



Accelerate technology.
Drive commercialization.
Maximize impact.

2018/19 ANNUAL REPORT
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EXECUTIVE SUMMARY

Emissions Reduction Alberta (ERA) is taking action to deliver results the world needs. ERA invests the carbon price paid by Alberta's large final emitters (LFEs) into innovative, greenhouse gas (GHG) reducing technology projects. These investments help innovators develop and demonstrate Alberta-based technologies that can lower emissions at home and be exported around the world.

ERA was established 10 years ago to invest the revenues from Alberta's Specified Gas Emitters Regulation (SGER) and help deliver on the Government's climate change strategy. Since 2009, the organization has funded 161 projects, investing \$557 million into innovative technologies worth \$4.3 billion. For every \$1 committed, almost \$7 is invested by partners. If every project is successful, ERA will help to deliver a reduction of 41.3 million tonnes of CO₂e by 2030. That is the amount of carbon sequestered by almost 683 million trees growing for 10 years, or equivalent to taking almost nine million cars off the road.

In 2018/19 alone, ERA committed over \$185 million to 33 projects with a combined value of \$1.6 billion. These projects are anticipated to deliver cumulative GHG reductions of more than 15 million tonnes of CO₂e by 2030. Projects were selected through two competitive funding opportunities and a new Partnership Intake Program—an initiative designed to increase efficiency of ERA's funding process.

These projects include recovering heat from a refinery to generate electricity, demonstration of solar and battery storage at an oil and gas plant, and transitioning Alberta's diesel-powered transit buses to electric. These are just some examples of promising new technologies that will get a funding boost as a direct result of the carbon levy paid by industry.

Project partners like Lafarge are evaluating the environmental benefits of using waste-derived fuels at its Exshaw Cement Plant to replace 50 per cent of fossil fuel use with lower carbon options by 2020. Eavor Technologies Inc. is using existing oil and gas drilling technology and expertise to collect heat from below the earth's surface in a demonstration project near Rocky Mountain House, Alberta.

Working with trusted partners across the Canadian innovation ecosystem creates a unified approach to reducing GHG emissions and securing Alberta's lower carbon success. Partnerships allow ERA to leverage funds and due diligence, share risk, and reduce administrative burden for applicants. This work continued in 2018/19. ERA signed trusted partner agreements with Business Development Bank of Canada, Natural Gas Innovation Fund (NGIF), and NRG-COSIA Carbon XPRIZE. ERA now has 13 partnership agreements in place.

To share insights and engage with stakeholders, ERA hosted a carbon capture, utilization, and storage Lessons Learned event attracting 225 participants. The organization also partnered with Alberta Innovates and Sustainable Development Technology Canada (SDTC) on the Maximizing Funding Potential Workshop, an event to help innovators understand the various funding organizations in Alberta's innovation system, their offerings and how they work together. The event attracted over 200 attendees. The team also participated in 38 events and workshops, with speaking roles at 28 of those events. ERA's stories were shared through video, podcasts, speaking engagements, presentations, and print materials.

In 2018/19, ERA welcomed new Board Chair Dave Collyer, and said farewell to two original board members, Robert Mansell and Brenda Kenny. To ensure the organization remains responsive to the evolving needs of Alberta's industries and innovators, the Board and team refined ERA's unique value proposition, putting greater emphasis on communicating the successes and lessons learned from projects, and updated the four focus areas in its Technology Roadmap.

In all of this work, ERA remained committed to continuous improvement and ongoing operational improvements. In 2018/19 operating costs were just 1.5 per cent of the total funds committed to ERA projects.

Moving forward, ERA will continue to invest in the GHG-reducing solutions the province needs, helping to attract investment, create jobs, and grow Alberta's economy.

EMISSIONS REDUCTION ALBERTA CORPORATE OVERVIEW

Since Alberta's SGER was introduced in 2009, ERA has been a key player in helping to reduce GHGs, attract investment, and create jobs in the province. Originally known as the Climate Change Emissions Management (CCEMC) Corporation, ERA has been the mechanism for investing the carbon price paid by large industrial emitters directly into clean technology solutions.

Mandate

Reduce greenhouse gas (GHG) emissions and grow Alberta's economy by accelerating the development and adoption of innovative technology solutions.

Vision

Alberta has competitive industries that deliver sustainable environmental outcomes, attract investment, and build a diversified, lower carbon economy.

Value Proposition

ERA invests the proceeds from carbon pricing paid by large final emitters to reduce GHGs and strengthen the competitiveness of new and incumbent industries in Alberta.

ERA delivers results through a competitive, transparent, efficient, and outcomes-focused delivery model.

Strategic Priorities

- 1. Accelerate Technology:** Invest in GHG-reducing technologies that help Alberta grow existing industries and create new ones.
- 2. Drive Commercialization:** Convene the resources required to accelerate the adoption of technology solutions that lead to economic growth and GHG reductions in Alberta.
- 3. Maximize Impact:** Maximize impact through leveraged funding, communications, and operational excellence.

ERA was established in 2009 as the Climate Change Emissions Management (CCEMC) Corporation. The organization was created to invest the revenue generated from the Specified Gas Emitters Regulation (SGER) into innovative, GHG-reducing technologies.

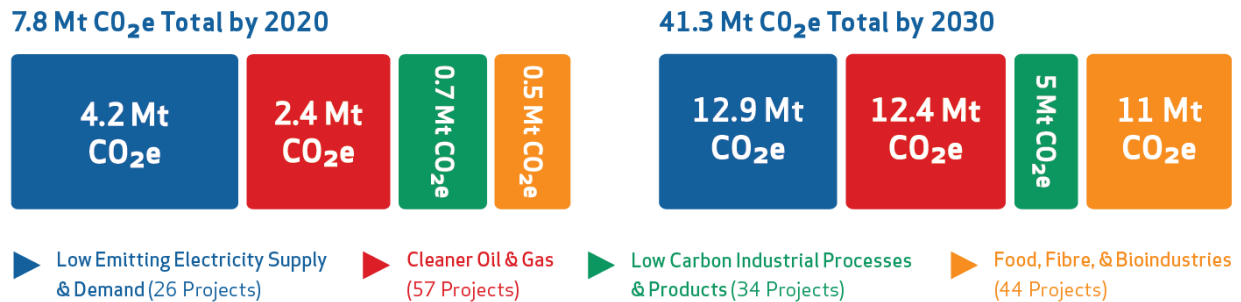
ERA'S UNIQUE BUSINESS MODEL

While many jurisdictions have a mechanism to invest in clean technology, the ERA model is unique: Funding is sourced from Alberta's large emitters who are required to reduce their GHG emissions to meet regulated targets under Alberta's climate change regulations.

- ERA offers a clear line of sight from the carbon price industry pays to investment in the solutions industry needs to help achieve emissions reductions.
- The organization funds later-stage technology, which means accelerating projects toward broader industry deployment and adoption by helping to de-risk projects in the crucial pilot, demonstration, and scale-up stages of development.
- Non-dilutive grant funding helps accelerate clean technologies through development stages where private industry and financial institutions are often unwilling to invest due to technology risk.
- The 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 reinvest funds when projects do not progress.
- ERA's operating model is extremely efficient; in 2018, operating costs represented just 1.5% of the total funds invested.
- Every dollar invested by ERA must be matched 1:1 by private investment, ensuring there is a market demand for the technology. Historically, this target has been exceeded. For every dollar invested by ERA, another \$6.80 is invested by industry, innovators and other project funders.
- ERA acts on climate change and supports economic growth and diversification by accelerating projects that reduce GHGs, attract investment, and create jobs in Alberta.

KEY PERFORMANCE INDICATORS

Cumulative project emission reductions



ERA estimates its investments will result in emissions reductions of an average of 3.1 million tonnes of CO₂e annually. This is equivalent to taking 679,000 passenger vehicles off the road for one year.

ERA has estimated emission reductions for all projects with approved funding commitments and executed funding agreements and assumed these projects will continue successfully and as planned. Should circumstances change for these projects, emission reductions estimates may change materially. If projects are successfully deployed across the market, emission reductions will significantly increase.

Creating jobs and diversifying the economy

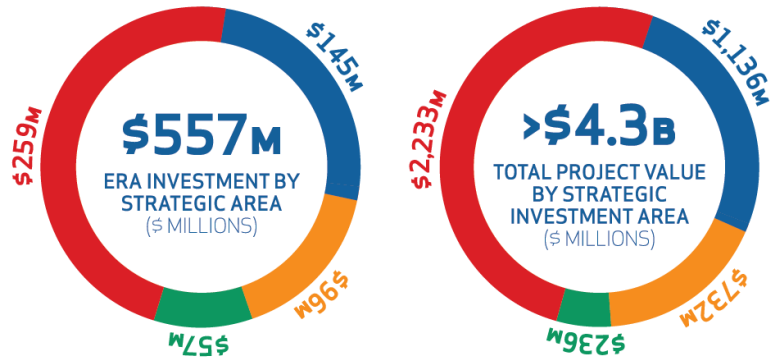


*A person-year is equal to one-year of employment for one individual.
Please note: economic impact is reported on a calendar year basis, not fiscal year.

