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June 14, 2016

Dear Federal/Provincial Working Group Co-Chairs:

Re: Health Collaborative Submission to the Federal/Provincial Climate Working Group on Specific Mitigating Opportunities: Electricity Sector

This submission is being made on behalf of 15 health organizations that represent doctors, nurses, public health professionals, public health advocates, and health care workers from across the country.

We are united in the view that climate change is threatening the health and well-being of Canadians and people around the world and that Canada should take immediate action to reduce its greenhouse gas (GHG) emissions in line with the Paris Agreement on Climate Change.

We also recognize that coal-fired electricity generation — a singularly high emitter of greenhouse gases among our energy sources — is also a leading emitter of several air contaminants and persistent toxics that are harmful to human health.

As such, we urge the Government of Canada to phase out coal-fired power plants by 2025 as a critical and immediate action toward achieving Canada's emissions commitments and as a means to reap significant health benefits for Canadians.

Climate Change – A Threat to Public Health at Home and Abroad

While many think of climate change as an environmental problem, many health professionals consider it the most significant public health challenge of our generation. Climate change affects many social and environmental factors that impact health, including air quality, air temperature, security and quality of drinking water, security of food supplies, the range of insect-borne diseases, and the security of housing and transportation systems. The World Health Organization has declared climate change "the greatest threat to global health in the 21st century" (WHO, 2016). It has estimated that, between 2030 and 2050, climate change will produce 250,000 additional deaths each year: 38,000 due to heat exposure among elderly people; 48,000 due to diarrhoea; 60,000 due to malaria; and 95 000 due to childhood under-nutrition (WHO 2014a).

Climate change is the ultimate health equity and social justice issue. Countries with poor health infrastructure and low incomes that are already struggling to feed their residents are the hardest hit by climate change, while countries with the highest standards of living, such as Canada, are among the largest emitters of the greenhouse gases that are contributing to climate change.

In Canada, climate change is expected to:

- increase the frequency and severity of heat waves;
- produce higher levels of smog and pollen as temperatures increase;
- extend the range of insect- and tick-borne diseases such as West Nile Virus and Lyme's disease;
- increase the frequency and severity of thunderstorms, droughts, hailstorms, wildfires and tornadoes;
- increase the risks of avalanches and mudslides in the mountains;
- produce heavier rainfall events which can lead to floods, contaminated drinking water, food-borne illnesses and other intestinal diseases; and
- melt permafrost and winter ice roads in the north (Health Canada, 2005).

Many of these impacts are already being experienced by people across the country and many of our members are dealing with the repercussions from these events to varying degrees in communities across Canada.

Coal Power – A Significant Source of GHGs in Canada and Globally

Despite coal's troubling impacts on human health and the environment, Canada has a long history of reliance on traditional coal-fired power plants to produce electricity. While coal provided only 10.6% of Canada's electricity in 2014, it was responsible for 72% of the greenhouse gases emitted from the electricity sector (NIR, 2014). Before 2005, coal-fired power plants were responsible for about 15% of Canada's greenhouse gases (NIR, 2014). By phasing out is six coal-fired power plants, Ontario has

made considerable progress to reducing Canada's electricity sector GHG emissions. In 2014, the year that Ontario completed its phase-out, coal-fired electricity was responsible for approximately 8.4% of Canada's emissions of greenhouse gases; Alberta's six plants for 5.7%, Saskatchewan's three plants for 1.6%, Nova Scotia's four plants for 0.7%, and New Brunswick's one plant for 0.5% (NIR, 2014). Coal plants continue to be a serious source of greenhouse gases in Canada.

Countries around the world are increasingly aware of the urgent need to eliminate coal from their electricity grids. Coal-fired power plants remain significant emitters of GHGs on a global scale; they are responsible for 44% of the energy-related carbon dioxide emitted around the world, and 29% of greenhouse gases from all anthropogenic sources (IEA, 2015). The International Energy Agency has deemed reducing coal-fired power generation to be one of the five climate policies essential to international success on climate change (IEA, 2015). The closure of coal-fired power plants worldwide is seen by many as the fastest and most imperative way to dramatically reduce emissions on a global basis.

In order for Canada to effectively advocate for their closure globally, it must demonstrate leadership at home. The pan-Canadian climate plan must deliver on an ambitious commitment to eliminate coal-fired power generation by 2025. With an ambitious commitment to coal phase-out in hand, Canada can enter this year's COP22 international climate negotiations in Marrakesh, Morocco as a leader on this issue. Canada's action to eliminate coal-fired power would be a significant global victory and — by demonstrating a model of action to be replicated in other high- and then low- to middle-income countries — could then be amplified at the global scale.

