

# Breathing in the Benefits: Summary

September 14, 2016

## Summary

In November 2015, Alberta joined a growing number of jurisdictions worldwide by announcing its plan to phase out coal by 2030. Coal plants release significant amounts of greenhouse gas and air pollutants, exposing human lives to unnecessary health risks. Released in 2013, *A Costly Diagnosis* shed light on the tangible health impact of coal power in Alberta.<sup>1</sup> Now, *Breathing in the Benefits* examines the significant health benefits of accelerating Alberta's coal phase-out.

Environment Canada first estimated the impact from coal-fired electricity on Canadians' health in 2012 as the new federal regulation on coal plants was implemented. Extrapolating this analysis, it is estimated that, in 2015, coal power in Alberta was responsible for 92 premature deaths, 81 emergency room visits and nearly \$461 million in socio-economic value of avoided health outcomes.

While the Government of Alberta announced its intention to phase out coal by 2030, a shut-down schedule has yet to be unveiled. An accelerated phase-out in a stepwise fashion, as proposed by the Pembina Institute, could avoid approximately an additional 600 premature deaths, 500 emergency room visits, and nearly \$3 billion in socio-economic value of avoided health outcomes between 2015 and 2035.

## A global trend of moving away from coal

With 18 coal power units and an overall capacity of nearly 6,300 MW in 2015, Alberta burns more coal for electricity than the rest of Canada combined. While coal-fired electricity continued to grow in Alberta until recently, many OECD jurisdictions have been actively moving away from coal for over a decade. Ontario completed a coal phase-out in 2014. In the U.S., stringent pollution control requirements contributed to accelerate coal plant retirements.

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<sup>1</sup> Tim Weis, Noah Farber, Kristi Anderson, Farrah Khan, Beth Nanni, Benjamin Thibault, *A Costly Diagnosis: Subsidizing coal power with Albertans' health* (2013). <http://www.pembina.org/pub/2424>

In November 2015, Alberta announced it would phase out coal-fired electricity by 2030 and replace it with cleaner sources of power.<sup>2</sup> This places Alberta in a leading group of coal-burning jurisdictions that announced phase-outs in the period surrounding the Paris Climate Conference in December 2015.

Along with the climate benefits, the Government of Alberta has identified health impacts as a central reason for transitioning away from coal-fired electricity. It is extensively documented that air pollutants emitted by coal power generation produce acute and chronic adverse health impacts. For example, exposure to fine particulate matter (PM<sub>2.5</sub>) that forms in the air from NO<sub>x</sub> and SO<sub>2</sub>, has been linked to increases in respiratory ailments, heart and lung diseases including lung cancer, and premature deaths.

## Estimating the health impact from coal power in Alberta

The health impacts of coal-fired generation in Canada were first estimated in 2012 when Environment Canada published a cost-benefit analysis – the Regulatory Impact Analysis Statement (RIAS) – of the then-new federal regulation on coal-fired units.<sup>3</sup> The analysis modelled the health implications of the RIAS versus business-as-usual between 2015 and 2035. Avoided health effects for selected outcomes in Canada and Alberta estimated in the RIAS are presented in Table 1.

Table 1. Cumulative avoided health impacts for selected health outcomes in Canada and Alberta between 2015 and 2035

	Canada	Alberta
Premature mortality	900	590
Emergency room visits and hospitalization	800	520
Asthma episodes	120,000	80,000
Days of breathing difficulty and reduced activity	2,700,000	1,900,000
Present value in 2015 of total avoided health outcomes (M\$2015)	\$4,600	\$3,000

Source: Environment Canada<sup>4</sup>

<sup>2</sup> Alberta Government, “Climate leadership: Ending coal pollution.” <http://www.alberta.ca/climate-coal-electricity.cfm>

<sup>3</sup> Environment Canada, Regulatory Impact Analysis Statement, *Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations* (2012). Available in Canada Gazette Part II, Vol. 146, No. 19. [http://publications.gc.ca/collections/collection\\_2012/gazette/SP2-2-146-19.pdf](http://publications.gc.ca/collections/collection_2012/gazette/SP2-2-146-19.pdf)

<sup>4</sup> Ibid., Table 18.

By interpolating the RIAS results specific to Alberta, we can derive an estimate of the incremental health benefits for Albertans of an incremental reduction in generation from the province’s coal plants. Then, by extrapolating the RIAS results, we can project the current health impact of coal-fired electricity in Alberta.<sup>5</sup> Figure 1 presents the estimated impact of coal in Alberta in 2015.

