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Alberta's AI Data Centre Workforce:

Skills, Talent, and Economic Opportunity

Research by

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Preface:

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ictc-ctic.ca info@ictc-ctic.ca

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- **Dave Murray**, Senior Advisor, Industry and Ecosystem Engagement, ICTC
- **Debjyoti Sen**, M.Sc, P.Eng, Director, Centres for Manufacturing and Energy Innovation, Red Deer Polytechnic
- **Joseph Marchand**, Professor of Economics, University of Alberta
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- **Coleman Rooksby**, Senior Data Center Specialist, University of Alberta
- **Colin Clish**, CEO, PointOne Data Centers
- **Dan Jolivet**, P.Eng., Senior Vice President, EllisDon Advanced Industrial & Technology, EllisDon Construction
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- **Travis Cummings**, Director of External Affairs and Marketing, Martin Energy Group
- **Tyler Engel**, Director, Partnerships, Avatar Innovations
- **W. Brad Spence**, Director of Training & Employment, George Gordon Developments Ltd.

Foreword



Anne Patterson
Chief Research and Communications Officer
Information and Communications Technology Council

Alberta's AI data centre ambitions are moving from strategy to a practical question of capacity: Who will build and operate this infrastructure, and how will the province prepare?

As investment interest grows and projects advance, the answer will depend as much on people and skills as it does on land, power, and physical infrastructure. Alberta enters this period with capabilities developed over decades in energy, industrial construction, engineering, skilled trades, and information and communications technology (ICT). These strengths are highly relevant to the construction and operation of large data centres and are central to the opportunity identified in the Government of Alberta's AI Data Centre Strategy.

This report examines what that opportunity could mean for Alberta workers. It was developed to give employers, post-secondary institutions, training providers, and workforce organizations a clearer view of the occupations and skills that may be needed as the industry grows—critical information now, as training systems take time to respond. Employers need qualified workers when construction begins and facilities come online. Educational institutions need sufficient lead time to adjust programs, develop partnerships, and expand training capacity. Workers need reliable information about where their existing experience is relevant and which additional skills will help them enter these careers.

For Alberta workers, the potential economic benefits are substantial. Data centre construction creates demand for electricians; pipefitters; plumbers; heating, ventilation, and air conditioning (HVAC) technicians; engineers; project managers; equipment installers; and commissioning specialists. Once facilities are operating, employment shifts toward a smaller, specialized workforce responsible for power and cooling systems, facility operations, networking, cybersecurity, maintenance, safety, security, and business operations.

ICTC's modelling estimates that just one 400 MW AI data centre could generate approximately $829 million in direct and indirect labour income for Alberta workers over its first 10 years. It could also support approximately 339 ongoing direct and indirect jobs each year once operational. The estimated average annual compensation for direct construction employment is about $87,000, which is approximately 94% above Alberta's median individual income of $44,900. For direct operational employment, estimated average compensation is approximately $94,000, or about 109% above the provincial median. Earnings will vary by occupation, experience, and specialization, but the findings indicate that data centre development could support well-paid skilled and technical careers.

Alberta has a strong base from which to meet this demand. Approximately 260,000 Albertans already work in construction and skilled-trades occupations relevant to data centre development, supported by substantial engineering, electrical, ICT, facilities, safety, and security workforces. Many workers understand complex power and mechanical systems, industrial safety, major project delivery, and the demands of keeping critical infrastructure operating reliably.

Alberta's key workforce obstacle is the limited number of people with direct experience in large AI data centre environments. These facilities bring together electrical systems, high-density cooling, servers, networks, automation, cybersecurity, and operational technology in an environment that

must remain online continuously. Employers need people with strong occupational expertise who also understand how their work connects with the rest of the facility.

ICTC's analysis of more than 4,800 Canadian data centre job postings reinforces the importance of experience. Among postings that specified an experience requirement, 81% asked for at least two years and 39% required six years or more. Employers also seek a combination of formal education, industry certifications, equipment knowledge, digital capabilities, and skills such as teamwork, communication, troubleshooting, sound decision-making, and attention to detail.

Meeting this demand will require a closer relationship between industry and Alberta's education and training system. Employers can expand apprenticeships, co-op placements, internships, practicums, equipment-based training, and other opportunities that give students and workers experience in real operating environments. Post-secondary institutions and training providers can develop accessible, employer-recognized programs in areas such as critical facility operations, high-density cooling, power systems, operational technology (OT) cybersecurity, and data centre infrastructure management.

These decisions must be informed by current labour market evidence. The report therefore recommends creating an Alberta AI data centre workforce observatory to track employment, occupational demand, emerging skills, training needs, and workforce gaps as the industry develops. A dedicated and continuing source of information would help employers anticipate hiring pressures, support decisions by educational institutions about programs and enrolment capacity, guide training providers toward emerging skills, and give workers a clearer view of where career opportunities are developing.

The pace of development will have a major influence on whether Alberta can meet this demand. Electricians, pipefitters, HVAC technicians, engineers, construction managers, and other workers needed by data centres are also required for energy projects, housing, utilities, hospitals, public transit, and other major infrastructure. There is no large reserve of experienced workers waiting to be hired if several major projects begin at once.

This report shows how quickly shortages could emerge. Under current labour supply assumptions, developing half of Alberta's proposed data centre capacity through a 10-year rollout could leave the province short approximately 666 construction and skilled-trades workers at peak demand. If 80% of proposed capacity moved forward under the same rollout, the potential gap could reach approximately 5,208 workers.

These scenarios are not forecasts of what will occur, but they illustrate the pressure that overlapping projects could place on Alberta's workforce. Competition for the same workers could increase project costs, delay construction, raise recruitment and retention pressures for local employers, and draw specialized talent away from other important infrastructure projects.

The findings present Alberta with a credible economic opportunity and a clear workforce challenge. The province already has many of the workers and capabilities required to support a growing data centre industry. Developing specialized experience, improving access to current labour market information, strengthening employer-education partnerships, and expanding practical training pathways will help more Albertans participate as demand emerges.

Alberta's physical infrastructure will shape where data centres can be built. Its workforce capacity will help determine how much of the resulting economic value is retained in the province through well-paid careers, stronger businesses, new skills, and lasting opportunities for Alberta workers and communities.

Anne Patterson
Chief Research and Communications Officer
Information and Communications Technology Council (ICTC)

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Executive Summary

The rapid rise of artificial intelligence (AI) has sparked a demand for data centres capable of supporting advanced computing for training and operating AI models. In Canada, Alberta is emerging as a focal point for AI data centre development. Recent proposed large-scale data centre investments suggest that AI data centres could become an important part of Alberta's future digital economy.

