
Renewing Alberta's mineral future

A strategy to re-energize Alberta's minerals sector

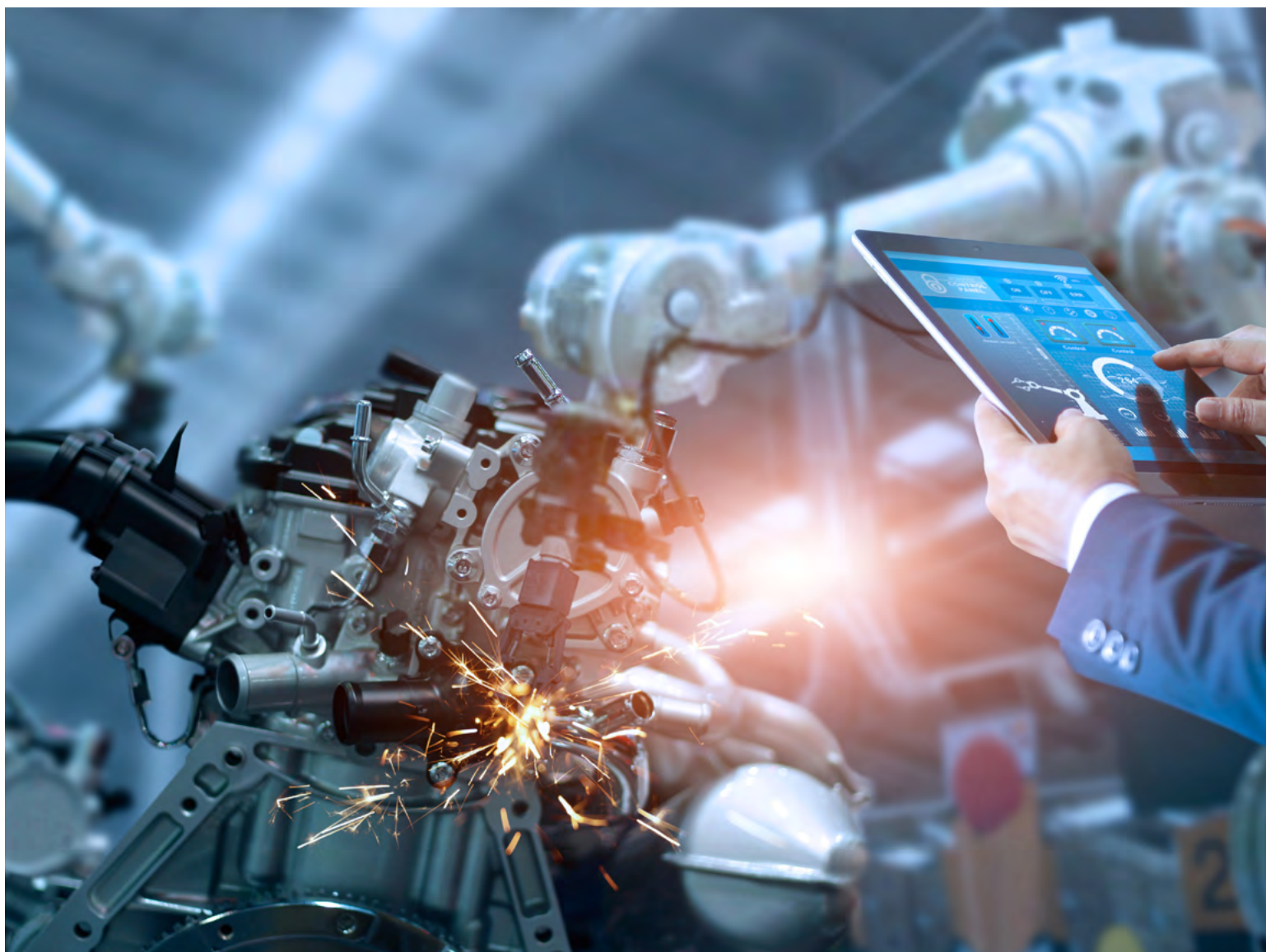


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Strategic Overview

Alberta is widely recognized as a global leader in crude oil, natural gas, and oil sands production. The province has the opportunity to further capitalize on its vast mineral resource potential and the rising global demand for minerals – including critical and strategic minerals such as lithium, uranium, vanadium, rare earth elements, potash, and diamonds – by ensuring a modern minerals strategy that encourages responsible and sustainable exploration, development, manufacturing, and recycling of such minerals and mineral products. This strategy will help establish an attractive climate for investment and innovation to grow Alberta’s minerals sector. It will also directly contribute to the Government of Alberta’s focus on getting Albertans back to work, an important component of Alberta’s Recovery Plan.

Alberta is well-known as a leading jurisdiction for responsible resource development, which will serve the province well as it looks to expand on its mineral future. Despite mineral occurrence throughout the province, no metallic mineral mines currently operate in Alberta. Alberta’s non-energy mineral production comes primarily from approximately 20 active quarries producing salt, limestone and other industrial minerals.

With assertive leadership and a strategic plan, Alberta can become a leader in the development of clean technologies, and support the global transformation to a low carbon economy. Not only does Alberta possess minerals used in the development of green energy, such as battery manufacturing, but the province also has the scientific and industrial capacity to accelerate the development and deployment of clean technologies necessary for their production and manufacture.

Alberta is not alone in pursuing this opportunity and competes with other jurisdictions – both in Canada and across the world. As a result, Alberta must take immediate and bold actions to establish and advance its role and leadership as a preferred mineral supplier and potential manufacturer. Doing so will ensure Albertans benefit from the continued responsible and sustainable development of the province’s vast resources, as well as supplying minerals and mineral products necessary for the global energy transition.

Taking this approach will continue to advance the province’s position as a leader in environmental, social, and governance outcomes and demonstrate the critical role Alberta’s resources, technology and diverse energy mix will play in the global energy future.

Critical minerals are particularly important to the economy, face supply challenges and have no commercially available substitutes.

Strategic minerals are essential for military uses and national security.



Alberta contains a wide variety of rock types that may have mineral potential, including intrusive rocks, as seen above.

