

MEDIA BACKGROUNDER

Power to Change: How Alberta can green its grid and embrace clean energy

By James Glave and Ben Thibault

Why does Alberta need to change its electricity system?

Alberta's electricity sector generates almost the same quantity of carbon pollution as its oilsands sector. This is due, in large part, to the province's continued reliance on coal. At present, Alberta burns more coal for electricity than all other provinces combined.

On an annual basis, the province's coal-fired electricity plants release roughly the same quantity of greenhouse gases as half of all the passenger vehicles on the roads in the entire country—in addition to health-damaging sulphur and nitrogen oxides, mercury and particulate matter. In total, Alberta sources about 85 percent of its power from fossil fuels. The resulting pollution carries a real cost to society that is not currently reflected in the price Albertans pay for power.

What do Albertans think about their province's coal reliance?

A spring 2013 NRG Research Group poll found that more than two-thirds (68 per cent) of Albertans want coal plants phased out or shut down and replaced with natural gas and renewable energy such as wind, solar and hydro. A more recent (February 2014) poll by Oracle Poll Research found that 80 per cent of Albertans would like their electricity generated from renewable sources such as wind and solar instead of burning black rock. The Oracle research also found that two-thirds of Albertans are prepared to pay higher prices for electricity generated by wind and solar power.

What was your goal with this report?

Clean Energy Canada and the Pembina Institute jointly produced *Power to Change* to understand how long it would take — and what it would cost — Alberta to end its reliance on coal and gas for electricity generation and ultimately transform its power system to a more diverse mix with significant contributions from a variety of clean and renewable energy sources.

What was your approach?

We modeled two distinct scenarios for the development of the province's power grid, a "Clean Power Transition" and "Clean Power Transformation" scenario—as well as a business-as-usual baseline in which the province continues to rely on fossil fuels to keep the lights on.

In both our transition and transformation scenarios, coal plants are replaced over a measured timeline with a mix of generation sources including wind, solar, geothermal, hydroelectricity, and efficiency — as well as a realistic compliment of high-efficiency and peaking natural gas plants. Our "transformation" scenario all-but eliminates coal from the power grid by 2033 in favour of cleaner alternatives.

What will a transition to clean electricity mean for the cost of electricity?

In both our "transition" and "transformation" scenarios, the price of generation will increase slightly—by just over six per cent for the transformational scenario—by the year 2023 relative to business as usual. However, in the second decade, the price of generation in both scenarios falls by nearly four per cent below business as usual. An Oracle Poll Research poll found that two-thirds of Albertans are willing to pay higher prices for electricity generated by wind and solar power, and that a majority are convinced there are costly negative health effects related to burning coal. Even so, with greater diversity of generation sources, as opposed to the business-as-usual "dash to gas", our clean energy scenarios offer hedges against serious price risks over the long run.

What will a transition to clean electricity mean for carbon pollution?

A large-scale shift to renewable power would reduce the electricity sector's carbon pollution 69 per cent relative to business as usual. Rather than remaining mainly stagnant, then actually increasing in emissions out to 2050, the clean electricity scenarios would see immediate reductions and, within 20 years, would catch up to the electricity sector emission reductions that are already being achieved nationally in Canada.

By 2033, under a path to our clean electricity transformation scenario, Alberta's electricity sector could provide more than its share of emissions reductions toward meeting Alberta's climate targets, helping the province to get on track despite rapidly growing emissions related to oilsands development. Such a transition would bring Alberta's electricity emissions intensity (carbon pollution per GWh) — currently the highest in the country — closer in line with the national average. It would mean that Alberta could stop lagging behind the United States in the improvements it has been making to reduce its coal reliance and clean up its electricity.

Does Alberta have sufficient renewable energy resources to pull this off?

Yes. Alberta enjoys some of Canada's most abundant and reliable renewable energy resources, including hundreds of gigawatts' worth of potential solar, wind, geothermal, biomass and hydro capacity.

What policies do you recommend government adopt?

We do not recommend specific policies to transition and transform the province's electricity system. Rather, we outline the characteristics of a successful policy framework. Ultimately, the authors of this report would support any policy options that seek to achieve the following goals for Alberta's electricity system:

- Level the playing field for renewable energy sources by accounting for the presently hidden pollution and greenhouse gas costs of fossil fuel generation
- Address the major hurdle to financing for renewable energy projects by providing some degree of long-term price certainty for the electricity generated
- Prepare the groundwork and dismantle regulatory barriers for the widespread market penetration of new, clean generation technologies—such as distributed generation and storage technologies that integrate renewable energy into the grid
- Allow renewable energy sources— including distributed generation sources— to fully realize the value of the energy they produce.

Why did you publish this report now?

The Government of Alberta recently resumed work on its long-promised Alternative and Renewable Energy Policy Framework. The authors sought to inform the development of this framework and inspire policy leadership so that the province might reduce pollution and capture a larger share of the growing global market for clean energy. Further, we produced the report to inform Albertans that they have the resources, the know-how, and the opportunity to become clean energy leaders.