Powering AI: KALiNA's Near-Zero-Emissions Alberta Vision Links Natural Gas To AI

By Carter Haydu
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KALiNA Power Limited has bold ambitions for Alberta's energy future, planning low-emissions power plants to service data centres — giving natural gas producers a new market as power demand for artificial intelligence surges.

"We're talking with the major gas producers," **Ross MacLachlan**, managing director and chief executive officer, told *DOB Energy*. "They're starting to realize there will be a big shortage of power, and this is a great way for them to use their gas — to basically supply gas for these power plants."

Through its Canadian subsidiary, **KALiNA Distributed Power**, the Australian cleantech company is developing a portfolio of facilities in Alberta — combined-cycle power plants utilizing carbon capture and sequestration (CCS) for near-zero emissions energy. In February, the company signed a multi-year framework agreement with **Crusoe Energy** to co-develop AI-focused data centres alongside KALiNA's near-zero-emissions natural gas power plants.

"We're just really excited about this opportunity, especially being able to find all these things in Alberta — all the components that lead to successful energy infrastructure projects," said **Matthew Jenkins**, executive director, Canada. "The team is motivated. We're thrilled with our success to date. We're pushing hard through this year."

He added: “We met with Crusoe and established a really good relationship. That has evolved into this framework agreement, which gives us the ability to have a partner who’s extremely well recognized in the U.S., has connections through its investors and investing clients, and will give us long-term tenants — establishing that power purchase agreement framework that will really make these projects into true pieces of infrastructure.”

All sites will be located near critical infrastructure. Crusoe will own and operate the data centres, contracting power via long-term purchase agreements. Each 170-megawatt power-CCS plant represents gross unlevered capital expenditures of approximately $1 billion (around $640 million net of incentives).

“These data centres are really responding to the needs of [AI] — we know that — and the need for power,” said MacLachlan. “Literally, there aren’t many locations in North America that can handle the power requirements for the AI industry. However, Alberta is for sure one of those areas that can.”

In total, KALiNA is pursuing about 1.7 gigawatts of Power-CCS capacity across multiple sites in central Alberta, integrating CCS with low-emissions power generation, including at Clairmont, Alsike, Gilby, Myers and Crossfield.

Each site is strategically positioned near electrical infrastructure, natural gas pipelines and proposed CO2 sequestration hubs. The developments offer a scalable solution for natural gas producers while supporting growing energy demands.

The company has formally secured site control at two new locations at Crossfield and Clairmont through options to purchase until the end of 2027 and 2028. KALiNA will oversee the engineering, procurement and construction (EPC) provider for all projects, ensuring factors such as proper contracting and cost control. MacLachlan said: “We’ll have each of these projects constructed through an EPC fully wrapped deal, but we’ll manage that process.”

Incrementalized potential

KALiNA’s modular approach to data centres means its 170 MW power plant design can be incrementally scaled, noted the CEO. This flexibility allows companies to expand in stages, matching generated power access to growth needs. It addresses AI-driven demand without requiring immediate massive power plant commitments. “That’s a commercial aspect that’s often overlooked.”

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Smaller projects also offer advantages in equipment lead times, contracting and community impact, Jenkins added. Alberta’s grid supports flexible, incremental development, leveraging existing gas and carbon capture interconnections. This approach enables strategic expansion without overcommitting to any single location, allowing for the emergence of new growth opportunities across the province.

Co-siting AI data centres with near-zero emissions power plants is an attractive model as it ensures a dedicated, stable power source while avoiding strain and price volatility associated with the conventional grid, MacLachlan said. “Co-siting insulates the data centre from that degree of volatility and provides them with the certainty that a multibillion-dollar project data centre will require from their lenders.”

Project progressions

KALiNA currently has five sites in development. MacLachlan suggested that three have completed environmental studies and two are set for assessments post-thaw. All sites have electrical interconnection applications submitted, with gas access bidding planned for 2025. Rezoning is underway to ensure compliance with industrial use, positioning the projects for the next development stages. They are all designed to capture 95 per cent of CO2 emissions.

“By the fall of this year, we’ll have finished what we call our ‘prefeed,’” he said, adding KALiNA will have all its applications in for environmental and Alberta permitting before starting front-end engineering and design — the FEED work.

“That’s where the heavy lifting really starts to take place, and we’ll start that at the end of 2025.”

The 180-acre Clairmont site has the capacity for one 170 MW power CCS plant, while the 320-acre Crossfield site can accommodate at least three 170 MW plants. Usable acreage, electrical transmission details, natural gas availability and CO2 sequestration capacity influence capacity potential. The company has now assembled five secured projects representing a total of 785 acres.

Further, KALiNA has filed for electrical interconnection at Alsike, Myers and Crossfield to support data centre power needs and power generation, enabling on-site data centres and grid access for surplus electricity sales. At Gilby and Clairmont, KALiNA intends to sell electricity to the Alberta power pool or contract with off-site data centres through long-term purchase agreements.

Tolling matters

In August 2024, KALiNA announced executing multiple tolling memorandums of understanding with natural gas producers for its Alberta-based power plants featuring CO2 capture and sequestration. The non-binding MOUs outline a framework for commercial terms under which producers can convert natural gas into electricity and sequestration credits, helping reduce corporate emissions. The agreements cover 40,000 GJ/day of gas.

According to Jenkins, producers have responded positively to the growing role of natural gas in Alberta’s power market — including use in data centres. Efficient gas-fired plants were once seen as having minimal consumption impact, but rising demand from data centres has shifted that perception. Producers now view power generation as an attractive alternative sales channel, gaining a deeper understanding of Alberta’s evolving energy landscape.

“The demand of those data centres doesn’t ebb and flow. They’re running consistently,” he said. “So, the response to the market should be that there are more folks like us who are looking to partner with those data centres and be the self-supply centres so we don’t have all of that load being borne by the grid.”

Future opportunities

As AI advances, efficiencies will reduce energy needs per task, but overall demand will rise, MacLachlan said. Major technology firms, such as Microsoft and Google, see these efficiencies accelerating AI adoption rather than curbing power consumption, he added. With AI's rapid expansion, energy access will remain a primary constraint, reinforcing the need for scalable, reliable power solutions to support the industry's growth.

Last year, KALiNA signed an MOU with a U.S.-based data centre developer to build low-CO2 emissions projects in Alberta. KALiNA sees the partnership potentially unlocking a $75-$100 billion opportunity in the province. There are few locations in the U.S. that can handle gigawatt-scale power demands for AI-driven data centres, suggested the CEO, but Alberta is probably one of the best opportunities that anyone has identified for this AI challenge.

"We've been doing this now for several years, and so we're not coming to this party late in the day, jumping on a bandwagon. We've been looking at sites for this particular configuration now for four years, looking at dozens of locations across the province," MacLachlan added. "I'm hopeful that we can secure an additional couple of sites over the next year or so."

KALiNA is a cleantech company that also owns KALiNA Cycle, which efficiently takes low-temperature heat from industrial processes or geothermal resources and converts it into electricity. MacLachlan noted that there is potential to apply this technology to the company's Alberta assets in the future. "It would not be a major opportunity, but it would be something we'd look to add to the overall efficiencies of these projects."

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