EMISSIONS REDUCTION ALBERTA

BUSINESS PLAN 2022-25

Contents

LAND ACKNOWLEDGEMENT

ERA would like to acknowledge that Alberta is the traditional and ancestral territory of many peoples, presently subject to Treaties 6, 7, and 8: the Blackfoot Confederacy (Kainai, Piikani, and Siksika), Cree, Dene, Saulteaux, Nakota Sioux, Stoney Nakoda, Tsuu T'ina Nation, and the Métis People of Alberta. This includes the Métis Settlements and the Six Regions of the Métis Nation of Alberta within the historical Northwest Metis Homeland. We acknowledge the many First Nations, Métis, and Inuit who have lived in and cared for these lands for generations. We are grateful for the traditional Knowledge Keepers and Elders who are still with us today and those who have gone before us. We make this acknowledgement as an act of reconciliation and gratitude to those whose territory we reside on or are visiting.

Message from the Board Chair

On behalf of the Emissions Reduction Alberta (ERA) Board, I am very pleased to present ERA's 2022-25 Business Plan.

During 2021, organizations and countries around the world committed to clearer goals to reduce greenhouse gas (GHG) emissions, including those related to achieving net-zero by 2050. Concurrently, increasing concern was apparent regarding sustainability of global energy systems, access to affordable and reliable energy, and the financial capacity required to accelerate the pace of innovation to reach these ambitious goals. These developments reinforce the reality that the transformation of global energy systems on the path to net zero will be highly uncertain, challenging, and disruptive.

These developments also serve to reinforce the important role that ERA plays in the climate and energy space in Alberta and Canada. ERA's mandate remains very relevant—reducing GHG emissions while growing Alberta's economy through the development and adoption of innovative technology solutions. Our portfolio approach to investment in technology and innovation has proven to be very robust, and is likely to be even more relevant in light of the uncertainties inherent in the broad range of potential GHG reduction pathways. Our business model is also very efficient and highly flexible/scaleable in response to variable levels of available funding. Finally, ERA has a proven track record of developing and implementing strategic partnerships—provincially, nationally, and internationally—to leverage our expertise, our investment capacity, and our convening power. These attributes underpin our confidence in ERA's role in enabling Alberta and Canada to achieve a low emissions future, while contributing to a competitive Alberta economy that attracts investment and creates jobs.

ERA's technology investment portfolio must take into consideration sectoral, temporal, and risk-related dimensions. It must also strike the right balance in investing in improving the emissions performance of incumbent industries, including oil and gas, and contributing to the development and growth of new, low-carbon emissions industries.

ERA's Technology Road Map (TRM) provides the foundation for the investment portfolio outlined in our 2022-2025 Business Plan. On a positive note, a number of the key technology pathways that will likely influence the pathways to net zero have been identified—clean hydrogen production, carbon capture utilization and storage (CCUS), circular economy, energy efficiency upgrades, and more. These key technology solutions are among the competitive funding opportunities outlined in this Business Plan, with ERA funding contributing to de-risking and accelerating development and deployment of these technologies.

Building on the foundation provided by the TRM, this Business Plan outlines how ERA plans to deploy the funds entrusted to us by the Government of Alberta from the Technology Innovation and Emissions Reduction (TIER) regulation; highlights the manner in which ERA will sustain a highly-agile, adaptive and efficient organization that continues to deliver results; and demonstrates how ERA will further develop partnerships to enhance leverage and overall impact.

Finally, Steve MacDonald will be retiring as ERA's CEO in June, 2022. Steve's leadership has been instrumental in ERA consistently delivering strong results, in establishing the sound foundation for this Business Plan, and in positioning the organization for future success. We are very appreciative of Steve's many contributions to ERA and wish him all the best in his future endeavours. As a Board, we remain very confident in the capacity and commitment of the ERA team, working with Steve's successor as CEO, to achieve the objectives outlined in this Business Plan.

Sincerely,

DAVE COLLYER

Board Chair, Emissions Reduction Alberta

Message from the CEO

As the world has recognized, the net-zero challenges and the timelines to achieve this goal are too big and complex for one investor, one industry, one government, or one country to tackle alone. We must act together as a global community to mitigate climate change while keeping our economy strong. We know that technology and innovation are key solutions.

The past year has seen significant investments by all levels of government and industry in clean tech that supports job creation, economic recovery, and a net-zero future. ERA has played a critical role in this space and this work will continue. This year's Business Plan builds on last year's by sharpening ERA's focus to maximize impact through a more streamlined communications plan, a clearer path to energy efficiency, and future call areas aligned to current challenges. In 2022-25, we will explore new competitive funding opportunities, potential areas of focus include, but are not limited to:

- **HYDROGEN**
- **FUELS OF THE FUTURE**
- **ADVANCED MATERIALS**
- **INDUSTRIAL TRANSFORMATION**
- **RESHAPING ENERGY SYSTEMS**

ERA will also continue accepting applications for its Energy Savings for Business Program, a $55 million funding opportunity that supports cost-saving and emissions-reducing projects targeted at small- and medium-scale industrial and commercial facilities. To address market needs, the program will evolve in 2022, to accelerate commercially available technology upgrades in small oil and gas facilities.

As an independent organization, ERA has been a key partner and convenor, helping Alberta achieve its environmental and economic goals by stewarding investments and project progression along the innovation continuum. Since we were established in 2009, we have committed $796 million to 220 projects worth $6.5 billion. The technologies and innovations that ERA has supported are on track to deliver cumulative GHG reductions of 42 million tonnes by 2030. These investments will also lead to 31,900 person-year jobs being created by 2025 and contribute over $4.6 billion to Alberta's GDP.

These investments are mobilizing private sector spending to advance technology scale-up. This builds on our strengths in innovation and people, and takes Alberta another step towards the lower emissions future the world is pursuing.

Alberta needs to continue to deploy the technologies we have, develop and improve the ones we need, and create more solutions through investments in research and development. This Business Plan outlines ERA's role in establishing the province as a leader in the low emissions world.

Sincerely,

STEVE MACDONALD

CEO, Emissions Reduction Alberta

1.0 Business Plan At-A-Glance

ERA plays a critical role supporting Alberta's innovation system and is well positioned to help the province achieve its environmental and economic goals. The organization continues to identify and invest in opportunities to accelerate innovation and attract the investment required to strengthen and diversify the economy. The investments we make today will unlock future opportunities for Alberta on its pathway to net zero.

This 2022-25 Business Plan sets out the actions ERA will take to deliver on its mandate. The plan is scalable and ERA's flexible business model enables the organization to strike the right balance, responding to government and industry's short-term needs, while delivering on longer-term strategic outcomes. Critical among these actions will be the successful delivery of important funding calls that were launched in 2021/22, including the $30 million Carbon Capture Kickstart funding competition and $50 million Circular Economy Challenge. Looking forward, ERA will deliver new competitive funding opportunities. Examples of potential focus areas for future Calls for Proposals include:

- Hydrogen
- Fuels of the Future
- Advanced Materials
- Industrial Transformation
- Reshaping Energy Systems

Annual Calls for Proposals will be augmented by ERA's Partnership Intake Program—a flexible mechanism for ERA to fund innovative projects that are brought forward by trusted funding partners in the innovation system. ERA will convene the resources required to accelerate adoption of clean technology solutions. This includes expanding our Trusted Partner network to accelerate development and deployment of the technology the world needs. ERA plans to work closely with partners in the federal government to create larger pools of capital for driving innovation and technology toward commercialization. In addition, ERA will also continue to support small- and medium-sized businesses who face barriers to adopting new commercially available energy efficiency technologies through its Energy Savings for Business (ESB) Program. ERA's operating budget (attached) assumes annual revenues of $180 million, $100 million, and $150 million over the next three years. The commitments outlined in this Business Plan are scaleable and ERA can be responsive to changes in the total funding available for investment.

As ERA developed this Business Plan, geopolitical volatility was impacting global commodities markets. Canada was also moving through the COVID-19 pandemic's fifth wave. Outside of these events, climate change continues to be a pressing global challenge, underscoring the importance of ERA's work. Critically important to our mandate, the activities ERA has committed to undertake are scalable and adaptable. Our highly efficient and flexible business model allows us to be responsive to these changing global scenarios.

