

EMISSIONS REDUCTION ALBERTA PROJECTS

CLEANER ENERGY PRODUCTION PROJECTS

ORGANIZATION	ERA FUNDING	PROJECT	LOCATION	PROJECT STATUS	STAGE OF INNOVATION	TOTAL PROJECT COST
E-T Energy Ltd.	\$6,861,860	Poplar Creek Project, ET-DSPTM for Development of Athabasca Oil Sands	Poplar Creek	Complete	Demonstration	\$20.6 million
ESEIEH Consortium	\$16,474,830	Enhanced Solvent Extraction Incorporating Electromagnetic Heating	Fort Mackay	Active	Demonstration	\$91.4 million
Evergreen Energy Technologies Inc.	\$138,983	Reliable Power for Remote Locations	Calgary	Complete	Demonstration	\$278,000
Imperial Oil	\$10,000,000	Cyclic Solvent Process Pilot	Cold Lake	Active	Demonstration	\$102.6 million
MEG Energy Corp.	\$10,000,000	Heavy Crude Quality Improvement	Alberta Industrial Heartland Region	Active	Demonstration	\$107.4 million
N-Solv Corporation	\$10,000,000	N-Solv BEST Pilot Plant at Suncor Dover	Fort McMurray	Complete	Demonstration	\$83 million
Seal Well Inc.	\$492,012	Permanent Sealing of GHG Emitting or Sequestration Wells with a Bismuth-Based Metal Alloy	Alberta	Complete	Development	\$1 million
Hi-Tec Fuel and Auto Ltd.	\$273,157	Engineering of the Natural Gas Dual Fuel Blend System for Heavy Duty Diesel Vehicles	Edmonton	Complete	Demonstration	\$559,000
B&C Energy Services Inc.	\$232,541	Enzergy™ the Next Generation Coal Combustion for Cleaner Environment	Alberta	Complete	Demonstration	\$557,000
Field Upgrading Ltd.	\$8,928,600	Field Upgrading Pilot Plant	Fort Saskatchewan	Active	Demonstration	\$29.1 million
N-Solv Corporation	\$25,000,000	N-Solv best oil sands scale-up project	Fort McMurray	Contribution agreement phase	Demonstration	\$238 million
Saltworks Technologies Inc.	\$500,000	Low energy produced water treatment	Vancouver	Complete	Implementation	\$3.4 million

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CARBON CAPTURE AND STORAGE PROJECTS

ORGANIZATION	ERA FUNDING	PROJECT	LOCATION	PROJECT STATUS	STAGE OF INNOVATION	TOTAL PROJECT COST
HTC Pureenergy Inc.	\$243,259	HTC Pureenergy CO ₂ Capture FEED Study for Devon's Jackfish SAGD Facility	Conklin	Complete	Development	\$487,000
GE	\$1,176,181	Ceramic membrane-based technology for H ₂ production with CO ₂ capture and sequestration	Edmonton	Ended early	R&D	\$2.4 million
Suncor Energy Inc.	\$2,499,999	OTSG Oxy-fuel Demonstration	Christina Lake	Complete	Demonstration	\$6.1 million
Husky Oil Operations Ltd.	\$2,955,000	Lashburn CO ₂ Capture Demonstration Project	Waseka, Saskatchewan	Active	Demonstration	\$17.3 million
Inventys Thermal Technologies Inc.	\$3,068,000	VeloxoTherm™ CO ₂ Capture Project	BC and Saskatchewan	Active	Demonstration	\$23.8 million
Carbon Engineering Ltd.	\$499,901	Direct Air Capture - Pilot Plant Demonstration	Squamish, BC	Complete	Development	\$8.1 million
CO ₂ Solutions Inc.	\$500,000	Optimization of Enzymatic System for CO ₂ Capture from Oil Sands Production	Quebec	Complete	Development	\$1.8 million
Sustainable Energy Solutions	\$490,305	Cryogenic Carbon Capture with Energy Storage (CCCES)	Orem, Utah	Complete	Development	\$981,000
CO ₂ Solutions Inc.	\$15,000,000	Commercial Demonstration of Biocatalytic process for Low Cost Carbon Capture	Redwater	Contribution agreement phase	Demonstration	\$30 million

