

# Backgrounder: Why we should Accelerate the Phase-out of Alberta's Coal Plants

## Alberta Relies Heavily on Coal Plants

- Other jurisdictions around the world are phasing out their coal plants.
- Alberta burns more coal than the rest of Canada combined.
- In 2014, it generated 67 per cent of its electricity from coal.
- It increased its coal capacity by 14 per cent from 2002 to 2012.
- Alberta has six coal plants with 18 individual generators; 12 of these generators lie immediately upwind of Edmonton in the Wabamun region.
- Their generating capacity ranges from 150 megawatts (**MW**) to 495 MW for a combined capacity of over 6,200 MW.

## 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; particularly of sulphur dioxide (**SO<sub>2</sub>**), nitrogen oxides (**NO<sub>2</sub>**), fine particular matter (**PM<sub>2.5</sub>**) and ground level **ozone**.
- **In 2011, Alberta's coal plants emitted:**
  - **33 per cent of the SO<sub>2</sub> emitted in the province (114,511 tonnes)**
  - **10 per cent of the NO<sub>x</sub> emitted (71,507 tonnes) and**
  - **6 per cent of the PM<sub>2.5</sub> that is directly emitted (1,782 tonnes).**
- **SO<sub>2</sub>** is a gas that can turn into an acid mist and PM<sub>2.5</sub> in the air. **In Edmonton approximately 60% of all SO<sub>2</sub> comes from the Wabamun coal generation facilities.**
- **NO<sub>x</sub>** refers to two air pollutants that are gases as well - nitric oxide (**NO**) and nitrogen dioxide (**NO<sub>2</sub>**). Both can turn into an acid mist and PM<sub>2.5</sub> in the air as well. **In Edmonton, approximately 40% of all NO<sub>x</sub> comes from the Wabamun coal generation facilities.**
- **PM<sub>2.5</sub>** is the term used for solid or liquid particles that are suspended in the air. They are tiny particles that can be inhaled deep in to the lungs and absorbed into the blood stream. They can be composed of metal fumes, organic chemicals, smoke, acid mist and pollen. PM<sub>2.5</sub> can be directly emitted from industry stacks and vehicles tailpipes or formed in the air from pollutants such as SO<sub>2</sub> and NO<sub>x</sub> (known as secondary PM 2.5).
- **In January 2015, the Alberta Government reported that air levels of PM<sub>2.5</sub> in Edmonton have exceeded the Canada Wide Standards on several occasions in recent years.** These exceedences, which

occurred primarily in the winter-time, were the result of secondary PM2.5. At present, there is credible plan to deal with these exceedances.

- **Ground level Ozone** is produced in the air from air pollutants such as NOx and volatile organic compounds (**VOCs**) in the presence of sunlight.

## **Air Pollution increases Deaths, Hospital Admissions & Disease**

### **SO2:**

- Short exposures to high levels can aggravate the lungs, particularly for 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 on unborn children.

### **NO2:**

- 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 for those which affect 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 linked to cancers such as lung cancer.
- Long-term exposures may also have a negative impact on pregnancies, the brain development of children, and on the lungs of children.

### **Ozone:**

- Irritates the lungs and airways particularly among young children and those with lung diseases.
- It increases deaths, hospital admissions, emergency room visits and respiratory infections.
- There is no level of exposure that is considered safe.
- Exposures may also aggravate those with heart diseases, increasing heart attacks and heart irregularities.

## **Many Albertans are Being Harmed by Coal Plant Air Pollution**

- Using the **Illness Cost of Air Pollution (ICAP)** model that was used by the Canadian Medical Association, it was estimated that, annually, PM2.5 and ozone from Alberta's coal plants gave rise to:
  - **More than 100 deaths from long-term exposures**
  - **700 visits to Alberta's emergency departments and 80 hospital admissions for heart and lung conditions from short-term exposures; and**
  - **4,800 asthma symptom days from short-term exposures.**
- The ICAP model values these health impacts at **\$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.

- Children who are exposed to higher levels of mercury in the womb or early in life can experience negative developmental effects such as poor motor skills.
- Mercury exposure happens when people consume fish that is contaminated with mercury.
- 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 the Climate Crisis

- In 2011, Alberta's coal plants were responsible for 18% of the total greenhouse gases emitted in the province (about 43 megatonnes).
- This equates to approximately 35% of all industrial emissions, almost as much as all of the oil sands operations in Alberta combined.
- Climate change IS happening and there is a strong scientific consensus that human activity is contributing to it.

## The Climate Crisis is Devastating to Health Globally

- Globally, climate change is already having a devastating effect on human health around the world but 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.

## The Climate Crisis 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 of us in Canada, we too will be negatively affected.
- In Alberta, the climate crisis is expected to:
  - Increase the frequency and severity of heat waves and heat-related deaths and illnesses;
  - Produce higher levels of smog and pollen and air pollution related health impacts;
  - Increase the frequency and severity of thunderstorms, hailstorms and tornadoes;
  - Increase the risks of avalanches and mudslides in the mountains;
  - Produce heavier rain which can lead to floods, contamination of drinking water, and increases in food-borne illnesses and other intestinal diseases.
- **For example: In June 2013, heavy rainfall in parts of Alberta led to catastrophic flooding that affected several communities. More than 100,000 people were displaced throughout the region. The Government of Alberta estimated that the flooding would likely cost more than \$5 billion.**
- Other recent weather events, such as the recent Calgary tornado and hailstorms, and the extremely low river levels in Alberta, can be linked to the climate crisis.

For more information, see [Alberta Coal Phase-out Website](#)