Defining the Opportunity

The Next-Generation Minerals Industry

Mineral exploration and development—today and into the future—is undergoing an extraordinary technology-driven transformation. The minerals industry deploys a range of modern, innovative processes and technologies in their operations, including supercomputers, automation, monitoring sensors and artificial intelligence (AI). It also taps into renewable energy sources to reduce environmental footprint. These, in return, contribute to a more competitive, modern and sustainable minerals industry.

With the advancement of technologies, companies are looking to extract and produce minerals from both primary (such as hard rock/ore mining and formation waters) and secondary sources (such as reprocessing wastes/by-products from existing hydrocarbon development for valuable and critical minerals as value-added products). Alberta is seeing increasing interest and industry advancement in both sources within the minerals sector in the province.

Rising Global Demand

The International Energy Agency forecasts that electric vehicle sales could exceed 45 million vehicles per year by 2030¹. More jurisdictions are transitioning to clean technologies and fueling their economies through renewable electricity sources such as wind and solar energy. As a result, energy storage installations around the world are projected to grow to a total of US\$546 billion of investment by 2040². Worldwide demand for metals and critical minerals is rising in response to growing populations, technological advancement, global transition to a low carbon economy, and national security. This includes, but is not limited to, lithium for electric vehicles; vanadium for energy storage systems and titanium alloys; rare earth elements for batteries, electronics and wind turbines; and potash as a fertilizer.

Canada is working to become a leading mining nation and Alberta can be a key player in that objective. Alberta is well-positioned to become a preferred supplier of raw metals and minerals, as well as processed products to fuel our modern society. For emerging mineral mining opportunities, Alberta has a unique advantage due to the experience and expertise of its mature oil and gas and coal sectors, readily available well sites, infrastructure, and transportation, co-production opportunities with the existing energy sector, and a skilled labor force.

¹ International Energy Agency, Global EV Outlook 2020.

² Bloomberg Energy Storage Outlook 2020, September 2020.

National Minerals and Metals Strategy

Canada is a global mining powerhouse. The Government of Canada is taking steps to solidify its position as a worldwide mining leader. Federal, provincial and territorial governments, including Alberta, have worked together to create the Canadian Minerals and Metals Plan (released March 2019) and its first Action Plan 2020 (released March 2020 and updated in September 2020). This plan aims to secure Canada's competitive position as a global mining leader and lay the foundation for a future-looking minerals and metals industry that capitalizes on the opportunities offered by an evolving and diversified economy. The Canadian Minerals and Metals Plan focuses on six strategic directions for supporting a competitive, sustainable and responsible minerals and metals industry:

- Economic Development and Competitiveness
- Advancing the Participation of Indigenous Peoples
- The Environment
- Science, Technology and Innovation
- Communities
- Global Leadership

Alberta has been, and will continue to be, part of the process of developing and implementing the Canadian Minerals and Metals Plan and its Action Plans. Alberta is participating in a number of pan-Canadian flagship initiatives under the Canadian Minerals and Metals Plan, including but not limited to the pan-Canadian Geoscience Strategy, A Canada Brand for Mining, Critical Minerals and Battery Value Chain, and the National Orphaned or Abandoned Mines Initiative (NOAMI). Alberta's Minerals Strategy is developed in alignment with the national strategy and aims to capitalize on our vast resource potential, encourage investment and innovation, and grow our minerals sector.

Canada is also working with the United States to finalize the Canada-U.S. Joint Action Plan on Critical Minerals Collaboration³, to advance our mutual interest in securing supply chains for the critical minerals needed for important manufacturing sectors, including communication technology, aerospace and defence, and clean technology. This presents opportunities for Alberta and other Canadian jurisdictions to work together to enhance the competitiveness of our respective minerals industries. Alberta has been part of the federal, provincial, and territorial efforts in pursuing Canada's approach targeting the critical minerals and battery value chains.

³ Natural Resources Canada News Release on Canada and U.S. Finalize Joint Action Plan on Critical Minerals Collaboration as of January 9, 2020. Link: <https://www.canada.ca/en/natural-resources-canada/news/2020/01/canada-and-us-finalize-joint-action-plan-on-critical-minerals-collaboration.html>

Why Alberta: Our Competitive Advantage

Alberta is well-positioned to leverage its vast expertise in resource development – as well as supporting social and physical infrastructure – to advance a competitive and sustainable minerals sector. Alberta’s established and experienced energy sector provides many strategic advantages that can help advance the province’s minerals sector, including:

- Strong environmental, social and governance (ESG) factors that makes Alberta a secure place to invest with confidence now and into the future.
- A safe, efficient, and well-connected transportation and infrastructure system, as well as service and supply chain networks that connect Alberta’s mineral resources and products to markets.
- A strong reputation in geological knowledge and geoscience expertise in the field.
- A young, skilled, and educated natural resources workforce ready to support mineral exploration and development.
- A strong ecosystem of post-secondary, research and public institutions that fosters technology and innovation and a history of developing new products to bring to markets.
- Strong partnerships with Indigenous and municipal communities that share an interest in the economic and social benefits arising from responsible mineral development.
- Stable and competitive fiscal and regulatory policies that promote environmentally and socially responsible resource development to ensure investor confidence.

As part of Alberta’s Recovery Plan, the province is taking action to further Alberta’s strategic advantages and economic strengths to attract investment, set the stage for a re-energized minerals sector, and position Albertans for long-term prosperity. These actions complement the efforts being made by private sectors to promote sustainable and responsible resource development.

Job Creation and Investment Attraction

Alberta is committed to lowering the tax burden, cutting red tape, and providing clarity and certainty for investors in the province. Alberta has:

- Established the **Job Creation Tax Cut Act** reducing the general business tax rate from 12 per cent to 8 per cent. Alberta’s combined federal-provincial business tax rate is now lower than that of all other Canadian jurisdictions and 44 U.S. states making it one of the most competitive places to invest in North America.
- Created the **Invest Alberta Corporation**, a provincial agency to assist prospective companies and investors to capitalize on investment opportunities in Alberta’s core industries and emerging growth sectors, including resource development. The province’s Investment and Growth Strategy provides an Investment and Growth Fund to create a competitive edge and demonstrate to investors around the world that Alberta is open for business.
- Streamlined approval processes, and eliminated unnecessary rules and processes through the **Red Tape Reduction Initiative**.