Business Plan At-A-Glance

STRATEGIC PRIORITY: ACCELERATE TECHNOLOGY

OBJECTIVES

- Identify the highest potential investment opportunities
- Attract high-quality project applications for ERA's competitive Calls for Proposals and Partnership Intake Program
- Accelerate innovative clean technology that supports net-zero goals
- Support efforts by Alberta's businesses to achieve net-zero GHG emissions by 2050

ACTIONS

- Implement an investment strategy that is aligned with ERA's provincial priorities and global innovation needs
- Identify solutions that reduce emissions for Alberta's existing industries and help create new business opportunities
- Pursue innovative technology projects using competitive funding calls and Partnership Intake Program
- Select and fund the highest potential opportunities using a rigorous and transparent process

STRATEGIC PRIORITY: DRIVE COMMERCIALIZATION

OBJECTIVES

- Increase commercialization and market adoption of emissions-reducing technologies
- Share technological learnings and project knowledge to accelerate commercial deployment of technologies
- Leverage investments to create larger pools of capital for innovation and technology
- Foster economic benefits (direct and indirect) in Alberta from projects funded by ERA, including measurable jobs (temporary and permanent), GDP creation in new and existing sectors, and economic diversification

ACTIONS

- Manage a balanced portfolio
- Convene capacity and ecosystem supports to address barriers to commercialization
- Deliver programming to increase market adoption of emissions-reduction technologies
- Act as a trusted advisor to policy makers by providing strategic advice to stimulate adoption of clean technology solutions

STRATEGIC PRIORITY: MAXIMIZE IMPACT

OBJECTIVES

- Demonstrate ERA's contribution and support to provincial policy priorities, including emissions reduction and economic growth
- Promote widespread dissemination of knowledge and lessons learned from ERA-funded projects
- Increase awareness of ERA's role within the innovation system
- Support the Government of Alberta to achieve its strategic outcomes and policy objectives related to climate change
- Ensure efficient and effective use of public funds

ACTIONS

- Increase awareness and share knowledge, successes, and stories from funded projects
- Ensure ERA's successes and lessons learned are a key component of Alberta's economic and environmental reporting
- Explore opportunities to maximize impact beyond technology support
- Strengthen ERA's performance management framework
- Drive toward operational and organizational excellence

2.0 About ERA

ERA was created in 2009 to help deliver on the province's environmental and economic goals. ERA takes action on climate change and supports economic growth by investing in development and deployment of clean technology solutions that reduce GHG emissions while lowering costs, attracting investment, and creating jobs in Alberta.

Alberta has an industrial carbon pricing and emissions trading system that has been in place since 2007. On January 1, 2020, the Government of Alberta implemented its new TIER regulation. Under this carbon pricing mechanism, large emitters in Alberta are required to meet GHG emission performance benchmarks. Regulated facilities can comply with these benchmarks by making on-site reductions, using emission performance credits from other facilities that have outperformed their benchmarks, using offset credits from prescribed emissions reduction activities outside of regulated facilities, or by paying into the TIER compliance fund. The price of TIER fund credits has increased from $30 per tonne in 2020 to $50 in 2022, and Alberta has committed to maintaining jurisdiction over industrial carbon pricing which includes increasing the fund price to align with the federal carbon price, scheduled to reach $170 per tonne by 2030. ERA remains a key delivery agent responsible for reinvesting these funds into innovative technologies to accelerate emissions reductions.

MANDATE

ERA's mandate is to reduce GHG emissions and grow Alberta's economy by accelerating the development and adoption of innovative technology solutions.

VISION

ERA's vision is for Alberta to have a diversified, net-zero economy with competitive industries that attract investment and deliver sustainable environmental outcomes.

VALUE PROPOSITION

ERA invests proceeds from carbon pricing paid by large industrial emitters to reduce GHG emissions and strengthen the competitiveness of new and incumbent industries in Alberta. Our investments help innovators develop and demonstrate GHG-reducing technologies. These technologies will lower costs, improve competitiveness, and accelerate Alberta's transformation to a low emissions economy. ERA delivers results through a competitive, transparent, efficient, and outcomes-focused delivery model.

CORE VALUES

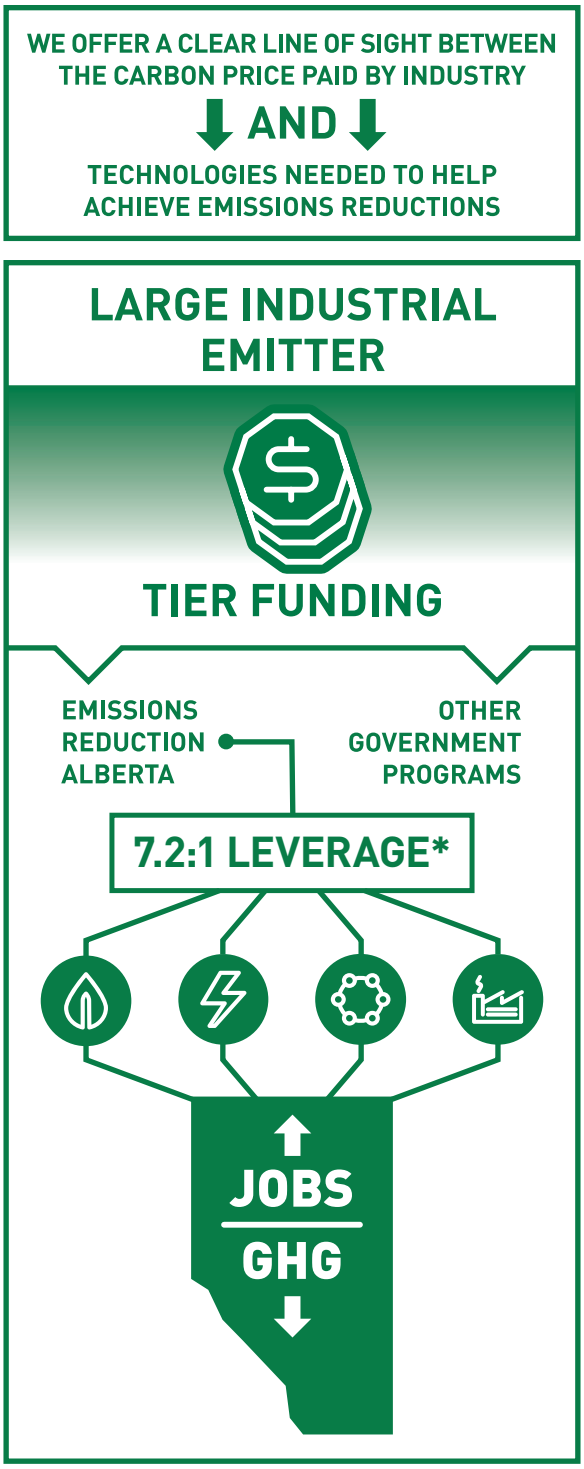
INNOVATION **COLLABORATION** **TRANSPARENCY** **INTEGRITY**

BUSINESS MODEL

While many jurisdictions have a mechanism to invest in clean technology, the ERA model is unique:

- It offers a clear line of sight from the carbon price paid by industry, under the TIER regulation, to investment in the solutions needed to achieve GHG reductions
- Funding is directed at accelerating innovation toward commercial deployment and adoption by de-risking technology in the crucial pilot, demonstration, and first-of-kind deployment stages of development
- Non-dilutive* grant funding allows ERA to reduce innovation risk with industry and private funders to accelerate the development of compelling clean technologies through development stages
- Its Delegated Administrative Organization (DAO) structure means ERA has no annual investment caps, can fund multi-year projects, can carry funding over from year-to-year, and can reinvest funds when projects do not progress

*Non-dilutive funding is defined as funding that does not require you to give up ownership or shares of your company or product.



*ERA requires 1:1 matching of its investments with private dollars. For projects funded to date, every dollar invested by ERA has been leveraged with $7.20 invested by industry, innovators, and other project funders.

OUR IMPACT

$796 MILLION
TOTAL INVESTMENT

220 PROJECTS

$6.5 BILLION
TOTAL PROJECT VALUE

42 MILLION TONNES
OF CUMULATIVE EMISSIONS REDUCTIONS
BY 2030

104 MILLION TONNES
OF CUMULATIVE EMISSIONS REDUCTIONS
BY 2050

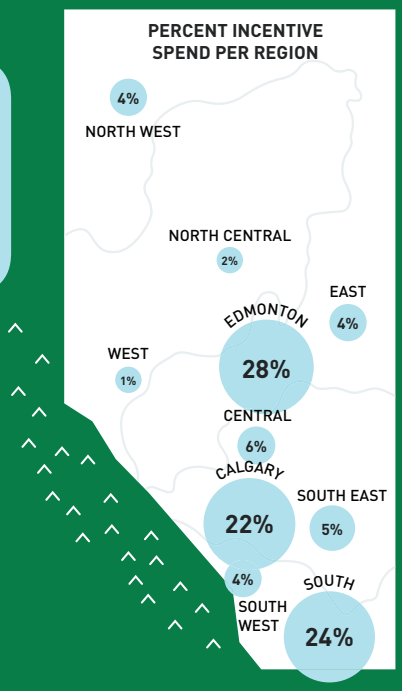
7.2:1
LEVERAGED FUNDING FROM PUBLIC AND PRIVATE INVESTORS

94% OF KEY STAKEHOLDERS SUPPORT ERA'S MANDATE

31,900
PERSON-YEAR JOBS IN ALBERTA BY 2025

$4.6 BILLION
GDP IMPACT TO ALBERTA BY 2025

OVER 1300
PROJECTS SUPPORTED THROUGH THE ENERGY SAVINGS FOR BUSINESS PROGRAM



GOVERNANCE AND BOARD

ERA is a not-for-profit organization that reports to an independent Board of Directors. While independently governed and operated, ERA remains accountable to the Government of Alberta through the Technology Innovation and Emissions Reduction Fund Administration Regulation, a Memorandum of Understanding, and a Grant Agreement. Through this accountability framework, ERA has two primary reporting requirements to the Minister and Department of Alberta Environment and Parks: an annual rolling three-year Business Plan to highlight priorities and planned activities for the near-term future, and an Annual Report to highlight achievement and outcomes from each fiscal year. ERA's Grant Agreement with the Government of Alberta is in place until 2024.

