



Elemental Energy has partnered with Cold Lake First Nations on a solar and energy storage project in Southern Alberta. ERA committed \$10 million to the \$40 million project.

## ELEMENTAL'S SOLAR AND STORAGE PROJECT INCLUDES PARTNERSHIP WITH FIRST NATION

Just outside of Medicine Hat, a new project is not only producing solar energy, it's storing it. The project marks an important next step in the evolving renewable energy sector in Western Canada. It also creates an innovative path for economic reconciliation.

Elemental Energy has partnered with Cold Lake First Nations (CLFN), giving them equity interest in the project, which is expected to become operational in late 2022.

"As stewards of the land, our Nation fully supports sustainable renewable energy development respecting environmental, economic, cultural and social contexts, while realizing long-term economic benefits through an ownership stake in the project," said Chief Roger Marten.

The first-of-its-kind in Canada, the Chappice Lake Solar and Storage Project uses a game-changing DC-connected solar and flow battery system. Instead of wasting energy usually lost due to grid limitations, it will be stored and released whenever it is needed.

"Storage is a critical component in the rapid transition of the electrical grid, both here in Alberta and around the world," says Dan Eaton, Director of Project Development for Vancouver-based Elemental Energy.

With approximately 40,000 solar panels to be installed alongside an 8.4 MWh Vanadium

Flow Battery (VFB), the Chappice Lake facility showcases technology that makes better use of Alberta's existing grid for renewable energy adoption. Emissions Reduction Alberta committed \$10 million to the \$40 million project.

A 21 Mwp solar array will be co-located with a utility-scale VFB from Invinity Energy Systems and generate enough low-cost electricity to serve over 5,000 Albertans.

"Storage is what's going to facilitate the rapid adoption and deep penetration of renewable energy into the Alberta grid. Renewable energy generation on its own is variable. Storage can make it dispatchable," Eaton said.

Solar energy produced at Chappice Lake will charge the VFB during the day and release it as needed. And while Eaton says the system comes with significant up-front investment, the long-term benefits include a safer, longer battery life with minimal degradation over 25 years.

"For us, what's exciting is bringing a new innovative project to a market that's undergoing rapid transition," Eaton said. "We think this project will bring a lot of value to the province and be a catalyst for more innovative dispatchable renewable energy projects. We are excited to collaborate with Cold Lake First Nations on a project that unites both purpose and profit."



Over 2,000 homes in Fort Saskatchewan will soon be fueled by natural gas blended with hydrogen as part of a pilot project by ATCO. ERA committed \$2.8 million to the \$7.9 million project.

## ATCO EXPLORES HEATING HOMES AND FUELING APPLIANCES WITH HYDROGEN TO REDUCE EMISSIONS

Heating your home or business and fueling your appliances with hydrogen is on the horizon. In a first-of-its-kind project for Alberta, ATCO Gas is conducting a pilot project in Fort Saskatchewan to test a cost-effective way to keep customers comfortable with a lower-carbon energy supply.

Their \$7.9 million project is based on a simple premise: blend hydrogen into natural gas. Like natural gas, hydrogen can be locally produced, stored, and is easily transported. Unlike natural gas, hydrogen has no carbon emissions when it is burned, it emits only heat and water vapour.

"Alberta is quickly progressing to be a world leader in hydrogen adoption, all heading towards a time when hydrogen is our primary home heating fuel," said Patrick Bain, Manager, Hydrogen Projects at ATCO. "This project is just the beginning of ATCO's energy transformation."

This project is an important enabler for Canada's future hydrogen economy and strategically supports the rollout of hydrogen blending in the gas distribution system. It also has significant potential to advance the regulatory and commercial environment for the technology.

For the pilot project, ATCO will blend five per cent hydrogen with natural gas to show that the process is safe. For the 2,100 customers impacted, costs will not change. Emissions Reduction Alberta (ERA) committed \$2.8 million to the project through its Natural Gas Challenge.

By starting at five per cent, ATCO can manage the hydrogen transition on a small scale while working through regulatory, technical, and public engagement requirements. Once successful, they will increase the proportion of blended hydrogen and then look at implementing hydrogen blending for larger applications, dramatically reducing emissions.

Alberta's abundance of natural gas and carbon sequestration expertise provides a unique advantage to produce hydrogen at a competitive cost. The province's energy sector currently has the infrastructure to support a large-scale move to hydrogen: skilled labour, robust pipelines, storage capacity, and carbon capture technologies.

"ERA's commitment to the project allows ATCO to demonstrate the viability of hydrogen as a heating fuel in Alberta's climate," says Lance Radke, Vice President of Customer Experience and Initiatives at ATCO.

ATCO's Fort Saskatchewan Hydrogen Blending Project aligns with the Government of Alberta's Natural Gas Strategy and Hydrogen Roadmap and moves the province forward on the path for the large-scale delivery of low-carbon energy.

Alberta's abundance of natural gas and carbon sequestration expertise provides a unique advantage to produce low-carbon hydrogen at a competitive cost. When deployed at a larger scale, hydrogen blending will substantially reduce carbon emissions in the province.