The province enjoys strong structural advantages, including vast energy resources and power generation, industrial land, existing telecommunications infrastructure, a competitive business environment, and a "pro-build" regulatory reputation. It also benefits from a skilled workforce experienced in energy development, heavy construction, and industrial engineering. However, the scale of this proposed development would require a significant volume of skilled labour to build and maintain these facilities.

This report examines the labour market impacts of Alberta's emerging AI data centre industry. Workforce and wage pressures, as well as skills shortages, could emerge if several major proposed data centre projects proceed simultaneously. While early stages would require a transient but large number of construction workers and skilled tradespeople, the operation and maintenance phase would require a smaller but more permanent group of specialized workers.

ICTC's research on Alberta's data centre labour market shows that AI data centres create two distinct workforce profiles:

1. **Development and construction phase:** The data centre development and construction phase generates the largest concentration of employment, requiring skilled trades such as electricians, plumbers, pipefitters, and mechanical and HVAC technicians, as well as electrical and mechanical engineers and electrical equipment technicians and installers.
2. **Operations and maintenance phase:** AI data centre facilities require a smaller but permanent and specialized workforce, focused on power and cooling systems, facility operations, ICT and networking, maintenance, physical security and cybersecurity, e-waste, and operational reliability. Automation may reduce some routine on-site work, but it will not eliminate the need for highly skilled and experienced workers who can maintain data centre uptime, carry out routine and preventative maintenance, and respond to complex technical incidents.

According to ICTC's workforce and economic impact model, a 400 MW AI data centre in Alberta could add roughly $6.8 billion to Alberta's gross domestic product (GDP) over 10 years. Depending on the methodology used, it would also support nearly 7,400 cumulative job-years over a three-year construction period, both in terms of direct and indirect employment. Once operational, the AI data centre facility would support an additional 339 permanent, ongoing jobs each year in operations and maintenance roles, also both direct and indirect.

The skills required to operate AI data centres cross traditional occupational boundaries. Data centre workers must understand how power, cooling, servers, networking, and security control systems interact. This requires stronger interdisciplinary training, apprenticeships, work-integrated learning (WIL), and close partnerships between employers, post-secondary institutions, and training providers.

Alberta has a strong foundation of transferable talent in oil and gas, heavy industrial construction, engineering, skilled trades, and ICT. However, the province has a limited pool of workers with direct experience in large-scale AI data centre environments. Thus, the main challenge is therefore not a generalized workforce, but rather a potential shortage of experienced workers who combine established qualifications with data-centre-specific domain knowledge.

The economic benefits of data centre investment may extend far beyond direct employment by supporting regional suppliers, infrastructure development, AI adoption, innovation, and overall productivity. Alberta is already home to numerous successful data centre technology start-ups. However, the downstream benefits are not automatic and will depend on whether local businesses, researchers, universities, and public institutions can access and use a portion of the new AI compute capacity.

AI data centre development in Alberta also presents opportunities for meaningful Indigenous economic participation. This can happen through employment, training, procurement and contracting, revenue sharing, and equity partnerships. Engagement with Indigenous communities should begin early and reflect the rights, priorities, capacity, and preferred forms of involvement of each affected community.

Indigenous participation can also strengthen Alberta's capacity to deliver this investment by expanding the workforce, supplier, infrastructure, and investment base available to the sector. Securing long-term benefits will require deliberate and formal procurement strategies, workforce development and training pathways, and opportunities for Indigenous businesses and communities to participate as suppliers, commercial partners, and asset owners.

To reach these conclusions, this report uses a mixed-methods research approach. It combines a labour and economic impact model with an analysis of Canadian data centre job postings. Additionally, the findings are shaped by feedback and insights gathered from two industry roundtables, 21 interviews with experts and industry leaders who have direct experience developing data centre infrastructure in Alberta, and an 11-member research advisory committee.

Key Takeaways

The opportunities: Alberta is well-positioned for AI data centre investment. It features abundant access to energy, open land, robust infrastructure, and a competitive business environment. This physical readiness is backed by a mature labour force with proven expertise in heavy engineering, construction, and advanced tech.

The economic and job impacts: A single 400 MW AI data centre could add roughly $6.8 billion to Alberta's GDP over 10 years. The facility could thus bring about 7,400 job-years, both direct and indirect, over the initial three-year construction period. Once fully operational, it could support an additional 339 permanent jobs in operations and maintenance each year during the remaining life of the project. Both GDP and employment figures could increase significantly if Alberta were successful in rolling out most of its planned 12,618 MW capacity.

Indigenous participation and economic reconciliation as strategic assets: Deeper Indigenous involvement can expand the province's workforce, supplier base, infrastructure partnerships, and investment capacity, while creating durable benefits for Indigenous communities through employment, procurement, equity participation, and ownership. Achieving this potential will require early co-design, formal workforce and supplier-development pathways, and meaningful opportunities for long-term economic participation.

The core challenge: In some scenario projections, the provincial labour market could experience shortages. Although Alberta does not lack skilled workers, it lacks people with specific AI data centre experience. Fully capturing the economic potential of AI data centres will require addressing a critical shortage of specialized talent across the construction and operational phases.

The evolution of skills: In addition to specialized talents, modern data centres require workers with hybrid skills who understand how power, cooling, IT, and security interact. Teamwork, troubleshooting, and broad system knowledge matter more than knowing just one trade.

Training gaps: To align workers with the specific needs of data centres, the province will need to invest in specialized education and training programs. Industry, post-secondaries, and energy planners will need to work together to build these learning pathways to coincide with upcoming project timelines and rising labour demands.

Other potential risks: Building multiple data centre projects at once could cause steep competition for talent. As demand spikes for roles such as electricians, HVAC techs, and ICT specialists, the competition it would bring could delay projects, raise costs, and draw critical workers away from regional energy, utility, and other major infrastructure projects.

List of Abbreviations

- **AI:** artificial intelligence
- **ACO:** Aboriginal Consultation Office
- **AESO:**Alberta Electric System Operator
- **AWS:** Amazon Web Services
- **CCNA:** Cisco Certified Network Associate
- **CFA:** chartered financial analyst
- **CIB:** Canada Infrastructure Bank
- **CISSP:** certified information systems security professional
- **CMMS:** computerized maintenance management system
- **CPA:** chartered professional accountant
- **CRM:** customer relationship management
- **DCIM:**data centre infrastructure management
- **DSCG:** Distributed Storage and Compute Grid
- **EPC:** engineering, procurement, and construction
- **ESG:** environmental, social, and governance
- **ERP:** enterprise resource planning
- **FTE:** full-time equivalent
- **GDP:** gross domestic product
- **GPU:** graphics processing unit
- **HR:** human resources
- **HVAC:**heating, ventilation, and air conditioning
- **ICT:** information and communications technology
- **ICTC:** Information and Communications Technology Council
- **I-O:** input-output
- **IT:** information technology
- **KII:** key informant interview
- **kVA:** kilovolt-ampere
- **LLM:** large language model
- **MW:** megawatt
- **NAIT:** Northern Alberta Institute of Technology
- **NILF:** not in labour force
- **NOC:** National Occupational Classification
- **OT:** operational technology
- **PMP:** Project Management Professional
- **SAIT:** Southern Alberta Institute of Technology
- **UPS:** uninterruptible power supply
- **VR/XR:** virtual/extended reality
- **WHMIS:** Workplace Hazardous Materials Information System
- **WIL:** work-integrated learning

Introduction

The global race to train and deploy advanced AI models has driven a historic build-out of data centre infrastructure across North America and around the world. In Canada, Alberta is quickly emerging as a focal point for AI data centre development. A single 400 MW AI data centre could add roughly $6.8 billion to Alberta's GDP over 10 years. This figure could increase significantly if Alberta were successful in rolling out most of its planned 12,618 MW capacity.