EMISSIONS REDUCTION ALBERTA PROJECTS

RENEWABLE ENERGY PROJECTS

ORGANIZATION	ERA FUNDING	PROJECT	LOCATION	PROJECT STATUS	STAGE OF INNOVATION	TOTAL PROJECT COST
West Fraser Timber	\$5,000,000	Slave Lake Pulp Bio-Methanation Project	Slave Lake	Complete	Implementation	\$39.9 million
Growing Power Hairy Hill L.P.	\$5,000,000	GPHH Integrated BioRefinery™	Hairy Hill	Complete	Implementation	\$40.3 million
Salt Canada Inc.	\$500,000	Regional Municipality of Wood Buffalo Aerobic Landfill Project	Fort McMurray	Active	Demonstration	\$13.4 million
Blackspring Ridge / Wind Project	\$10,000,000	300 MW Blackspring Ridge I Wind Project	Vulcan County	Complete	Implementation	\$600 million
City of Edmonton	\$10,000,000	Implementation of High Solids Anaerobic Digestion Technology at the Edmonton Waste Management Centre	Edmonton	Active	Implementation	\$30.8 million
Growtec	\$3,572,988	Source Separated Organics and Agricultural Waste Anaerobic Digester	Chin/Coaldale	Complete	Implementation	\$7.2 million
Landmark Group of Builders	\$2,311,800	Large Scale Building Integrated Solar PV Demonstration in Production Housing	Edmonton, Red Deer and Calgary areas	Active	Implementation	\$5.8 million
Soliculture, Inc.	\$420,000	Wavelength-Selective Solar Collectors for Power Generating Greenhouses and Carbon Capture	Vegreville and California	Active	R&D	\$846,000

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ORGANIZATION	ERA FUNDING	PROJECT	LOCATION	PROJECT STATUS	STAGE OF INNOVATION	TOTAL PROJECT COST
Enerkem Inc.	\$1,800,000	Reduction of GHG Emissions through Greening Biofuel Production and CO2 Utilization: From Pilot Plant to Commercialization	Edmonton	Active	R&D	\$5.5 million
City of Medicine Hat	\$3,000,000	Medicine Hat Concentrating Solar Thermal Power Project	Medicine Hat	Complete	Demonstration	\$13.2 million
Lethbridge Biogas General Partnership	\$8,200,000	Lethbridge Biogas, Biogas Cogeneration Project	Lethbridge	Complete	Implementation	\$28.6 million
Enmax Corp.	\$11,212,000	Micro Generation Solutions	Alberta	Active	Implementation	\$34.3 million
Morgan Solar Inc.	\$10,000,000	Alberta Solar One	Vulcan	Active	Demonstration	\$23 million
GTE Solar Inc.	\$14,997,000	GTE Solar Brooks #1	Brooks	Active	Implementation	\$30 million
Transalta Corporation	\$11,146,300	Enabling increased intermittent green generation via wind energy storage	Pincher Creek	Active	Demonstration	\$22.7 million

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ENERGY EFFICIENCY PROJECTS

ORGANIZATION	ERA FUNDING	PROJECT	LOCATION	PROJECT STATUS	STAGE OF INNOVATION	TOTAL PROJECT COST
May-Ruben Technologies Inc.	\$569,704	BFE Thermally Driven Refrigeration System	Calgary	Complete	R&D	\$3.7million
Nova Chemicals Corp.	\$700,000	Energy Footprint Reduction for Ethylene Manufacturing	Calgary and Edmonton	Complete	R&D	\$1.4 million
Suncor Energy Inc.	\$790,905	Alberta Oil Sands Energy Efficiency and GHG Mitigation Roadmap	Fort McMurray	Complete	Implementation	\$1.6 million
Weyerhaeuser Company Ltd.	\$5,000,000	Weyerhaeuser Grande Prairie Evaporator Project	Grande Prairie	Complete	Implementation	\$81.8 million
EnCana Corp.	\$2,400,000	Vent Gas Capture for Engine Fuel Use	Southern Alberta	Complete	Implementation	\$5.9 million
ConocoPhillips Canada	\$6,971,285	Company-Wide Rollout of a Systematic Energy Efficiency Program Leading to Significant GHG Reductions in Alberta's Oil and Gas Industry	Alberta	Complete	Implementation	\$13.9 million
Cenovus Energy Inc.	\$2,676,714	REMVue/Slipstream Air/Fuel Ratio Control and Vent Capture Project.	Alderson, Alberta	Complete	Implementation	\$7.7 million
NRGreen Power Ltd.	\$7,000,000	Whitecourt Recovered Energy Project	Whitecourt	Complete	Demonstration	\$97 million
Global Analyzer Systems Ltd.	\$300,000	Stack-Top Temperature Reduction Project	Calgary	Active	Demonstration	\$690,000
Landmark Group of Builders	\$499,200	NetZero (Ready) Home Design and Demonstration for Production Housing	Calgary, Edmonton, Red Deer	Active	Demonstration	\$2.1 million