The governance role of ERA's Board of Directors involves strategic planning, organizational oversight, risk management, standards of business conduct, and reporting to the Government of Alberta. The Board is responsible for seeking out highly-qualified Directors with diverse backgrounds to ensure fresh ideas and perspectives are brought to the table as members' terms expire. The Board is also responsible for selecting and evaluating the performance of ERA's Chief Executive Officer (CEO) in alignment with organizational goals. In 2022, the Board will announce a new CEO, following the retirement of Steve MacDonald, who served the organization for more than six years. In addition to its governance and strategic oversight role, ERA's Board of Directors makes the final investment decision on funded projects and provides advice to inform Alberta's overall efforts to achieve environmental and economic objectives.

With highly accomplished backgrounds that include industry, government, academia, and the not-for-profit sector, ERA's Board provides tremendous expertise and leadership to the organization.

ERA BOARD MEMBERS

- Dave Collyer *(Board Chair)*
- Joseph Doucet *(Vice-Chair)*
- Céline Bak
- Vittoria Bellissimo
- Johannes Dyring
- Sara Hastings-Simon
- Clive Mather
- David Moss
- Kate Rich

3.0 Delivering on strategic priorities

ERA has established three strategic priorities that form the core of this Business Plan to deliver on its mandate and vision for Alberta. These priorities serve as the framework for deliberate actions that ERA will take over the next three years:

1. **ACCELERATE TECHNOLOGY:** Invest in innovative technologies that help existing and new industries in Alberta accelerate toward net-zero GHG emissions in the province
2. **DRIVE COMMERCIALIZATION:** Convene the resources required to accelerate adoption of technology solutions that lead to economic growth and GHG reductions in Alberta
3. **MAXIMIZE IMPACT:** Maximize ERA's impact by sharing knowledge, lessons learned, and striving for operational excellence

Delivery of these strategic priorities is made possible through a Grant Agreement with the Government of Alberta. ERA has also received a funding commitment from the Federal Government, in coordination with the Government of Alberta, through the Low Carbon Economy Leadership Fund (LCELF) to supplement provincial funding toward high-impact technology demonstration projects and ERA's ESB program.

ERA has designed this Business Plan based on the anticipation of future funding from the Government of Alberta, and is working with the government to map out future funding commitments through the Grant Agreement. ERA will also foster and build its relationship with the Federal Government to seek additional opportunities to leverage resources to maximize the impact of Alberta's investments.

Alex Villeneuve, Ceres Solutions, Using Agricultural Waste and Craft Brewer's Grain to Grow High-Value Mushrooms and Produce Livestock Feed

ERA's efficient and responsive business model allows for scalability and acceleration of the activities outlined in this plan. The actions described below can be expanded and enhanced to yield broader and deeper benefits should additional dollars become available. This includes additional funding opportunities and the ability to accelerate projects currently beyond ERA's capacity. In 2022-25, ERA will explore additional funding mechanisms like repayable grants and loan guarantees to supplement its current grant-funding approach. Such mechanisms could enable ERA to catalyze highly capital-intensive projects while balancing the risks associated with larger investment dollars.

In the face of shifting financial markets and economies due to the impacts of COVID-19, large-scale climate disasters, and evolving consumer demands, ERA continues to be called upon to support long-term economic and environmental sustainability efforts in Alberta. At the time of writing this Business Plan, Alberta's economy appears to be poised for recovery. [1]The province has gained more jobs than were lost during the COVID-19 pandemic and its Real Gross Domestic Product (GDP) is expected to rise by 5.1 per cent in 2022, bringing Alberta's economy back to levels not seen since 2014.

However, climate-related risks continue to play a role in shaping how Alberta's industries do business, with many companies demonstrating alignment with Environmental, Social, and Governance (ESG) standards, and committing to more stringent climate emissions targets such as net-zero by 2050. ERA's awareness of, and alignment with, new policies and regulations, and investment in both short- and long-term technologies and solutions will help reduce some of these risks and lessen the burden on Alberta's industries.

For ERA, it is imperative to execute a Business Plan that will reduce GHG emissions and help keep Alberta's economy strong by identifying and accelerating the innovation and investment required to realize Alberta's greatest possibilities.

[1] https://www.alberta.ca/economic-outlook.aspx#:~:text=In%202022%2C%20Alberta's%20real%20GDP,levels%20not%20seen%20since%202014

3.1 Strategic priority: Accelerate Technology

Invest in innovative technologies that help existing and new industries in Alberta accelerate toward net-zero GHG emissions in the province

OBJECTIVES

- Identify the highest potential investment opportunities
- Attract high quality project applications for ERA's competitive Calls for Proposals and Partnership Intake Program
- Accelerate innovative clean technology that can support net-zero emissions achievement toward commercialization and deployment in Alberta
- Support efforts by Alberta's businesses to achieve net-zero GHG emissions by 2050

IMPACTS

- Accelerated advancement of bold clean technology solutions that can drive toward net-zero GHG emissions in Alberta
- Made-in-Alberta innovation that can be exported across Canada and globally
- Strong suite of technology options for Alberta's industries to achieve net-zero commitments
- Increased employment and investment attraction in Alberta's clean technology sectors
- Improved Environmental, Social, and Governance (ESG) outcomes

KEY INDICATORS

- Total project investment
- Technology Readiness Level (TRL) progression
- Direct, market, and enabled GHG reductions
- Jobs created and total dollars invested in Alberta
- Measurable non-GHG environmental, social, and other benefits in Alberta

ACTION 1:

Implement an investment strategy that is aligned with ERA's TRM, provincial priorities, and innovation needs

ERA's investments are guided by its TRM—a living document that ensures the organization remains responsive to the evolving needs of Alberta's industries and innovators within a changing global context.

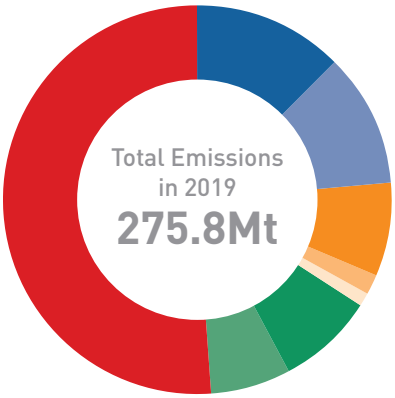
THE TRM:

- Identifies key guideposts and indicators for what a net-zero GHG future might look like for Alberta
- Defines potential innovation and technology pathways for achieving Alberta's desired environmental and economic outcomes
- Maps the tactical options and initiatives to deliver needed solutions

ERA'S TRM IDENTIFIES FOUR AREAS OF FOCUS FOR ITS INVESTMENTS:

ERA's balanced portfolio approach means we invest in technologies and solutions relevant for short- to long-term environmental and economic benefits that span all sectors. Alberta's emission profile presents opportunities for immediate reduction, while investing across timespans provides a runway for the emergence of new industries.

Tamara Loiselle, CEO and Founder, Synergraze, Cattle Feed Additive for Reducing Methane Emissions



Alberta's GHG Emissions Profile (Mt CO_2e)

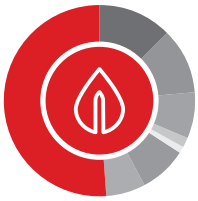
2019 Data

- **Oil and Gas** 141Mt (51%)
- **Transport** 34Mt (12%)
- **Electricity** 31Mt (11%)
- **Agriculture** 21Mt (8%)
- **Waste** 5Mt (2%)
- **Light Manufacturing, Construction, and Forest Resources** 3Mt (1%)
- **Buildings** 23Mt (8%)
- **Heavy Industry** 18Mt (7%)

Figure 1: Alberta's GHG Emissions Profile per industry based on Canada's 2019 National GHG Inventory Data

CLEANER OIL & GAS

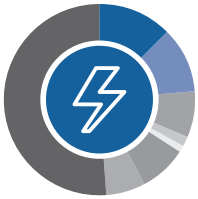
Transformative technologies and innovation to address the largest sources of GHG emissions in Alberta by reducing the environmental footprint of the province's hydrocarbon supply chain and exploring alternative and value-add opportunities.



- **Oil and Gas** 141 Mt CO_2e (51%)

LOW EMITTING ELECTRICITY & TRANSPORTATION

Technology and innovation to support a reliable, lower emissions electricity system, including reducing the GHG footprint of Alberta's electricity supply mix by investing in energy storage to enable increased deployment of renewables and fostering a smarter electricity grid that can efficiently power Alberta's homes, businesses, and transportation.



- **Transport** 34 Mt CO_2e (12%)
- **Electricity** 31 Mt CO_2e (11%)

FOOD, FIBRE, & BIOINDUSTRIES

Advancing Alberta's bioeconomy, and reducing GHG's, through novel agricultural, livestock, land use, and forestry practices; bioenergy and biomaterials; waste management and waste-to-energy; and enhanced carbon retention.

- **Agriculture** 21 Mt CO_2e (8%)
- **Waste** 5 Mt CO_2e (2%)
- **Light Manufacturing, Construction and Forest Resources** 3 Mt CO_2e (1%)

LOW CARBON PRODUCTS & INDUSTRIAL PROCESSES

Technologies to deliver GHG reductions through energy efficiency and process innovation, zero-emission material and chemical production.