The province has several characteristics that may be attractive to developers. It combines abundant energy resources and industrial land, and a colder climate, which provides natural, cost-saving cooling for heat-producing servers. It also possesses a skilled workforce with deep, transferable expertise across the energy, engineering, construction, and ICT sectors, that is easily transferable to building and managing large-scale facilities.

While Alberta has a strong base of transferable skills across these occupations, it faces a distinct structural labour challenge. While general technical skills are plentiful, the province has a limited pool of specialized professionals. There are notable shortages of experienced data centre operators, specialized AI project engineers, service technicians, and senior cybersecurity professionals capable of managing large-scale infrastructure.

The employment impact of AI data centres is heavily concentrated in the construction phase. A modelled 400 MW facility could support approximately 7,400 cumulative job-years over a three-year construction period, alongside approximately 339 permanent jobs each year in operations and maintenance roles. This includes direct jobs associated with data centre construction and operations as well as indirect roles throughout the broader supply chain, based on per-MW employment intensity benchmarks calibrated to hyperscale facilities in this capacity range.

Labour market pressures could intensify rapidly if multiple large-scale data centre projects proceed concurrently and in a compressed time schedule plan. Overlapping or compressed construction schedules could generate intense demand for electricians, mechanical trades, pipefitters, HVAC specialists, data-cabling contractors, and experienced operators and commissioning technicians. Such localized competition could raise costs, delay projects, and draw workers away from energy, utilities, and other major infrastructure projects.

This report provides a comprehensive assessment of Alberta's AI data centre development and its subsequent workforce implications. The findings are derived from a mixed-methods research approach, including a labour and economic impact model and an analysis of Canadian data centre job postings. To ensure industry relevance and academic rigour, an 11-member advisory committee guided the research. Primary insights were gathered through two industry roundtables, and 21 qualitative interviews were conducted with prominent experts and data centre industry leaders with experience developing and operating data centre infrastructure in Alberta. The report concludes by identifying critical workforce gaps and outlining strategic pathways for Indigenous communities and businesses to participate in emerging AI data centre supply chains.

What is an AI Data Centre?



An AI data centre is a specialized, highly advanced facility designed to handle the intense processing demands of AI. Traditional data centres primarily support general cloud computing, web hosting, and standard enterprise applications. In contrast, AI data centres are purpose-built to train massive machine-learning models and run complex neural networks, which fundamentally changes how they are engineered and operated.[1] They are large-scale facilities that store and process digital data using integrated servers, networking, storage, power, and cooling systems, typically operated by telecommunications companies, technology firms, cloud providers, and government agencies.[2] Large AI data centres require immense amounts of reliable, uninterrupted power to operate, with the largest demanding the equivalent electricity needed to power an entire city.

1 IBM. August 12, 2026. What is an AI data centre? https://www.ibm.com/think/topics/ai-data-center.
2 Jia, Y. November 2024. Analysis of the impact of artificial intelligence on electricity consumption. IEEE Xplore. https://ieeexplore.ieee.org/document/10748289.

Alberta's AI Data Centre Industry

Key Takeaways:

1. While Alberta's data centre industry has historically been small and mainly focused on providing local ICT services throughout the province, it accounts for a significant share of proposed Canadian data centre capacity with an estimated 78% of planned data centre developments in the country and 92% of planned data centre capacity.
2. Alberta has several structural advantages for AI data centre development, including access to natural gas, power-generation capacity, ample industrial land, existing energy distribution and telecommunications infrastructure, competitive business conditions, and a workforce base with experience in energy, construction, engineering, and ICT.
3. The proposed scale of AI data centre investment is substantial, with major projects, such as the $13 billion Meta data centre in Sturgeon County, suggesting the province is well on its way to becoming a major focal point for AI data centre development.

AI Data Centre Development

Alberta is undergoing a major build-out of AI data centres, transforming the province into a primary focal point for Canada's digital infrastructure. Alberta has 12,618 MW of data centre capacity in its planning and development pipeline, dwarfing all other Canadian provinces.[3] Under this plan, the province accounts for 78% of Canada's data centre development pipeline and potentially 92% of future capacity by megawattage (Figure 1).[4]

This shift marks a dramatic change for Canada, where data centres have traditionally been concentrated in Ontario, Québec, and British Columbia.[5] Among the reasons tech companies are attracted to Alberta is that energy is the largest ongoing cost for these facilities, and Alberta offers unique regional advantages that keep power reliable and affordable.[6]