Strong Environmental, Social and Governance Factors

Alberta has long been at forefront of global ESG factors, producing energy under the world’s highest environmental, human rights, and labour standards. In fact, Canada – led by Alberta – is a leader in global ESG performance factors among oil-producing countries. Alberta continues to demonstrate leadership by:

- Leveraging up to \$750 million in stimulus funding through **Technology Innovation and Emission Reduction** fund and other funding for investments in clean technology, emissions reductions, and green innovation.

- Advancing land use **regional and sub-regional planning** to address cumulative impacts, resource management, and reflect regional economic, societal, and environmental priorities in an integrated way.
- Implementing the **Regulatory Assurance Framework** to increase the effectiveness and efficiency of Alberta’s environmental regulatory regime.

Accelerating Innovation, Knowledge and Skills

Alberta is home to world-renowned research and post-secondary institutions focused on developing cutting edge energy technology and educating the next generation of Alberta’s skilled, knowledgeable workforce. Alberta has pioneered a number of innovations in natural resource science over the years, and continues to push the boundaries and its entrepreneurial drive by taking the following actions:

- Accelerating research, innovation, and entrepreneurship through **Alberta Innovates** to launch technologies and introduce new ideas – from applied research to the development of new products and processes – in the minerals and emerging resources sectors.
- Launching the **Innovation Employment Grant**, under the **Technology and Innovation Strategy**, a refundable tax credit to assist companies that invest in research and development, spurring job creation in high-growth, new industries.
- Launching the **Labour and Talent Strategy** to increase work-integrated learning opportunities, expand the apprenticeship model and micro-credentials, and enhance connections between post-secondary and industry.
- Establishing a **Research Commercialization Working Group** with members from industry, post-secondary institutions and the Government of Alberta, to address research commercialization challenges, identify areas where post-secondary research could be translated to support economic growth and develop strategies to attract investment for Alberta research.

Affirming and Renewing Partnerships

Alberta is also taking action to ensure Indigenous communities have a meaningful role as active participants in Alberta’s energy and mineral sectors, rightfully sharing in the province’s prosperity. To advance partnerships with long-lasting benefits, the Government of Alberta has taken a number of actions to strengthen its commitment to reconciliation while promoting improved economic security and prosperity of Indigenous Peoples in Alberta, including:

- Establishing the **Alberta Indigenous Opportunities Corporation** to increase access to capital to support medium to large-scale Indigenous investments in natural resource projects.
- Funding the **Indigenous Litigation Fund** to support Indigenous Peoples’ advocacy for responsible resource development.
- Funding projects through the **Aboriginal Business Investment Fund** to support Indigenous community-owned economic development projects. The **Employment Partnerships Program** provides skills training and employment supports for Indigenous Peoples in Alberta.

Moving Alberta’s Resources and Products to Markets

Alberta’s safe, efficient and well-connected transportation network is strategically positioned to advance mineral exploration and development by getting people, goods, and services where they need to go. Alberta’s reliable, and extensive highway, rail, and air infrastructure provides quick and efficient access to mineral resources across all corners of the province as well as to global ports and economic centres across North America and the world. Leveraging this existing network, Alberta is further enhancing its ability to get its products to global markets:

- Investing in the construction, rehabilitation and maintenance of community and resource transportation infrastructure through the **Strategic Transportation Infrastructure Program** in order to support industrial growth.

Alberta's Resource Endowment

Alberta has favorable geology for many metallic and industrial minerals, such as lithium, uranium, vanadium, nickel, rare earth elements, potash, and diamonds. These minerals are used worldwide to manufacture batteries, cell phones, energy storage cells, fertilizers, and other modern products.

Lithium has broad applications in air treatment, ceramics, glass, metallurgy, lubricants, pharmaceuticals, and polymers, and most importantly, as a key component in the manufacturing of lithium-ion batteries for smart electronics, electric vehicles, and renewable energy storage. Studies by the Alberta Geological Survey have shown elevated lithium concentrations in formation waters – most notably, lithium-rich brines occur in Devonian aquifers in the Fox Creek, Leduc, Red Deer and Swan Hills areas in west-central Alberta.

Rare earth elements are recognized as critical minerals because of increasing global demand in the areas of clean energy and national defence technologies, and the high risk for supply disruptions. As a result, global efforts to conduct exploration activities to discover economically viable deposits of rare earth elements and bring them into production have increased dramatically in recent years. Research has shown increased concentration of rare earth elements in oil sands froth treatment tailings and other waste streams from oil sands processing, along with the presence of other metals, such as titanium and zircon.

As for uranium, Canada is the second largest uranium producer in the world, with about 15 per cent of total world production. The Athabasca Basin, which straddles the northern Alberta-Saskatchewan border, contains some of the greatest uranium resources in the world. Alberta is exploring ways to support the development of small modular reactors, which are small enough to be built in a factory and shipped by truck, rail or ship, with the ability to generate enough power for a small city. This promising technology can help diversify the energy sector, provide clean electricity to remote communities, and can help to significantly lower emissions in Alberta's traditional energy sector.

While promising mineral occurrences such as the ones above are found throughout much of the province, further mapping and exploration is required to determine if these mineral deposits have commercial potential. With this vast, untapped geological potential for minerals and as an established global leader in responsible resource development, Alberta is well-poised to become a future international producer and supplier of minerals and mineral products.

Definition

While there are various classifications of metallic and industrial minerals, this strategy uses the following system:

- base metals e.g. copper, zinc and uranium;
- precious metals e.g. gold and platinum;
- gemstones e.g. diamonds;
- brine-hosted minerals e.g. lithium;
- industrial minerals;
 - building materials e.g. limestone and sandstone;
 - minerals for chemical or other industrial use e.g. barite, lime and salt.

The scope of this strategy does not include coal or sand and gravel.

