



Renewing Alberta's mineral future

Strategy and action plan

The opportunity

Worldwide demand for metals and critical minerals is rising rapidly in response to growing populations, technological advancement, global transformation to a low carbon economy, and national security interests. Key examples of global demand include lithium for electric vehicles and battery storage; vanadium for energy storage systems; rare earth elements for batteries, electronics and wind turbines; and potash as a fertilizer.

In 2018 the World Bank predicted an increase in demand of about 500% by 2050 for minerals such as graphite, lithium and cobalt just to feed the clean energy transition alone.

Currently North America mainly relies on imports for these minerals. Alberta has the potential to diversify the metallic minerals supply chain that is currently dominated by a few international players, such as China, Australia and several African nations.

With an experienced work force, assertive leadership and a strategic plan for minerals, Alberta is well-positioned to become a leader in the development of clean technologies and support the global transformation to a low carbon economy, reducing the supply risk for a net-zero emission future. The Government of Alberta is creating a dedicated regulatory framework to encourage investment, ensure environmental stewardship, help diversify the economy and create jobs.

Implementing this strategy will reveal Alberta's potential economic mineral deposits, and, by maintaining Alberta's high environmental, social and governance standards, help Alberta to become the preferred supplier to manufacturers.

The vision

Alberta becomes a preferred producer and supplier of minerals and mineral products and actively contributes to the global energy transformation.

Minerals in Alberta

Alberta has the geology and exploration evidence that indicates potential for many critical minerals that are considered vital for our economic well-being. More information is required to fully assess the resource base as Alberta's potential minerals remain largely under evaluated and under-explored. However, extensive experience in oil and gas exploration and production is driving potential new and innovative discoveries such as lithium from brine, and rare earth elements from oil sands tailings.

Alberta has favorable geology for many metallic and industrial minerals such as lithium, uranium, vanadium, nickel, rare earth elements, potash, and diamonds. These minerals could be extracted from conventional sources such as ores from traditional mining methods, or unconventional sources such as:

- brines or salt solutions accessed through wells,
- secondary sources such as:
 - oil and gas and geothermal production of groundwater
 - oil sands operation waste streams through further reprocessing