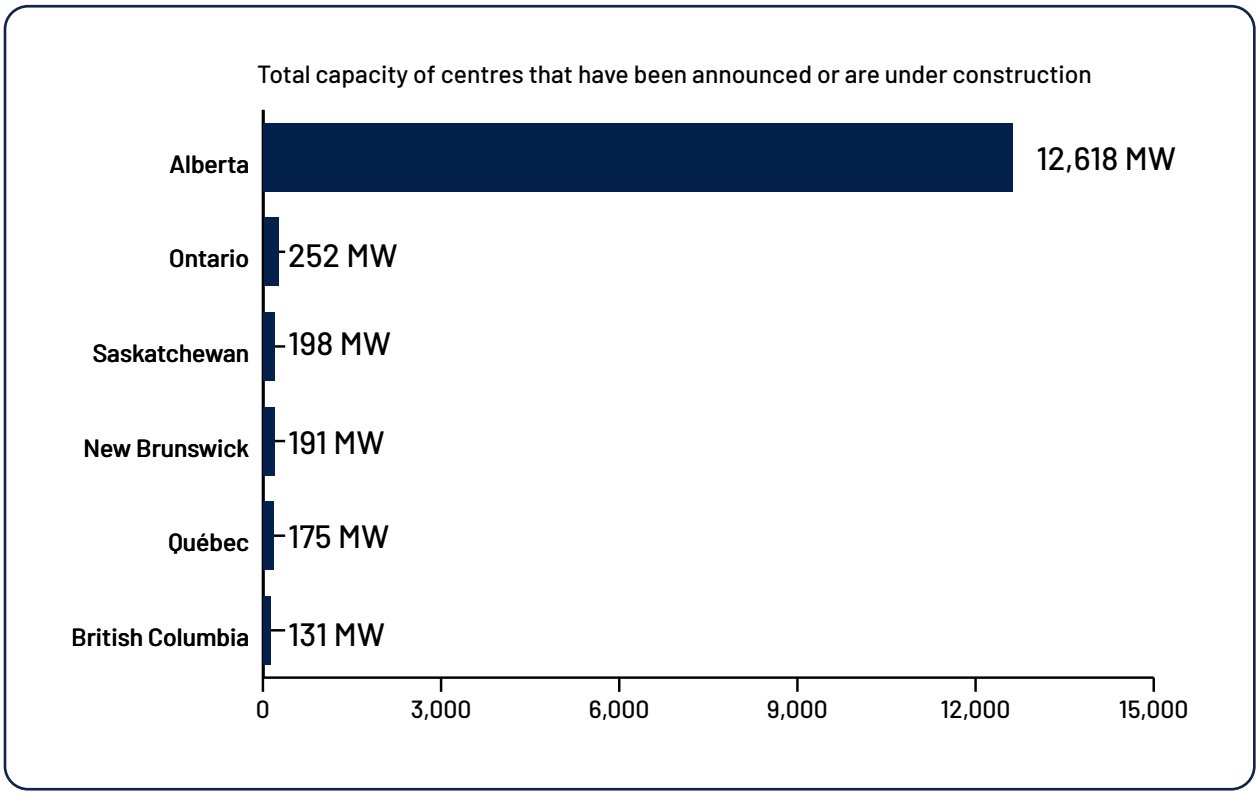
3 As the 12,600+ MW pipeline is massive, every proposed project must go through and pass a rigorous multi-stage regulatory process. Consequently, it is not yet clear how many of these projects will be approved and built in the end. For example, a 970 MW Meta project was approved, while a 1,400 MW project in Olds was recently rejected.

4 Alexander, C., and Rolheiser. L. 2026. Data centred: The shifting landscape of Canada's digital infrastructure. Schulich School of Business real assets research paper series, 12–13. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=6464099.

5 Canadian Energy Regulator. October 2, 2024. Market snapshot: Energy demand from data centers is steadily increasing, and AI development is a significant factor. https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2024/market-snapshot-energy-demand-from-data-centers-is-steadily-increasing-and-ai-development-is-a-significant-factor.html.

6 Michael, A. and Cottier, B. May 14, 2026. Servers account for 60% of the total cost of ownership of a one-gigawatt AI data center. Epoch AI. https://epoch.ai/data-insights/ai-datacenter-cost-breakdown.

Figure 1. Planned Data Centre Capacity (MW) in Canada by Province



Source: Adapted from York University, 2026, and CBC News, 2026.[7]

The province stands out globally due to its vast natural gas reserves and a highly flexible regulatory environment. Developers can use "behind-the-meter" power generation, which allows them to build private, on-site natural gas power plants rather than relying solely on the public grid. This setup gives data centres direct, cost-competitive access to electricity. Additionally, Alberta features a favourable business environment with low corporate taxes and a cool climate that provides natural cooling for rows of hot computer servers, significantly reducing energy waste and lowering operational expenses.[8]

The ongoing surge of investment in AI data centres in Alberta has produced a variety of large, high-profile AI data centre development initiatives throughout the province. While not all these proposed projects will necessarily be built, major recent announcements and proposals for new AI data centres highlight the scale and pace of new data centre development (Figure 2).

7 Alexander, C. and Rolheiser, L. 2026. Data centred: The shifting landscape of Canada's digital infrastructure. Schulich School of Business real assets research paper series, Figure 3 (a), 13. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=6464099.
Bakx, K., Young, N., and Ali, R. June 4, 2026. Supersized data centres are coming to Canada. One province is at the epicentre. CBC News. https://www.cbc.ca/news/business/bakx-york-ai-data-centres-alberta-solomon-9.7222388.

8 Alexander, C. and Rolheiser, L. 2026. Data centred: The shifting landscape of Canada's digital infrastructure. Schulich School of Business real assets research paper series. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=6464099.

Figure 2. Examples of High-Profile AI Data Centre Developments in Alberta

Project Name	Size (MW)	Location(s)	Investment/ Cost Estimate ($)
Beacon Chestermere AI Data Centre Hub	400	Chestermere	-
Beacon Foothills AI Data Centre Hub	400	Foothills County	4 billion
Beacon Harry Smith AI Data Centre Hub	-	Parkland County	-
Beacon Heartland AI Data Centre Hub	960	Sturgeon County	-
Beacon Indus Data Centre Hub	~1,500	Rocky View County	-
Beacon Saunders Lake AI Data Centre Hub	-	Leduc County	-
Bitdeer Crypto Mining Facility, Fox Creek	101	Fox Creek	214 million
Blindman Industrial Park AI Data Centre	-	Red Deer County	-
Clive Data Centre	~20	Lacombe County	-
Crusoe AI Data Centres Alberta	~510	Brazeau County, Red Deer County, Rocky View County	3 billion
eStruxture CAL-3 Data Centre	90	Rocky View County	750 million
Goldfinch Technology Park	-	Wheatland County	-
HubOne AI & BTC High Density Compute Park	750+	Wheatland County	-
Technologies New Energy & Data District Data Centres (Phase 1)	240	Calgary, Edmonton, Olds, Bonnyville	1.3 billion
K-Tech and Aurora AZ Energy Compute Facility	100	Calgary	-
Malachite One Data Centre	-	Yellowhead County	15 billion
Meta Data Centre	1,000	Sturgeon County	13 billion
Mihta Askiy Data Centre	650	Northern Sunrise County	-
Prairie Sky Data Solutions Strathmore Data Centre (Phase 1)	-	Strathmore	-
Wonder Valley AI Data Centre Park (Phase 1)	1,400	Municipal District of Greenview	12 billion

Source: Government of Alberta, Alberta Major Projects.[9]
Note: The table outlines AI data centres in the proposal or development stages (as of time of writing).

