

Land Use Pressures in Alberta

For: Clerk of the House Standing Committee on Natural Resources (RNNR) **Date:** November 21, 2024

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Purpose

To follow up on questions from the RNNR Committee's October 7, 2024 hearing regarding wind and solar electricity development in context with other land uses in Alberta.

Summary

- Wind and solar power plants are minor users of land in Alberta compared to other uses, and are not projected to become major land users in the coming years.
- The biggest users of land and the largest drivers of agricultural land loss in Alberta are residences, roads, pipelines, oil and gas infrastructure, and other industrial sites.
- Wind and solar energy development is currently disadvantaged in relation to other land uses.

Context

- In the October 7 House Standing Committee on Natural Resources meeting, Pembina Institute was asked a question regarding land use pressures in Alberta.
- Between August and November 2023, the Alberta Utilities Commission (AUC), which regulates power plant development in Alberta, conducted an inquiry into the development of solar, wind, hydro, and geothermal energy.
- Following the AUC inquiry, Alberta announced new directions on February 29, 2024 that will restrict the development of renewable energy.

Considerations

Wind and solar power plants are minor users of land in Alberta

- The Pembina Institute’s research found that the conventional oil and gas sector uses 125 times as much land as all solar and wind developments, not including pipelines (see Annex 1).

The largest drivers of agricultural land loss in Alberta are pipelines, oil and gas infrastructure, and other industrial sites.

- The AUC’s inquiry into renewable energy development found:
 - The largest driver of agricultural land loss between 2019 and 2021 was pipelines, followed by non-solar or non-wind industrial sites. Annex 1 shows solar development caused 11.0% of agricultural land loss in that period and wind development caused 2.7%.¹
 - Driven by market forces, the vast majority (91%) of existing renewable energy projects are sited on non-prime agricultural land.²
 - Even if all future renewable energy development was forced to occur on agricultural land, only 0.6% of Alberta’s current agricultural land would need to be converted by 2050.³

Wind and solar energy development is currently disadvantaged relative to other land uses.

- While new rules have not yet been finalized, no-go zones for wind energy will extend 35 km from certain parks based on the impact of wind turbines on “pristine viewscapes” and wind and solar energy will be restricted from certain types of agricultural land.
- Alberta has not announced if or how it will consider similar restrictions on oil and gas development, forestry, mining, or any other forms of land use.
- Subsurface oil and gas development does not require agricultural landowner permission.⁴
- Both the oil and gas and forestry industries are allowed to operate on Crown Land while renewable energy has been so far excluded through wildlife protection provisions.⁵

Annex 1: Additional Material

Non-Agricultural Land Use in Alberta

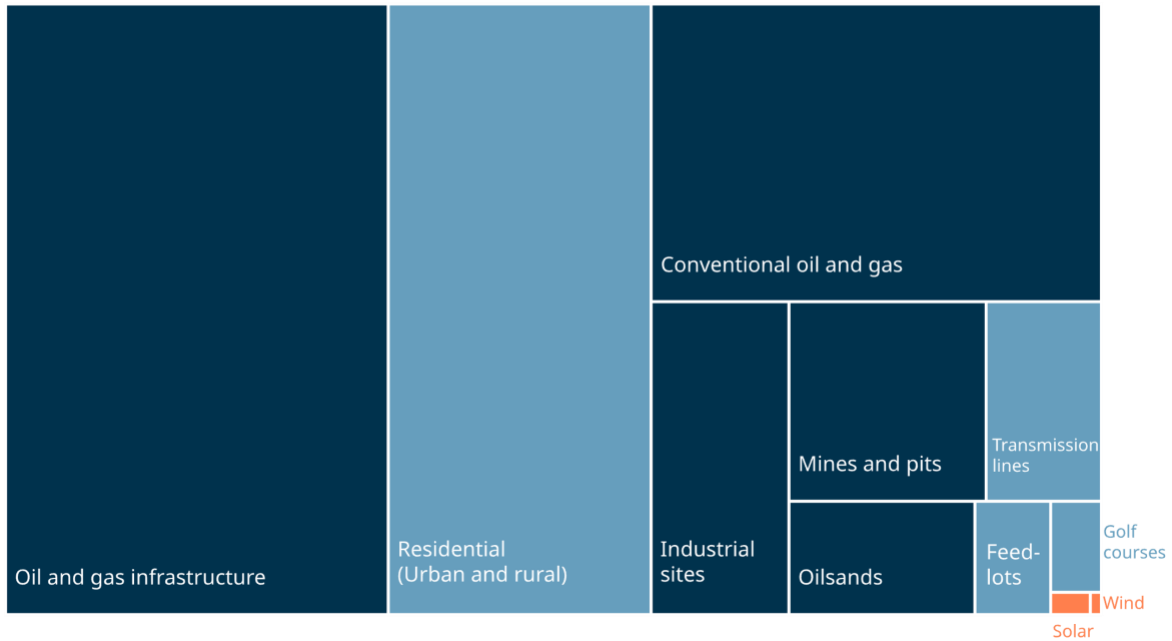


Figure 1. Land use of select sectors in Alberta, 2021

Data source: Alberta Biodiversity Monitoring Institute, Copernicus Data Space Ecosystem⁶

In 2021, the largest users of land in Alberta (other than agriculture, forestry, roads and railways) were oil and gas infrastructure (includes pipelines, seismic lines and refineries), conventional oil and gas, residential, and other industrial uses. The conventional oil and gas sector uses 125 times as much land as wind and solar combined.

