

How Green is Alberta's Renewable Energy Development?

By Ian Urquhart, *Editor*



Is this a silly question? Does posing it suggest the Advocate's editor has his dates wrong? Recreational cannabis use isn't legal until October 17th.

Electricity Generation: The Importance of Renewables to Alberta's Ambitions

If you believe the question silly or, that I have my dates wrong, you likely will highlight Alberta's ambitious goal for increasing the percentage of electricity from renewables in the provincial grid. The Notley government's effort to address climate change sets a 30 percent target for 2030. By 2030, in other words, 30 percent of the installed electricity capacity in Alberta should come from renewable sources such as wind, solar, and hydro. The table below illustrates well just what a dramatic change this Renewable Electricity Program will contribute to. Coal-fired electricity plants, constituting 38 percent of the installed capacity in 2016, disappear altogether from the power grid. Wind power is projected to make up 24 percent of the electricity system's capacity in 2030, nearly triple its nine percent share in 2016. Natural gas-fired electricity also is expected to grow impressively over the next dozen years. It is projected to constitute 60 percent of the province's installed capacity in 2030, up from 44 percent in 2016. If this path is followed, 5,000 megawatts of electricity from renewables will be added to Alberta's electricity grid by 2030; renewables will constitute a significant portion of the

province's electricity supply.

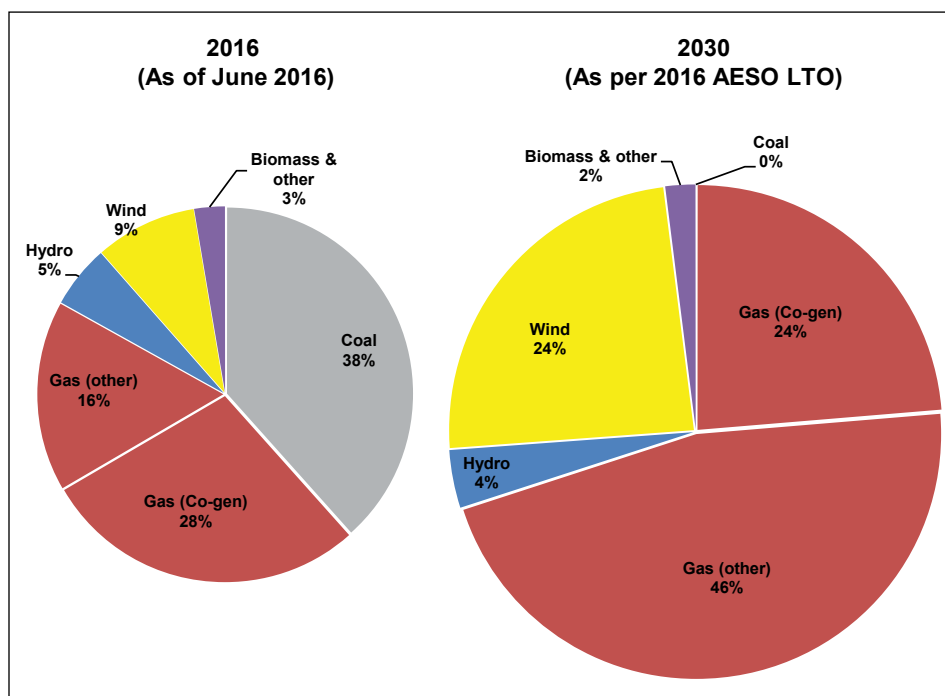
The ambitions of Alberta's Renewable Electricity Program certainly make the case that, when it comes to supplying electricity in the future, Premier Notley intends to green the grid. The program should help reduce Alberta's emissions from one of Alberta's most significant sources of greenhouse gases. If the sources of electricity are all we should consider when it comes to assessing ecological costs and benefits, then Alberta's renewable development efforts merit a "very green" badge.

It isn't that simple though. When it comes to embracing renewable energy we need to do so in ways that don't squeeze

the life out of other important ecological values and objectives. Protected areas, ensuring that all of Alberta's natural regions are represented well and effectively in a provincial protected areas network, also need to be considered. The consideration is especially important given the significant positive contribution a healthy network of protected areas may make to preserving and restoring biodiversity.