Figure 1 is a simplified map of Alberta’s minerals that presents a current view of metallic and industrial mineral resources in the province and the extent of prospective areas for the exploration of undiscovered resources⁴. Resources included are minerals naturally occurring in rocks and sediments, as well as minerals that may be recoverable as by-products of industrial processes. These minerals include, but are not limited to:

Cobalt*	Used in rechargeable batteries and superalloys.
Copper*	Used in building construction, power generation and transmission, electronic product manufacturing, and the production of industrial machinery and transportation vehicles.
Diamonds	Used in jewellery, industrial, and other sectors.
Iron	Mostly used to manufacture steel and alloy steels and also used in civil engineering.
Lithium*	Used primarily for lithium-ion batteries.
Magnesium*	Used in furnace linings for manufacturing steel and ceramics.
Nickel*	Used in magnets, rechargeable batteries and superalloys.
Potash*	Primarily used as a fertilizer.
Rare Earth Elements (REEs)*	Primarily used in batteries and electronics.
Titanium*	Overwhelmingly used as a white pigment or in metal alloys.
Uranium*	Mostly used for nuclear fuel.
Vanadium*	Primarily used for titanium alloys and for energy storage.
Zirconium*	Used in the high-temperature ceramics industries.
Zinc*	Used in alloys and manufacture of many products such as paints, rubber, cosmetics, and pharmaceuticals.

*These minerals are among the critical minerals identified by the United States⁵ or Canada⁶.

⁴ Alberta Geological Survey, MAP 590, Minerals of Alberta, Released 2020-01-24. https://ags.aer.ca/publications/MAP_590.html

⁵ The United States Department of the Interior published a list of 35 minerals considered critical to the economic and national security of the United States. <https://www.usgs.gov/news/interior-releases-2018-s-final-list-35-minerals-deemed-critical-us-national-security-and>

⁶ The Government of Canada released Canada’s list of 31 minerals considered critical for the sustainable economic success of Canada and our allies and to position Canada as the leading mining nation. <https://www.nrcan.gc.ca/criticalminerals>

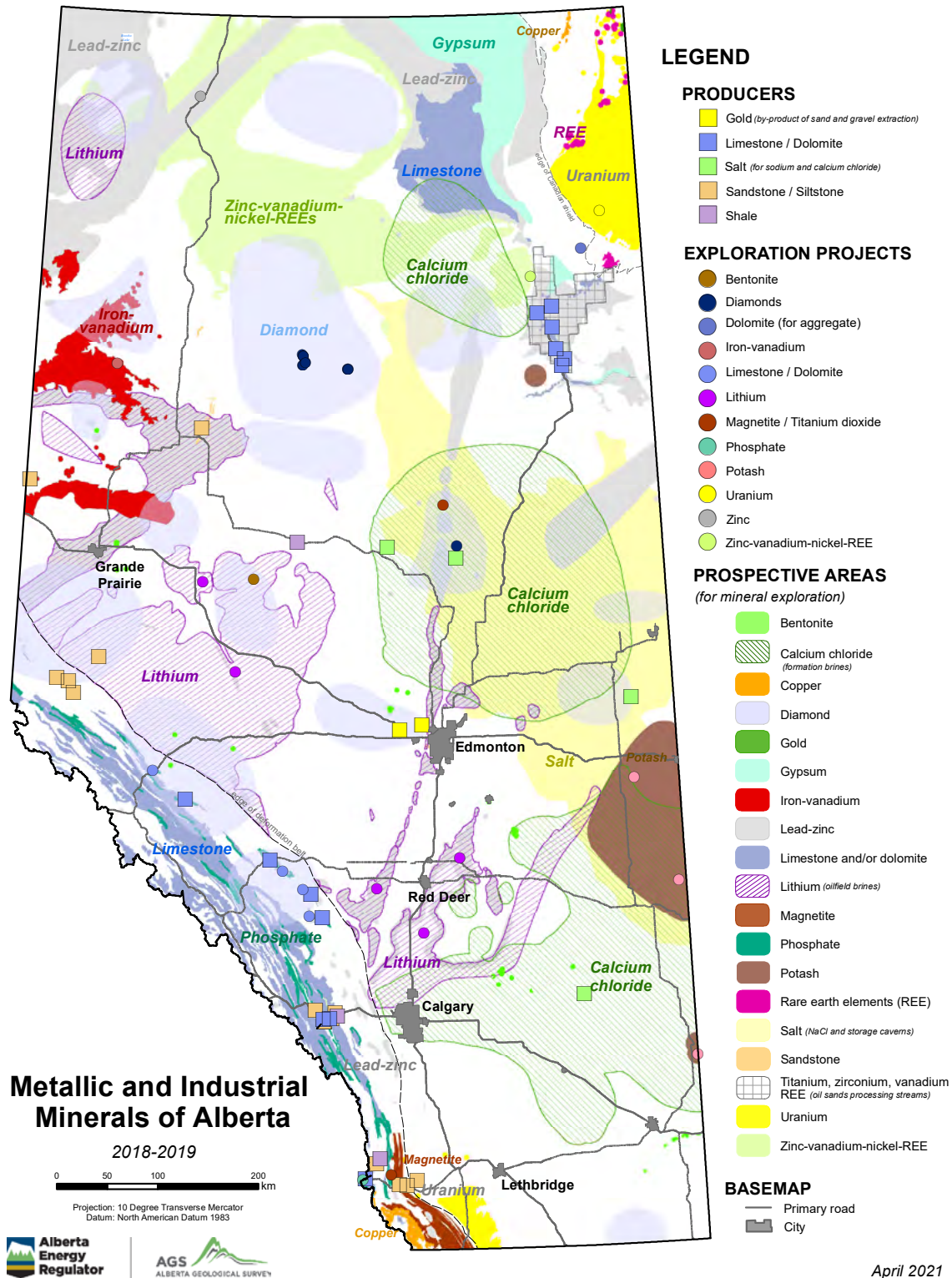


Figure 1: Metallic and Industrial Minerals of Alberta (Source: Alberta Geological Survey, 2021)

Vision

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

Guiding Principles

Six principles are identified to guide our actions to achieve the vision:

- Position and promote Alberta as a global destination of choice for mineral investment, innovation, exploration, development, manufacturing and recycling.
- Ensure environmentally and socially responsible and sustainable development that considers the entire life cycle of a project and its cumulative effects.
- Promote innovation and value-add opportunities along the supply and value chains while contributing to the global transformation to a low-carbon economy.
- Advance the role, inclusion, and voice of Indigenous Peoples.
- Support Indigenous and non-Indigenous community engagement and partnerships.
- Build a legacy of positive benefits for Albertans.