- **Buildings** 22 Mt CO_2e (8%)
- **Heavy Industry** 18 Mt CO_2e (7%)

The past year has seen significant investments by all levels of government and industry in clean technology that supports job creation, economic recovery, and environmental sustainability. Jurisdictions and industries around the world have recognized the need to expedite action to reduce GHG emissions and meet net-zero ambitions. ERA is in the process of revising and updating the TRM to reflect rapidly accelerating local and global trends and ensure the roadmap continues to chart a path toward the province's vision, with updates to be completed in 2022.

As ERA revises its TRM, contemplates future funding calls, and identifies priorities for its Partnership Intake Program, it will take a balanced approach to investing in innovation. This includes continued support for technologies and solutions for existing industries in their pursuit of net-zero GHG emissions. It also includes seeking technology opportunities for new low-emissions economic activities that remain critical to continued economic prosperity and achieving long-term climate commitments.

Sharon Fleming, Calgary Transit, Electric Bus On-Route Charging Deployment

ACTION 2:

Identify solutions that reduce emissions for Alberta's strengths and help create new business opportunities

ERA is committed to seeking out emerging technologies that can be developed in Alberta and deployed globally. In 2022-2025, ERA will continue to enhance its technology scouting capacity by leveraging its Trusted Partner network, engaging with innovators to learn more about their international efforts and technologies, and working with industry to understand their needs for clean technology solutions. ERA embraces the philosophy that good ideas can come from anywhere. ERA will seek innovation from industry, researchers, small- and medium-sized enterprises, municipalities, among others, and will engage with innovators and thought leaders from around the globe, bringing the best ideas to Alberta for environmental and economic benefits.

ERA's broad network of provincial, national, and international partners provides the opportunity to identify shared challenges, become aware of leveraging opportunities, and tap into global innovation activity. ERA will engage in targeted outreach and hosted workshops that involve a multitude of key stakeholders who provide intelligence to help shape upcoming Calls for Proposals. ERA will actively seek and nurture key innovative solutions through its Partnership Intake Program, helping to ensure that the best technologies are accelerated to create jobs and GHG reductions.

Kyle Mulligan, Canadian Pacific, Hydrogen Locomotive Program

ACTION 3:

Pursue innovative technology projects using competitive funding calls and Partnership Intake Program

ERA's funding will be made available primarily through delivery of targeted, competitive funding challenges and the Partnership Intake Program. Accelerating and de-risking later-stage GHG-reducing technologies requires significant capital investment. ERA's processes and systems have been designed to fill a significant need for de-risking technologies that have been proven in concept and prototype and need to be scaled-up for field piloting, commercial demonstration, and first-of-kind commercial deployment.

In January 2022, ERA launched its $30 million Carbon Capture Kickstart funding competition for pre-construction design and engineering projects to accelerate implementation of CCUS technologies in Alberta. This investment will reduce the technical and budgetary uncertainty around the feasibility of large-scale carbon capture in the province. In March 2022, ERA launched its $50 million Circular Economy Challenge funding competition seeking "cradle-to-cradle" solutions that improve material repurposing, recycling, and regeneration within supply chains, helping to reduce consumption of raw materials in favour of recovery and reuse.

In 2022-25, ERA will continue supporting acceleration of innovative, GHG-reducing technologies that address industry needs and opportunities in Alberta that align with the TRM. ERA has identified specific focus areas that are informed by government, industry, and innovator priorities through stakeholder engagement activities held in 2021-22.

FUNDING COMPETITION FOCUS AREAS

ERA understands that technology investment across multiple focus areas and industries is needed to chart a trajectory toward net-zero GHG emissions in Alberta. The following potential funding competitions have been identified as key near-term opportunities to align with this trajectory.

HYDROGEN

Hydrogen has been recognized locally and globally as a promising fuel and energy carrier for achieving net-zero ambitions due to the absence of CO_2 emissions when used for energy. Efforts are increasing around the world to advance and demonstrate low-carbon hydrogen production from both renewable and non-renewable resources. Alberta's vast hydrocarbon reserves; CO_2 storage capacity; technical, engineering, construction, and manufacturing expertise; industrial infrastructure; and renewable energy resources position the province to be one of the lowest cost producers of low-GHG hydrogen in the world.

In 2021, the Government of Alberta released its Hydrogen Roadmap, which outlines policy pillars to reach clean hydrogen integration in Alberta's domestic energy system and become a reliable exporter of hydrogen by 2030. Furthermore, significant technology opportunities and challenges exist across the hydrogen value chain, from production to storage to transport and effective use of low-GHG hydrogen. ERA will work with its stakeholders and partners to ensure a healthy pipeline of low-GHG hydrogen technologies across the value chain and will support high-potential innovation at the stages of technology scale-up and large-scale demonstration. This will build off ERA's historic hydrogen and CCUS investments.

ADVANCED MATERIALS

While much attention and effort has been directed at developing future energy systems, advanced new materials will also be required to facilitate a net-zero economy. For example, lighter, stronger, and less GHG-intensive construction materials will be necessary for infrastructure. Alberta has a tremendous opportunity to lead the development of novel materials that will pave the way to a sustainable future.

For example, Alberta's existing materials manufacturing industries are poised to demonstrate and implement transformative processes that continue to provide high-quality materials with lower embodied GHG emissions. Significant efforts are also underway to utilize existing infrastructure and expertise to develop new materials such as non-combustion products from Alberta's bitumen resources or high-value metals found in trace amounts within Alberta's natural resources that can facilitate things such as advanced battery and fuel cell development. Waste materials and process streams represent an opportunity for production of valuable materials. CCUS is another opportunity to enhance everyday materials like concrete, plastics, and batteries. ERA will seek out innovative technology solutions to accelerate the demonstration and commercialization of advanced materials to enable a net-zero economy.

INDUSTRIAL TRANSFORMATION

Heavy industries have been pillars of Alberta's economy for decades. However, many of the operations in these industries are both GHG emissions-intensive and trade-exposed. Simultaneously, many of the GHG sources in these industries are difficult to abate due to the fundamental nature of the operations. Ensuring these industries are globally competitive and able to meet long-term GHG commitments and investor demands will require novel processes to achieve deep GHG reductions beyond efficiency and incremental improvements.

With a strong industrial base, connected industrial regions, and a vibrant research and development community, Alberta's industrial facilities are well positioned to demonstrate novel approaches at their locations. Furthermore, successful deep GHG reductions demonstrated at industrial operations can often be replicated at facilities in the same industry or related industries. ERA will focus on transformative reduction opportunities for these industries, fostering a pathway toward net-zero GHG emissions.

RESHAPING ENERGY SYSTEMS

Industries and businesses are increasingly looking at saving costs and being more efficient to remain competitive in an interconnected, global marketplace. ERA is already playing a role in this transition by dedicating up to $55 million to the ESB Program, which has enabled rapid deployment of commercialized technologies to help small and medium enterprises reduce emissions and save costs. However, achieving long-term net-zero GHG ambitions will also require innovative technologies and solutions for the way that energy is managed and used. For example, Alberta's electricity transmission and distribution system will need to incorporate and deliver increasing amounts of intermittent and variable renewable electricity. In addition to providing consumers with reliable access to electricity, future energy systems must be designed in ways that protect consumers from utility price increases, enabling affordable access for all communities. Commercial and industrial buildings will need novel approaches and tangible demonstrations for achieving net-zero GHG emissions. Integration of digital technologies such as artificial intelligence, machine learning, and data-based optimization will also play an important role creating a more flexible and reliable energy system. ERA will focus on advancing innovative technologies and solutions to reduce GHG's and enable Alberta's future energy systems.

FUELS OF THE FUTURE

At the 26th UNFCC Conference of the Parties (COP26) held in November 2021, efforts continued to build toward curbing GHG emissions. Nations around the globe are developing their Nationally Determined Contributions (NDC) and climate targets for GHG reductions and agreed to implement market and non-market approaches to incentivize climate action in the private sector. In support of COP26, the International Energy Agency (IEA) produced their World Energy Outlook for 2021, reiterating the importance of liquid hydrocarbons and their use as fuels for transport, as petrochemical feedstock, as energy for electricity generation, and others. These products have an unrivalled energy density and are easy to transport, making them an ideal means to carry and store energy. However, these fuels represent a significant portion of global and local GHG emissions. While alternatives are being developed for some current uses such as electrification in passenger cars, liquid hydrocarbons remain difficult to replace in heavy-duty and marine transport, aviation, and as a feedstock for the petrochemical industry.

Alberta can be a leader in the production of low- to zero-emissions fuels by capitalizing on its current industries, infrastructure, and resource base. Development of new, transformative technology for low-GHG fuels and energy carriers will improve the diversity and resilience of Alberta's economy and provide flexibility for fuel switching to achieve significant end-use GHG reductions. This includes fuels that will play a critical role in achieving a net-zero GHG future such as biofuels, e-fuels, renewable natural gas, clean electricity from renewable sources and nuclear, and hydrogen. While significant commercial success have been achieved locally and globally, opportunities exist for transformative innovation, step-change improvements, and critical technology enablers to reduce the cost and meet future demands for these fuels of the future. ERA will focus on bold new innovations in the area of low- to zero-emitting fuels to ensure a suite of economically-competitive fuels are available to meet the growing demand while reducing emissions.