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ORGANIZATION	ERA FUNDING	PROJECT	LOCATION	PROJECT STATUS	STAGE OF INNOVATION	TOTAL PROJECT COST
ATCO Gas	\$1,834,642	Combined Heat and Power for Commercial and Institutional Buildings	Alberta	Active	Implementation	\$5.6 million
Genalta Power Inc.	\$4,881,763	Emission-free electrical power from multiple waste energy sources	North of Calgary	Active	Implementation	\$14.9 million

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BIOLOGICAL PROJECTS

ORGANIZATION	ERA FUNDING	PROJECT	LOCATION	PROJECT STATUS	STAGE OF INNOVATION	TOTAL PROJECT COST
Canadian Fertilizer Institute (CFI)	\$199,860	Farming 4R Land, Phase I	Alberta	Complete	Demonstration	\$225,000
University of Calgary - Dr. Layzell	\$57,500	Developing an adsorbing biocarbon to achieve greenhouse gas benefits in the remediation of produced water in oil sands operations	Calgary	Complete	R&D	\$58,000
The Prasino Group	\$290,834	Protocol validation studies	Calgary and Edmonton	Complete	Demonstration	\$291,000
University of Calgary - Dr. Hettiaratchi	\$495,100	Control of point-source low-volume methane emissions using methane biofiltration technology	Calgary	Active	Demonstration	\$974,000
Canadian Fertilizer Institute (CFI)	\$227,500	Farming 4R land, phase II	Alberta	Complete	Demonstration	\$253,000
Carlton University - Dr. Monreal	\$136,069	Intelligent NanoFertilizers: The dynamics of soil bacterial populations associated with root exudates and nitrogen uptake by wheat and canola	Alberta & Ontario	Complete	Demonstration	\$136,000
Ducks Unlimited - Canada's Institute for Wetland and Waterfowl Research	\$52,076	Incorporating wetland carbon values into spatially explicit tools to inform land-use decisions	Manitoba, Saskatchewan and Alberta	Complete	R&D	\$164,000
University of Alberta - Dr. Bork	\$168,000	Performance validation of cattle selected for feed efficiency under extensive cow/calf production systems	Alberta	Active	R&D	\$413,000
Sprayfoam Co.	\$200,000	Commercialization of Bio-Based Spray Foam	Red Deer	Complete	R&D	\$240,000
University of Alberta - Dr. Basarab	\$851,354	Methane emissions from beef cattle bred for low residual feed intake	Alberta	Active	Demonstration	\$1.6 million

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BIOLOGICAL PROJECTS

ORGANIZATION	ERA FUNDING	PROJECT	LOCATION	PROJECT STATUS	STAGE OF INNOVATION	TOTAL PROJECT COST
University of Alberta - Dr. Guillermo Hernandez	\$75,000	Use of nitrification inhibitors to reduce nitrous oxide emissions from crop fields and receiving liquid manure inspection in the fall versus spring	Edmonton	Active	R&D	\$235,000
University of Alberta - Dr. Kumar	\$86,250	Algae-based biomass for production of fuels and chemicals	Edmonton	Active	R&D	\$426,000
City of Lethbridge	\$69,000	Waste Characterization Study	Lethbridge	Active	R&D	\$124,000
Mikro-Tek Inc.	\$453,000	Biological Plant Inoculants to Increase Carbon Sequestration in Alberta's Agriculture and Forestry Sectors	Slave Lake	Active	Development	\$968,000
Mustus Energy Ltd.	\$10,000,000	Forestry Waste to Electrical Power - Fuel Variability Minimization Project	La Crete	Active	Implementation	\$157.8 million
SBI Fine Chemicals	\$10,000,000	Drop-In Renewable Diesel Fuel replacing fossil fuel	Edmonton	Contribution agreement phase	Demonstration	\$20.5 million
Tetra Tech Inc.	\$1,745,166	Biocovers for Greenhouse Gas Mitigation from Landfills	Leduc	Active	Demonstration	\$3.5 million
Queens University - Dr. Allison Rutter	\$56,830	Sustainable remediation of petroleum hydrocarbons (PHCS) using phytotechnologies	Ontario	Complete	R&D	\$57,000
University of Alberta - Dr. Carlo Montemagno	\$500,000	Artificial photosynthesis for managing industrially produced CO ₂ emissions through carbon capture and value creation	Edmonton	Active	Development	\$1.3 million
University of Calgary - Dr. Peter Dunfield	\$57,500	Eco-mimicry approach to methane capture in tailings ponds: design of a multi bioreactor and gas sampling system for testing the performances of known methane oxidizing materials	Calgary	Active	R&D	\$70,000