Realizing the Vision

As the steward of Alberta's mineral resources, the Government of Alberta will provide a competitive and attractive business environment that encourages private enterprise to access, explore for and develop these resources in a responsible manner and throughout mineral value chains.

The Government of Alberta is committed to responsible fiscal management. This strategy is developed in alignment with the Government of Alberta's strategic directions and will be implemented in accordance with its overall fiscal management.

There are six key areas to support and achieve Alberta's vision:

- Increase public geoscience.
- Enhance the fiscal and regulatory environment.
- Promote responsible development.
- Advance opportunities for Indigenous Peoples.
- Develop public awareness and a skilled workforce.
- Promote innovation and industrial development.

Alberta must also collaborate with the federal government and other jurisdictions and build the inter-governmental coordination and alignment in order to advance the mineral visions for both Alberta and Canada.

Key Areas

1. Increase Public Geoscience

To establish Alberta as a destination of choice for mineral investment, exploration, and development, Alberta must be positioned to compete globally. Publicly accessible, robust and current geoscience information is the first step in attracting investment for exploration and development as it reduces exploration risk, and contributes to well-informed resource development and land use decisions.

Alberta must enhance its public geological knowledge base to equip our governments, the public, industry, land owners as well as Indigenous Peoples with better understanding of our resource potential. This, in return, helps them make informed decisions with respect to land use planning, infrastructure development, environment protection and traditional land uses. This is particularly the case for our metallic minerals, as they remain largely unmapped and unexplored. This will enable the governments at all levels to make more informed and strategic land use decisions while attracting the mining industry to Alberta. This warrants a targeted and strategic approach, which will require coordinated efforts from governments, industry and many other mining stakeholders. Robust and current geoscience information should be made publicly available and easily accessible.

Many metallic and industrial minerals are found in both conventional and unconventional sources in Alberta. For example, titanium, vanadium, rare earth elements, and other critical minerals are found in oil sands, oil sands products, and oil sands processing waste streams, as well as lithium from oil and gas wastewater.

Many critical and strategic minerals are found in both primary and secondary sources in Alberta.

Though the quantity of these minerals is sometimes low per site, the aggregate amount within Alberta and Canada could be significant. Work has begun to build an inventory of those minerals and their concentrations; however, a more systematic approach is required to fully understand the resource potential in those secondary or unconventional sources. The Government of Alberta will examine the opportunity to track and collect mineral information where appropriate, such as more routine sampling of oil and gas wastewater across Alberta to scan for lithium and other valuable minerals and improved data collection requirements for exploration wells.

The Alberta Geological Survey

The Alberta Geological Survey has supported Alberta's mineral exploration and resource development for more than 100 years. It provides geological information and advice about the geology of Alberta to the Government of Alberta, the Alberta Energy Regulator, industry, and the public to support the exploration, sustainable development, regulation, and conservation of the province's resources. Building on this rich history, and supported by adequate funding and capacity, the Alberta Geological Survey is well-positioned to deliver more minerals-focused public geoscience information.

Led by the National Geological Surveys Committee, consisting of Canada's federal, provincial and territorial geological surveys, Canada is developing a new pan-Canadian Geoscience Strategy that aims to increase the availability and accessibility of public geoscience, assess opportunities to increase funding for geoscience, and examine ways to enhance national and international collaboration on geoscience innovation. The Alberta Geological Survey is part of the collaborative efforts in developing this pan-Canadian Geoscience Strategy under the Canadian Minerals and Metals Plan.

2. Enhance the Fiscal and Regulatory Environment

Alberta has the opportunity to provide investors and developers with regulatory clarity and policy certainty to increase investor confidence. Ensuring a clear, predictable, and competitive regulatory framework, a strong fiscal regime, and modern tenure and royalty systems in place will provide industry with increased clarity regarding regulatory expectations.

Update the Lifecycle Metallic and Industrial Mineral Regulatory Regime

A clear, predictable and robust regulatory regime is key to boosting investor confidence, attracting investment and ensuring responsible resource development. The Government of Alberta is examining opportunities to update and streamline Alberta's current legislation and regulations that oversee the life cycle of metallic and industrial mineral development. Responsible mineral exploration and development requires a modern lifecycle regulatory framework that strives to be responsive, transparent, outcome-based, and risk-proportionate.

The permits and approvals currently required for metallic and industrial mineral development fall under legislation pertaining to exploration, tenure, and environmental protections, but do not extend to resource conservation and management. Alberta has a legal, policy and regulatory framework for its coal and other energy resource developments, which can be adapted to oversee mineral development with emerging technologies and innovations. The Government of Alberta plans to update its regulatory regime for metallic and industrial minerals to facilitate responsible and sustainable mineral development, while ensuring environmental protections for air, land, and water and biodiversity outcomes are achieved over the full life cycle of a project.

To ensure responsible mineral exploration and development occur for both traditional and any emerging mineral operations, the Government of Alberta will establish clear accountabilities for managing liabilities throughout the mineral development life cycle so that all regulatory sites closure (e.g. reclamation and remediation) requirements are met. The Government of Alberta has made improvement to update its liability management framework for oil and gas development and will consider extending the learning and findings to mineral development where appropriate.

The Government of Alberta plans to streamline administrative processes, as well as provide a clear regulatory roadmap and guidance, associated with metallic and industrial mineral exploration and development to reduce unnecessary regulatory burden, enhance regulatory clarity and certainty, increase investor and public confidence, and encourage industry competition. This will further encourage traditional and innovative mineral exploration and development to increase in the province.

Modernize the Metallic and Industrial Mineral Tenure and Royalty Regulations

Effective and competitive tenure and royalty systems are integral to ensuring Alberta's ability to attract investment and protect Albertans' interest as resource owners. Alberta has seen increased interest from industry to explore innovative ways to extract and develop metallic and industrial minerals from both traditional and non-traditional sources. The Government of Alberta will modernize its tenure and royalty regulations to reflect changing industry practices, emerging mineral opportunities and other changing conditions now and into the future.