PARTNERSHIP INTAKE PROGRAM

In addition to ERA's competitive Call for Proposals process, ERA will consider projects through its Partnership Intake Program. This program allows ERA to be nimble in addressing gaps and needs that arise in Alberta's innovation ecosystem to ensure that high-potential and strategically important projects, as identified by ERA's Trusted Partners, can be evaluated outside of the Call for Proposals cycle. The Trusted Partner process accelerates innovation and maximizes impact by leveraging funds, coordinating investment priorities, and reducing the administrative burden for project proponents. It also allows bolstering of efforts to advance technology commercialization by working collaboratively with other funders in the innovation system.

ERA will continue to seek high-potential opportunities that fall outside of ERA's funding competition scope and timelines. ERA's TRM identifies numerous technology areas that will be critical beyond those identified in the near-term funding competitions outlined in this Business Plan. ERA will work with its Trusted Partners to proactively seek high-impact projects in these areas, including for example: nature-based solutions and increasing the carbon sink capabilities of the natural environment; development of sustainable value-added agri food products such as alternative proteins; advancement of next-generation nuclear power such as small modular nuclear reactors; and next-generation CCUS technology for low CO_2 concentration streams.

Trusted Partners are like-minded funding organizations with rigorous, fair, and transparent due diligence processes comparable in principle to ERA's. ERA has active Trusted Partner relationships with the following organizations. In 2022-25, ERA will continue to leverage its existing partnerships and seek out new, value-add partners that can help advance critical technologies for Alberta:

- Government of Alberta
- Alberta Innovates
- Natural Resources Canada (NRCan)
- Northern Alberta Institute for Technology (NAIT)
- University of Calgary
- University of Alberta
- Sustainable Development Technology Canada (SDTC)
- Business Development Bank of Canada (BDC)
- Prairies Economic Development Canada (PrairiesCan)
- Export Development Canada (EDC)
- Natural Gas Innovation Fund (NGIF)
- EVOK Innovations
- XPRIZE Foundation

ACTION 4:

Select and fund the highest potential opportunities using a rigorous and transparent process

All of ERA's technology acceleration investments are assessed against a set of transparent criteria and undergo a rigorous due diligence process to select projects that best deliver on ERA's mandate, TRM, and Business Plan.

ERA typically relies on a two-stage evaluation process in its Calls for Proposals, followed by a detailed project execution process, to ensure that funds are invested prudently. This evaluation process involves oversight by an independent Fairness Monitor who ensures all applicants are treated in a fair and impartial manner. The Fairness Monitor reports directly to ERA's Board of Directors and shares findings before any funding decisions are made.

Note: ERA's ESB Program follows a different process using eligibility criteria. The ESB Program and its recently launched funding streams utilize processes designed to achieve the outcomes of the program. More details about the specific processes used within the ESB program can be found on ERA's website at eralberta.ca.

3.2 Strategic Priority: Drive Commercialization

Convene and leverage the resources required to accelerate adoption of technology solutions that lead to economic growth and GHG reductions in Alberta

OBJECTIVES

- Increase commercialization and market adoption of emissions-reducing technologies
- Share technological learnings and project knowledge to accelerate commercial deployment of technologies
- Leverage investments to create larger pools of capital for innovation and technology
- Foster economic benefits (direct and indirect) in Alberta from projects funded by ERA, including measurable jobs, GDP creation in new and existing sectors, and economic diversification

IMPACTS

- Accelerated commercialization and adoption of Alberta-based clean technologies within Alberta, across Canada, and around the world
- Increased economic competitiveness, growth, and diversification through existing and new industries
- Successful and profitable Alberta-based companies
- Measurable transformation toward a net-zero GHG economy

KEY INDICATORS

- Collaborative partnerships
- Technology investment
- GDP impact
- Job creation
- Completed projects continuing toward commercialization
- Support for small and medium-sized enterprises

ACTION 1:

Manage a balanced portfolio

Local and global analyses have demonstrated the need for both implementation of near-term deployable solutions and the development of long-term transformative solutions. Furthermore, to ensure a resilient transformation to a low or net-zero emissions future, all of Alberta's emissions-intensive industries will need to take action. Additionally, a multitude of technology solutions will need to be explored within and across industries due to the breadth of GHG challenges and the inherent risk involved in technology innovation. ERA will deliberately build a balanced portfolio across timescales, technology readiness levels, industries, and technology pathways when designing funding competitions, seeking solutions through the Partnership Intake Program, and implementing the ESB Program.

ERA's TRM guides its investment decisions and informs its portfolio mix. ERA regularly reviews and assesses its forward-looking TRM and retrospective investment portfolio to ensure alignment with market needs, industry demands for clean technology, and the policy outcomes of the government. In 2022-2025, ERA will continue to work closely with the Provincial and Federal Governments to monitor policy changes and priorities that could necessitate adjustment to investment focus and portfolio mix.

ACTION 2:

Convene capacity and ecosystem supports to address barriers to commercialization

Beyond funding, innovators face additional challenges that hinder technology advancement and adoption by industry. Public funding is critical for accelerating new technologies, but alone is not enough to carry innovation through to commercialization. Addressing these gaps requires an all-hands-on-deck approach, with government and industry sitting at the same table.

In 2022-2025, ERA will continue to work with government, innovators, and Alberta's industries to help address these gaps and accelerate efforts to bring new technologies and solutions to market. ERA will work to create additional strategic alliances that ensure continued coordination across the innovation ecosystem and leverage ERA's investments for greater impact. ERA will increase the frequency of engagement with its partners and those who play a key role in enabling the innovation system, including accelerators, industry, innovation networks, industry alliances, and post-secondary institutions, among others.

ERA has always sought additional opportunities to support innovators on their path to commercialization. As ERA continues developing its network of collaborators in 2022-2025, efforts will be made to build a suite of partnerships that are complementary to ERA's role in the innovation continuum. This will enhance ERA's role as a convener in connecting innovators at all stages to the right resources based on their technology's maturity. It will also allow ERA to gain broader knowledge of high-potential technologies as they progress toward the scale-up and demonstration stages.

For example, ERA held workshops between post-secondary institutions and industry representatives in 2021/22 to help bridge the gap from ideation to commercialization and foster connections between researchers and industry operators. In 2022-2025, ERA will continue to build on these initiatives to help leverage resources throughout the innovation ecosystem to advance early innovative ideas into demonstrable emissions-reducing technologies. In addition, ERA will engage post-secondaries to help analyze completion metrics and project outcomes to help draw a line between ideation and technology commercialization. ERA will continue to work with business support service providers such as Platform Calgary, Innovate Edmonton, and Alberta Innovates to help ensure entrepreneurs and innovators have the business capacity and skills to advance their innovation toward commercialization.

STRATEGIC INNOVATION FUND – NET-ZERO ACCELERATOR

In 2022-25, ERA will strengthen partnerships with federal departments and organizations to maximize the impact and benefits to Alberta from federal investments.

For example, the federal department of Innovation, Science and Economic Development's (ISED) manages the Strategic Innovation Fund Net-Zero Accelerator (SIF-NZA), an $8 billion fund focused on decarbonizing high-emitting sectors, green industrial transformation, and clean tech and battery ecosystem development.

In 2021, a federal-provincial Working Group was formed to support the SIF-NZA through exploration of opportunities and approaches for coordinating business intelligence, funding, and efficient delivery of government programming in Alberta related to industrial decarbonization, clean technology development, and reducing domestic greenhouse gas emissions. In March of 2022, SIF-NZA announced its "High Emitter Call to Action", seeking projects that advance innovative technologies such as CCUS, hydrogen, and small modular nuclear reactors (SMNRs), given their significant potential for large emitters and industrial transformation.

ERA will continue working with ISED and other federal ministries to connect with interested parties that have large-scale, innovative, and GHG-reducing projects for federal climate funding. This will include streamlining of processes to identify new investments for significant GHG-reductions and job-creation in Alberta.

INTERNATIONAL PARTNERSHIPS

In 2022-2025, ERA will continue building a network of international partnerships and relationships that will facilitate exporting local technologies across the globe and importing global technologies to enhance local industries. ERA will continue working with provincial and federal government partners to identify opportunities through trade and consular offices to develop international networks that increase awareness and impact of our activities and impact, and build Alberta's reputation. ERA will also continue working closely with Invest Alberta to catalyze increased investment in the province. Through its international partnership with Accelerating CCS Technologies (ACT), ERA will continue to pursue opportunities to collaborate on innovation projects.

ACTION 3:

Deliver programming to increase market adoption of emissions-reduction technologies

In 2022-2023, ERA will continue accepting applications for its ESB Program, a $55 million funding opportunity to support cost-saving and emissions-reducing projects targeted at small- and medium-scale industrial and commercial facilities. The program was launched in February 2021 and has accelerated the uptake of commercially available emissions-reducing technologies, allowing businesses such as manufacturing facilities, agricultural operations, office buildings, and fabrication shops to reduce operating costs and lower emissions.

ERA recently expanded the scope of the ESB Program to enable support for a wider range of participants and project types through two new streams:

- Small Producer Energy Efficiency Deployment (SPEED) stream is focused on accelerating implementation of commercially available technology upgrades in small- and medium-sized oil and gas facilities. These projects will drive immediate and cost-effective GHG reductions, supporting jobs, and offering long-term economic benefits.
- Expanded Technologies Pilot (ETP) is a new pathway for participants to apply with effective, commercially available technologies not currently supported through ESB. Through the pilot, ERA can fund the project and better understand the technology's performance, market potential, and how it could be best supported in future initiatives.