Health Benefits Associated with Coal Plant Closures and Reduced Air Pollution

Closing coal-fired power plants across Canada will produce immediate health benefits and health care savings. Coal-fired power plants have significant impacts on air quality. They release large volumes of the common air pollutants such as sulphur dioxide, nitrogen oxides and fine particulate matter and air toxics such as mercury that can travel long distances. The common air pollutants have been clearly and consistently linked to increased rates of cardiovascular and respiratory diseases, including lung cancer, and increased rates of asthma symptoms, respiratory infections, emergency room visits, hospital admissions, and premature deaths (WHO, 2013).

On a global scale, outdoor air pollution is responsible for approximately 3.7 million premature deaths per year from heart disease, strokes, chronic obstructive pulmonary disease, lung cancer and acute lower respiratory infections among children (WHO, 2014). The emissions from coal-fired power plants are responsible for a significant share of these health impacts. For example, in 2005, it was estimated that air pollution from Ontario's six coal plants were responsible for more than 600 premature deaths,

900 hospital admissions, and 1000 emergency room visits in Ontario each year (OMOE, 2005). These health impacts were valued at $4.4 billion per year (OMOE, 2005).

With the phase-out of coal-fired power plants in Ontario, emissions of air pollutants, levels of air pollution, and air pollution-related health impacts have been reduced significantly. Between 2003 and 2012, sulphur dioxide emissions from coal plants were reduced by 140,000 tonnes (Figure 1), annual air levels of sulphur dioxide across Ontario declined by nearly 50% (Figure 2), and annual air levels of fine particulate matter declined by about 25% (Figure 3) (OMOECC, 2014).

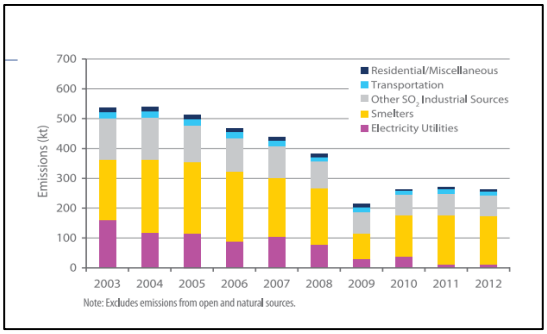

Figure 1: Annual Emissions of Sulphur Dioxide, Different Sectors, Ontario, 2003-2012 (OMOECC, 2014).

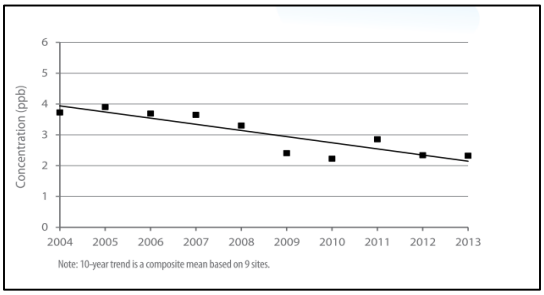

Figure 2: Annual Air Levels of Sulphur Dioxide, Selected Sites, Ontario, 2004-2013 (OMOE, 2014)

Toronto Public Health found that improvements in Toronto's air quality between 2000 and 2010, reduced air-pollution-related premature deaths in Toronto by 23% from 1,700 per year to 1,300, and air pollution-related hospital admissions by 41% from 6,000 to 3,550 (TPH, 2014). Toronto Public Health attributes these air quality improvements to the phase out of coal plants in Ontario as well as other measures taken by the federal, provincial and municipal governments (TPH, 2014).

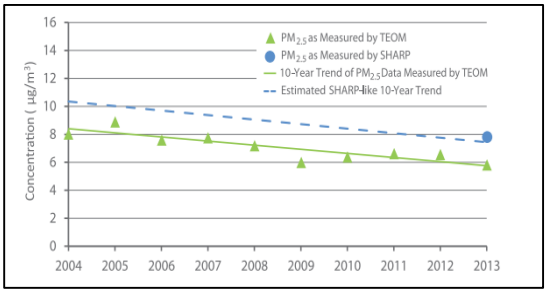

Figure 3: Annual Air Levels of Fine Particulate Matter, Selected Sites, Ontario 2004-2013 (MOE, 2014)

In Alberta, where six coal-fired power plants are responsible for approximately 33% of the sulphur dioxide, 10% of the nitrogen oxides, and 6% of the fine particulate matter directly emitted into Alberta's air, it is estimated that, each year, air pollution from coal-fired power plants in Alberta, is giving rise to approximately 100 premature deaths from long-term exposures, 700 visits to Alberta's emergency departments and 80 hospital admissions for respiratory and cardiovascular ailments from short-term exposures, and 4,800 asthma symptom days from short-term exposures. The health impacts have been valued at approximately $300 million per year or $3 billion when extrapolated over a 10 year period (Pembina 2013).