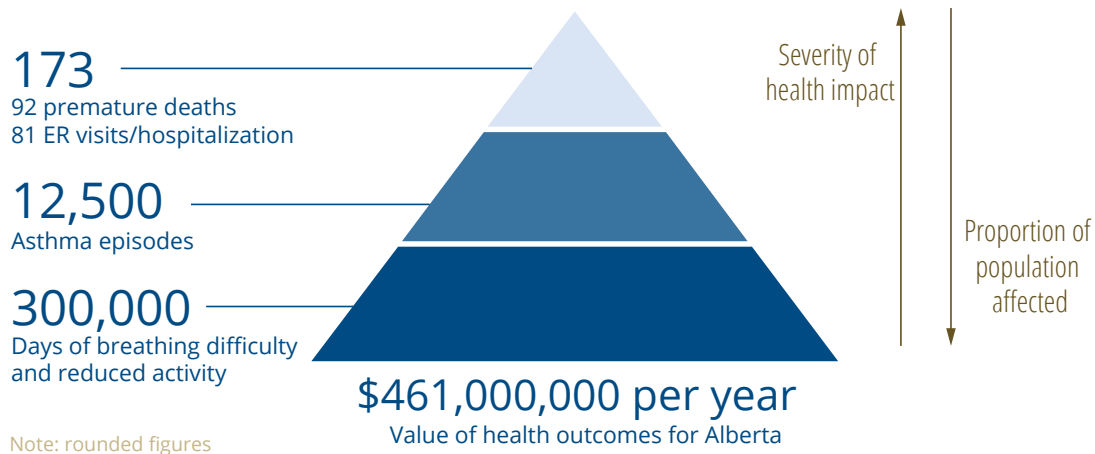


Figure 1. Impact on Albertans’ health from coal-fired electricity in 2015

## Health benefits from a coal phase-out by 2030 in Alberta

A similar methodology was used to estimate additional health benefits to be gained from an accelerated coal phase-out, following a schedule as proposed by the Pembina Institute. Figure 2 presents these estimates, compared to the RIAS’ updated findings.

<sup>5</sup> The methodology used to model health benefits is thoroughly detailed in the Appendix A of *Breathing in the benefits*. In addition, the section 3.3.2 contains acknowledgement and caveats attached to the methodology we employed.

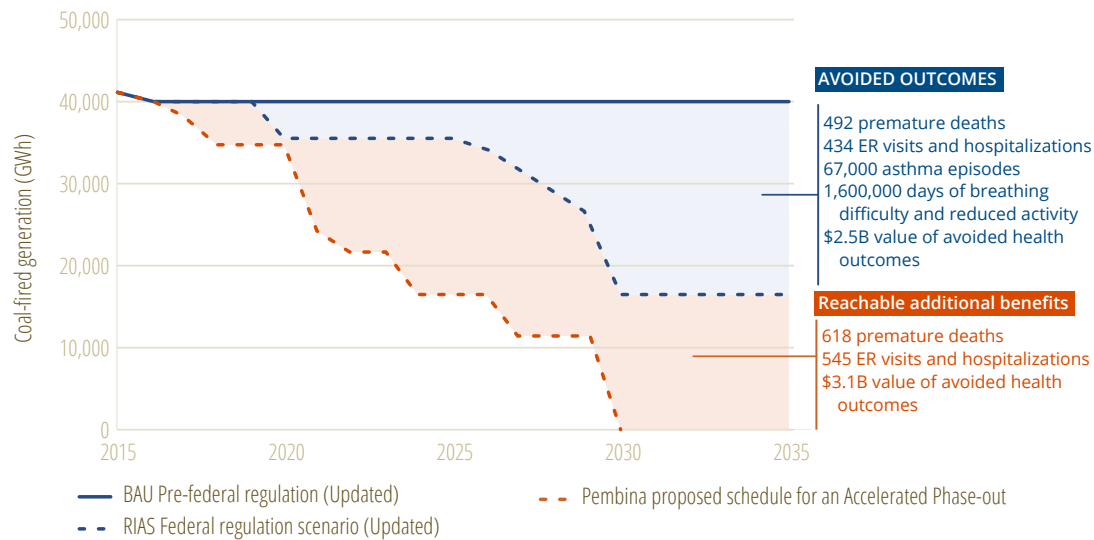


Figure 2. Additional health benefits associated with an accelerated coal phase-out

Figure simplified from *Breathing in the Benefits*.

With an accelerated phase-out of coal power between now and 2030, in a stepwise fashion of phasing out a relatively steady capacity each year, Alberta could more than double the benefits associated with the previous federal regulation between 2015 and 2035. This would translate in the avoidance of approximately:

- 600 premature deaths
- 500 ER visits and hospitalizations
- 80,000 asthma episodes
- 2 million days of breathing difficulty and reduced activity
- Nearly \$3 billion in socio-economic value of avoided health outcomes