New large-scale investments and proposed projects include Meta's recent announcement of a $13 billion, 1-gigawatt AI data centre in Sturgeon County;[10] Beacon Data Centres' proposed Heartland and Indus Data Centre Hubs, located in the Edmonton and Calgary metro areas respectively;[11] and Technologies New Energy's development of four data centre projects to be located in Olds, Bonnyville, Calgary, and Edmonton.[12]

9 Government of Alberta. August 15, 2026. Alberta major projects. https://majorprojects.alberta.ca/.
10 Meta. July 8, 2026. Breaking ground on Meta's first data center in Canada. https://about.fb.com/news/2026/07/breaking-ground-on-metas-first-data-center-in-canada/.
11 Beacon Data Centres. August 15, 2026. Indus Data Centre Hub. https://beacondatacenters.com/indus-campus/.
Beacon Data Centres. August 15, 2026. Heartland Data Centre Hub. https://beacondatacenters.com/heartland-campus/.
12 Invest Alberta. December 15, 2025. Technologies New Energy unveils data centre deal in Alberta. https://investalberta.ca/technologies-new-energy-unveils-data-centre-deal-in-alberta/.

In addition to the proposed and under-development AI data centres listed in the Government of Alberta's major projects database, there are also further large-scale, yet-to-be-announced data centre projects, such as the 1,200 MW Newell Data Centre under consideration for Brooks, Alberta.[13] AI company Anthropic is also seeking to invest in AI compute capacity in Alberta.[14]

This significant investment and build-out of AI data centre infrastructure is being facilitated by a provincial government AI data centres strategy, which seeks to use the province's strategic advantages to guide significant private investment in data centre infrastructure in the coming years.

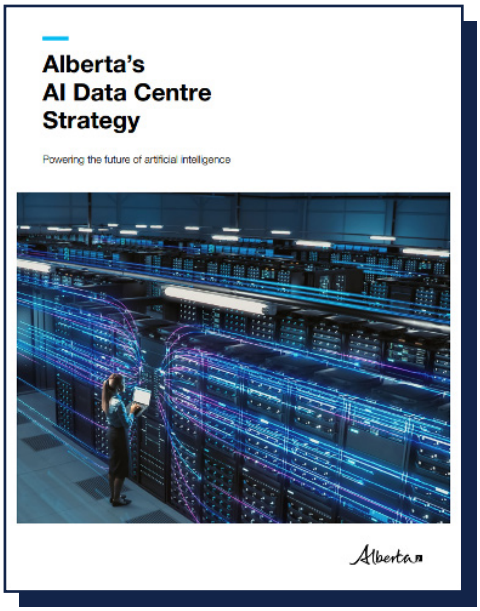
Alberta's AI Data Centre Strategy

In 2024, the Government of Alberta launched an AI data centre strategy[15] with a goal of attracting $100 billion in data centre investment over five years.[16] Alberta's strategy is built on the core pillars of power capacity and access, including off-grid and grid-connected energy; sustainable cooling, including leveraging Alberta's relatively cool climate and access to water resources; and a commitment to economic growth, with a competitive taxation policy and a collaborative approach to data centre investment.

The strategy seeks to leverage the province's advantages in natural resources, such as ample reserves of natural gas for power generation and a successful innovation economy to develop new data centre technologies, such as advanced cooling, as well as a pro-build regulatory environment.[17]

Alberta's approach to attracting data centre investment in the province includes offering an "AI data centre concierge program" to potential investors, collaborating closely with municipalities and expanding the province's technology and innovation base in critical fields such as AI. The strategy also highlights the importance of reconciliation and building partnerships with Indigenous communities.[18]

Figure 3. Alberta's Data Centre Strategy



Source: Government of Alberta, 2024.

13 Gallant, C. June 13, 2026. Brooks residents seek info on the data centre megaproject planned right next door. CBC News. https://www.cbc.ca/news/canada/calgary/brooks-residents-seek-info-on-the-data-centre-megaproject-planned-right-next-door-9.7233496.

14 Hemmadi, M. August 19, 2026. Anthropic wants to add "gigawatts" of AI compute in Canada. The Logic. https://thelogic.co/news/anthropic-hiring-staff-canada-ai-compute/.

15 Government of Alberta. August 11, 2026. Artificial intelligence data centres strategy. https://www.alberta.ca/artificial-intelligence-data-centres-strategy;

16 Mitham, P. July 24, 2026. Alberta eyes data centre dominance with five-year investment target. Western Investor, https://www.westerninvestor.com/british-columbia/alberta-eyes-data-centre-dominance-with-five-year-investment-target-12585548.
Farrell, J. December 4, 2024. Alberta tech minister wants $100B in AI data centre infrastructure built over next 5 years. CBC News. https://www.cbc.ca/news/canada/edmonton/alberta-ai-data-centres-1.7401602.

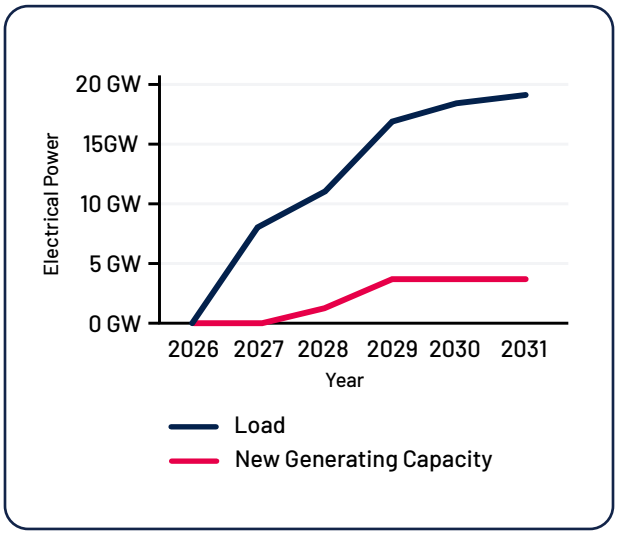
17 Government of Alberta. 2024. Artificial intelligence data centres strategy, 7–10. https://open.alberta.ca/dataset/f6fe5816-12ac-4ba6-805c-d0a0dd5aebf9/resource/26d62103-ff38-4310-a98f-ab4595a4af74/download/ti-albertas-ai-data-centre-strategy.pdf.

18 Ibid., 11.

AI Data Centre Electricity Demand and Energy Solutions

Electricity demand and capacity data from the Alberta Electric System Operator (AESO) shows that data centre energization requests are projected to vastly outpace the growth of generating capacity into the early 2030s (Figure 4).

Figure 4. Alberta Data Centre Load Demand Versus New Generating Capacity



Source: Adapted from AESO, 2025.[19]

Alberta does not have sufficient future grid capacity to meet the electricity needs of all its new data centres.[20] Because of this gap, most new AI data centre projects will likely require off-grid, "behind-the-meter" energy solutions.[21] This means data centres will have to run their own private micro-grids or enter into direct power purchase agreements with energy providers.