Investing in a diverse portfolio

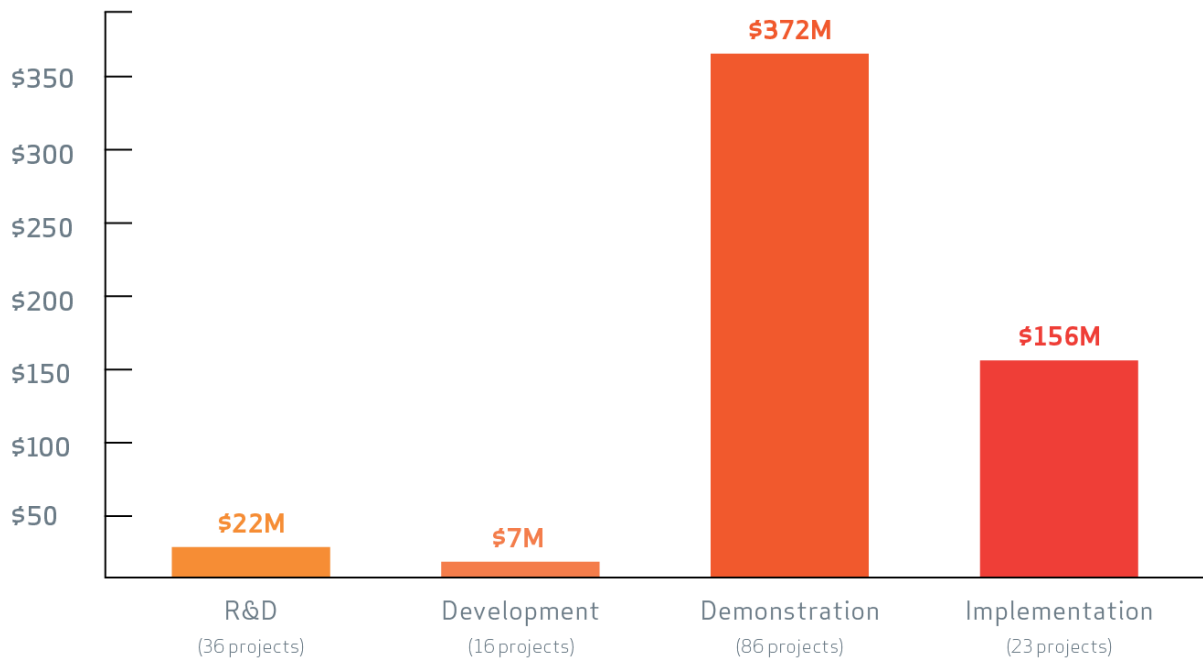
161 Projects Total

- ▶ **Cleaner Oil & Gas**
(57 Projects)
- ▶ **Low Emitting Electricity Supply & Demand** (26 Projects)
- ▶ **Food, Fibre, & Bioindustries**
(44 Projects)
- ▶ **Low Carbon Industrial Processes & Products** (34 Projects)



For every ERA dollar committed to advancing new technologies, nearly \$7 has been invested by industry and funding partners.

ERA investment by innovation stage (\$ millions)



Creating awareness and understanding

- Stakeholder research (2017) shows:
 - 60 per cent of informed Albertans are “very aware” of ERA
 - 92 per cent support ERA’s goals
 - 83 per cent support for mandate.
- Trusted partnerships are advancing:
 - Three partnership agreements signed in 2018, 13 now in place.
- Conferences, workshops, and events help tell the ERA story:
 - Participated in 38 highly-targeted events to raise awareness of ERA with key influencers
 - Accepted 28 national and international speaking engagements to present Alberta’s emissions reduction thought leadership
 - Hosted five workshops to share lessons learned to inform future funding opportunities.
- The media is interested:
 - >200 digital and print media articles referencing ERA projects and investments
 - >650 million potential audience reach (note: audience reach is defined as the number of people who might receive the message).

GOVERNANCE

ERA collaborates with and is accountable to the Government of Alberta. As a Delegated Administrative Organization “(DAO)”, ERA operates through independent directors and is required to report annually on progress and financial status. This structure allows ERA to:

- Respond quickly to the needs of Alberta’s innovation system
- Carry funds from one budget year to the next
- Ensure multi-year projects are possible
- Reinvest funds when projects do not progress.

A commitment to good governance, operational practices, internal controls, and continuous improvement helps ERA function efficiently and effectively. Read more 2018/19 highlights below.

Announcing ERA’s new Board Chair

Respected oil and gas leader David Collyer was appointed by the Government of Alberta as the new Board Chair of ERA, taking over the role on October 1, 2018. Mr. Collyer’s nearly 40 years of experience complements and builds on the skill sets of ERA’s Board of Directors. He has served as president and CEO of the Canadian Association of Petroleum Producers and president and country chair for Shell in Canada.

Two original Board members’ terms end

ERA is grateful to its two outgoing Board Members, Robert Mansell and Brenda Kenny, for their long-term contributions on ERA’s Board of Directors. Dr. Mansell and Dr. Kenny were each on the ERA Board for 10 years, serving as two of the organization’s founding Board members. Dr. Kenny also served as ERA’s Vice-Chair and Chair of the Governance, Accountability and Human Resources Committee. Dr. Mansell served as Treasurer and Chair of the Audit, Finance and Investment Committee. Their terms expired June 21, 2019. An extensive search for their replacements was conducted in 2018/19 with support from a third-party recruitment firm.

Refining ERA’s unique Value Proposition

Each year, ERA reviews its priorities and investment portfolio to ensure the organization remains responsive to the evolving needs of Alberta’s industries and innovators. In 2018/2019, this review led to a focus on ERA’s unique value proposition and the need to put a greater emphasis on communicating the successes and lessons learned from projects. This also led ERA to adapt and refine the four priority investment areas outlined in the Technology Roadmap:

- Cleaner Oil and Gas
- Low Emitting Electricity Supply and Demand
- Food, Fibre, and Bioindustries
- Low Carbon Industrial Processes and Products.

STRATEGIC PRIORITY: ACCELERATE TECHNOLOGY

\$185 MILLION for 33 PROJECTS with a combined value of \$1.6 BILLION

ERA invests in field piloting, demonstration, and first-of-kind deployment of innovative technologies through projects that align with ERA's Technology Roadmap and market needs, and that support Alberta's economic and environmental priorities. ERA's vision is for Alberta to have competitive industries that deliver sustainable environmental outcomes, attract investment, and build a diversified, lower carbon economy. Meeting the world's growing energy demand while reducing GHG emissions requires innovation and transformative technologies. ERA is taking action to deliver results the world needs.

In 2018/19, ERA committed over \$185 million for 33 projects with a combined value of \$1.6 billion. They are anticipated to deliver cumulative GHG reductions of more than 15 million tonnes of CO₂e by 2030.

- **Industrial Efficiency Challenge:** Generating nearly \$400 million in funding requests, ERA received 93 expressions of interest; 19 projects were shortlisted; 11 projects were selected; 10 are now advancing.
- **BEST (Biotechnology, Electricity, and Sustainable Transportation) Challenge:** Oversubscribed with nearly \$1 billion in funding requests, ERA received 180 expressions of interest; 24 projects were shortlisted; 17 were selected; 16 are now advancing.
- **Partnership Intake Program:** A new approach to funding outside ERA's traditional calls for proposals, the program committed over \$24 million in investments to seven projects worth \$873 million.

Industrial Efficiency Challenge commits \$69 million to 10 projects worth over \$300 million

Launched in 2018, the Industrial Efficiency Challenge was an open call to Large Final Emitter (LFE) industrial facilities—Alberta's most energy-intensive, trade-exposed industries—to implement new technologies that reduce emissions and operating costs. Sectors for consideration included oil and gas, chemicals and fertilizers, cement and concrete, forestry and agriculture, electricity, and manufacturing. The Industrial Efficiency Challenge targeted near-term opportunities to improve cost competitiveness and reduce GHG emissions from large industrial emitters in Alberta.

In 2019, ERA announced \$69 million in support for 10 projects with a combined total value estimated at over \$307 million. These initiatives are anticipated to deliver cumulative GHG reductions of 4.9 million tonnes of CO₂e by 2030. This is equivalent to bringing more than 1,300 wind turbines online. Significant reductions in operating costs are also expected. If successful, many of these new technologies can be adopted across industrial sectors, leading to further emission reductions and further economic benefits.

Projects include:

Imperial Oil Limited

Kearl ConDex Flue Gas Heat and Water Recovery Project

Total project value: \$22,200,000 | ERA commitment: \$6,000,000

Imperial will demonstrate ConDex boiler flue gas and water recovery technology at its Kearl Oil Sands mine. The technology is designed to reduce GHG emissions by capturing and using exhaust heat otherwise lost to the atmosphere in oil sands mining operations.