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ORGANIZATION	ERA FUNDING	PROJECT	LOCATION	PROJECT STATUS	STAGE OF INNOVATION	TOTAL PROJECT COST
University of Alberta - Dr. Cameron Carlyle	\$487,500	Regionally appropriate grazing	Edmonton	Active	R&D	\$715,000
University of Calgary - Dr. Maria Strack	\$277,070	Improved construction of roads and pipelines to minimize impact on peatland GHG emissions	Waterloo, Ontario and Calgary, Edmonton and Carmon Creek, Alberta	Active	R&D	\$555,000
Agriculture and Agri-Food Canada	\$1,377,523	Technologies for reducing GHG emissions and providing offset options for the beef and dairy industries	Lethbridge and Australia	Active	R&D	\$2.8 million
University of Manitoba	\$711,022	A matter of timing and source: enhanced efficiency nitrogen fertilizers and products to reduce nitrous oxide emissions in the prairie provinces	Winnipeg, Regina, Edmonton	Active	R&D	\$1.6 million
Growsafe Systems Ltd.	\$994,394	Deploying an advanced analytics platform to quantify livestock GHG emissions and monitor reduction strategies at individual animal and whole operation scale	Airdrie	Active	Demonstration	\$2 million

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ADAPTATION PROJECTS

ORGANIZATION	ERA FUNDING	PROJECT	LOCATION	PROJECT STATUS	TOTAL PROJECT COST
Foothills Research Institute/ Tree Improvement Alberta	\$2,996,031	Tree Species Adaptation Risk Management Project	Alberta	Complete	\$3 million
Alberta Biodiversity Monitoring Institute	\$2,394,631	Biodiversity Management and Climate Change Adaptation	Calgary, Edmonton, Vegreville	Complete	\$2.4 million
Alberta Innovates - Energy and Environment Solutions and WaterSMART Solutions Ltd.	\$1,600,000	South Saskatchewan River Basin (SSRB) Adaptation to Climate Variability Project	Calgary	Complete	\$1.6 million

EMISSIONS REDUCTION ALBERTA PROJECTS

ERA GRAND CHALLENGE - CARBON UTILIZATION PROJECTS

ORGANIZATION	ERA FUNDING	PROJECT	LOCATION	PROJECT STATUS	TOTAL PROJECT COST
Pioneer Energy	\$500,000	High-Value Synthetic Chemicals and Gasoline Drop-In Liquid Fuels from Canada's CO ₂ and Flare Gas Emissions	Colorado	Complete	\$754,000
University of Alberta	\$500,000	Novel Internal Dry Reforming Solid Oxide Fuel Cell Technology for CO ₂ Utilization	Edmonton	Complete	\$502,000
Robert Gordon University	\$478,130	Integration of Advanced Hybrid Inorganic Membranes for Carbon Dioxide Conversion	Scotland	Active	\$776,000
University of Maryland	\$499,848	An Innovative and Highly Efficient Microalgae-Based Carbon Sequestration System to Reduce CO ₂ Emissions and Produce Valuable Byproducts Including Biofuels In All Climate	Maryland	Complete	\$500,000
Liquid Light, Inc	\$500,000	Converting Carbon Dioxide Into Chemicals and Fuels Using Clean, Domestic Sources of Energy in Alberta	New Jersey	Complete	\$7.4 million
McGill University	\$500,000	Use of Carbon Dioxide in Making Carbonate-Bond Precast Concrete Products	Quebec	Complete	\$500,000
E3Tec Service, LLC	\$499,418	Production of Dimethyl Carbonate (DMC) from Captured CO ₂ and Methanol	Maryland	Complete	\$555,000
CCm Research Ltd.	\$495,230	High Efficiency CO ₂ Capture Using Novel Fibres in the Production of Soil Conditioning Agents Polymer Replacements	England	Complete	\$555,000