The ESB program has been extended until spring 2023 to increase participation by providing more time to complete projects. Over the next 12 months, this program will continue to help Alberta businesses grow their operations and become more competitive, while creating skilled jobs and boosting economic recovery.

Once fully subscribed, ESB is anticipated to achieve or exceed its impact targets: GHG reductions of 1.3 million tonnes of CO_2e; creation of approximately 1,400 jobs (direct and indirect); and driving an estimated $300 million in economic activity.

ACTION 4:

Act as a trusted advisor to policy makers by providing strategic advice to stimulate adoption of clean technology solutions

For a technology to successfully reach commercialization, the right market, policy, and regulatory conditions must exist. Mechanisms such as Alberta's TIER regulation can spur the advancement and uptake of technologies that achieve desired environmental outcomes while growing the economy. Policy and regulatory predictability is often a key consideration for companies developing or investing in clean technology and remains a barrier to the development of some technologies that will be required on the pathway to net zero.

ERA plays an important role in understanding the regulatory and policy barriers faced by innovators in Alberta and brings this insight to government through its work as a trusted advisor and through policy collaboratives. ERA also works with a variety of key stakeholders across the innovation ecosystem to provide advice that helps ensure new policy and regulation enables innovation and technology deployment.

Alignment with provincial and federal policy outcomes is essential to ERA's success. ERA works closely with all levels of government to support delivery of their priorities and objectives. Funding initiatives are designed in collaboration with regulators and policy makers to complement and enhance the effect of policy and regulatory drivers. In 2022-25, ERA will continue to explore synergies with provincial and federal priorities. For example, ERA will work with the Government of Canada to understand the implications and opportunities presented by the forthcoming Clean Fuel Standard regulation when designing a funding competition related to Fuels of the Future, outlined in Section 3.1. Similarly, ERA will continue working with the Governments of Alberta and Canada to ensure efforts are aligned and optimized related to advancing initiatives bolstered by the announced federal investment tax credit for CCUS projects.

3.3 Strategic Priority: Maximize Impact

Maximize ERA's impact by sharing knowledge, promoting lessons learned, and achieving operational excellence

OBJECTIVES

- Demonstrate ERA's contribution and support to provincial policy priorities, including emissions reduction and economic growth
- Promote widespread dissemination of knowledge and lessons learned from ERA-funded projects
- Increase awareness of ERA's role within the innovation system
- Support the Government of Alberta to achieve its strategic communications outcomes and objectives related to climate change
- Ensure efficient and effective use of public funds

IMPACTS

- Widespread knowledge of ERA-supported technologies among key stakeholders
- Incorporation of project learnings into future implementation and projects across the province
- Increased recognition of Alberta as an innovation and clean technology leader, strong environmental steward, and globally competitive clean investment destination
- Trusted Partners and key stakeholders understand and champion ERA's processes, role, and impact

KEY INDICATORS

- Stakeholder awareness and collaborative partnerships
- Follow-on business from engagement with proponents
- Operating costs as a percentage of approved project commitments
- Length of ERA intake, decision-making, and contracting cycle
- Leveraged investment
- Return on Investment
- Projects supporting global Sustainable Development Goals

ACTION 1:

Increase awareness and share knowledge, successes, and stories from funded projects

KNOWLEDGE SHARING AND LESSONS LEARNED

Sharing of knowledge, successes, and lessons learned from ERA-funded projects is critical for increasing the awareness and maximizing the impact of ERA's investments. Although face-to-face meetings and stakeholder events have been largely cancelled or postponed during COVID-19, ERA has been flexible in finding ways to engage with key audiences through strategic events and by advancing thought leadership. ERA has hosted and participated in online, in-person, and hybrid live/online events. Leveraging connections with industry and government influencers in this way builds upon ERA's credibility as a convener across the innovation system, and as an accelerator of commercialization and adoption for GHG-reducing technologies.

In 2022-2025, ERA plans to continue to profile its projects and their outcomes by hosting events and leveraging virtual forums and conferences. In 2022, ERA will:

- Host Lessons Learned events for the purpose of knowledge transfer
- Coordinate a Maximizing Funding Potential Workshop with Trusted Partners so innovators can learn more about the organizations investing in innovation and clean technology in Canada
- Continue its SPARK Speaker Series featuring thought-leaders from a variety of industries to share their insights, ideas, and experiences to spark innovation
- Provide thought leaders who can speak at innovation and sustainability events focused on raising awareness of emissions-reducing technology trends and projects
- Attend events to raise awareness of ERA's mandate and funding opportunities
- Submit a bid to host the IEAGHG GHGT-17 Conference in Calgary in 2024. This conference, which aligns with ERA's mandate and Alberta's and Canada's net-zero targets, presents an opportunity for Alberta to showcase its deep knowledge and expertise in developing and advancing CCUS technologies to an international audience, gaining global recognition and furthering ERA's technology reach.

These stakeholder events bring cleantech researchers and innovators together with representatives from the business community, government, and the innovation system to help inspire and accelerate Alberta's transformation to a low emissions economy.

IMPACT STORIES

Stories of impact inspire innovation and reinforce that Alberta is developing technologies the world needs. In 2021, ERA began working with Alberta Innovates' Impact Action Lab to design an Impact Narrative to better understand how ERA's funding has contributed to a company's growth. These Impact Narratives will help communicate the impact of the funded projects to ERA's stakeholders, tying in key performance indicators and how they support broader industry goals such as net-zero by 2050.

In 2022-25, ERA will continue to deliver a story-based content strategy across numerous communication platforms: website, social media, newsletter, YouTube, Spotify, Apple, Google, and more. Stories will focus on projects in ERA's funding portfolio, and ERA will launch a new series in 2022 to showcase completed projects. This new series will raise awareness of proven technology innovations and increase the market uptake of newly commercialized technology based on GHG reduction potential and economic benefits.

In 2022-25, ERA will also increase the frequency of its podcasts. Carbon Copy, a podcast about the technology, engineering, and economics of a low carbon future will be released as often as monthly. These stories will also be used in speeches, presentations, stakeholder updates, internal communications, and more. ERA will proactively reach out to podcasts that align with its mandate, vision, and value proposition to secure interviews that further highlight ERA investments.

To increase its audience, ERA will:

- Proactively distribute all content produced by the organization to its Trusted Partner network
- Leverage sponsored content or boosted posts to share stories with a wider audience
- Drive an increase in users to the ERA website, where users will be directed to subscribe to ERA's newsletter, apply for funding, attend events, or follow social media channels
- Assess audience perceptions through an update to its 2019 stakeholder research study

ERA will continue to pursue favourable media coverage by top-tier news organizations at both the provincial and national level. The organization will capitalize on its relationships with industry magazines and non-traditional media partners to produce articles and online television interviews. Stories and editorials written by ERA will be pitched to relevant trade magazines. In 2022-25, more emphasis will be put on generating international media coverage to tell the Alberta clean technology story to a global audience. This work raises awareness of ERA's value proposition and supports ERA funding recipients as they raise awareness of their technology's impact.

ACTION 2:

Ensure ERA's successes and lessons learned are a key component of Alberta's economic and environmental reporting

Albertans want to know the Government is taking climate action. During a time where misinformation is becoming increasingly prevalent, it is critical that ERA provides the Alberta Government with facts, actions, and outcomes that are proof points for Alberta's broader narrative on climate action and economic development.

In 2022-25, ERA will continue to offer the Government of Alberta opportunities to leverage ERA's investments and successes. ERA communication assets will be shared with government departments, including Invest Alberta and the province's trade offices in the USA. Alberta Environment and Parks will continue to have first right of refusal for ministerial involvement in funding announcements and ERA will involve other provincial departments (e.g., Energy; Jobs, Economy, and Innovation; Forestry and Agriculture) and the federal government in communication activities when appropriate or required.

Beyond regular briefings on projects, ERA will continue to produce its:

- TRM as a guide to achieving net zero
- Business Plan to outline its strategy and focus areas for future investment
- Quarterly Stewardship Report to demonstrate ongoing transparency for TIER investments
- Annual Report to showcase the impact of investments each year

Bryce Jones, Flash Forest, Commercial Pilots and Demonstrations of Rapid Drone Reforestation Technology

ACTION 3:

Explore opportunities to maximize impact beyond technology support

Trusted partnerships have provided a mechanism for ERA to engage in a consistent and meaningful way across the innovation ecosystem and maximize investments. Furthermore, supporting Alberta's industries in reaching net-zero commitments will require more than just funding toward technology development, demonstration, and deployment projects. In 2022-25, ERA will explore opportunities to engage Alberta's leading companies in a hands-on educational program that drives corporate culture toward identifying and implementing cost-effective energy savings practices in their operations and facilities through a Strategic Energy Management (SEM) program. The SEM program is proposed as a way to build lasting institutional competencies that enable companies to plan and implement continuous operational efficiency improvements, large capital projects, and develop long-term emissions reduction strategies necessary to meet future goals. By focusing on corporate leadership, these benefits can expand across the corporate structure and contribute to capacity-building opportunities and developing industry best-practices.