3. Promote Responsible Development

A robust minerals sector enabled by a clear commitment to responsible development represents a significant job growth opportunity for the province. Alberta continues to work towards upholding and enhancing its stringent environmental standards that are adaptable to the changing landscape.

Integrate Mineral Opportunities into Land Use Planning

Mineral exploration⁷ requires access to a large land base to allow investigation for economic mineral properties. While key to raising baseline geological knowledge, mineral exploration tends to have low-intensity land disturbance. In Alberta, most of the province has not been extensively mapped and explored for metallic and industrial minerals. Industry needs general access to a large land base to explore and, if a discovery is made, to proceed with the development of the resource within the integrated resource management framework. The Government of Alberta needs to ensure that an appropriate land base is available for mineral exploration as part of regional and sub-regional planning processes, and that potential impacts to future mineral development opportunities are considered in land use decision-making. In addition, Alberta is modernizing its approach to mineral development, which aims to provide industry with more flexibility for acquiring rights and making new investments, while we continue to uphold our province's stringent environmental and health and safety standards. All proposed mineral development projects continue to be subject to rigorous reviews, including environmental assessments, and in alignment with Alberta's land use policies, including regional plans.

⁸ Mineral exploration is the search for materials in the earth's crust that appear in high enough concentrations and amounts to be extracted and processed for profit. There are typically three types of mineral exploration: 1) Grassroots or early exploration involves searching for a mineral deposit in an area that hasn't been searched before; 2) Brownfield exploration involves a search for additional deposits near a known mine; 3) On-site mineral exploration is an expanded search for a mineral resource that has already been found and developed on the property of an existing mine.



With the potential to develop lithium and rare earth elements, Alberta is positioned to help meet the growing demand for batteries used to power electric vehicles.

Update Resource Conservation Regulations

The environmental regulations around tailings, waste, and groundwater may need to be updated to identify and maximize conservation of mineral resources from secondary sources, such as minerals contained in produced water, oil sands tailings, petroleum coke fly ash, and coal fly ash.

Remediation and reclamation plans can be optimized to further minimize environmental impacts while still allowing future access to such resources for economic opportunities. Opportunities exist where potential sampling and commercial exploitation of minerals from secondary sources can be encouraged and enabled over life-cycle assessments. Coordination is required among government, industry and research institutes and organizations to help fill the knowledge gaps around the management, storage, and reclamation of secondary mineral sources.

Enhance Environmental Information Access and Sharing

Large mining and quarry projects are required to provide an environmental impact assessment that identifies potential environmental impacts and reclamation and remediation strategies. These assessments typically incur substantial effort and cost, while often related to an area significantly larger than the mineral lease area. The Government of Alberta will seek opportunities where collaboration between industry and government can help reduce cost through greater transparency of and access to non-competitive environmental information (e.g., sharing of biophysical assessments).

4. Advance Opportunities for Indigenous Peoples

Many Indigenous communities are situated near mineral deposits where potential mineral exploration and development may take place. Understanding Indigenous concerns and perspectives can help identify potential impacts to Treaty rights, harvesting activities and traditional uses. Enhancing the involvement of Indigenous Peoples and Indigenous entrepreneurs and businesses in mineral exploration and development — as well as along the mineral supply and value chains — allows for a better understanding of the opportunities, interests and potential concerns identified by Indigenous Peoples. Discussions with Indigenous communities can also help inform development of best practices for industry to follow when engaging on specific projects and initiatives.

As part of ongoing efforts, the Government of Alberta established the Alberta Indigenous Opportunities Corporation in 2019 to support job-creating investments from Indigenous communities, entrepreneurs, and businesses. This in return will help Indigenous communities become partners in prosperity.

5. Develop Public Awareness and a Skilled Workforce

Alberta must continue to collaborate with the federal government and other Canadian jurisdictions, along with various industry and educational organizations to increase public knowledge about mineral exploration and development. Increasing this awareness will help ensure Albertans are well equipped—now and into the future—to participate in and support the minerals sector.

Raise Public Awareness

Increasing mineral literacy can facilitate community support for mineral development projects and attract the required investment and talent for mineral related jobs. For mineral exploration and development activities to advance, Albertans must have access to the knowledge to make informed decisions. This includes a clear understanding of the differences and nuances between the development of energy resources, and metallic and industrial mineral exploration and development. Mineral exploration and development tends to require shorter work planning periods prior to execution, has increased flexibility in work locations and types, and a much smaller footprint - both physically and financially. Increased public awareness of the opportunities in the minerals sector will ultimately support the development of a skilled and educated labor force.

Canada is leading to establish a pan-Canadian mineral literacy hub that will provide a centralized point of access for existing and new resources on Canada's minerals sector as well as spearhead the "Canadians of Mining" campaign, which aims to help attract, retain, and develop a highly qualified workforce for Canada's minerals sector. Alberta will continue to support the federal leadership in this pan-Canadian campaign, and make sure Alberta's perspectives and opportunities are fairly represented on the national level. Alberta will also explore its own initiatives to raise public awareness and provide timely information about its mineral opportunities and government actions.

Enhance Workforce and Transferable Skills

Through collaboration among governments, Indigenous Peoples, communities, industry, businesses, educational institutions and other organizations, Albertans are enabled and encouraged to participate in the workforce and capitalize on new and emerging employment opportunities.

In the short term, this could be particularly important for some communities that are facing closure of subbituminous coal mines in the coming years. Mineral exploration and development requires skill sets similar to coal and oil sands mining and oil and gas development. Establishing a sizable minerals sector can bring Albertans back to work and provide economic and social benefits to communities impacted by the development cycles of other commodities. The Government of Alberta is taking actions to re-train and transition the coal industry workforce into other sectors such as the mineral industry, with dedicated funding and programs in place such as the “Tuition Voucher” program. Many Indigenous-focused career and training centers, programs and services, such as the Aboriginal Futures Career and Training Centre, currently exist across Alberta and can continue to provide support to mineral development related activities.