## COMMITTED TO ACTION

- ▶ ERA is a key partner in helping to achieve Alberta's climate and economic priorities. We fund and de-risk late-stage technologies to reduce GHG emissions and help grow and create competitive industries in Alberta.

## CONVENING RESOURCES FOR COLLABORATION

- ▶ For more than 13 years, ERA has been investing revenues from the carbon price paid by Large Final Emitters (LFEs) to accelerate the development and adoption of innovative and clean technology solutions.
- ▶ We work with industry, government, and technology developers to make Alberta a hub for innovative ideas that reduce GHG emissions and improve economic competitiveness.
- ▶ We convene resources and facilitate strategic partnerships with industry, government, business, academia, and other funders to foster a suite of policy, regulatory, program and business innovation tools that will help address barriers to commercialization.
- ▶ With our stakeholders, we developed a Technology Roadmap that guides investment decisions and informs our investment portfolio mix.

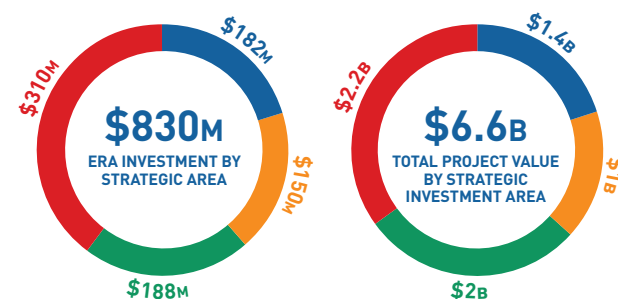
FUNDING OPPORTUNITY	WHAT'S IT ABOUT?	ERA FUNDING	HIGHLIGHTS
<b>GRAND CHALLENGE</b>	Technologies to transform CO <sub>2</sub> from waste to value-added	\$30M	2 projects awarded \$5M each in the final round
<b>METHANE CHALLENGE</b>	New methane detection and reduction technologies	\$23M	11 projects funded worth \$60M in total project value
<b>OIL SANDS INNOVATION CHALLENGE</b>	Late-stage, GHG-reducing technologies to help Alberta's oil sands industry remain competitive	\$36M	6 projects funded worth \$370M in total project value
<b>INDUSTRIAL EFFICIENCY CHALLENGE</b>	Technologies to increase efficiencies for LFE industrial facilities	\$56M*	9 projects funded worth \$235M in total project value
<b>BEST CHALLENGE</b>	GHG-reducing technologies in biotechnology, electricity, and sustainable transportation	\$76M	13 projects funded worth \$297M in total project value
<b>NATURAL GAS CHALLENGE</b>	Unlocking innovation across Alberta's natural gas value chain	\$58M	20 projects funded worth \$158M in total project value
<b>FOOD, FARMING, AND FORESTRY CHALLENGE</b>	Accelerating innovation for sustainable growth	\$28M	16 projects funded worth \$136M in total project value
<b>SHOVEL-READY CHALLENGE</b>	Support for companies ready to implement leading-edge technologies in applications for both greenfield and brownfield operations	\$166M*	16 projects funded worth over \$2B in total project value
<b>PARTNERSHIP INTAKE PROGRAM</b>	Evaluating promising GHG-reducing projects referred to ERA by Trusted Partners	\$66M*	17 projects funded to date worth over \$1.2B in total project value
<b>ENERGY SAVINGS FOR BUSINESS</b>	Support for small- and medium-scale industrial and commercial businesses for cost-saving and emissions reducing projects	\$55M*	\$23 million in incentive obligations to date

\*This program is funded in part by the Government of Canada's Low Carbon Economy Leadership Fund.

## INVESTING IN A DIVERSE PORTFOLIO

### 230 Projects

- ▶ **Cleaner Oil & Gas** (74 Projects)
- ▶ **Low Emitting Electricity System** (32 Projects)
- ▶ **Food, Fibre, & Bioindustries\*** (59 Projects)
- ▶ **Low Carbon Industrial Processes & Products** (65 Projects)



\*In 2012, ERA provided funding for three adaptation projects in consultation with Alberta Environment and Parks.

## CUMULATIVE PROJECT EMISSION REDUCTIONS

### 6.1 Mt CO<sub>2</sub>e Total by 2020



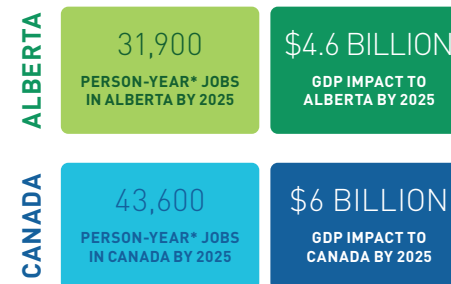
### 40 Mt CO<sub>2</sub>e Total by 2030



Note: We 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. These projections do not include the Energy Savings for Business program

## LEVERAGING FUNDING AND CREATING JOBS

Technology is the engine of environmental and economic opportunity. For every ERA dollar we commit to advancing new technologies, \$6.90 has been invested by funding partners.



\*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.