



Research and Technology



our challenge

Transitioning to a clean energy future takes time, significant financial investment and a shared commitment between government, industry and Albertans. It requires us to think beyond traditional methods and attitudes and accept that changes are necessary if Alberta is to remain a reliable, global energy provider.

our actions

Alberta is focusing expertise and money to find green and clean energy solutions through technology and research. The Conference Board of Canada states that over the next five years, more money (\$6.1 billion) will be invested in climate friendly technology in Alberta than all the other Canadian provinces combined.

success in innovation

- > The Alberta government, post-secondary institutions, industry and funding organizations are committed to working cooperatively to reduce the environmental impacts of energy development.
- > *Alberta Innovates* is the province's strategic hub for research and technology innovation.
 - It coordinates the efforts of agencies such as Alberta Innovates – Energy and Environmental Solutions, Alberta Innovates – Technology Futures, the province's post-secondary institutions that make up Campus Alberta and international collaborations.
 - All non-proprietary knowledge is shared to help speed up clean energy technology development worldwide.



HOME-GROWN ALBERTA TECHNOLOGY, SUCH AS WHAT IS USED IN STEAM-ASSISTED GRAVITY DRAINAGE (SAG-D), HAS HELPED THE OIL SANDS INDUSTRY ACCESS HARD-TO-REACH BITUMEN WITH LESS ENVIRONMENTAL IMPACT.

renewable energy

- > Alberta is pursuing renewable energy with its Bio Energy Plan. This \$150-million investment by the province has the potential to leverage up to \$2 billion in additional private investment.
- > Other renewable energy initiatives include:
 - Development of wind power – currently, Alberta is one of the leading provinces in Canada in this area, along with Ontario and Quebec
 - Integration of alternative energy sources such as geothermal energy to replace reliance on natural gas
 - Waste-to-energy and residue gasification initiatives
 - 100 per cent of the electricity used by provincial government buildings is purchased from renewable sources, mainly wind and biomass

clean energy technology

- > More than \$257 million has been collected for a clean energy technology fund, which will be invested to find better ways to cleanly develop resources.
 - Funds are administered through the Climate Change and Emissions Management Corporation and awarded to projects within the province.
- > Alberta has allocated \$32 million to support clean energy research being driven by the University of Alberta, including a \$25-million research partnership between the University and the Helmholtz Association of German Research Centres with an emphasis on the oil sands.
- > The Alberta government is investing \$25 million into Carbon Management Canada, a national, university-led research network housed at the University of Calgary that is developing insights, technologies and policies to reduce emissions in Canada's fossil fuel energy sector.

carbon capture and storage

- > The Alberta government has also committed \$2 billion to reduce GHG emissions in the energy sector through carbon capture and storage – a process that captures carbon dioxide emissions, transports and stores them in geological formations deep inside the earth.
- > Alberta has signed a grant agreement for the Alberta Carbon Trunk Line which will create a pipeline system to transport CO₂. Work is underway to finalize agreements for three additional projects that will:
 - Green oil sands supply at the upgrading stage (Quest Project)
 - Green electricity production at Alberta coal-fired electricity plants (Project Pioneer)
 - Produce clean energy with in-situ coal gasification (Swan Hills Synfuels Project)

oil sands research and partnerships

- > Research at the Centre for Oil Sands Innovation at the University of Alberta and the Alberta Ingenuity Centre for In Situ Energy at the University of Calgary focuses on less energy-intensive upgrading practices of oil sands resources.
- > New recovery technologies are funded through the Innovative Energy Technology Program, a \$200-million Alberta government royalty credit.
- > At the National Institute for Nanotechnology at the University of Alberta, nanotechnology is being used to explore and develop innovations that will accelerate improvements in the environmental performance of the energy sector.
- > The Government of Alberta is working with industry and researchers to develop new tailings performance criteria, management technologies and practical solutions to reduce and potentially eliminate tailings ponds as we know them today.
- > Research into improved in situ thermal extraction techniques will reduce – or eliminate – industry's reliance on fresh water, reduce energy consumption and lower greenhouse gas emissions.



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THE GOVERNMENT OF ALBERTA WORKS WITH INDUSTRY AND ACADEMIC RESEARCH PARTNERS TO FUND INNOVATIVE CLEAN ENERGY SOLUTIONS.