Lafarge Canada

Low Carbon Fuels

Total project value: \$44,300,000 | ERA commitment: \$10,000,000

Lafarge's Exshaw Cement Plant is aiming to replace 50 per cent of its natural gas use by utilizing waste-derived fuels that would otherwise end up in landfills. The implementation will be supported by development of a waste/fuel processing facility in Calgary.

Suncor Energy Inc.

Digital Optimization using Advanced Process Control in an In-Situ Facility

Total project value: \$2,900,000 | ERA commitment: \$1,400,000

Suncor is implementing a digital optimization technology known as Advanced Process Control at its Firebag and MacKay River in-situ facilities. The technology combines algorithms with machine learning and data analytics to enhance process control performance.

TransCanada Energy

Supercritical CO₂ Waste Heat Recovery and Utilization Technology

Total project value: \$45,600,000 | ERA commitment: \$8,000,000

TransCanada is installing a demonstration waste heat recovery generation system at one of its compressor station sites in Alberta. The technology is a first-of-a-kind approach that recovers waste heat from a gas turbine and converts it to emissions-free electricity.

TAQA North Ltd.

Crossfield Gas Plant Energy Efficiency and GHG Reduction Project

Total project value: \$34,700,000 | ERA commitment: \$10,000,000

TAQA North will demonstrate the benefits of acid gas injection with potential for localized enhanced gas recovery at the Crossfield Gas Plant. The project is expected to support sustainability of the gas plant by improving production efficiency and reducing carbon compliance costs.

ConocoPhillips Canada

Field Pilot of Multilateral Well Technology to Reduce GHG Intensity of SAGD

Total project value: \$15,600,000 | ERA commitment: \$6,000,000

ConocoPhillips will use innovative drilling and thermal junction technology in existing Steam Assisted Gravity Drainage (SAGD) vertical wellbores to increase production from a single surface location, without the need for additional above ground capital.

Alberta-Pacific Forest Industries Inc.

Kraft Pulp Mill Flue Gas Energy Recovery Project

Total project value: \$18,900,000 | ERA commitment: \$6,000,000

Al-Pac Kraft Pulp Mill will deploy a recovery system to capture heat from the plant's flue gas stream and generate additional electricity. The unique materials used to handle acidic condensate from the flue gas have never been installed in a Canadian pulp mill industrial boiler.

Athabasca Oil Corporation

Energy Intensity Reduction through Flow Control Devices and Non-Condensable Gas

Total project value: \$38,800,000 | ERA commitment: \$4,300,000

Athabasca Oil Corporation will implement flow control devices and non-condensable gas injection at its in-situ facilities in Alberta. Both proposed technologies improve the overall efficiency of the steam-assisted gravity drainage process and are applicable to many in-situ oil sands operations.

Energreen Solutions

Strathcona Works – Waste Heat to Power Project

Total project value: \$70,000,000 | ERA commitment: \$10,000,000

The Rio Tinto/Alcoa Strathcona Works manufacturing facility in Edmonton is implementing a waste heat recovery system to create electricity to be utilized onsite.

ENMAX Generation Portfolio Inc.

Crossfield Energy Centre Hybrid Electric Gas Turbine Project – Hybridization of a natural gas turbine with battery storage

Total project value: \$14,600,000 | ERA commitment: \$7,300,000

ENMAX is installing Canada's first Hybrid Electric Gas Turbine; adding a lithium-ion battery and control system to an existing natural gas turbine. The technology will provide electricity to Albertans at near-zero emissions, while supporting the growth of renewables in the province.

Innovative projects worth \$420 million selected for ERA's BEST Challenge

Alberta's electricity, transportation, and biological industries have a significant impact on the economy. They also account for up to 40 per cent of the province's annual GHG emissions. ERA's BEST Challenge—a funding opportunity for biotechnology, electricity, and sustainable transportation—awarded \$92 million for 16 projects worth a combined value of \$420 million. Projects range from electrification of bus fleets to energy storage and bold new uses for hydrogen. These initiatives are anticipated to account for cumulative GHG reductions of 1.1 million tonnes of CO₂e by 2030—equivalent to the GHG emissions from over 230,000 passenger vehicles driven for one year.

These promising projects will create new economic opportunities across Alberta's electricity, transportation, and biological industries. The projects address a single industry or span across multiple industries. Working within and across these areas will increase opportunities to break down barriers and accelerate the most promising solutions. Funding support will also help demonstrate and scale up technologies that can be adopted in communities across Alberta and around the world.

Projects include:

BIOTECHNOLOGY

Lanzatech, Inc.

Carbon Sequestration via Next-Generation Bioreactor Technology

Total project value: \$23,500,000 | ERA commitment: \$10,000,000

Lanzatech will demonstrate its next-generation microbubble bioreactor technology by producing ethanol from the off-gas of forestry-residue pyrolysis in Alberta in an integrated biorefinery.

Shell Canada Energy

Shell Alberta Bioenergy Project

Total project value: \$108,000,000 | ERA commitment: \$10,000,000

Shell is proposing to collect, resize, and process organic wastes, and transport them to a facility to produce biogas and digestate. This has the potential to create a new outlet for agriculture and livestock sectors in the province.

Sultech Global Innovation Corp.

Production of Micronized Sulphur and formulation of a Sprayable Elemental Sulphur Fertilizer – A Commercial Demonstration Project

Total project value: \$6,100,000 | ERA commitment: \$1,200,000

Sultech and its partners will demonstrate the viability of a proprietary process for micronizing molten elemental sulphur and the formulation of a sprayable sulphur fertilizer and soil amendment. The project involves designing, constructing, and commissioning a Commercial Demonstration Plant.

ELECTRICITY

TransCanada Energy

Saddlebrook Solar and Storage

Total project value: \$43,800,000 | ERA commitment: \$10,000,000

TransCanada will develop, design, construct, commission, and operate a novel, utility-scale, solar-plus-storage electricity generation facility in Alberta. The aim is to demonstrate the feasibility of renewable generation and the viability of long-duration battery storage in the province.

ENMAX Generation Portfolio Inc.

ENMAX Midstream Industrial Solar and Storage Project

Total project value: \$3,900,000 | ERA commitment: \$2,000,000

ENMAX will demonstrate the feasibility of solar photovoltaic (PV) and battery storage in industrial applications. This is the first large-scale demonstration of solar plus battery storage for midstream energy facilities in Canada, and it has the potential to provide proof-of-concept for similar facilities throughout Alberta.

AltaLink Management Ltd. Whitecourt Transmission Deferral Battery

Total project value: \$26,800,000 | ERA commitment: \$10,000,000

The Whitecourt Transmission Deferral Battery project involves installing a battery energy storage system at the existing substation, minimizing or eliminating the need to build a new transmission line.

FortisAlberta Inc.

FortisAlberta Waterton Energy Storage Project

Total project value: \$5,100,000 | ERA commitment: \$1,300,000

The FortisAlberta Waterton Energy Storage Project will showcase the stacked technical, economic, and social benefits of utilizing battery energy storage systems, solar PV renewable generation, and advanced distribution management systems. This could help address reliability issues faced by customers.

Drumheller Solar Corporation

Drumheller Solar and Battery Storage Project

Total project value: \$25,000,000 | ERA commitment: \$5,000,000

The Drumheller Solar Farm and Battery Storage Project comprises a ground mounted solar facility combined with a battery storage system connected to the local distribution network managed by ATCO.

Natel Energy

Bow River Irrigation District (BRID) Drop 5 Hydro Project

Total project value: \$3,700,000 | ERA commitment: \$1,800,000

Natel Energy will generate carbon-free energy by diverting water flow around an existing weir through a powerhouse that utilizes its hydroEngine® turbine. This will be the first full-scale installation of this turbine at this power rating.

SUSTAINABLE TRANSPORTATION

Integrated Sustainability and Alberta Newsprint Company

GHG Reduction for Supply Chain Improvements for Oil and Gas Hydraulic Fracturing

Total project value: \$76,000,000 | ERA commitment: \$10,000,000

The Whitefox Project will create a centralized treated wastewater system that will provide shared, high-utilization, integrated water infrastructure to multiple major energy companies near Fox Creek, Alberta. The project will provide a year-round supply of recycled pulp and paper mill effluent to oil and gas producers.

ATCO Gas and Pipelines Ltd.

First-of-Kind Commercial Deployment and Demonstration of 100 Class 7 and 8 Original Equipment Manufacturer (OEM) Commercial Compressed Natural Gas (CNG)/Renewable Natural Gas (RNG) Powered Vehicles

Total project value: \$26,700,000 | ERA commitment: \$6,600,000

ATCO will deploy a first-in-Alberta commercial demonstration of 100 commercial tractors, powered by near-zero engines and supported by two commercial-grade refueling stations in Calgary.

eCAMION

Demonstration of Battery-Based Bus Charging Routes

Total project value: \$8,900,000 | ERA commitment: \$4,400,000

eCAMION's first-of-kind charging system is expected to reduce e-bus impact on the electrical grid and lower installation and operating costs, which should allow for broader and faster adoption across the province. A trial of this fast-charge technology will take place in partnership with the City of Edmonton.

