Factsheet:

Why Phase-Out Alberta's Coal-Fired Power Plants?

Alberta Relies Heavily on Coal Plants

- Alberta burns nearly twice as much coal as the rest of Canada combined.
- In 2014, it generated 68 per cent of its electricity from coal.
- Alberta increased its coal capacity by 14 per cent from 2002 to 2012.
- Many other jurisdictions are working to reduce their reliance on coal plants.
- Alberta has six coal plants with 18 individual generators with generating capacities ranging from 150 megawatts (**MW**) to 495 MW for a combined capacity of over 6,200 MW.

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Coal Plants Are a Major Source of Air Pollution

- Coal plants are a major source of the common air pollutants that are harmful to humans including sulphur dioxide (**SO_2**), nitrogen dioxide (**NO_2**), fine particular matter (**PM2.5**) and **ozone.**
- In 2011, Alberta's coal plants emitted:
  - 33 per cent of the SO_2 emitted in the province (114,511 tonnes);
  - 10 per cent of the nitrogen oxides (**NO_x**)emitted (71,507 tonnes); and
  - 6 per cent of the PM2.5 that is directly emitted (1,782 tonnes).
- **SO_2** is a gas that can turn into an acid mist in the air and add to air levels of PM2.5.

- **NO_x** refers to two air pollutants that are gases - nitric oxide (**NO**) and nitrogen dioxide (**NO_2**). Both can turn into an acid mist in the air and add to air levels of PM2.5.
- **PM2.5** can be directly emitted from industry stacks and vehicles tailpipes or formed in the air from pollutants such as SO_2 and NO_x.
- **PM2.5** is the term used for tiny solid or liquid particles that are suspended in the air.
- **PM2.5** can be inhaled deep into the lungs and absorbed into the blood stream.
- **PM2.5** can be composed of metal fumes, organic chemicals, smoke, acid mist and pollen.
- **Ground level ozone** is produced in the air from air pollutants such as NO_x and volatile organic compounds (**VOCs**) in the presence of sunlight.

Air Pollution Increases Disease, Hospital Admissions & Premature Deaths

SO_2:

- Short exposures to high levels can aggravate the lungs, particularly among people with respiratory diseases such as asthma and chronic obstructive pulmonary disease (**COPD**).
- Low-level exposures can contribute to deaths and hospital admissions from heart and lung diseases, and may have a negative impact on unborn children.

Photo: Kozielczyk, Thinkstock 1

NO_2:

- Short- and long-term exposures can contribute to deaths and diseases related to the lungs.
- Can be particularly irritating to people with respiratory diseases such as asthma and COPD.

PM2.5:

- Short- and long-term exposures have been clearly and consistently linked to increases in deaths and disease, particularly conditions associated with the heart and blood vessels (i.e. cardiovascular disease).
- Many studies have shown that there is no level of exposure that is safe.
- PM2.5 is a cancer-causing agent that has been clearly linked to lung cancer.
- Long-term exposures may also have a negative impact on pregnancies, the development of children's brains, and on the lungs of children.

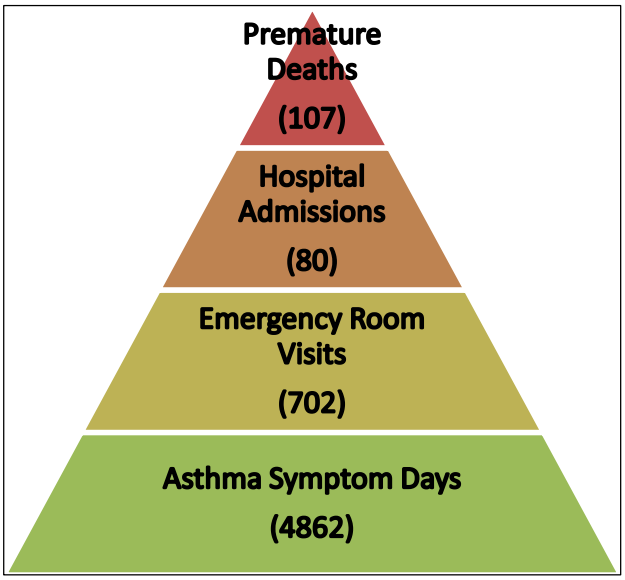
Ozone:

- Irritates the lungs and airways particularly among young children and those with lung diseases.
- Increases deaths, hospital admissions, emergency room visits, and respiratory infections.

- There is no level of exposure that is considered safe.
- Exposures may also aggravate people with heart diseases, increasing heart attacks and heart irregularities.

Alberta's Coal Plants Are Harming Many Albertans

- In 2008, using the Illness Cost of Air Pollution (**ICAP**) model, the Canadian Medical Association estimated that air pollution in Alberta was producing approximately $549 million in health-related costs per year.
- Using the same model, CAPE and its partners estimated that in 2008 air pollution from Alberta's coal plants gave rise to:
  - More than 100 deaths from long-term exposures;
  - 700 visits to Alberta's emergency departments;
  - 80 hospital admissions for heart and lung conditions; and
  - 4,800 asthma symptom days.



- These health impacts were valued at approximately $300 million per year.

Coal Plants Are a Major Source of Mercury

- In 2011, Alberta's coal plants emitted 44 per cent of the mercury that was released from man-made sources in the province.
- Mercury is a persistent toxic that accumulates in the aquatic food chain.
- People can be exposed to mercury when they consume fish that has high levels of mercury.
- Children who are exposed to higher levels in the womb or early in life can experience negative developmental effects such as poor motor skills or learning abilities.
- Women of childbearing age, pregnant women, children, and populations who depend on fish as a traditional food source are at greatest risk for negative health impacts from mercury exposure.

Coal Plants Contribute to Climate Change

- In 2011, Alberta's coal plants were responsible for 18% of the total greenhouse gases emitted in the province (about 43 megatonnes).
- This is almost as much as all of the oil sands operations in Alberta combined.

- Climate change IS happening and there is strong consensus around the world that human activity is contributing to it.

Climate Change Is Devastating to Health Globally

- Climate change is already having a devastating effect on human health around the world and the impacts are expected to increase significantly in the coming years.
- The World Health Organization (WHO) estimates that, between 2030 and 2050, climate change will result in approximately 250,000 additional deaths per year:
  - 38,000 due to heat exposure in elderly people;
  - 48,000 due to diarrhoea;
  - 60,000 due to malaria; and
  - 95 000 due to childhood under-nutrition.

Climate Change Will Harm Albertans as Well

- While people living in low income countries, near coastlines, and on islands will be hit much harder by climate change than those in Canada, Albertans will not be immune.
- Health Canada has reported that, with climate change, Alberta is expected to experience:
  - Increased frequency and severity of heat waves and heat-related deaths and illnesses
  - Higher levels of smog and pollen and air pollution related health impacts
  - Increased frequency and severity of thunderstorms, hailstorms and tornadoes
  - Increased risk of avalanches and mudslides in the mountains
  - Heavier rain which can lead to floods, contamination of drinking water, and increases in food-borne illnesses and other intestinal diseases
- These events can be associated with both heavy health costs and significant economic costs. For example, the heavy rainfall that led to catastrophic flooding in several communities in Alberta in 2013 displaced more than 100,000 people and cost more than $5 billion.

Photo: 51Systems, Thinkstock 1

For more information, see CAPE Website or Alberta Coal Phase-out Website