The Renewable Energy Land Rush

Paying policy making attention to protected areas and biodiversity is especially important now because Alberta is in the midst of a renewable energy land rush.



The acronym "AESO LTO" refers to Alberta Electric System Operator Long Term Outlook. Source: Government of Alberta, "Alberta Electricity System Overview," <https://www.energy.alberta.ca/AU/electricity/AboutElec/Documents/Elec101.pdf>. CREDIT: GOVERNMENT OF ALBERTA

Between 2016 and June 2018, the Alberta Utilities Commission (AUC) approved four utility-scale wind electricity projects. During that period, the AUC received another 14 wind farm applications. Together these 18 projects propose to produce more than 3,000 megawatts of electricity. Their turbines and associated infrastructure will spread out over nearly 1,350 square kilometres of the province.

The extra-large size of this footprint may be easier to picture if we compare it to the sizes of Alberta’s municipalities. This wind farm footprint is more than ten times the size of Lethbridge, more than ten times the size of Red Deer. Two cities the size of Edmonton would fit snugly in this area. Once these applications cross the 1,650 square kilometer threshold an area twice the size of the city of Calgary will be targeted for utility-scale wind power projects.

This land rush, like other episodes of industrialization in Alberta’s history, has the potential to put more negative pressure on lands whose broader ecological values were dismissed by past administrations. This is especially so because the vast majority of these projects intend to locate in Alberta’s Parkland, Grassland, and Foothills Natural Regions. Table One shows just how poorly represented these regions are in Alberta’s catalogue of protected areas. There has been very little, if any, positive change in their status since 2005. Grasslands constitute 14.5 percent of Alberta – yet only 1.3 percent of this natural region enjoys some measure of protection; the Parkland region makes up 9.2 percent of the province but only 0.9 percent of this region is protected; the Foothills stretch over 10.1 percent of Alberta – only 1.4 percent merits the label “protected.”

Respecting and Realizing the Protected Areas/ Biodiversity Link

Elsewhere in this issue Joanna Skrajny and Grace Wark introduce you to Canada’s commitment, under the United Nations Convention on Biological Diversity, to ensure that 17 percent of Canada is secured in a terrestrial protected network by 2020. In Alberta, as Table One indicates, 14.8 percent of the province is within that network. But, the fact that Alberta is within striking distance of the 17 percent goal shouldn’t invite complacency. It shouldn’t divert our attention from a vital condition attached to pursuing Canada’s United Nations commitment. In meeting its 17 percent target, governments in Canada should ensure that additions to the terrestrial network “focus on areas that are ecologically representative and important for biodiversi-

Table One: Alberta Natural Regions, Size and Percentage Represented in Parks and Protected Areas, 2018/2005

Natural Region	Total Size (sq. km)	Total Size (% of Alberta)	2018 Size of Natural Region(s) Protected (sq. km)	2018 Percentage of Natural Region(s) Protected	2005 Percentage of Natural Region(s) Protected
Rocky Mtns	49,070	7.4	29,577	60.2	58.1
Foothills	66,436	10.1	944	1.4	1.4
Grassland	95,565	14.5	1,257	1.3	0.8
Parkland	60,747	9.2	570	0.9	0.9
Boreal Forest	378,046	57.3	58,384	15.4	13.2
Can. Shield	9,719	1.5	7,130	73.4	15.5
Total	659,583	100.0	97,863	14.8	12.5

SOURCE: GOVERNMENT OF ALBERTA.

ty and ecosystem services, and to ensure that these areas are well-connected and effectively managed.”

The historical failure to adopt this focus or implement this condition in Alberta has influenced the geographical representation of species-at-risk in our province – one indicator of biodiversity. Forty-two species were listed as “at risk” by the Alberta government in 2015; twenty-six of those species are dependent on grasslands. Remembering that preserving biodiversity is the goal of the UN Convention it’s imperative that efforts in Alberta to meet the 17 percent target prioritize the natural regions that are so poorly represented currently in the province’s network of protected areas.