ENMAX Generation Portfolio Inc.

ENMAX E-Fleet Pilot

Total project value: \$2,080,000 | ERA commitment: \$1,000,000

ENMAX will pilot electric vehicle technology on two medium-duty trucks. This first-in-Canada demonstration tests the technology in a utility operational environment during all weather conditions.

City of Calgary

Electric Bus On-Route Charging Deployment

Total project value: \$31,000,000 | ERA commitment: \$7,000,000

The City of Calgary will deploy electric public transit buses and associated on-route rapid-charging infrastructure at three to four transit hubs. Lessons learned from the project will be shared with other municipalities and transit organizations.

Alberta Motor Transport Association (AMTA)

Alberta Zero Emissions Truck Electrification Collaboration (AZETEC)

Total project value: \$15,000,000 | ERA commitment: \$7,300,000

This project will feature the development of two long-range fuel cell electric trucks for operation between Edmonton and Calgary. AMTA intends to develop and demonstrate a 700-km plus range zero-emission truck.

Calgary Zoo

Intelligent Microgrid Project

Total project value: \$13,400,000 | ERA commitment: \$4,300,000

This novel integrated and intelligent Smart Micro Grid at the Calgary Zoo is a first-of-kind project. It will enable a new phase of "greening" Alberta's electric system through multiple, local, intelligent, smart grid generation installations that significantly reduce Alberta's GHG emissions for years to come.

Insights

ERA's funding opportunities are informed by multi-stakeholder workshops that bring together government, industry, innovators, academia, and others to discuss Alberta's technology opportunities, challenges, and market needs. ERA's model effectively brings together the best and brightest to understand the needs of industry and formulate funding opportunities that address both provincial and specific market needs.

ERA uses a rigorous and transparent process

All of ERA's potential investments are assessed by external and internal experts using transparent criteria, and all undergo a rigorous due diligence review to select projects that can best deliver on the organization's mandate and Technology Roadmap. The ERA evaluation process involves oversight by an independent Fairness Monitor who ensures all applicants are treated in a fair and impartial manner. The Monitor reports directly to the Board of Directors and shares findings before any decisions are made.

Partnership Intake Program helps leverage funding and streamline support for innovators

In 2018, ERA approved the first set of projects under the Partnership Intake Program. The process has been highly effective for accelerating innovation, maximizing impact through leverage of partner funds, and reducing the administrative burden for project proponents. The referral-based program allows ERA to consider funding promising technologies outside its traditional call for proposal process, allowing for ongoing opportunities to fund innovative GHG-reducing projects brought forward by Trusted Partners.

Working with Trusted Partners across the Canadian innovation ecosystem creates a unified approach to reducing GHG emissions and securing Alberta's lower carbon success. In 2018/19 the program committed over \$24 million in investments to seven projects worth \$873 million.

Fractal Systems Inc.

Referred by Sustainable Development Technology Canada (SDTC)

Total project value: \$22,000,000 | ERA commitment: \$5,000,000

Fractal Systems Inc. is commercially deploying its Enhanced JetShear (EJS) technology for the first time at a Regional Hub facility at a midstream oil and gas site. The technology cost-effectively improves the quality and viscosity of bitumen; lowering transportation costs, increasing export pipeline capacity up to 20 per cent, and cutting wells-to-tank greenhouse gas (GHG) emissions by 11 per cent.

Carbon Clean Energy Inc.

Referred by Economic Development, Tourism and Trade's Economic Development Division

Total project value: \$285,000,000 | ERA commitment: \$5,000,000

Carbon Clean Energy Inc. is developing a \$285 million, first-of-its-kind, wheat-based, biofuels facility that aims to create low carbon intensity ethanol in response to Alberta's new renewable fuel standards.

Known as Project Wheatland, the state-of-the-art plant features an energy self-sufficient design that will also generate clean power from biogas production.

SYLVIS Environmental Services

Referred by Natural Resources Canada (NRCan)

Total project value: \$14,000,000 | ERA commitment: \$2,100,000

SYLVIS Environmental Services Inc.'s innovative BIOSALIX process will utilize municipal biosolids and other waste organics in the production of wood biomass. The project will be demonstrated on Westmoreland Coal Company's Paintearth Mine.

Titanium Corporation Inc.**Referred by NRCan****Total project value: \$520,000,000 | ERA commitment: \$5,000,000**

The project aims to remediate oil sands froth treatment tailings at Canadian Natural's Horizon Oil Sands site. Titanium's technology has the potential to create new economic opportunities by recovering high-value minerals contained in this tailings stream.

Eavor Technologies Inc.**Referred by Alberta Innovates, NRCan, SDTC****Total project value: \$10,300,000 | ERA commitment: \$1,000,000**

Eavor Technologies Inc. has developed the world's first closed loop geothermal system in a demonstration project near Rocky Mountain House, Alberta. The technology uses existing oil and gas drilling technology and expertise to collect heat from below the earth's surface.

FSG Technologies Inc.**Referred by SDTC****Total project value: \$15,000,000 | ERA commitment: \$4,800,000**

FSG Technologies Inc. will design, build, commission, and operate a field pilot of its for their flash steam generation (FSG) at the Water Technology Development Centre Test Facility, located at Suncor Energy's Firebag SAGD facility. The technology reduces the amount of natural gas necessary to generate steam through a combination of higher energy efficiency and reduced water treatment.

Ambyint Inc.**Referred by SDTC****Total project value: \$6,600,000 | ERA commitment: \$2,000,000**

Ambyint has developed a digital platform solution for oil and gas producers to enhance productivity and efficiency. The overall project goal is the development and demonstration of a universal adaptive oil and gas well controller and autonomous operating capabilities.

Building collaborative partnerships

Partnerships are central to ERA's success and critical to delivering on its commitment to drive commercialization. Partnerships enable the organization to:

- Align around outcomes, challenges, and directed innovation opportunities to limit duplication in the innovation system
- Develop funding calls that will provide the greatest benefits for the Province
- Leverage funds
- Share risk
- Accelerate technology development.

ERA's ongoing relationship with Alberta Innovates is critical to achieving strategic and operational goals. More importantly, the partnership provides innovators and technologies with a simplified means for accessing resources and supports.

ERA has the following Trusted Partner agreements in place:

- Alberta Government
 - Alberta Climate Change Office
 - Economic Development, Tourism and Trade
 - Energy
- Alberta Innovates
- Business Development Bank of Canada (BDC)
- Energy Efficiency Alberta
- Evok Innovations
- Natural Gas Innovation Fund (NGIF)
- Natural Resources Canada (NRCan)
- Northern Alberta Institute of Technology (NAIT)
- Ontario Centres of Excellence
- Sustainable Development Technology Canada (SDTC)
- University of Alberta
- University of Calgary
- XPRIZE Foundation.

Developing Trusted Partners provides innovators streamlined access to additional funding

In 2018/19, ERA and BDC signed a Trusted Partner Memorandum of Understanding (MOU). The agreement aims to streamline support for innovators through easier access to multiple streams of funding and support. BDC's Cleantech practice is aligned with ERA's Technology Roadmap and this new partnership agreement allows both organizations further opportunities to fund innovative GHG-reducing projects through referrals.

In 2018/19, ERA also announced a Trusted Partner agreement with the Natural Gas Innovation Fund™ (NGIF), a Federal/Provincial Government and industry collaborative to support GHG emission reduction. The collaboration also involves NRCan, Alberta Innovates, and the Province of British Columbia Innovative Clean Energy (ICE) Fund. Through this fund, partners will consider co-funding successful NGIF applicants with projects that deliver significant GHG emission reduction and are located in Canada, Alberta, and British Columbia, respectively.

ERA also signed a Trusted Partner agreement with XPrize. The NRC-COSIA Carbon XPRIZE is another example of collaboration to help test carbon capture, utilization, and storage (CCUS) technology applications in various sectors using the Alberta Carbon Conversion Technology Centre (ACCTC).

There is an opportunity to continue to build a pipeline of projects entering the ACCTC to further utilize this infrastructure and enable increased CCUS initiative development. The Alberta Carbon Trunk Line (ACTL) and other technologies, together with organizations dealing with enhanced oil recovery and production of byproducts, provide an economic incentive to carbon capture technologies. ERA funding can accelerate these technologies, which have potential to reduce GHGs and diversify Alberta's economy.

Workshops inform potential funding opportunities

For new technology to become commercialized, it must provide a solution that aligns with a market need or opportunity. For this reason, ERA invests in solutions that tackle the problems Alberta must solve today, while also seeking out transformative technologies to grow and diversify the economy and address Alberta's largest GHG sources over the longer term.

ERA's funding opportunities are always informed by multi-stakeholder workshops and engagement that brings together government, industry, technology developers, academia, and others to discuss Alberta's opportunities and challenges.

