EDMONTON CEMENT PLANT ADVANCES CARBON CAPTURE AND STORAGE PROJECT

Edmonton’s Lehigh Cement Plant is developing North America’s first full-scale carbon capture, utilization, and storage (CCUS) solution for the cement industry with the goal of capturing around 780,000 tonnes of CO₂ annually.

Currently, the cement industry contributes as much as eight per cent of global greenhouse gas (GHG) emissions. The global demand for cement is expected to increase 23 per cent by 2050. If this technology reaches commercial deployment, it could accelerate adoption across the industry globally.

Lehigh’s parent company, HeidelbergCement, is collaborating with Enbridge on a carbon capture, transport, and storage solution at Edmonton’s Lehigh Cement Plant.

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The solution is a combined Battery Energy Storage Solution, or BESS, with solar voltaic renewable generation; a microgrid meant to transfer the community between grid and battery supply when needed.

“Here’s only one 70-kilometre-long distribution line connecting the Town of Waterton to the grid. So, the age-old philosophical question “if a tree falls in the forest” never used to apply to them—they knew it fell if it knocked out their power.”

FortisAlberta, who supplies more than half-a-million customers in central and southern Alberta, has devised a first-of-its-kind battery storage system for the Waterton Lakes National Park townsite. It has been fully operational since the fall of 2022.

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Power outages have a huge impact on summer-only businesses in Waterton National Park and can greatly affect the tourist experience. The technology solution will improve grid reliability for residents, businesses, and visitors.

The $6 million project received almost $1.3 million in funding from ERA. It also had support from Alberta Innovates and Natural Resources Canada’s Smart Grid Program.

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“With just the single line supplying power, outages meant a waiting game as crews worked to restore power.

“We were met with two options: construct a second power line in case of an outage to the first, or come up with something totally different,” said Janine Sullivan, President & CEO, FortisAlberta.”

Demonstrating the integration of BESS and solar PV systems will provide insight into future applications with project learnings shared with industry throughout Alberta.

FORTISALBERTA DELIVERS BACKUP POWER TO WATERTON LAKES NATIONAL PARK TOWNSITE

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“We see close to 500,000 visitors a year, so having that reliable power for both our businesses and our own operations, really is important for safety and a quality experience,” said Dallas Meidinger, External Relations Manager, Waterton Lakes National Park.

The Town of Waterton is prone to a higher-than-normal outages due to its long distance from the nearest substation and the natural terrain in the area. The FortisAlberta Waterton Energy Storage Project enables the community to maintain power and support emergency services during an outage.

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**COMMITTED TO ACTION**

ERA was created in 2009 to help deliver on the province’s environmental and economic goals. ERA invests revenues from the carbon price paid by large industrial emitters in the pilot, demonstration and deployment of clean technology solutions that reduce GHGs, lower costs, attract investment, and create jobs in Alberta.

<table>
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<tr>
<th>FUNDING OPPORTUNITY</th>
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<tr>
<td><strong>GRAND CHALLENGE</strong></td>
<td>Technologies to transform CO₂ from waste to value-added</td>
<td>$24M</td>
<td>2 projects awarded $5M each in the final round</td>
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<td><strong>METHANE CHALLENGE</strong></td>
<td>New methane detection and reduction technologies</td>
<td>$23M</td>
<td>12 projects funded worth $60M in total project value</td>
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<td><strong>OIL SANDS INNOVATION CHALLENGE</strong></td>
<td>Late-stage, GHG-reducing technologies to help Alberta’s oil sands industry remain competitive</td>
<td>$36M</td>
<td>6 projects funded worth $377M in total project value</td>
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<td><strong>INDUSTRIAL EFFICIENCY CHALLENGE</strong></td>
<td>Technologies to increase efficiencies for LFE industrial facilities</td>
<td>$56M*</td>
<td>9 projects funded worth $199M in total project value</td>
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<td><strong>BEST CHALLENGE</strong></td>
<td>GHG-reducing technologies in biotechnology, electricity, and sustainable transportation</td>
<td>$65M</td>
<td>11 projects funded worth $234M in total project value</td>
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<td><strong>NATURAL GAS CHALLENGE</strong></td>
<td>Unlocking innovation across Alberta’s natural gas value chain</td>
<td>$58M</td>
<td>20 projects funded worth $168M in total project value</td>
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<tr>
<td><strong>FOOD, FARMING, AND FORESTRY CHALLENGE</strong></td>
<td>Accelerating innovation for sustainable growth</td>
<td>$25M</td>
<td>15 projects funded worth $127M in total project value</td>
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<tr>
<td><strong>SHOVEL-READY CHALLENGE</strong></td>
<td>Support for companies ready to implement leading-edge technologies in applications for both greenfield and brownfield operations</td>
<td>$163M*</td>
<td>16 projects funded worth over $2B in total project value</td>
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<tr>
<td><strong>CARBON CAPTURE KICKSTART</strong></td>
<td>Advancing the province’s global leadership in CCUS-related technologies</td>
<td>$41M</td>
<td>11 projects that could lead to over $20 billion in capital expenditures</td>
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<tr>
<td><strong>CIRCULAR ECONOMY CHALLENGE</strong></td>
<td>Reducing the impacts of material production, processing, and disposal</td>
<td>$48M</td>
<td>10 projects funded worth $296M in total project value</td>
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<td><strong>PARTNERSHIP INTAKE PROGRAM</strong></td>
<td>Evaluating promising GHG-reducing projects referred to ERA by Trusted Partners</td>
<td>$75M*</td>
<td>21 projects funded worth over $1.3B in total project value</td>
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<tr>
<td><strong>ENERGY SAVINGS FOR BUSINESS</strong></td>
<td>Support for small- and medium-scale industrial and commercial businesses for cost-saving and emissions reducing projects</td>
<td>$44.1M*</td>
<td>1,960 projects funded worth $151M in total project value</td>
</tr>
</tbody>
</table>

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

**TECHNOLOGY INNOVATION**

**Investing in a Diverse Portfolio**

- **246 Projects***
  - Future Fuels (54 Projects)
  - Circular Economy (64 Projects)
  - Energy Efficiency (34 Projects)
  - Industrial Transformation (64 Projects)
  - Carbon Sequestration (37 Projects)

**Cumulative Project Emission Reductions**

- **40 Mt CO₂e Total by 2030**
  - **22 Mt**
  - **8 Mt**
  - **7 Mt**
  - **1 Mt**
  - **1 Mt**

- **104 Mt CO₂e Total by 2050**
  - **67 Mt**
  - **19 Mt**
  - **11 Mt**
  - **5 Mt**
  - **2 Mt**

**COMMERICAL ADOPTION**

**ENERGY SAVINGS FOR BUSINESS PROGRAM**

**ALL PROJECTS**

- **ALBERTA**
  - 33,400 PERSON-YEAR** JOBS IN ALBERTA BY 2025
  - $4.9 BILLION GDP IMPACT TO ALBERTA BY 2025

- **CANADA**
  - 45,800 PERSON-YEAR** JOBS IN CANADA BY 2025
  - $6.6 BILLION GDP IMPACT TO CANADA BY 2025

*In 2012, ERA provided $7 million in funding for three adaptation projects worth $7 million in consultation with Alberta Environment and Parks.

**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.