

Figures accurate as of: February 14, 2017

Emissions Reduction Alberta (ERA) accelerates development of innovative technologies that reduce greenhouse gas emissions and secure Alberta's success in a lower carbon economy.

ERA IS A KEY PARTNER IN ADDRESSING ALBERTA'S CLIMATE LEADERSHIP PRIORITIES

- ERA is aligned with Alberta's Climate Leadership Plan and will continue to fine-tune its portfolio to reflect Alberta's policy direction.
- Government provides grants to ERA to enable it to fulfil its mandate. This funding comes from Alberta's large emitters who choose to pay into the Climate Change and Emissions Management Fund as a compliance option.
- We are working together with industry and innovators to help Alberta become a hub for innovative new ideas that reduce GHG emissions.
- We are funding technology and innovation that will help Alberta build a sustainable economy that attracts investment, creates jobs, expands market access, and delivers improved environmental outcomes.

ALIGNMENT WITH CLIMATE LEADERSHIP PLAN

- ERA has committed nearly \$100 million to advancing renewable energy.
- In addition, approximately 40% of our investments support efforts to reduce emissions from in-situ oil production, oil sands mining and upgrading.

ERA IS ACCELERATING INNOVATIVE SOLUTIONS TO REDUCE GREENHOUSE GAS EMISSIONS IN ALBERTA

- ERA is part of Alberta's supportive innovation network. We help technology developers address barriers and further their path to commercialization.
- ERA invests in transformative technologies, which have the potential to dramatically reduce GHG emissions across sectors and play a critical role in achieving the province's long-term reductions goals.
- We also fund demonstration and deployment projects that will result in substantial near-term emissions reductions, estimated to produce more reductions of more than 7 megatonnes by 2020.

ERA IS INVESTING IN TECHNOLOGIES THAT HAVE POSITIVE IMPACTS, BOTH ENVIRONMENTALLY AND ECONOMICALLY, IN ALBERTA

- ERA is delivering GHG reductions and economic outcomes. Technology is the engine of environmental and economic opportunity.
- We have committed more than \$300 million in funding to over 100 projects. Projects have a combined total value of more than \$2.2 billion.
- ERA spurs additional investment. For every ERA dollar, more than another \$5 are also invested by funding partners.

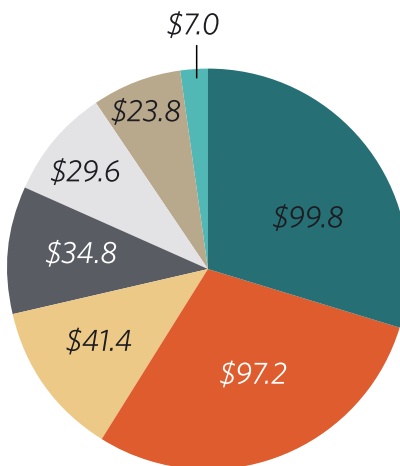
• Based on a 2015 study by the Conference Board of Canada, the total economic impact of ERA and related investments from 2011 to 2016 will be more than \$2.4 billion (2007\$).

• In terms of the impact on jobs, the Conference Board of Canada estimates that about 15,000 person-years of full-time-equivalent employment will be added over the same period. The impact on GDP for Alberta is forecast to be \$1.95 billion.

ERA IS WORKING COLLABORATIVELY WITH GOVERNMENT, INDUSTRY AND OTHER STAKEHOLDERS TO SECURE A LOWER CARBON FUTURE FOR ALBERTA

- ERA is working collaboratively with other organizations so that together we can provide complete solutions that advance technologies towards commercialization in Alberta. Complete solutions include the financing, policy, regulatory, program and business innovation required to successfully implement new technologies.
- Our portfolio aligns with Alberta's Climate Leadership Plan and will focus on solutions where there is an identified market need or market demand for new technologies to further reduce GHG emissions.