In early 2019, ERA conducted a series of workshops to help shape and define potential competitive funding opportunities for the 2019-2022 Business Plan. After preliminary engagement with partners in industry and government, the following focus areas were identified as options to explore further:

- Natural gas value chain innovation
- Sustainable communities and smart infrastructure
- Innovative agriculture and agri-food
- Carbon capture, utilization, and storage (CCUS).

Technology Roadmap guides investments

ERA's investments are guided by its Technology Roadmap, which defines technology pathways and areas of focus for ERA's funding that will deliver the most impactful environmental and economic outcomes for Alberta.

The Roadmap:

- 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 for each pathway
- Identifies potential high impact technology investments that can help reduce GHGs and grow Alberta's economy
- Can help align the broader innovation system to deliver meaningful GHG reductions and economic impacts in Alberta's economy.

ERA's Technology Roadmap identifies four areas of focus for investments:

1. **Cleaner Oil and Gas:** Transformative technologies and innovation to reduce the GHG footprint of Alberta's fossil fuel supply chain and explore value-add opportunities that can help sustainably grow and diversify the province's energy economy.
2. **Low Emitting Electricity Supply and Demand:** Technology and innovation to support a reliable, lower carbon electricity system, including reducing the GHG footprint of Alberta's electricity supply mix, increasing the deployment of renewable energy, and enabling a smarter electricity grid that can power Alberta's homes, businesses and transportation.
3. **Food, Fibre, and Bioindustries:** Innovative processes and technologies to advance Alberta's bioeconomy, and reduce GHGs, including novel agricultural and forestry practices, bioenergy and biomaterials, waste management and waste to energy, and enhanced carbon retention.
4. **Low Carbon Industrial Processes and Products:** Technologies to deliver GHG reductions through energy efficiency, industrial process innovation, and low-GHG materials and chemicals.

Technology Readiness Levels

Technology Readiness Levels (TRL) progression tracking is a key metric for all projects. Applicants are required to self-assess the TRL of their technology and the expected advancement over the course of the project. In 2018/19, ERA took further steps to establish more robust performance metrics that include factors such as success rate, economic impact, and progress toward reducing the cost of technology deployment. ERA is working with Alberta Innovates' Performance Management and Evaluation team to develop a score card of how technologies within its portfolio have progressed along the innovation spectrum. This work will inform how the organization is helping to accelerate technologies, as well as better understand the broader system challenges faced by project proponents.

STRATEGIC PRIORITY: DRIVE COMMERCIALIZATION

OVER 225 PEOPLE with an interest in CCUS attended ERA'S LESSONS LEARNED WORKSHOP

To support economic diversification, job creation, education, training, and climate change action, ERA works in close alignment with Alberta's innovation system. In addition to providing funding, ERA convenes the resources required for success, including informing the suite of policy, regulatory, program, and business innovation tools required to address system gaps and deploy new technologies. By helping to put these conditions for success in place, ERA makes it clear to investors and inventors and all the players in between, that Alberta is the best place to commercialize clean technology solutions.

Supporting innovators on the path to commercialization

Beyond funding, innovators face additional challenges that hinder technology advancement and adoption by industry. Public funding is often not enough to accelerate these new technologies through to commercialization. ERA works with government and industry to help address gaps, which often includes convening additional partners and resources.

The innovation system in Canada and Alberta is complex, yet rich in resources and capacity. ERA is uniquely positioned to leverage and convene capacity in the system to foster the commercialization of innovative technologies, over and above the funding and technical expertise ERA brings to the table.

When projects are selected and contracted for funding, ERA assigns a project advisor to help steward the project in accordance with its funding agreement. Furthermore, ERA has worked with select funded or contracted projects to address business, financial, or commercial readiness challenges.

ERA also incorporates commercial potential criteria for each project into funding applications and contribution agreements. To enhance this perspective, ERA works jointly with Platform Calgary and TEC Edmonton who participate in the upfront project review process and jointly support ERA proponents alongside Alberta Innovates.

Based upon the success of these efforts, ERA sees an opportunity to explore additional proponent support for the benefit of unfunded projects or technologies. ERA is piloting a structured process for providing support capacity to assist promising projects and technologies.

Innovator Support Pilot implemented

In 2018/19, ERA assembled an external advisory team to help develop the detailed plan for the Innovator Support Pilot (ISP). The initiative will target projects who have gone through ERA's application process and who show technological promise but did not yet qualify for ERA funding due to specific challenges or barriers. The program is meant to prepare previous applicants for future funding opportunities with ERA or other partner organizations.

The ISP will connect innovators to various innovation system service providers who will work with these proponents to strengthen elements critical to business success such as organizational strategy, financial aspects, and commercialization potential. The ISP will help connect applicants to service providers who can help overcome specific barriers to commercialization such as TEC Edmonton, Platform Calgary, Alberta Innovates, Zone Startups Calgary, or post-secondary institutions.

In June 2018, reviewers from ERA's technical team and Alberta Innovates were tasked with building a shortlist of projects that would form the first cohort of this pilot program. Moving forward, ERA will engage in outreach with the shortlisted projects to be part of the initial pilot cohort.

Workshops and events

ERA has hosted workshops that involve a multitude of critical stakeholders who provide intelligence that helps shape calls for proposals. ERA's broad network of partners provides the opportunity to identify shared challenges, become aware of opportunities and engage with innovators.

Carbon Capture, Utilization, and Storage Lessons Learned Workshop hosted

Over 225 technology developers, industry insiders, investors, government employees, and regulatory officials with an interest in CCUS attended ERA's second Lessons Learned Workshop. The full-day, at-capacity event was held on November 30, 2018 at the Metropolitan Conference Centre in Calgary. The event built awareness of ERA's role in accelerating CCUS and other GHG-reducing technologies, while exploring Alberta's potential to be a global CCUS and clean technology leader.

Panelists presented the business case for carbon capture and use, as well as the market potential of current and future technologies. They shared knowledge of commercial facilities and operational experiences. Speakers explored lessons learned in technology development and financing. Entrepreneurs drew on firsthand experiences implementing CCUS projects, from navigating policy and regulatory uncertainties to developing revenue streams to choosing strategic partners and end users. The importance of government support to enable infrastructure was a key part of the discussions.

The event also identified that Alberta has already done some extraordinary things in the CCUS space, including ERA's \$35-million Grand Challenge, the Government of Alberta's support for the ACCTC the Alberta Carbon Trunk Line, and Shell Quest.

ERA's Lessons Learned Workshops are a way to share insights from experts with those who can benefit from knowledge translation. The goal is to accelerate technology adoption by sharing insights from project proponents and industry leaders.

Maximizing Funding Potential Workshop oversubscribed

ERA, Alberta Innovates, and Sustainable Development Technology Canada (SDTC) partnered to deliver the Maximizing Funding Potential Workshop. The event was oversubscribed within two hours after it was announced with over 200 people in attendance. During this one-day workshop, partners shared information on how to access funding, what support is right for specific projects, criteria requirements and more at the June 19, 2018 session in Calgary.

Workshop attendees heard from project evaluation experts representing the following agencies:

- Clean Growth Hub
- Natural Sciences and Engineering Research Council
- National Research Council – Industrial Research Assistance Program
- Alberta Innovates
- Sustainable Development Technology Canada
- Emissions Reduction Alberta
- Economic Development and Trade
- Western Economic Diversification
- Business Development Bank of Canada
- ATB
- Export Development Canada
- Canadian Trade Commissioner Service.

Planning for SPARK 2019: CARBON POSITIVE

In 2019, ERA will host SPARK, a biennial conference with the intent to bring together more than 700 clean tech researchers and innovators alongside Alberta’s business community, government, and the broader innovation system. The conference will host some of the world’s best clean technology innovators and investors as well as attendees who want to reimagine carbon. SPARK 2019: Carbon Positive takes place from October 28 to 30 at the Edmonton Convention Centre.

STRATEGIC PRIORITY: MAXIMIZE IMPACT

ERA's operating costs were **1.5 PER CENT** of the total funds **COMMITTED TO PROJECTS**.

ERA participated in **38 EVENTS AND WORKSHOPS**, **WITH SPEAKING ROLES AT 28** of them.

Ongoing operational improvements

ERA is committed to continuous improvement and has a responsibility to ongoing operational improvements, including discretionary and operational expenditures. While ERA's operating budget has always been lean, the organization has consistently sought opportunities to reduce the overall operating budget for the organization. 2018/19 work included:

- Enhancing project attrition analysis
- Updating market GHG methodology and calculation tools
- Launching post project completion reporting
- Undertaking an independent review of governance policies to streamline where appropriate.

Other highlights include:

Reducing red tape through the Partnership Intake Program

Launched in 2018, ERA's Partnership Intake Program provides opportunities to improve the efficiency of its intake process. It allows ERA to evaluate proposed projects referred by Trusted Partners, organizations with rigorous, fair, and transparent processes comparable to ERA's. When applicants provide ERA with a funding submission, they have the opportunity to have it shared and considered by other funding organizations. This allows technology innovators greater exposure to possible funding streams and access to later-stage funding opportunities beyond ERA's scope. The approach relieves administrative burdens for industry to apply and get funding, which equals time and money better spent developing technology solutions and business practices.