ACTION 4:

Strengthen ERA's performance management framework

Performance management is critical to demonstrating that ERA is delivering on its mandate, while staying true to its core values.

ERA is a well-established delivery agent of Alberta's climate change and economic policy, and its efforts are aligned with defined provincial, national, and international metrics. ERA is continually updating the metrics it uses, along with fine-tuning the collection methodology behind them to align with best practices. In 2021, ERA performed a strategic mapping exercise to ensure its suite of metrics is continuing to support its mandate and stakeholders. Going forward, ERA will continue evolving its performance management approach to measure performance against key indicators and to deliver maximum value to its stakeholders.

STRATEGIC DASHBOARD

To demonstrate and communicate how ERA is delivering results, the organization is committed to further developing and reporting on portfolio-based performance outcomes and measures. ERA's internal Strategic Dashboard gives a bird's-eye view of how the portfolio of projects is performing against original projections forecast at time of project approvals. Current projections will be updated each quarter as projects are onboarded via ERA's funding competitions, the Partnership Intake Program, and ESB Program. ERA will continue to track project attrition and the reasons for early project cancellation. In 2022-25, ERA will look to further analyze these attrition metrics and identify barriers that can be addressed by the broader innovation ecosystem.

QUANTIFYING AND REPORTING GHG REDUCTIONS

Applicants for ERA funding are evaluated on the GHG reduction potential of their proposed projects. This is central to ERA's mandate and is a key criterion during ERA's project selection process. ERA annually quantifies the estimated emission reductions that will be delivered through its portfolio of projects.

ERA-funded projects can have GHG benefits in a number of ways. In 2022-25, ERA will continue to quantify estimated GHG reduction potential for its investments in three broad categories:

1. **Direct:** The first category represents total GHG emissions reductions anticipated from each project directly. This value is provided by project proponents and reviewed by ERA to ensure the basis and methodology for the estimate is sound. ERA requires all projects that result in material direct GHG reductions to undertake third-party verification once the projects are complete to substantiate direct reduction calculations.

2. **Market:** The second potential for GHG reductions is through market adoption of technologies advanced through ERA funding. This represents an estimate of GHG reductions should the technologies be commercialized and adopted under forecast market conditions. Additionally, pre-construction design and engineering will fill key knowledge gaps, drive partnerships and innovation, and accelerate project financing and deployment in Alberta. A number of considerations and assumptions underpin this calculation, including GHG emissions intensity, estimated market size, various economic indicators, and lifespan of the technology. Since market assumptions can fluctuate with new regulations, market dynamics, and technology evolution, ERA regularly re-evaluates these estimates to ensure they reflect the most current market conditions and anticipated commercialization plans. This estimate is dynamic and follows the changing trajectory of the technologies, industries, and markets they represent.

3. **Enabled:** In addition to GHG reductions that occur directly from ERA-funded projects and subsequent adoption of ERA-funded technology, significant benefits can result in terms of GHG reductions that are enabled by ERA-funded projects. This could include, for example, methane detection technology that can enable industry to more effectively and cost-efficiently meet new regulations such as Alberta's Directive 60, energy storage that can enable greater integration of variable and intermittent renewable electricity, and others. These technologies enable GHG reductions that may be directly associated with other technologies, with regulatory obligations, or with behavioural changes. In many cases, enabled GHG reductions are difficult to quantify, measure, or verify, or are not additional to reductions from regulatory requirements. Nevertheless, enabled GHG benefits are critical to achieving net-zero commitments. In 2022-25, ERA will enhance efforts to understand the enabling impact of its investment portfolio.

QUANTIFYING AND REPORTING ECONOMIC IMPACT

In 2021/22, ERA updated its analysis to quantify the net economic impact resulting from ERA's emissions reduction investments. This quantification included an estimation of avoided climate damage associated with GHG reductions, as well as direct benefits from economic activities advanced through ERA-funded projects. At point of analysis, ERA's investment of $842 million are estimated to result in net benefits of $1.01 billion by 2030 and nearly $3 billion by 2050, amounting to a return of $2.60 by 2030 for every ERA dollar invested*. In addition to avoided climate damages, ERA uses Statistics Canada's Input-Output (I-O) model (2018) to determine the projected GDP impact to Alberta by 2025. At point of analysis, ERA's funded projects are expected to contribute $4.6 billion to Alberta's GDP and $6.09 billion to the national GDP between 2011 and 2025. This indicates that every $1 of ERA funding supports an increase of $5.50 to the provincial GDP or $7.20 to the national GDP.

In 2022-25, ERA will use this analysis to communicate and signal to investors the potential economic benefit these technologies offer. ERA will continue with the valuation of its emissions reductions, determining and explaining trends that ensue in the next three years, and working with the innovation ecosystem to advance key technologies to ready them for adoption into market.

PERFORMANCE MANAGEMENT REFINEMENT

Ensuring responsible and effective stewardship of public funds requires ERA to track and report metrics on past performance. As data analysis and reporting becomes more advanced, additional initiatives are being evaluated. In 2022-25, ERA will seek to further demonstrate to its stakeholders a line of sight between its funding, technology commercialization activities, and GHG emissions reductions, including:

- Identifying and investing in promising technologies that have a high-potential in Alberta's short- and long-term future
- Helping support Alberta energy producers' net-zero emissions commitments
- Contributing to local, national, and international targets
- Develop additional communication tools for diverse audiences

*ERA calculates the return on investment using Environment and Climate Change Canada's Social Cost of Carbon valuation model. Note that both benefits and investment (i.e., cost) were estimated at present-value terms by applying a 3% discount rate.

ACTION 5:

Drive toward operational and organizational excellence

EQUITY, DIVERSITY, AND INCLUSION

While GHG reductions are at the core of ERA's mandate and Alberta's climate and innovation policies, this is not the only measure of success. ERA recognizes the importance of developing an inclusive culture critical for developing programs and achieving outcomes relevant and accessible to Alberta's diverse populations. In 2022-25, ERA will move forward with its Equity, Diversity, and Inclusion (EDI)* strategy and will incorporate training initiatives for staff, Board members, and service providers. ERA will find ways to ensure its engagement strategy is all-encompassing, including the engagement of underrepresented groups. In 2021, ERA began collecting data from it's new applicants to help inform its engagement strategy, including call scoping and outreach, call launch and webinar events, and knowledge transfer initiatives such as lessons learned.

ENVIRONMENTAL, SOCIAL, AND CORPORATE GOVERNANCE (ESG)

ESG frameworks are becoming increasingly important for organizations and are being demanded by investors across the globe. As Alberta develops and shares its ESG framework for responsible investment in the province and sustainable resource stewardship, ERA will align with the frameworks in its own investments and organizational commitments.

ONGOING OPERATIONAL IMPROVEMENTS

Delivering operational effectiveness and efficiency has always been a guiding principle for ERA. With an increase in overlapping competition and program deliverables over the last year, ERA has proactively bolstered its operational capacity over the past 18 months, including establishment of a Calgary-based office to reflect the provincial reach of the organization.

ERA's approach to resourcing and capacity building is centered on being able to scale in response to the needs of the organization, government, and the innovation ecosystem. To enable this, ERA employs a hybrid of internal staff and external service providers. In 2022-25, ERA will continue holding staff and service providers to a strong value proposition and encouraging them to identify efficiencies and to assist ERA in maintaining low operating costs and high value for dollar. Given the current challenging economic environment, ongoing pandemic, and long-term impact on the Alberta economy, ERA will actively seek opportunities to increase cost effectiveness and efficiency. The operating budget that follows delivers ERA's commitment to keep the overall administrative cost low relative to the funds under administration.

*EDI refers to a system of practices and strategies addressing the need to remove systemic barriers and biases to ensure all individuals have equal opportunity to access and benefit programs, recognizing differences in race, colour, place of origin, religion, sexual orientation, etc., and ensuring all individuals are valued and respected for their contributions equally.

4.0 Operating Budget

ERA has prepared a budget to outline current estimates of potential funding. However, it should be noted that ERA can scale its funding competitions and Partnership Intake Program to fit within any funding envelope that is confirmed by the Government of Alberta or other funding partners. In addition, ERA has the flexibility to reallocate funds to future funding opportunities from approved projects that may not proceed.

ERA launched the ESB Program in early 2021, and this program is expected to continue throughout 2022/23. The program has been extended and the design adjusted to reflect current market conditions. The ETP and SPEED offerings, under the ESB programming umbrella, were launched during 2021/22 and the associated administration costs have been adjusted to reflect these changes. As a result, the administration costs are forecast to be approximately $7 million for the program or 13% of the total program allocation, which while higher than anticipated at program launch, remains lower than historical industry average (typically 20% or greater) for programs of this type. Benefits specific to this type of program include high volumes of participation, easy program accessibility for small- and medium-sized businesses, increased capacity building, broad market research on the supported measures, creating a robust network of contractors, and as such, total administrative costs are higher than typical ERA funding calls.

ERA continues to demonstrate a highly efficient operating model. The estimated operating budget for fiscal 2022/23 is consistent with the forecast actual expenses for fiscal 2021/22 when the ESB suite of programs are removed. As a percentage of total funds under management, ERA's costs are estimated to be under 2% for fiscals 2021/22 and 2022/23, and 2.5% or less for fiscals 2023/24 and 2024/25. This is reflective of the high volume of applications through ERA's Calls for Proposals and the resulting increase in total active projects under management for the organization.