ERA INVESTMENT BY STRATEGIC AREA (\$ MILLIONS)



- CLEANER ENERGY PRODUCTION (15 PROJECTS)
- RENEWABLE ENERGY (15 PROJECTS)
- CCS (10 PROJECTS)
- ENERGY EFFICIENCY (13 PROJECTS)
- BIOLOGICAL GHG MANAGEMENT (25 PROJECTS)
- CARBON UTILIZATION (28 PROJECTS)
- ADAPTATION (3 PROJECTS)



PROJECT SUMMARY

- ERA is accelerating the development of new technologies.
- We have committed funding to 62 projects from Small and Medium Enterprises (SMEs). Included in that figure are projects that ERA selected through a joint process with Sustainable Development Technology Canada (SDTC) to advance solutions that are deployable in Alberta.
- We are moving carbon dioxide from a waste product to an asset. Through the ERA Grand Challenge: Innovative Carbon Uses, Alberta has reached out to the world to support the development of these technologies. In the first round, ERA made commitments to 24 projects under the Grand Challenge.
- ERA is helping Alberta to implement renewable energy technology and encourage adoption across our complex electric system.
- We are reducing methane emissions. ERA has already funded several projects to address methane emissions and is currently assessing projects from a dedicated methane funding opportunity.
- We are advancing technology solutions that could eliminate the need for steam in the in-situ extraction process for oil sands. If successful, these technologies will result in significant reductions in GHG emissions per barrel. ERA is supporting several projects that focus on this challenge, including one from a consortium that uses solvents combined with electromagnetic heating.
- The families of technologies ERA is advancing will have an economic impact. For example, according to a recent study by the University of Calgary's School of Public Policy, every 100,000 barrels per day of bitumen partially upgraded can generate \$3.5 billion labour income, \$13.37 billion GDP and contribute \$2.77 billion in revenue to the federal government and \$1.85 billion in revenue to the provincial government over a 20-year period. It is estimated that bitumen partial upgrading could reduce GHG emissions by up to 20 per cent on a wheel to tank lifecycle basis.

Project summary by strategic area	# of Projects	CCEMC Funds (\$Millions)	Total Project Value	Cumulative Project Emission Reductions by 2020 (Mt CO ₂ e) ¹	# of Projects Complete	# of SMEs
Biological GHG Management	25	29.6	197.0	0.4	8	8
CCS	10	41.4	128.9	N/A	6	6
Cleaner Energy Production and Processing	15	99.8	713.9	0.2	7	12
Energy Efficiency	13	34.8	239.8	2.4	8	6
Renewable Energy	15	97.2	895.3	4.4	6	9
Sub-Total	78	302.8	2,174.9	7.4	35	41
Adaptation Program	3	7.0	7.0	N/A	3	3
Grand Challenge ²	28	23.8	43.4	0.1	21	18
Sub-Total	31	30.8	50.4	0.1	24	21
Total	109	333.6	2,225.3	7.5	59	62

¹We have estimated emission reductions for all projects with approved funding commitments and executed funding agreements and assumed the projects will continue successfully and as planned. Should circumstances change for these projects, emission reduction estimates may change materially.

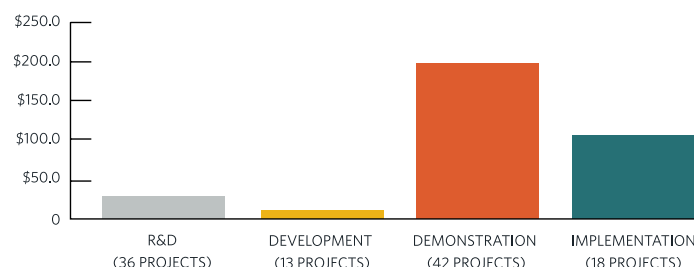
²Projects funded under the Grand Challenge have been selected based on numerous criteria including the potential for successful technology development and deployment leading to a net emission reduction of 1 Mt CO₂e/a in Alberta.

ERA INVESTMENT BY INNOVATION STAGE

The bulk of ERA's investment currently focuses on projects in later stages of development, and includes 34 demonstration projects and 18 implementation projects.

ERA INVESTMENT BY INNOVATION STAGE (ALL PROJECTS)

(\$ MILLIONS)



INDUSTRY SECTOR EMISSIONS REDUCTIONS

(MEGATONNES CO₂e by 2020)

Agriculture - Livestock & Crop Management	*
Biofuels Production	0.4
Buildings - Commercial & Residential	*
Chemical Manufacturing	*
Electricity Generation - Fuel Switching, Waste Heat Recovery, Battery Storage	0.1
Electricity Generation - Renewable	4.2
Forest Products	0.5
Landfills & Waste Management	0.2
Multi-Sector	*
Municipality	*
Natural Gas Production, Processing & Distribution	0.1
Oil and Natural Gas Extraction	1.7
Oil Production - In-Situ	0.2
Oil Production - Oil Sands Mining & Upgrading	*
Other	0.1
Transportation	*
Grand Total	7.5

*GHG emission reductions from these industries are nominal at the project level.



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