MADE FROM OIL:

- Golf balls, lifejackets and parachutes
- Tires and car seats
- Medical supplies, dentures and hearing aids
- Smartphones and electronics

OIL SANDS PRODUCTION IN 2015:

57% is from in situ
43% is from mining

GROWTH OF OIL SANDS - FROM 2015 TO 2030:

60% growth in in situ
49% growth in mining

Source: CAPP 2016