Reviewing approach to risk management

ERA has had a risk management strategy in place since 2015. At each scheduled Board meeting, the Board reviews the highest priority risks and the actions being taken to mitigate these risks. In early 2019, ERA initiated a process with an independent third party to review and assess ERA's approach to risk management, in consideration of current global best practices in Enterprise Risk Management using the Committee of Sponsoring Organizations of the Treadway Commission 2017 Enterprise Risk Management Framework. Through this work, ERA has identified and understands potential organizational risks and has put appropriate mitigation measures in place.

Ensuring savings from service providers

Since it was established in 2009, ERA's business needs have been carried out by a network of highly-experienced service providers and delivery partners contracted to carry out specific functions. ERA continues to focus on "value for money" from these best-of-class service providers. This includes looking for in-year savings where it makes sense based on actual the actual operations of the year, as well as annual budget rationalization prior to the start of the fiscal year.

Length of intake and decision-making cycle

ERA's funding process invites submissions for consideration through a competitive call for proposals. This process includes two stages of expert review prior to a Board decision and has proven to be an effective way to ensure that the best projects are selected. Project applicants have expressed a desire for more time to prepare their submissions and wanted a simplified Expression of Interest (EOI) application.

In 2018/19, ERA ensured applicants had a minimum of eight weeks for EOI submission for both the Industrial Efficiency Challenge and the BEST Challenge. For the Industrial Efficiency Challenge, ERA reduced the document limit to eight from 10 pages.

Measuring GDP and employment impact

In 2019, the Alberta Ministry of Economic Development and Trade carried out an updated analysis on behalf of ERA to better understand the economic impact of investments. That work confirmed that:

- ERA projects will have a total cumulative impact of over 20,000 person-year* jobs and add \$3 billion to Alberta's GDP by 2024.
- While ERA boosts Alberta's economy, its impact can be felt across Canada as well. ERA projects will add \$4 billion to the nation as a whole by 2024 and increase employment to over 30,000 person-year jobs.

**A person-year is equal to one-year of employment for one individual. Please note economic impact is reported on a calendar year basis, not fiscal year.*

Operating costs as a percentage of approved project commitments

ERA's 2018/19 operating costs were \$5.1 million, compared to \$4.1 million in 2017/18. The increase in operating expenses is directly related to the increase in the number of funding calls in 2018/19 over the prior year. As noted previously, ERA ran two competitive calls during the year along with selecting projects for funding through the Partnership Intake Program. During the prior year, ERA funded only one competitive call and was in the pilot year for the Partnership Intake Program.

Another measure of efficiency is operating costs as a percentage of the funds required to fulfill project commitments approved by the Board. In 2018/19 operating costs were 1.5 per cent of the total funds committed to projects, down from 2.2 per cent in 2017/18.

This improvement can be attributed to realized operating cost efficiencies to keep the total operating costs low, as well as a further increase to ERA's remaining committed funds for the projects approved during the year.

Sharing insights through speaking sessions and trade shows

ERA's broad network of partners provides the opportunity to identify shared challenges, become aware of opportunities, and engage with innovators. In 2018/19 ERA purposefully engaged in targeted outreach and hosted workshops that involved a multitude of stakeholders who provide intelligence that helps us shape calls for proposals. ERA experts are strategically placed at events that provide a platform to achieve broader communication goals of raising awareness of the organization's mandate and funding opportunities. It also helps raise the profile of Alberta as a place for clean technology investment and a province taking real action to deliver the environmental and economic outcomes that the world needs.

In 2018/19, ERA engaged with stakeholders and participated in events that help the team identify and accelerate GHG-reducing solutions. ERA participated in 38 events and workshops, with speaking roles at 28 of them. Sessions ranged from presentations at events hosted by Alberta influencers to educational sessions for ministerial delegations from around the world.

Highlights include:

CEM-MI-4 – Vancouver

ERA showcased expertise for ministers from more than 25 countries at the Clean Energy Ministerial-Mission Innovation Event (CEM10/MI-4) at the Vancouver Convention Centre. ERA had an information booth onsite at the Innovation Showcase with project partners Field Upgrading, CarbonCure Technologies, Geotherm, and SYLVIS to create business and investment opportunities around clean energy technologies, services, and programs. ERA CEO Steve MacDonald was invited to speak on a panel on Canadian Competitiveness in Clean Energy and Innovation, discussing the challenges and opportunities in transitioning to a less emitting economy. He also participated in a forum on international climate cooperation and markets hosted by IETA. Elizabeth Shirt, ERA's Director of Policy and Strategy, took part in a panel discussing how government funding programs play a key role in supporting new energy technologies.

Oil Sands Innovation Summit – Calgary

ERA once again partnered with COSIA and Alberta Innovates on the Oil Sands Innovation Summit. The event showcased the latest research, innovations, ideas, and results in greenhouse gas reduction, land and water improvements, and tailings management. ERA had a strong presence at the event—Mark Summers, Executive Director of Technology and Innovation, provided a performance update on ERA and Alberta Innovates projects. Elizabeth Shirt, Executive Director of Policy and Strategy, moderated a panel focused on new Technologies to Capture and Convert CO₂.

INVENTURE\$ – Main sponsor and participation – Calgary

ERA Board Chair Dave Collyer was on stage alongside Brenda Kenny, Board Chair for Alberta Innovates, and John Brogly, acting Chief Executive of COSIA, at INVENTURE\$ 2019. The “Are You up for the Challenge?” panel was moderated by Martha Hall Findlay, CEO of the Canada West Foundation. ERA also had an information booth at this event, which attracted approximately 2,000 people and helped raise awareness of SPARK 2019.

Carbon Market Workshop: European Union – Florence, Italy

ERA CEO Steve MacDonald spoke on behalf of ERA at the European Commission’s Carbon Market Workshop in Florence, Italy. This is an annual high level and invitation-only workshop attended by 55 global leaders from the European Union, China, U.S., and Australia. MacDonald took the opportunity to share successes and learnings from the ERA model, and tangible examples of funded projects that are delivering greenhouse gas emissions reductions and operating cost efficiencies in Alberta. Discussions explored opportunities for collaboration and partnerships to further advance shared solutions to common challenges.

Energy Efficiency and Supply Forum – Washington, U.S.

CEO Steve MacDonald, was in Washington D.C. to speak at the United States Energy Association's inaugural Energy Efficiency & Supply Forum. MacDonald was invited to outline ERA’s business model and how Alberta’s carbon price on large emitters is incenting the acceleration of clean technology development and deployment that can lead to environmental and economic success. He was joined by speakers from Alabama, Maryland, Ohio, and Pennsylvania—each outlining successful technologies and programs implemented in their cities and states.

MacDonald also attended a series of meetings with the Canadian Embassy’s energy and environment team, the United States Department of Energy, the Center for Climate and Energy Solutions, ARPA-E, the Paul H. Nitze School of Advanced International Studies, and more.

2018 Energy Symposium – Edmonton

CABREE, the energy and environment research centre at the Alberta School of Business, hosted the 2018 Energy Symposium: The Future of Alberta’s Electricity System tomorrow. The event featured speakers from inside and outside Alberta, with a view on advancing the conversation around what the next decade holds for Alberta's power sector. ERA CEO Steve MacDonald was on a panel discussing The Impact of Policy Changes on Electricity Markets.

Communicating success

ERA’s Communication Strategy is focused on:

- Engaging with key audience(s) to enhance ERA’s credibility
- Acting as enabler of Government of Alberta strategic communications outcomes, objectives and activities
- Simplifying the message about the role innovation and technology plays in creating competitive industries, enabling new business opportunities, and delivering on environmental outcomes.

While ERA is constantly refreshing its communication strategy, core objectives remain:

1. Raise awareness of ERA's unique value proposition among ERA's target audience(s)
2. Secure the best quality project applications for ERA's competitive calls for proposals and Partnership Intake Program
3. Ensure the Government of Alberta leverages ERA's success stories, lessons learned and outcomes to demonstrate how investment in innovation and technology is helping to grow businesses and reduce GHG emissions in Alberta's energy sector and throughout the economy.
4. Make certain ERA's trusted partners and key stakeholders:
 - Understand our processes, role and impact; and benefit through lessons learned from project execution
 - Recommend ERA as an ideal partner to advance technologies to reduce GHGs
 - Use ERA's stories, successes and funded projects as examples of how Alberta is leading in the development and deployment of technologies that will help meet global climate and economic goals
 - Rely upon ERA's technology roadmap as a resource to ensure "alignment" within the innovation system.

To achieve its objectives, in 2018/19 ERA put a greater focus on storytelling and understanding the lessons learned on key projects. This allowed us to develop a stronger content strategy to share these learnings with those who may be able to innovate faster as a result of this knowledge translation.