Building this new power infrastructure could generate additional investment and workforce demand, leading to more jobs and a higher demand for workers. Indigenous-owned and partnered energy projects may also form part of this emerging infrastructure landscape. Indigenous communities across Canada are increasingly participating as owners in renewable generation and other energy infrastructure, while ICTC research has identified community-led initiatives involving renewable energy and decentralized Indigenous-owned utilities.[22]

Since Alberta has significant natural gas reserves and pre-existing gas distribution pipeline infrastructure, these private power setups will likely be largely based on gas turbine technology, backed by renewables, fuel cells, and battery storage. Experts ICTC engaged for this study note that, while these data centres will produce their own power, they may still desire a grid connection as this would allow them to use the public grid as an emergency backup source or potentially sell any excess power generated into the public electricity market.

In the future, alternative energy sources that may offer behind-the-grid solutions to AI data centres could include geothermal energy and small modular reactor nuclear energy; though, neither of these energy solutions are available for the current build-out of AI data centres and are likely years away from potential deployment.[23]

19 Alberta Electric System Operator. September 26, 2025. AESO update on data centres. https://www.aeso.ca/grid/connecting-to-the-grid/process-updates/2025/data-centre-update/.

20 The 12600+ MW planned capacity discussed at the onset is roughly equal to Alberta's entire current electrical grid, which peaks at about 13,000 MW.

21 Alberta Electric System Operator. December 8, 2022. The behind the fence process. https://www.aeso.ca/assets/Uploads/BTF-Process-Quick-Reference-Guide.pdf.

22 Information and Communications Technology Council, First Nations Technology Council, and Engage Delaney. 2026. Shaping a digital future for Indigenous Peoples: Alberta labour market study. https://ictc-ctic.ca/reports/shaping-a-digital-future-for-indigenous-peoples.

23 Forecasted deplorability timelines of emerging energy solutions, such as geothermal and nuclear energy, fall well outside of current data centre development timelines; see: To, S(T). October 2025. Powering the digital economy: The data center dilemma. Asia Pacific Foundation of Canada, Figure 6, 15. https://www.asiapacific.ca/publication/powering-digital-economy-data-center-dilemma-APEC-2025.

AI Data Centre Development Cycle

An AI data centre goes through a multi-phase lifecycle, each requiring a skilled workforce to design, build, and run the facility and, eventually, decommission it. The process begins with the planning and development phase. During this time, operators select a site, consult with the community, and complete environmental assessments. They also secure financing, get permits, coordinate with energy and utility providers, and procure power, cooling, and ICT equipment from suppliers. From there, the data centre moves into the construction phase where a site is prepared, and the physical buildings and infrastructure are constructed. Technicians install critical power, cooling, and computer systems. Some large data centres also build their own dedicated power sources, like gas turbines or solar panels, which may be managed by the operator or an outside energy company.

From there, the data centre moves into its longer-term operational and maintenance phase. In this phase, a long-term workforce of employees working directly in the data centre carry out roles such as operating and maintaining power, ICT systems, and cooling systems; doing customer service and logistical tasks; and maintaining data centre uptime. Outside contractors also provide key support during this phase, handling tasks like cybersecurity, site security of the buildings and other facilities, and electrical and mechanical maintenance.

Finally, at the end of its operational lifecycle, the data centre enters the decommissioning phase. This stage requires a specialized technical workforce to safely power down infrastructure, securely wipe and destroy sensitive data storage drives, and dismantle thousands of heavy GPU server racks. Specialized teams must also responsibly recycle high-value electronic components, drain liquid-cooling systems, and either repurpose the physical building structure or safely restore the land site for future development.

Large-scale data centres may also have dedicated power supply, such as dedicated electricity-generating infrastructure like gas turbine engines and renewable energy infrastructure. Dedicated power generation may be carried out directly by the data centre operator or by a third-party energy provider. Figure 5 outlines four data centre lifecycle phases and the main activities involved.

Figure 5. Data Centre Development and Main Activities

Lifecycle Phase	Main Activities
1. Planning and development	Early-stage roles related to site selection, permitting and approvals, design, utility coordination and power planning, community engagement, financing, and project management.
2. Construction	The largest short-term employment phase, involving site preparation, skilled trades, engineering, equipment and systems installation, logistics, safety, and commissioning.
3. Operations and maintenance	A longer-term workforce focused on facility operations, power and cooling systems, ICT, maintenance, cyber/physical security, customer service and support, and uptime and operational reliability.
4. Decommissioning	The final lifecycle phase involving hardware asset recovery, e-waste recycling, and infrastructure dismantling or site retrofitting for future use.

Economic and Employment Impacts

Key Takeaways:

1. The potential pace of data centre build-out in Alberta could generate a significant boost to provincial GDP over a ten-year period under both moderate and aggressive capacity build-out scenarios. Additionally, the data centre industry boasts exceptional labour productivity, generating steady economic value during construction and surging to even higher levels once facilities transition to full operation.
2. AI data centres create different workforce demands across their lifecycles, with the project development and construction stages generating the largest spike in transitory workforce demand, while operations and ongoing maintenance require a smaller but specialized long-term workforce focused on data centre operations, power and cooling systems, ICT, maintenance, and site security.
3. If 50% to 80% of the planned large-scale AI data centre projects were to be built simultaneously over 10 years, the rapid spike in labour demand could outpace, in certain situations, the available supply, resulting in labour shortages across certain occupations. Compressed timelines would amplify these challenges.
4. If multiple proposed AI data centre projects were to launch simultaneously, there are concerns that they could compete directly with critical provincial infrastructure—such as hospitals, public transit lines, and oil and gas installations—for the same limited pool of skilled workers and engineers, risking severe market tightening and the displacement of essential talent from existing local developments.

Measuring the total economic and employment impact of Alberta's data centre boom rests on several critical considerations, most notably the dual factors of project quantity and construction timing. Because these large-scale builds require massive, concentrated workforces during construction but highly automated, leaner teams once operational, the overlapping schedule of multiple projects will ultimately dictate the peak and long-term stability of local job creation.

Because the massive 12,600+ MW pipeline represents proposed concepts rather than guaranteed facilities, the impact on both GDP and employment depends heavily on the exact number of projects that would successfully clear the strict regulatory gauntlet and get built. Furthermore, the pace at which these approved data centres are rolled out will also dictate the nature of local job creation. A rapid, simultaneous surge in development could create an immediate, overwhelming demand for thousands of specialized construction workers and tech technicians, whereas a slower, phased timeline would provide steady, long-term employment that allows local supply chains and municipal infrastructure to adapt gradually without sparking labour shortages.

Data centres are highly complex construction projects that require specialized electrical systems, backup power generation, cooling equipment, fibre connectivity, security systems, and extensive utility infrastructure. This complexity creates demand for a broad range of skilled-trades and construction professionals, including electricians, mechanical and HVAC technicians, concrete specialists, plumbers, pipefitters, project managers, and engineers.[24] Because of this unique complexity, workforce planners must carefully distinguish between the construction phase and the operational phase. The construction phase would create a huge but temporary spike in employment for skilled tradespeople and construction roles. In contrast, operating and maintaining the completed facility requires a much smaller, permanent crew to handle daily maintenance and technical operations.