Due to the COVID-19 pandemic, existing projects in ERA's portfolio are experiencing longer than expected project timelines, which has resulted in allocated project funds remaining with ERA longer than expected. ERA continues to operate with robust financial controls for projects and pays at the completion of milestones with associated deliverables, which has resulted in a higher balance in funds under management. While this has resulted in the lower operating cost metric expected for the current and next fiscal year, ERA anticipates project payments to accelerate with the expected economic recovery and a resulting increase in the operating cost metric is projected over a three-year period. Future operating costs will be influenced by the receipt and commitment of funds by ERA and the expansion of the portfolio and will be updated as project commitments unfold. ERA is committed to working with all funding recipients to expedite projects where possible and enforce contractual terms where necessary to ensure funds are distributed in a timely and well controlled manner.

EMISSIONS REDUCTION ALBERTA

Emissions Reduction Alberta (ERA)

	2021/22 Budget (Approved Feb 2021)	2021/22 Forecast (March 2022)	2022/23	2023/24	2024/25	
			Budget (March 2022)			
	$	$	$	$	$	
Revenue						
Grant revenue	115,000,000	122,061,594	178,738,188	100,000,000	150,000,000	(a)
Interest income	3,238,632	4,529,463	6,343,289	7,457,211	6,305,190	(b)
Other Revenue	230,000	560,744	-	-	-	(c)
Total Revenue	**118,468,632**	**127,151,801**	**185,081,477**	**107,457,211**	**156,305,190**	
Project Expenditures	256,264,384	157,010,186	249,252,261	170,853,842	180,865,816	(d)
Revenue less Project Expenditures	(137,795,752)	(29,858,385)	(64,170,784)	(63,396,632)	(24,560,626)	
Operating Expenses						
General & Administrative Expenses						
Corporate costs	344,394	309,544	419,259	433,884	447,135	
Insurance	24,272	30,000	33,000	36,300	39,930	
GST expense	242,951	190,857	173,427	146,183	133,813	
Total General & Admin Expenses	611,616	530,401	625,686	616,368	620,879	(e)
Management Expenses						
Project Adjudication and Portfolio Management	2,115,045	1,875,211	2,511,163	2,827,808	2,914,183	
Contracts	457,376	309,913	293,233	331,652	312,107	
Communication	1,130,581	1,073,478	1,099,348	1,297,823	1,087,767	
Strategic	448,355	438,005	502,730	497,169	507,466	
Corporate Administration	762,096	834,257	951,547	982,626	1,014,728	
Governance	183,131	166,101	207,844	212,087	216,458	
ESB	3,725,532	3,476,837	2,030,077	370,127	-	
CRIN	-	560,744	-	-	-	
Total Management Expenses	8,822,115	8,734,545	7,595,941	6,519,292	6,052,709	(f)
Other Contracted Services and Special Initiatives						
Consulting contracted services	762,035	804,422	767,640	767,150	782,392	(g)
GhG & GT Conference	100,000	20,000	20,000	30,000	30,000	(h)
Total Other Contracted Services and Special Initiatives	862,035	824,422	787,640	797,150	812,392	
Board and Oversight						
Board remuneration and expense	125,000	96,408	127,500	130,050	132,651	(i)
Professional fees	49,500	84,156	85,000	86,700	88,434	
Total Board and Oversight	174,500	180,563	212,500	216,750	221,085	
Total Operating Expense	10,470,266	10,269,932	9,221,767	8,149,560	7,707,065	
Surplus / (Deficiency) of Funds for the year	(148,266,018)	(40,128,316)	(73,392,551)	(71,546,192)	(32,267,691)	

EMISSIONS REDUCTION ALBERTA

Emissions Reduction Alberta (ERA)

	2021/22	2021/22	2022/23	2023/24	2024/25	
Total Funds Under Management - beginning of year	**459,077,634**	**521,895,827**	**481,767,511**	**408,374,960**	**336,828,768**	(j)
Total Funds Under Management - end of year	**310,811,616**	**481,767,511**	**408,374,960**	**336,828,768**	**304,561,077**	
Committed Funds for Approved Projects	**971,224,327**	**976,867,332**	**1,126,867,332**	**1,226,867,332**	**1,376,867,332**	(k)
Total Project Funds paid to date	**(619,356,700)**	**(471,914,116)**	**(721,166,376)**	**(892,020,219)**	**(1,072,886,035)**	
Remaining Funds required to fulfill approved project comm	**351,867,627**	**504,953,216**	**405,700,955**	**334,847,113**	**303,981,297**	
Uncommitted Funds	**(41,056,011)**	**(23,185,705)**	**2,674,004**	**1,981,655**	**579,780**	
Operating costs as a % of Funds Required to Fulfill Approved Project Commitments (With ESB)	**3.0%**	**2.0%**	**2.3%**	**2.4%**	**2.5%**	(l)
Operating costs as a % of Funds Required to Fulfill Approved Project Commitments (Without ESB)	**1.9%**	**1.4%**	**1.8%**	**2.3%**	**2.5%**	

Notes and assumptions

(a) ERA received $64 million of TIER funding in December 2021 for execution of ERA's Business Plan, including Carbon Capture Kickstart and Circular Economy calls. Total LCELF funds of $99.8M have been included in the revenue amounts based on accounting guidelines, however the cash flow of these LCELF funds will follow the reimbursement to the ultimate recipients. The flow of funds has been forecast to be received as $43 million in FY22, $52 million in FY23 and $5 million in FY24. ERA has also included a placeholder of $150 million for FY22/23, $100 million for FY23/24 and $150 million for FY24/25 for future Grant allocations from the GOA. The amounts budgeted in the business plan represent current estimates of potential funding, however it should be noted that ERA can scale their calls for proposals and partnership intake program to fit within any funding envelope that is confirmed by the Government of Alberta. In addition, ERA has the flexibility to reallocate funds from approved projects that may not proceed to future funding opportunities.

(b) Interest income has been based on cash flow projections for the Corporation and current interest rate assumptions forecasted by ERA. ERA's investment accounts include ATB Financial (ATB) and Canadian Western Bank (CWB) alongside the legacy CIBC Business Investment Account. Interest rates for the three high yield savings accounts float with bank prime which is expected to increase significantly in the next 18 months. Current rates and respective balances are as follows: CIBC - $342 million at 0.85%, ATB - $100 million at 0.96%, CWB - $50 million at 1.00%, CWB GIC - $50 million at 1.40% fixed to December 2022. Rate increases have been forecast based on the most current CIBC interest rate forecasts received in February 2022.

(c) CRIN revenue and associated costs have been projected based on the executed Strategic Innovation Fund Technology Program service contract with CRIN. No fee for service arrangements are currently contemplated in the budget.

(d) Program expenditures have been budgeted based on signed contribution agreements or on a set of assumptions regarding approved and anticipated funding for projects.

(e) General and Administrative Expenses budget for FY23 reflect an increase due to the growth of the organization and expanded office location.

(f) Total Management expense costs, excluding ESB and CRIN, have been forecasted to increase from the current year forecast as a result of an increase in total projects under management in the portfolio, enhanced procedures for portfolio management and increased call activity in 2022/23.

(g) Other Consultant costs are estimated to be consistent with current year activity and executed contracts. This includes support for Transition Accelerator and Platform Calgary that help to inform ERA's Technology Roadmap and broader investment strategy.

(h) Conference costs have been forecast reflecting ERA's proposal to host the 2025 GHG&GT international conference. Total net investment for ERA has been forecast at $100,000, with conference sponsorships and registration fees expecting to offset all remaining costs.

(i) Board remuneration and expense budgets for FY23 and beyond have returned to historical estimates, as travel is expected to resume as the COVID restrictions are lifted.

(j) Based on Cash flow projections for the month ended December 31, 2021. Represents ERA's total funds under management.

(k) Based on actual funding approved for remaining active projects in all completed calls and assumptions for Partnership Intake. Future approved rounds are based on estimates. Funds are shown as committed once the EOI cycle has started for a particular Call.

EMISSIONS REDUCTION ALBERTA

Emissions Reduction Alberta (ERA)

	2021/22 $	2021/22	2022/23	2023/24	2024/25
Committed Funds for approved projects - Forecast FY23	**844,216,897**				

Forecast Future Rounds	**$**
Partnership Intake 21/22	52,650,435
Call 8 - Carbon Capture Kickstart	30,000,000
Call 9 - Circular Economy	50,000,000
Call 10 and 2022/23 Partnership Intake	150,000,000
Calls 11,12 & 2023/24 Partnership Intake	100,000,000
Calls 13,14 & 2024/25 Partnership Intake	150,000,000

(l) This metric represents total ERA Operating costs for the year as a percentage of the funds required to fulfill all remaining project commitments approved by the ERA Board of Directors. The relative percentage increases over the three year budget. The funds required to fulfill remaining commitments will be reduced as project payments continue to be made in accordance with the project plans, at a greater pace than new commitments are made. Given we have placeholders for future years grant allocations, the actual percentage will differ from the estimate above. When ESB is removed, the operating metric improves given the ESB program experiences a higher administrative cost burden than ERA's typical portfolio of projects.