In 2018/19 ERA:

- Shared compelling ERA stories through video, podcasts, speaking engagements, presentations, and print materials
 - Adapted quarterly Stewardship Reports to put more profile on projects
 - Launched the inaugural episode of Carbon Copy, a new podcast series that takes a closer look at the technologies and people that will change climate impact and help reshape Alberta's economy
 - Created new video-based stories to share stories of complex technology innovation in ways all ERA audiences can understand the positive impacts
 - Shaped new thought leadership stories to be shared through conferences and events
 - Built new trade show materials
- Launched the Lessons Learned Event series, and in 2019-2022, plan to further elevate learnings by continuing this series
- Built on ERA's existing digital presence by enhancing website copy and increasing social media presence and engagement
- Designed and delivered events and workshops that fostered engagement and learning
- Leveraged proactive media relations to raise the profile of ERA provincially and nationally
- Monitored and measured communication activity to ensure strategies are delivering a high return on investment.

COMMUNICATIONS AT A GLANCE

Tactics	Average Frequency/year	Audience	2018/19
Website	Daily	All	Users: 31,099 ↑ 2.6% Sessions: 49,835 ↓ .5% Pageviews: 116,091 ↑ 4.1% Pages per session: 2.33 Time on site: 2:19 Bounce rate: 59.64%
Email newsletter	24	All	17 issues Open rate: 32.1% ↑21% industry average Click rate: 4.5% ↑23% industry average Unsubscribes: .3% Active subscribers: 4,463
Social media	Daily	All	Twitter: 1,467 followers ↑ 49.3% 1,250 average daily impressions > 1% average engagement LinkedIn: 583 followers ↑ 110.5% 2,917 average post impressions > 1% engagement average
Podcasts	4	All	1 episode produced >182 downloads from 13 countries
Videos	6	All	9 produced 36,500 views >50% of views since ERA's YouTube channel launched 2013 83 YouTube subscribers ↑ 133%

ERA TEAM

The ERA team supports its Board by providing sound research, expert advice, and effective reporting to facilitate decision-making.

- Steve MacDonald, CEO
- Elizabeth Shirt, Executive Director, Policy and Strategy
- Mark Summers, Executive Director, Technology and Innovation
- Heather Stephens, Chief Financial Officer
- Michelle Gurney, Communications
- Jennifer Cleall, Legal Counsel
- Amanda Amyotte, Executive Support

BOARD OF DIRECTORS

This group of experts in technology, finance, governance, and business provides strategic direction and oversight to the organization. These individuals form a diverse Board with backgrounds that include significant experience in industry, government, academia, and the not-for-profit sector.

- Dave Collyer, Board Chair
- Joseph Doucet, PhD, Vice-Chair
- Robert Mansell, PhD, Secretary-Treasurer (term ended June 21,2019)
- Céline Bak
- Brenda Kenny, PhD (term ended June 21,2019)
- Sara Hastings-Simon, PHD
- Clive Mather
- Patricia Mohr
- Bob Savage

Emissions Reduction Alberta

(Emissions Reduction Alberta is a registered trade name of Climate Change and Emissions Management (CCEMC) Corporation)

Financial Statements

May 31, 2019

Independent Auditor's Report

To the Board of Directors of
Climate Change and Emissions Management (CCEMC) Corporation (operating as Emissions
Reduction Alberta)

Opinion

We have audited the financial statements of Climate Change and Emissions Management (CCEMC) Corporation (operating as Emissions Reduction Alberta) (the "ERA"), which comprise the statement of financial position as at May 31, 2019, and the statements of changes in net assets, operations and cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies (collectively referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the ERA as at May 31, 2019, and the results of its operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards ("Canadian GAAS"). Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of our report. We are independent of the ERA in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the ERA's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the ERA or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the ERA's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian GAAS will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Canadian GAAS, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the ERA's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the ERA's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the ERA to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Deloitte LLP

Chartered Professional Accountants
September 24, 2019

Emissions Reduction Alberta

Statement of Financial Position

As at May 31, 2019

	2019 \$	2018 \$
Assets		
Current assets		
Cash	387,460,186	377,597,150
Accounts receivable	119,694	23,371
Grant receivable (note 3)	10,000,000	20,000,000
Interest receivable	807,146	628,420
Prepaid expenses	34,247	10,683
	<u>398,421,273</u>	<u>398,259,624</u>
Non-current assets		
Property and equipment	26,414	36,453
Grant receivable (note 3)	8,000,000	10,000,000
	<u>406,447,687</u>	<u>408,296,077</u>
Liabilities		
Current liabilities		
Accounts payable and accrued liabilities	3,875,742	1,849,449
Net Assets		
General Fund – unrestricted	-	-
Restricted Fund (note 4)	<u>402,571,945</u>	<u>406,446,628</u>
	<u>406,447,687</u>	<u>408,296,077</u>
Commitments and guarantees (note 6)		

Approved by the Board of Directors



Director



Director

The accompanying notes are an integral part of these financial statements.

Emissions Reduction Alberta

Statement of Changes in Net Assets

For the year ended May 31, 2019

			2019	2018
	General Fund \$	Restricted Fund \$	Total \$	Total \$
Balance – Beginning of year	-	406,446,628	406,446,628	274,991,426
(Deficiency) excess of revenue over expenses for the year	-	(3,874,683)	(3,874,683)	131,455,202
Balance – End of year	-	402,571,945	402,571,945	406,446,628

The accompanying notes are an integral part of these financial statements.

Emissions Reduction Alberta

Statement of Operations

For the year ended May 31, 2019

			2019	2018
	General Fund \$	Restricted Fund \$	Total \$	Total \$
Revenue				
Grant revenue (note 3)	-	31,150,000	31,150,000	164,500,000
Interest income	-	8,700,365	8,700,365	4,694,781
Conference	-	-	-	435,065
	-	39,850,365	39,850,365	169,629,846
Project expenses (note 6)	-	33,619,127	33,619,127	34,084,578
Excess of revenue over project expenses	-	6,231,238	6,231,238	135,545,268
Operating expenses				
Program management (note 5)	-	4,077,288	4,077,288	2,828,246
Consulting contracted services	-	454,204	454,204	408,496
Corporate costs	-	353,291	353,291	279,362
Amortization	-	11,261	11,261	8,006
Board remuneration and expenses (note 5)	-	116,581	116,581	93,021
Conference	-	93,296	93,296	472,935
	-	5,105,921	5,105,921	4,090,066
Grant re-allocation (note 3)	-	5,000,000	5,000,000	-
(Deficiency) excess of revenue over expenses for the year	-	(3,874,683)	(3,874,683)	131,455,202

The accompanying notes are an integral part of these financial statements.

Emissions Reduction Alberta

Statement of Cash Flows

For the year ended May 31, 2019

	2019 \$	2018 \$
Cash provided by (used in)		
Operating activities		
(Deficiency) excess of revenue over expenses for the year	(3,874,683)	131,455,202
Amortization	11,261	8,006
Net change in non-cash working capital items		
Accounts receivable	(96,323)	18,189
Grant receivable	12,000,000	(30,000,000)
Interest receivable	(178,726)	(371,112)
Prepaid expenses	(23,564)	18,389
Accounts payable and accrued liabilities	2,026,293	(781,086)
	9,864,258	100,347,588
Investing activities		
Purchase of capital assets	(1,222)	(42,552)
Increase in cash during the year	9,863,036	100,305,036
Cash – Beginning of year	377,597,150	277,292,114
Cash – End of year	387,460,186	377,597,150

The accompanying notes are an integral part of these financial statements.

Emissions Reduction Alberta

Notes to Financial Statements

May 31, 2019

1 Organization

Climate Change and Emissions Management (CCEMC) Corporation (CCEMC) is an Alberta-based, independent, not-for-profit organization incorporated under the Canada Corporations Act on February 17, 2009 and continued under the Canada Not-for-profit Corporations Act on October 14, 2016; its operations commenced on June 1, 2009. On October 21, 2016, CCEMC registered the trade name of Emissions Reduction Alberta (ERA) and uses this as its operating name. ERA's mandate is to identify and accelerate innovative solutions that secure Alberta's success in a lower carbon economy. The Climate Change and Emissions Management Fund (the Fund) was established under the Climate Change and Emissions Management Act by the Government of Alberta to support investment in innovation and clean technologies that will reduce Alberta's emissions of specified gases and support its ability to adapt to climate change. The Fund provides the primary source of revenue for ERA. As a not-for-profit organization, ERA is exempt from tax in accordance with Section 149(1)(l) of the Income Tax Act (Canada).

2 Summary of significant accounting policies

These financial statements have been prepared by management in accordance with Canadian accounting standards for not-for-profit organizations (ASNPO) within the framework of the accounting policies summarized below.

Fund accounting

For financial reporting purposes, the accounts have been classified into the following funds:

- General Fund

The General Fund includes all resources available for immediate purposes and accounts for ERA's activities other than those directly attributable to funding innovation and clean technologies and adaptation to climate change.