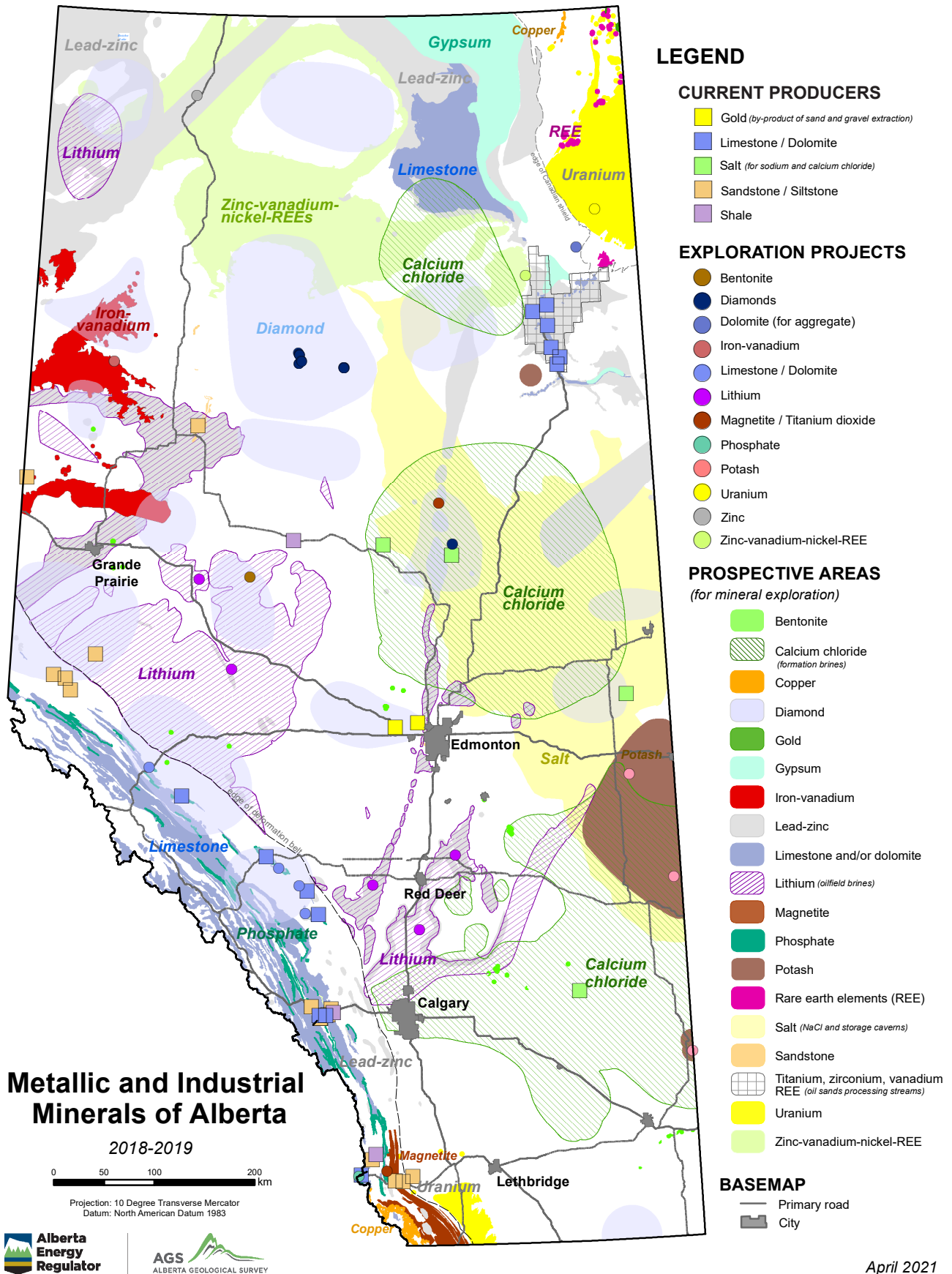


Figure 1: Metallic and Industrial Minerals of Alberta (Source: Alberta Geological Survey, 2021)

What minerals are used for

Minerals and metals contribute to our lives every day. They are found in countless products that are instrumental to clean technologies and the global transition to a low carbon economy. Alberta also has potential for base metals and minerals, such as iron. These are not defined as critical minerals, but they play an important role. Technological developments can create new uses for these minerals as well.

COMMON USES FOR MINERALS FOUND IN ALBERTA

Mineral	Common uses
Diamonds	Used in manufacturing and jewelry.
Iron	Used in manufactured steel, food storage cans, automobiles and heavy machinery.
Lithium	Used primarily for lithium-ion batteries, greases and pharmaceuticals.
Nickel	Used in magnets, rechargeable batteries, steel, and super-alloys.
Potash	Primarily used in fertilizer.
Rare earth elements (REE)	Primarily used in wind turbines, clean technologies, batteries and electronics.
Titanium	Used in metal alloys and pigments.
Uranium	Primarily used for nuclear fuel.
Vanadium	Primarily used for catalysts, alloys and for energy storage.
Zirconium	Used in high-temperature ceramics.
Zinc	Used in steel plating, alloys and paints, rubber, cosmetics, and pharmaceuticals.

Key actions

In order to support and achieve Alberta's vision, our new minerals strategy focuses on six key areas.

- 1. Enhance public geoscience:** Target extensive mineral mapping and better access to public geoscience information to develop a fulsome understanding of Alberta's mineral resources.
- 2. Improve the fiscal and regulatory environment:** Provide regulatory clarity and policy certainty to adopt a life-cycle perspective to increase investor confidence and ensure responsible development.
- 3. Promote responsible development:** Work towards upholding and enhancing Alberta's stringent environmental standards throughout a project's lifecycle and integrating mineral opportunities into land use planning.
- 4. Advance opportunities for Indigenous Peoples:** Build a better understanding of Indigenous Peoples' values and perspectives and enhance Indigenous economic development opportunities in the minerals sector.
- 5. Develop public awareness and a skilled workforce:** Ensure Albertans are well informed, enabled and encouraged to participate in the minerals sector and get Albertans back to work.
- 6. Promote innovation and industrial development:** Promote Alberta as a destination of choice for mineral investments and expand Alberta's scientific and industrial capacity to take full advantage along the mineral value chains, from raw minerals to processed products.