In the longer term, Alberta needs to develop a sizable workforce in order to expand and sustain a robust minerals sector in the province. The minerals sector is undergoing transformation with the deployment of advanced technologies such as artificial intelligence, automation and other enhanced technologies and tools. Creating new talents and skillsets that are tailored to mineral exploration, development and processing is a strategic consideration for the Government of Alberta. Our next generations need to be well educated, forward thinking and equipped with the necessary skills to support a modern and sustainable minerals sector.

Alberta’s post-secondary institutions provide a number of programs that help train Albertans for this industry. Examples include the Bachelor of Science programs provided by the Universities of Alberta and Calgary in Geology, Ecology and Mining Engineering, as well as the certificate and diploma programs offered by the Northern Alberta Institute of Technology (NAIT) and the Southern Alberta Institute of Technology (SAIT) in environmental technology, geological technology and energy asset management. All of these programs help equip next generations for a number of different careers in the mineral and mining industry.

The Government of Alberta announced the Labour and Talent Strategy, which aims to increase work-integrated learning opportunities, expand the apprenticeship model and micro-credentials, and enhance connections between post-secondary and industry. Existing partnerships are in place among the Alberta Ministry of Advanced Education, industry, entrepreneurs and post-secondary institutions for internship and applied research programs and can be further expanded to have a minerals focus in the future. Initiatives such as a partnership with Mitacs International, and additional funding for ‘CAREERS: The Next Generation’ support students to develop skills that will increase their employability and labour market resilience.

Furthermore, Alberta’s post-secondary transition strategy, Alberta 2030: Building Skills for Jobs, is seeking to more closely align post-secondary education and research to economic and industry growth, through focusing on providing the high quality education, skills and training needed to get Albertans back to work. This strategy seeks to meet current and future labour market demands and drive post-secondary research and innovation to ensure Alberta remains competitive in a 21st century global economy.



Vanadium, cobalt, and other critical minerals found in Alberta, have the potential to help advance renewable energy and energy storage.

6. Promote Innovation and Industrial Development

To compete in an evolving mineral sector, industry needs to continuously evolve. To compete, government and industry need to work together, as partners, to advance processes, encourage innovation, development, and adoption of emerging technologies. This will help to expand Alberta's scientific and industrial capacity to take advantage of opportunities along the full mineral value chains and diversify minerals and mineral products produced in Alberta.

Improve Marketing and Promotion

Marketing and promotion is central to making Alberta visible and attractive for mineral investment, both nationally and internationally. Investors need to know about the province's geological potential, stable and modern regulatory regimes, accessible infrastructure and a skilled workforce.

Successful mining jurisdictions such as British Columbia and Ontario put considerable effort into marketing their mineral development potential and Alberta must consider doing the same in order to compete.

As an important part of Alberta's Recovery Plan, the Government of Alberta has created the Invest Alberta Corporation, an arm's-length agency that will help promote Alberta as a prime investment location for businesses from across Canada and around the world, attracting high-value, job-creating investment. The agency will help instill investor confidence and generate investment in the province's key sectors, including the energy sector.

The Government of Alberta has established a Research Commercialization Working Group to attract investment for Alberta research. This includes sectors where Alberta could be a strong global and national leader, such as energy and alternative energy sources along with emerging technologies —particularly artificial intelligence and its use in advancing industry development.

Alberta is also part of the efforts to establish a "Canada Brand for Mining" coordinated by the federal, provincial and territorial governments, industry and partners. A Canada Brand for Mining that is built upon Canadian values and principles - in areas such as sustainable development, responsible business conduct, and partnership with communities and Indigenous Peoples, as well as its mineral endowment and expertise - could complement efforts that individual provinces and territories undertake to highlight the benefits of doing business in their respective jurisdictions.

Alberta can play a significant role in Canada's homegrown battery industry and support the development of clean energy technologies.

Explore Industrial Development Opportunities along a Full Value Chain

Alberta has a strong research and innovation system that lays the foundation for remarkable discoveries, creates new skilled jobs and helps Alberta build a prosperous society positioned for national and international success. With a strong record of success in innovation and entrepreneurship in resource development, such as Alberta's energy sector, the province is well equipped to further its advantage by accelerating and deploying more cutting-edge innovation. Alberta is constantly striving to stimulate bold ideas and actions from innovators, industry, and entrepreneurs; guide research investments to support new knowledge where it's needed; and support a robust pipeline of innovations from early stage to scale up to market ready.

Alberta Innovates is the province's largest research and innovation agency. Through various funding programs and initiatives, Alberta Innovates supports research and innovation that leads to economic growth and diversification, enhanced environmental performance, and social well-being. Accelerating clean technology development and deployment along the mineral exploration, development and value chain continues to be one of the focus areas with increasing efforts to foster responsible and sustainable resource development.

The Government of Alberta announced several other strategies that aim to increase Alberta's competitiveness in overall investment attraction and innovation. The Technology and Innovation Strategy aims to support Alberta in leading the country in attracting capital and investment by 2030; and developing a competitive landscape and the right enablers to drive entrepreneurship and grow priority sectors. The Strategy launched the Innovation Employment Grant (IEG), which promotes economic growth, and employment

through support to small- and medium-sized firms that invest in research and development. The grant, combined with support provided through Alberta Innovates and other measures, makes Alberta one of the most attractive places in Canada to undertake research and develop new products.

The Manufacturing Strategy will aim to increase competitiveness in areas of traditional manufacturing strength and enable growth of Alberta's advanced manufacturing capabilities. The Aviation, Aerospace and Logistics Strategy aims to expand Alberta's aviation, aerospace and logistics capabilities including enhancing the province's position as a logistics hub, and exploring advancing resource corridors and expanding rail capacity. The province is well positioned to expand its mineral processing and manufacturing capacity, which in return will help diversify the minerals and metals and value-added products produced in the province and optimize the return from resource development. Alberta has existing mineral processing capacity such as the Sherritt International Corporation's Fort Saskatchewan Metals Facility⁸ in Fort Saskatchewan, Alberta.