Causes of Agricultural Land Loss in Alberta, 2019-2021

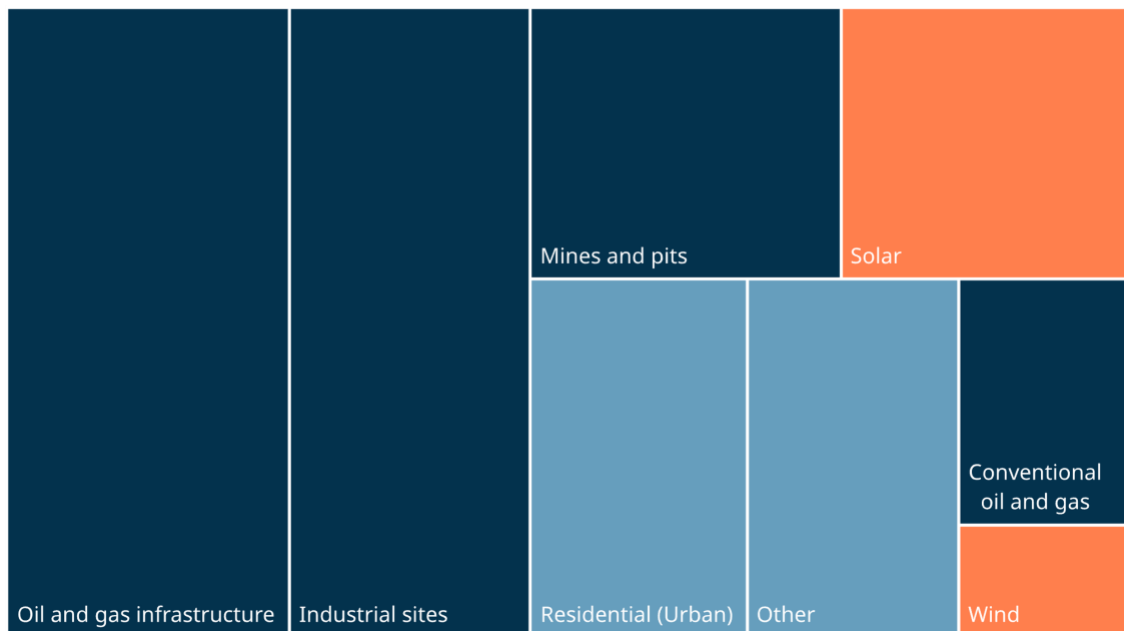


Figure 2. Top sources of agricultural land loss from 2019 through 2021 (relative to 2019)

Data source: Alberta Biodiversity Monitoring Institute, analysis by Venter⁷

Annex 2: References

¹ Alberta Utilities Commission, *AUC inquiry into the ongoing economic, orderly and efficient generation of electricity generation in Alberta: Module A Report* (January 2024), 21. https://media.auc.ab.ca/prd-wp-uploads/regulatory_documents/Reference/28501_Inquiry-ModuleA-Report.pdf

² AUC, *Module A Report*, 21.

³ AUC, *Module A Report*, 23.

⁴ AUC, *Module A Report*, 34.

⁵ Jason Wang, Simon Dyer, Ecojustice, Big Spruce Law, *Alberta Utilities Commission Renewable Electricity Generation Inquiry - Module A: Pembina Institute's written submission* (Pembina Institute, 2023), 23. <https://www.pembina.org/pub/alberta-utilities-commission-renewable-electricity-generation-inquiry-module>

⁶ Wind, oil sands, conventional oil and gas, and sand and gravel pits data from Alberta Biodiversity Monitoring Institute, *2021 Wall-to-Wall Human Footprint Inventory*. <https://abmi.ca/home/data-analytics/da-top/da-product-overview/Human-Footprint-Products/HF-inventory.html>. Solar area digitized from Copernicus Sentinel Data 2023, Copernicus Data Space Ecosystem. <https://dataspace.copernicus.eu>.

⁷ Oscar Venter, *Renewable energy and agricultural land use in Alberta 2019-2021: Analysis of footprint area* (2023), prepared for BRC-Canada. Appendix to Business Renewables Centre-Canada, *Submission to Module A of the Alberta Utilities Commission inquiry into the ongoing economic, orderly and efficient development of electricity generation in Alberta* (2023). <https://businessrenewables.ca/resource/brc-canada-auc-module-submission>