Coal-fired power plants are one of the most significant sources of sulphur dioxide which is a precursor of fine particulate matter. In 2014, 1,033 tonnes of sulphur dioxide were emitted from 736 sources across Canada (ECCC, 2014a). Twelve of the top 25 emitters of sulphur dioxide in Canada are coal-fired power plants; five in Alberta which collectively emit approximately 116 tonnes of sulphur dioxide; three in Saskatchewan which collectively emit approximately 80 tonnes; three in Nova Scotia which collectively emit 56 tonnes; and one in New Brunswick which emits about 8.5 tonnes (ECCC, 2014a).

Health Benefits Associated with Coal Plant Closures and Reduced Mercury Emissions

By closing the remaining coal-fired power plants in Canada, we can also protect the cognitive development of our children, reduce health and social service expenses associated with neurodevelopmental health impacts, and reclaim fish as a high-quality protein source that is available as a traditional food source or economic resource. Coal-fired power plants are a major source of mercury; a persistent toxic substance that accumulates in the aquatic food chain (CCME, 2005). Prenatal and early life exposure to mercury, resulting from the consumption of mercury-contaminated fish, has been linked to adverse developmental impacts such as reductions in cognitive abilities and motor skills (CCME, 2005). Researchers have attributed 3.2% of intellectual disability cases in the United States to mercury exposure and valued these excess cases at $2.0 billion per year (Trasande et al., 2006). Women of childbearing age, pregnant women, children, and populations that depend on fish as a traditional food source, are at greatest risk from mercury (CCME, 2005).

In 2014, nearly 2,400 kilograms of mercury were emitted into the air from 269 sources across Canada (ECCC, 2014). Coal-fired power plants were the single largest source of those emissions; responsible for nearly 35% of mercury emissions nationally (ECCC, 2014). Two of the plants operating in Saskatchewan were the two highest emitting sources of mercury in the country; responsible for approximately 16% of all mercury released across Canada (ECCC, 2014). The three coal plants in Saskatchewan were responsible for 80% of that province's mercury emissions, while the four coal plants in Nova Scotia were responsible for 83% of mercury emissions in that province, (ECCC, 20144). In New Brunswick, coal power is responsible for almost 95% of mercury emissions while the six plants in Alberta are responsible for 66% of Alberta's mercury emissions and nearly 10% of Canada's mercury emissions (ECCC, 2014).

Carbon-Free Alternatives to Coal are Readily Available

Air pollution, climate change, and the contamination of the aquatic food supply are the legacies of coal-fired power plants. While there are other measures that can and must be taken to reduce greenhouse gas emissions, few can contribute to the significant volume of reductions required as quickly as the phase-out of coal-fired power plants, and no other will provide the dramatic health co-benefits that are associated with phasing out coal-fired power plants.

The good news is there are alternatives to coal-fired power plants. Jurisdictions around the world are moving to phase-out the use of coal; displacing it with programs and policies directed at energy conservation and energy efficiency; and replacing it with renewable energies such as wind turbines and solar technologies that are becoming increasingly cost competitive (COP21, 2015).

Momentum is building as jurisdictions around the world take action on coal:

- Ontario, Canada, completed a total phase-out of 7,560 megawatts of coal power in 2014;
- Oregon passed legislation in March 2016 to phase out coal power by 2040;
- New York state announced that it will phase out coal power by 2020;
- Alberta announced that it will phase out 6,200 megawatts of coal power by 2030;
- The United Kingdom has announced that it will be coal free by 2025; and

- France, Germany, the United Kingdom and the United States have ended financing for overseas coal-fired plants except in rare circumstances.

We recommend that Prime Minister Trudeau, in co-operation with the provincial and territorial governments:

- Completely phase-out the use of coal-fired power plants as soon as possible and by 2025 at the very latest;
- Establish the mechanisms and programs needed to support the rapid development of renewable energies across the country;
- Establish the regulations, codes, funding and programs needed to encourage energy conservation and energy efficiency; and
- Work with the industry to ensure an orderly phase-out of coal-fired power plants and the fair treatment of workers displaced from their jobs.

If you have any questions about this submission, please contact Kim Perrotta, Executive Director of the Canadian Association of Physicians for the Environment (CAPE) at 416-306-2273.

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