Alberta's training and labour market response will need to address both needs simultaneously. Workforce planning cannot focus only on the short-term rush of construction and tradespeople needed to build the data centres. It must also prepare a steady pipeline of specialized technicians and supporting staff who can maintain and secure these advanced computing environments over decades.

The Estimated Economic and Employment Impact of Building and Operating Data Centres

Measuring the economic and employment impact of data centres depends on several factors. Chief among these variables are the size, quantity, and timing of the proposed developments. The analysis will consider these three factors.

The physical and electrical size of a facility determines its initial capital investment, with massive large-scale developments demanding billions of dollars in specialized infrastructure compared to smaller local centres. In economic and market research literature, data centres are classified into low, medium, and large tiers by their maximum IT load capacity measured in megawatts (MW):

- **Low (small) size:** Under 5 MW. These facilities generally handle localized workloads or "edge" computing closer to end-users. They typically host standard enterprise infrastructure for a single company's internal needs or local retail co-location.
- **Medium size:** 5 to 20 MW. These data centres primarily serve regional co-location demand, where multiple companies share or rent server space. Operators in this category often use phased expansions to add power slowly as client demand grows.
- **Large (hyperscale/mega) size:** 20 to 100+ MW. Facilities exceeding 20 MW are characteristic of major cloud and AI operators like Microsoft, Google, or Meta. The largest facilities in this tier, often called hyperscale or AI-ready, can scale past 100 MW up to massive gigawatt-scale campuses to train heavy AI models.

Because most of the pipeline of current and planned AI data centres in Alberta are exceptionally large, averaging roughly 580 MW per facility, this study focuses exclusively on the hyperscale segment. To simplify the data analysis and clarify the final interpretations, a standardized 400 MW capacity is established as the primary baseline point of reference. While some proposed projects in Alberta are much larger, a 400 MW facility is a substantial and globally common size for AI model training, AI inference, and cloud computing. To put its size into perspective, the International Energy Agency notes that a data centre facility of this scale consumes as much electricity annually as roughly 400,000 households.[25]

24 Associated General Contractors of America. July 22, 2026. Data centers: Economic impact. https://www.agc.org/datacenters/economic.
25 International Energy Agency. August 5, 2026. Artificial intelligence: A transformative technology with important implications for energy. https://www.iea.org/topics/artificial-intelligence.

The quantity of data centres built also has an impact. As discussed, the province's massive MW pipeline represents speculative proposals rather than guaranteed builds. The actual economic windfall consequently depends entirely on the quantity of projects that successfully clear regulatory hurdles. Finally, time dictates how these impacts will be felt across the province. A rapid, condensed construction timeline can create immediate labour shortages and strain supply chains, whereas a gradual, phased rollout ensures steady, long-term employment and stable revenue growth for local communities.

Emphasizing large, hyperscale data centres, the analysis considers factors across quantity and time. For uncertainty, the study assesses quantity based on a 50% and 80% completion rate of the 12,618 MW of data centre capacity in its planning queue. It then deals with the time factor using a condensed (five years) and medium rollout scenario (10 years).

Data Centre Construction Labour Demand Peaks

An interviewee from the Canadian construction sector with significant data centre development experience noted that the sheer scale of these projects dramatically shapes labour needs, though the relationship between size and workforce numbers is not always identical. For instance:

- **Modest data centre construction projects (50 MW):** Can peak at more than 500 on-site workers, which typically includes around 220 electricians and 43 mechanical workers.
- **Large data centre construction projects (200 MW):** Can peak at roughly 1,100 workers, including about 650 electricians and 250 mechanical workers.
- **Massive data centre construction projects (400 MW+):** Can peak at approximately 1,800 workers, requiring between 1,000 and 1,100 electricians alongside 350 to 400 mechanical workers.

Accelerated timelines can distort these numbers even further. For instance, a highly compressed 300 MW project may require a peak workforce of 2,000 workers on-site, including 900 electricians and 500 mechanical workers. This suggests that rushing a schedule could intensify labour strain by forcing more construction and tradespeople to work on-site at the same time. Ultimately, the exact mix and timing of the workforce would depend heavily on the project's scale and how aggressive the construction deadline is. Each data centre project built would also have its own workforce profile.

Estimated Economic Impact

To quantify the total provincial value of digital infrastructure development, this section evaluates the comprehensive economic footprint of a benchmark 400 MW AI data centre asset in Alberta. Large-scale digital infrastructure projects serve as major economic catalysts, generating substantial financial returns and employment opportunities well beyond the immediate facility perimeter. By isolating the distinct phases of capital investment and steady-state operations, this analysis provides provincial planners with an estimated baseline of wealth and job creation.

Because the scale of this sector depends on evolving market conditions, modelling must consider the speculative nature of proposed industry pipelines. While official announcements have cited an aggregate development pipeline of over 12,618 MW

in planned data centre capacity across Alberta, historical project completion rates demonstrate however that not all proposed developments will successfully advance through regulatory approvals, grid connection, and construction. To ensure a realistic and risk-adjusted outlook for Alberta, this study models economic impact across three project completion scenarios (Figure 6).

Figure 6. Data Centre Project Completion Rate Scenarios

Scenario	Project Completion Rate	Total Capacity (MW)
High demand	80%+	10,094
Medium demand	50%	6,309
Low demand	20%	2,524

Evaluating these benefits requires an analytical framework that captures both the short-term stimulus of initial capital deployment and the long-term wealth generated by ongoing daily operations. Using Statistics Canada's provincial economic formulas, which apply a value-added GDP framework, the model isolates net wealth creation across the provincial supply chain.

ICTC estimated the total economic impact of building and operating a 400 MW AI data centre in Alberta. Assuming a $4 billion initial construction investment, ICTC analyzed a hypothetical 10-year timeline running from 2027 to 2036. This timeline includes a three-year construction window followed by seven years of steady-state operations.

To map out the full financial benefits, the study looked at three layers of economic impact: direct, indirect, and induced. Importantly, a data centre generates two GDP figures that should be presented separately. The building phase produces a large but one-time boost to GDP, concentrated in the construction years, while the operations phase produces a smaller but recurring annual contribution for as long as the facility operates. Reporting them separately avoids the error of presenting a large construction-year total as if it were a permanent, yearly addition to the economy.

What the GDP Figure Counts

The total impact on GDP is the combined value added, direct and indirect, plus induced, that a data centre contributes to the economy. When a report states a data centre's total GDP, it combines three layers of economic activity (direct, indirect, and induced) into a single dollar figure that represents how much the project adds to the economy's overall output as a result of building the project and operating it in the long term.