Alberta can play a significant role within North American mineral development, continue to play a leading role in the development of clean energy technologies, and support the global transition to a low carbon economy. Not only does Alberta have many industrial minerals to support a necessary part of our modern life, Alberta also has the geological potential to supply many of the critical and strategic minerals that support green energy transition and technological transformation. Alberta also has scientific and industrial capacity to take full advantage of the resource value chains by diversifying commodities produced within the province. The success of these requires the Government of Alberta and Alberta's innovation ecosystem, such as Alberta Innovates, Emissions Reduction Alberta, post-secondary institutions and industry, to collaborate and work

⁸ Sherritt's Fort Saskatchewan refinery, constructed in 1954, treats imported feeds to produce high-purity nickel and cobalt products for export sales. Finished nickel and cobalt produced at the Fort Saskatchewan refinery are sold to international customers, primarily in Europe, Japan and China, for use in stainless steel applications, specialty alloys and assorted battery types. (Source: Sherritt's website)

with the federal government and other jurisdictions to continue to expand Alberta's knowledge economy and drive for commercialization. These, in return, will help grow a competitive, diversified and sustainable minerals sector in Alberta.

The federal government is pursuing the Canada-U.S. Joint Action Plan on Critical Minerals Collaboration and leading the development of a Canada's approach targeting all segments of the critical minerals and battery value chains. Alberta has potential to supply many of the minerals and metals needed to build advanced battery technologies such as lithium, cobalt, and vanadium, as well as its mineral processing and manufacturing capacity to fuel the domestic value chains.

With strategic planning and collaboration with the federal, provincial and territorial governments, along with jurisdictions outside of Canada, Alberta can play a significant role in Canada's critical minerals value chains and homegrown battery industry and support the development of clean energy technologies that, in return, provide opportunities for economic diversification and long-term prosperity for Albertans.

Action Plan

Immediate (within 2 years)

Increase public geoscience

- Develop an enhanced minerals-focused public geoscience program, such as mineral mapping for critical and strategic minerals.
- Ensure Alberta's geoscience information is publicly available and accessible.
- Establish requirements and processes to collect mineral data, such as from secondary sources.
- Improve Alberta's tenure interactive map and access of tenure information.
- Solidify the Alberta Geological Survey's mandate and funding to have sufficient capacity to deliver minerals-focused public geoscience.
- Support Canada's pan-Canadian Geoscience Strategy development.

Enhance the fiscal and regulatory environment

- Modernize the metallic and industrial mineral tenure.
- Provide clear regulatory guidance to industry, such as through a regulatory roadmap.
- Update a lifecycle metallic and industrial mineral regulatory regime.

Promote responsible development

- Coordinate with industry, Indigenous and other groups to modernize the policies around tailings, waste, and groundwater to promote conservation and development of secondary sourced minerals.
- Identify areas that can be made available for low-impact mineral exploration as part of regional/subregional planning.
- Improve public access to environmental information contained in large mineral projects' Environmental Impact Assessments (e.g., sharing of biophysical assessments).
- Support the federal government's pan-Canadian initiative to re-consider and expand the mandate for the National Orphaned or Abandoned Mines Initiative (NOAMI) in response to new and emerging issues regarding mine reclamation and closure.

Advance opportunities for Indigenous Peoples

- Continue to promote Indigenous-focused initiatives to support mineral development.
- Engage Indigenous communities and organizations about the opportunities, interests and challenges around mineral development.
- Ensure clear guidelines are provided to industry for conducting appropriate consultation for mineral development.

Develop public awareness and a skilled workforce

- Develop a better understanding of the talent and skillset needs required to develop the minerals sector.
- Enhance minerals focused webpages by the Government of Alberta and Alberta Geological Survey.
- Ensure a clear understanding of the differences and nuances between energy resource development and mineral exploration and development by Indigenous Peoples and the public.
- Support Canada's "Canadians of Mining" campaign.
- Support the skills development and training of transitioning workers from the energy and other sectors.

Promote innovation and industrial development

- Explore funding opportunities for innovation and technology development in relation to mineral value chains.
- Promote Alberta's minerals sector in collaboration with the federal government's "Canada Brand for Mining" initiative.
- Work with the federal and other provincial/territorial governments to develop Canada's critical minerals and battery value chain action plan.
- Work with the Research Commercialization Working Group to explore opportunities to prioritize mineral related research and funding.
- Work with the responsible ministries and agencies, such as Invest Alberta Corporation, to expand Alberta's mineral profile for global investment attraction.



Intermediate (2 – 5 years)

Increase public geoscience

- Continue inter-governmental collaboration and partnership to advance public geoscience, such as under the pan-Canadian Geoscience Strategy.
- Deliver an enhanced minerals-focused public geoscience program.

Enhance the fiscal and regulatory environment

- Continue the implementation of an updated lifecycle metallic and industrial mineral regulatory regime.
- Explore policy and other tools available to government to further encourage mineral exploration and development throughout the mineral value chains.
- Review and update the metallic and industrial mineral royalty framework.

Promote responsible development

- Examine opportunities and pathways for leveraging existing oil and gas infrastructure for mineral exploration and development purposes.
- Integrate public geoscience data and mineral potential assessments to inform public land management decision-making processes (e.g. land use planning).
- Strengthen clear accountabilities and rules on liability management and end-of-life closure requirements for mineral development.

Develop public awareness and a skilled workforce

- Explore opportunities to educate and build a better mineral literacy in the next generation for awareness and a future skilled workforce.
- Leverage and explore initiatives under the Labour and Talent Strategy to grow and expand a minerals focused young workforce.
- Promote stronger and focused outreach to secondary and post-secondary institutions and develop a pipeline of future talent for the mineral sector workforce.

Promote innovation and industrial development

- Foster the development of innovations that stimulate the growth of Alberta's technology and expertise internationally.
- Pursue opportunities to promote Alberta's investment attraction and exports internationally by mineral marketing and promotion.

Long Term (5 – 10 years)

Promote innovation and industrial development

- Leverage Alberta's industrial and scientific capacity to establish Alberta's leadership role in the North American critical mineral supply and value chains.
- Promote innovation and Alberta-made technologies along the mineral value chains that contribute to global green energy transition.
- Pursue opportunities to expand industrial development throughout the mineral value chains within the province.
- Work with Canada and other jurisdictions to foster a Canadian critical minerals, battery and energy storage supply and value chain, fueled by Alberta-produced minerals and mineral products.