This combination – Canada’s commitment to the UN Convention on Biodiversity plus the prevalence of species-at-risk on grasslands – should put a caveat on Alberta’s renewable energy development ambitions. AWA believes that public lands should be excluded from consideration when it comes to locating any industrial/utility-scale renewable energy project. Furthermore, all such renewable energy projects should be subject to a thorough provincial environmental assessment; any project with a proposed capacity of greater than five megawatts should be designated as a mandatory activity in Schedule 1 of the *Environmental Assessment (Mandatory and Exempted Activities) Regulation*. Currently, there is no requirement to conduct an environmental assessment of these projects under Alberta’s *Environmental Protection and Enhancement Act* (Sections 44 and 47 of that Act leave it to the discretion of the Director or the Minister to require an environmental assessment of a non-mandatory activity that is not exempted by regulation.).

In Germany, where wind generated 16.3 percent of the nation’s power in 2017, environmental impact assessments are mandatory for wind energy projects with 20 or more turbines and conditional for projects involving three to 19 turbines (the conditionality depends on the

results of an initial screening process). Mandatory assessments are particularly appropriate given the fact that Alberta, unlike Germany, has not conducted comprehensive “suitable area” or regional/local spatial development plans. Geissler, Köppel, and Gunther wrote in 2013: “These suitable areas are identified by a restriction analysis comparable to the following sequence: (1) mapping all categorical no-go areas (e.g. nature conservation areas, areas with high sensitivity of landscape scenery, forests, residential and industrial areas etc.) and buffer zones, (2) analysing wind potential of remaining sites, and (3) designating the remaining areas.”

As someone who has studied both Alberta’s pulp mill boom of the 1980s/90s and the more recent tar sands boom, I fear the current provincial government is repeating those histories of industrial development. In both histories, development surged ahead before basic knowledge about the ecological consequences of these types of industrialization was gathered. Today instead, Alberta’s policies should be guided by basic knowledge about the ecological consequences of these types of industrialization. AWA believes it’s essential for government to fund research into and monitor the impacts of industrial/utility-scale renewable energy development.

The need to fund research is vital for several reasons. First, the research of Baerwald, Patterson, and Barclay on the wind turbine mortalities of bats in southern Alberta published in *Ecosphere* in 2014 warns that “fatalities at a single wind energy site have the potential to have far-reaching ecological and population consequences.” Policy makers should invest the funds needed to see how serious this potential could be. Second, species such as bats provide important ecological services to economic sectors such as agriculture. Boyles et al estimated in their 2011 article in *Science* that bats, by eating insect pests, likely provided \$22.9 billion in ecological ser-

vices to U.S. agriculture. Those benefits didn’t include secondary effects of predation such as reducing the potential for insects to evolve and increase their resistance to pesticides. Nor did it include the similar pest-reduction services bats provide to the forest products sector.

AWA’s position contrasts with some who are recommending that public lands should be set aside as sites for utility-scale renewable energy electricity projects. Professor Ingleson, in a recent post on the University of Calgary’s ABLawg website (ablawg.ca), urged the provincial government to lease public lands to wind power developers; in his view, the failure to do so “was an obstacle to additional wind farm development in the province.” The figures cited earlier suggest that wind farm development is proceeding rapidly despite the absence of an official policy devoting public lands to this type of industrialization.

Since much of the current land rush is taking place on privately-owned lands and those lands are important to biodiversity and species at risk AWA also expects government to adopt certain regulatory positions. For example, if industrial/utility-scale renewable energy projects destroy or disturb native grassland, foothills, or parkland on private lands, the project’s owners must restore the native habitat.

As Dr. Joseph Kiesecker, lead scientist for The Nature Conservancy’s Conservation Lands Team, stated, a renewable energy plan that doesn’t address the “energy sprawl” associated with wind farms isn’t necessarily a green one. AWA agrees. If this provincial government wants a build a healthy green energy legacy it must do so in a way ensuring renewable energy development respects other ecological values. 🌱