The General Fund includes all unrestricted monies received that are available for use at ERA's discretion. There was no activity in the General Fund during the current fiscal year.

- Restricted Fund

The Restricted Fund includes those funds that are to be used to support investment in innovation and clean technologies and adaptation to climate change.

Emissions Reduction Alberta

Notes to Financial Statements

May 31, 2019

Revenue recognition

These financial statements have been prepared using the restricted fund method of accounting for contributions, the key elements of which are:

- Unrestricted contributions are recognized as revenue in the General Fund when received or on becoming receivable if the amount to be received can be estimated and collection is reasonably assured.
- Externally restricted contributions are recognized as revenue in the Restricted Fund when received or receivable if the amount to be received can be estimated and collection is reasonably assured. Externally restricted amounts can only be used for the purposes designated by external parties.
- Investment income earned on contributions subject to external restrictions is recorded as revenue in the Restricted Fund in the year it is earned.

Financial instruments

Financial assets and financial liabilities are initially recognized at fair value less transaction costs when ERA becomes a party to the contractual provisions of the financial instrument and subsequently are measured at amortized cost with any changes recorded in the statement of operations. ERA currently does not hold any equity instruments that would be measured after initial recognition at fair value.

Cash

Cash consists of cash on deposit.

Property and equipment

Property and equipment are recorded at cost less accumulated amortization. Amortization is provided on a straight-line basis at the following annual rates:

Computer equipment and software	3 years
Furniture and fixtures	5 years

Project expenses and liabilities

Project expenses and the associated project liability (included in accounts payable and accrued liabilities) are recognized on receipt of a valid project progress report and associated milestone invoices by ERA. A commitment for a project expense is disclosed as such when a contribution agreement is executed.

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Notes to Financial Statements

May 31, 2019

3 Grant revenue

Funds are granted from the Government of Alberta to ERA on an annual basis through a Grant Agreement. The initial Grant Agreement was dated March 31, 2009, which was effective through to June 30, 2015. The Grant Agreement was amended on March 30, 2010 and was further amended on August 8, 2014. A new Grant Agreement was executed on March 8, 2017 and is effective until March 31, 2020, unless extended or terminated in accordance with the agreement.

On December 14, 2018, ERA received a letter from the Minister of Environment and Parks outlining the funding amounts to ERA related to both the current and future fiscal years. The letter confirmed funding to ERA of \$15 million for the year ended May 31, 2019. The letter also confirmed that \$5 million of funding related to development of a Methane Reduction Program received by ERA in fiscal 2018 had been reallocated to another delivery entity. ERA had recorded \$20 million in grant receivable and associated revenue in the fiscal year ended May 31, 2018, therefore the \$5 million grant re-allocation has been recorded in the current year. On March 12, 2019, ERA received further notification from the Minister of Environment and Parks of an additional \$23.15 million to be granted in fiscal 2019 to support projects under ERA's BEST Challenge completed during the year. Further to the amounts received under the Grant Agreement, ERA has executed a Delivery Entity Agreement with respect to funds that are committed to ERA under the Federal Low Carbon Economy Leadership Fund (LCELF). The Government of Alberta has committed \$8 million from the LCELF funding to ERA to support the Industrial Efficiency Challenge completed during the year. These monies are expected to be received in the fiscal year ending May 31, 2022.

Committed amounts related to future years have been included as grant receivable and are payable as follows:

Year ended	\$
May 31, 2020	10,000,000
May 31, 2021	-
May 31, 2022	8,000,000

4 Restricted Fund

The Restricted Fund consists of funds that are externally restricted by the Government of Alberta for the purpose of investing in various initiatives and projects related to reducing emissions of specified gases or supporting Alberta's ability to adapt to climate change as established by the Fund. The funds are also restricted for the purpose of administering ERA, which includes fees, expenses, liabilities and other costs.

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Notes to Financial Statements

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5 Board and management remuneration

Total honoraria and expenses related to the directors of the board amounted to \$115,534 (2018 – \$92,016) in the fiscal year. Remuneration paid to directors or their employers includes honoraria totalling \$49,024 (2018 – \$45,093) as follows:

	2019 \$	2018 \$
C. Bak	5,808	8,559
J. Carter (a)	-	580
D. Collyer (b)	7,693	-
J. Doucet	6,800	4,705
S. Hastings-Simon	4,671	4,185
B. Kenny	4,278	5,569
S. Locke (c)	-	-
R. Mansell	5,685	5,527
C. Mather	10,181	6,282
P. Mohr	2,814	3,524
R. Savage (d)	-	-
K. Sendall (e)	1,094	6,162
	<hr/>	<hr/>
	49,024	45,093
	<hr/>	<hr/>

- a) Resigned September 2017
- b) Appointed as Chairman October 2018
- c) Resigned May 2018 and honoraria were waived
- d) Appointed December 2018 and honoraria were waived
- e) Term ended September 2018

Of these amounts, \$5,211 (2018 – \$3,911) is included in accounts payable and accrued liabilities. Expenses paid to directors of \$66,510 (2018 – \$46,923) relate to reimbursements for meals, travel and accommodation.

Program management expenses include remuneration to contract management who report directly to the board, totalling fees of \$287,595 (2018 – \$305,130); of this amount, \$30,870 (2018 – \$31,532) is included in accounts payable and accrued liabilities.

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Notes to Financial Statements

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6 Commitments and guarantees

During the year, contribution agreements for ERA funding were executed for 14 projects and two projects were not initiated. As at May 31, 2019, ERA has 132 executed contribution agreements outstanding and has commenced or completed funding for 114 of these approved projects. Funding for 18 of the 132 executed projects has not commenced. Total committed funds for executed projects is the difference between the total funding approved for executed contribution agreements and project expenses incurred to date or contribution agreements cancelled. A summary of these amounts is outlined as follows:

	2019	2018
	\$	\$
Total committed funds for executed projects – Beginning of year	95,163,716	86,268,397
Total funds for executed projects approved or adjusted during the year	84,264,654	50,778,397
Project expenses incurred during the year	(33,619,127)	(34,084,578)
Contribution agreements cancelled during the year	-	(7,798,500)
	<hr/>	<hr/>
Total committed funds for executed projects – End of year	145,809,243	95,163,716
Total funds for projects approved by the Board	193,010,310	90,600,000
	<hr/>	<hr/>
Total executed and approved commitments	338,819,553	185,763,716

Funds allocated to the executed contribution agreements are subject to ERA's review and approval prior to disbursement to ensure full compliance with the terms of the contribution agreement. The actual financial commitment could therefore differ materially from \$145,809,243 but will not exceed that amount.

There are also an additional 32 projects, totalling \$193,010,310 (2018 – \$90,600,000), that have been approved for funding by ERA's board of directors but for which contribution agreements have not yet been executed.

Included in the project expenses for the current year is \$5,449,041 (2018 – \$1,944,291) paid to projects being developed in Canada, but outside of Alberta, and \$217,218 (2018 – \$80,821) paid to projects being developed outside of Canada. Included in total executed and approved commitments for the current year is \$19,594,976 (2018 – \$19,594,976) committed to projects being developed in Canada, but outside of Alberta, and \$8,897,476 (2018 – \$8,897,476) committed to projects being developed outside of Canada.

Subsequent to year-end, three of the approved projects, totalling \$14,510,000, will not proceed, and 11 of the approved projects, totalling \$49,490,872, have executed contribution agreements. As at September 24, 2019, ERA has 18 projects remaining, totalling \$129,009,438, that have been approved for funding by ERA's board of directors but for which contribution agreements have not been executed.

ERA indemnifies its directors against claims reasonably incurred and resulting from the performance of their services to ERA. No amounts are reflected in the financial statements related to these indemnifications.

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May 31, 2019

7 Financial instruments

ERA's financial instruments are exposed to certain financial risks, including credit risk, market risk and liquidity risk.

Credit risk

Credit risk is the risk of financial loss to ERA if a party to a financial instrument fails to meet its contractual obligations and arises principally from cash and accounts receivable. The maximum amount of credit risk exposure is limited to the carrying value of the balances disclosed in these financial statements.

Management monitors these accounts regularly and does not believe ERA is exposed to significant credit risk at the statement of financial position date.

Market risk

Market risk is the risk changes in market prices, such as interest rates, will affect ERA's interest income or the value of the financial instruments held. ERA is subject to interest rate cash flow risk arising primarily from fluctuations in interest rates applied to its cash balances, which are subject to floating interest rates.

Liquidity risk

Liquidity risk is the risk ERA will not be able to meet its financial obligations as they come due. Management mitigates liquidity risk by monitoring forecasted and actual cash flows to ensure sufficient liquidity to meet its liabilities. Accounts payable and accrued liabilities are due within the current operating period.

8 Economic dependence

100% of ERA's grant revenue is received from the Fund and the Government of Alberta. The loss of this funding would have a material adverse impact on ERA's future operations, project commitments and financial position.

9 Reclassification of certain prior year amounts

Certain comparative figures have been reclassified to conform to the current year's financial statement presentation.