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ORGANIZATION	ERA FUNDING	PROJECT	LOCATION	PROJECT STATUS	TOTAL PROJECT COST
Carbon Cycle Ltd.	\$500,000	Process to Capture Carbon Dioxide and Produce Structured Calcium Carbonate and Fertilizer	England	Active	\$500,000
OakBio	\$500,000	Conversion of Industrial CO ₂ Emissions Into Biofuels and Chemicals	California	Complete	\$510,000
McGill University	\$423,136	Chemical Transformation of Carbon Dioxide Via Solar-Powered Artificial Photosynthesis	Quebec	Complete	\$423,000
Enerkem Inc.	\$500,000	Valorizing Industrially Produced CO ₂ : A Reliable and Cost-Effective Solution for Carbon Capture and Its Conversion to Marketable Products	Edmonton	Complete	\$514,000
ARCTECH, Inc.	\$423,256	HUMASORB [®] -L for Removal of CO ₂ , NOX GHGs, Along with SOX and Trace Metals	Virginia	Complete	\$649,000
University of British Columbia	\$500,000	A Coupled CO ₂ and Wastewater Treatment Process to Create High Value Gas/Oil Field Chemicals	British Columbia	Complete	\$500,000
University of California Riverside	\$499,886	CO ₂ Conversion to Methanol through Bi-reforming	California	Complete	\$500,000
Industrial Microbes, Inc.	\$500,000	Biological Co-fermentation of Carbon Dioxide and Methane to Malate	California	Complete	\$537,000

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ORGANIZATION	ERA FUNDING	PROJECT	LOCATION	PROJECT STATUS	TOTAL PROJECT COST
Blue Planet Ltd.	\$477,421	Carbon Capture and Mineralogic Sequestration: Addressing the World Wide Epidemic on a World Wide Scale	California	Complete	\$947,000
Skyonic Corporation	\$500,000	Skyonic SkyCycle™ Pilot Demonstration	Texas	Complete	\$4.2 million
RTI International	\$467,738	Captured-CO ₂ Catalyst for the Production of Ethylene Oxide (C3-PEO)	North Carolina	Complete	\$468,000
Quantiam Technologies Inc.	\$500,000	Green Methanol From Carbon Dioxide and Renewable Hydrogen (Methanol +)	Edmonton	Complete	\$933,000
Solidia Technologies	\$500,000	Solidia Concrete - A Sustainable Method For Cement Production and CO ₂ Utilization	New Jersey	Complete	\$1.3 million
Carbon Upcycling Technologies	\$488,950	CO ₂ to Graphene Reactors	Calgary	Complete	\$529,000
New Sky Energy	\$500,000	Soda Ash and Bicarbonate From a Low Energy Natural Gas Sweetening Process	Colorado	Complete	\$787,000
Gas Technology Institute	\$500,000	Direct Catalytic Synthesis of Acetic Acid From CO ₂ and CH ₄	Illinois	Active	\$500,000
CarbonCure Technologies	\$3,000,000	Carbon Dioxide Utilization in Concrete	Calgary	Contribution agreement phase	\$5.3 million
McGill University	\$3,000,000	Field-Deployment of a Carbon Dioxide Transformation System Powered by Sunlight	Montreal	Contribution agreement phase	\$3.9 million
Solidia Technologies	\$3,000,000	Solidia Concrete - A Sustainable Method for Cement Production and CO ₂ Utilization	New Jersey	Contribution agreement phase	\$4.7 million
Mangrove/ University of British Columbia	\$3,000,000	Field Pilot Demonstration of UBC's Waste-to-Value Innovation for Conversion of Carbon Dioxide and Desalination of Wastewater in Alberta	Vancouver	Contribution agreement phase	\$4 million

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ACCELERATOR PROJECT

ORGANIZATION	ERA POTENTIAL FUNDING	PROJECT	LOCATION	PROJECT STATUS	STAGE OF INNOVATION	TOTAL PROJECT COST
Cenovus	\$15,000,000	Post combustion carbon capture using molten carbonate fuel cell pilot	Calgary	Contribution agreement phase	Demonstration	\$38 million

STAGE OF INNOVATION DEFINITIONS

Applied R&D (Research & Development):

At this stage of development, the technology has been formulated for specific applications and is ready to be proven in a controlled setting. Projects in this category include the integration of critical technology components and proof-of-concept demonstration to establish the technical feasibility of a prototype.

Technology Development:

At this stage of development, the concept has been proven and is ready for prototype development. Projects in this category include technology improvement, development of a representative prototype system, and testing in a simulated operational environment.

Technology Demonstration:

At this stage of development, a prototype system is ready to be field tested in a small-scale operational environment and scaled up to near commercial sizes. Projects in this category include small-scale field pilots and large-scale demonstration facilities.

Commercial Implementation and Market Adoption:

At this stage of development, the technology has been proven to work under expected conditions in its final form. Projects in this category include first-of-kind commercial implementation and market adoption through subsequent deployments.