Total GDP measures value-add—the new economic value created at each stage of production—not total sales or spending. When a data centre spends $1 million on servers, GDP counts only the value each business adds along the way, not the full sale re-counted at every step. Consequently, a project's GDP contribution can be smaller than its headline spending or "output," and it is the more accurate measure of the project's true economic weight.

The total GDP impact sums the value added at all three layers: the direct value created at the facility, the indirect value created along its supply chain, and the induced value created as wages are re-spent in the local community. The relationship between the total and the direct contribution alone is expressed as a GDP multiplier; for example, every $1 of direct GDP may support some larger amount of total GDP once the supply-chain and spending ripples are included.

Figure 7. 400 MW Data Centre in Alberta, GDP Contribution ($M)

	Direct	Indirect	Induced	Total
Construction (2027–2029, cumulative)	$1,956	$644	$552	$3,152
Operations and maintenance (2030–2036, annual)	$320	$104	$88	$512

Source: Statistics Canada, Table 36-10-0595; ICTC Analysis.

In 2025, the total GDP of Alberta was $361 billion.[26] Based on the study's estimates, a single 400 MW data centre facility would make a significant contribution to Alberta's GDP. This economic boost would span the initial building phase and the subsequent years of steady running and would amount to an estimated $6.8 billion to Alberta's GDP over 10 years.

As illustrated in Figure 7, the financial benefits would be split across two phases:

- **The construction phase:** This three-year period generates a one-time total of $3.1 billion in direct, indirect, and induced economic activity.
- **The operational and maintenance phase:** Once active, the facility injects roughly $512 million annually into the economy over its first seven years of operation, combining direct facility impact with supply chain and induced local spending.

The economic model reveals that more than 60% of the financial value during construction and operations is generated directly by the builders and the data centre operator. The remaining 40% comes from indirect and induced ripple effects. These benefits flow to supply chain companies like equipment vendors and energy producers, as well as local shops and services. The model indicates that a portion of the economic impact would occur through supply chain and induced activity beyond the facility.

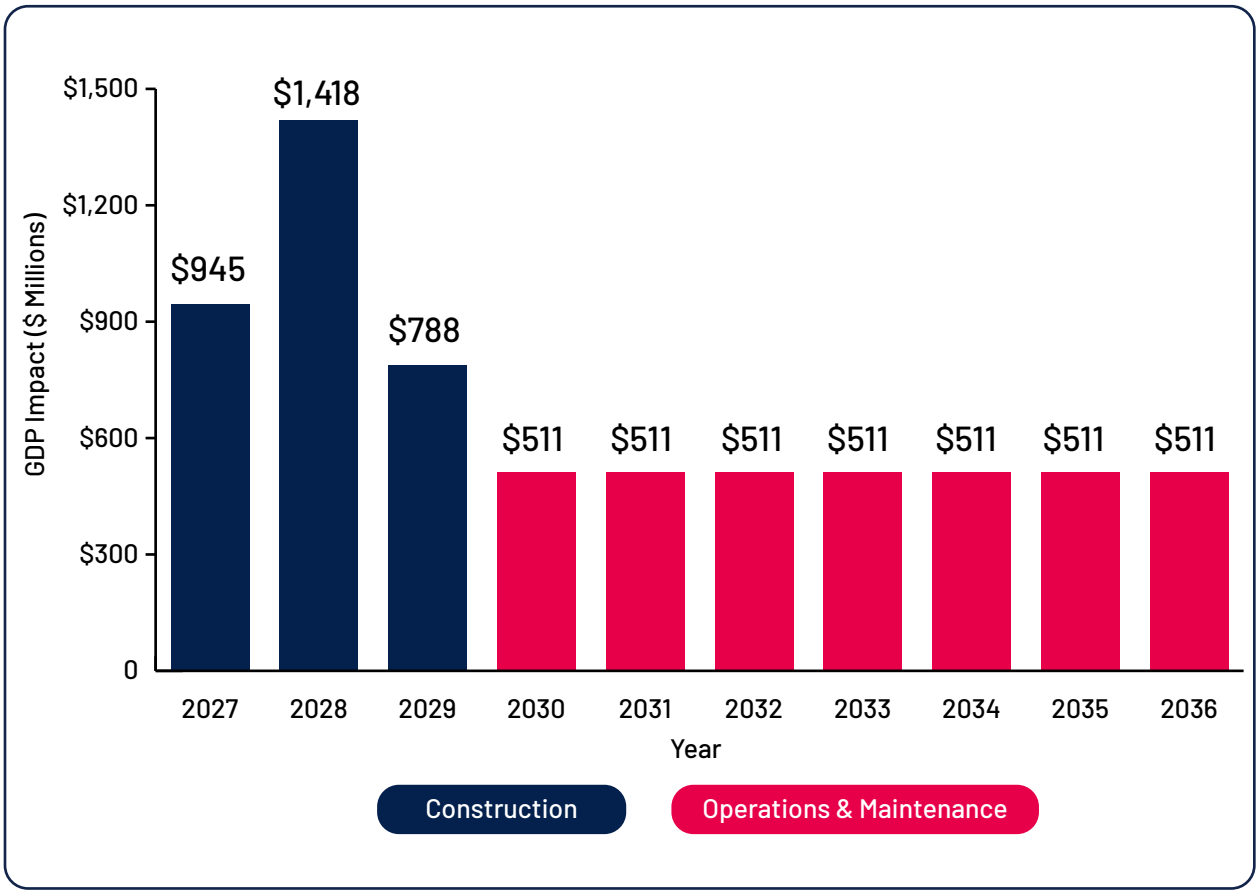
A data centre project's contribution to GDP changes drastically depending on its life cycle. For instance, the initial three-year building phase creates the largest spike in financial activity, moving through the following stages:

- **Year 1:** Generates $945.3 million as construction gets underway.
- **Year 2:** Peaks at $1,418 million during the height of building activity.
- **Year 3:** Decreases to $787.8 million as construction wraps up.

Once the facility is completed and goes online, the economic impact shifts into a stable, longer-term pattern. Over the next seven years of operation, the data centre would achieve a steady state, injecting a reliable $510.6 million annually into Alberta's GDP, as shown in Figure 8.

26 Statistics Canada. May 1, 2026. Table 36-10-0711-01. https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610071101.

Figure 8. Annual GDP Impact by Phase, 400 MW Alberta AI Data Centre (2027–2036)



Source: Statistics Canada, Table 36-10-0595; ICTC Analysis.

To illustrate the broader economic potential of digital infrastructure scaling, the model extends its analysis from the 400 MW benchmark facility to the broader provincial pipeline. Under the mid-growth scenario, which assumes the successful deployment of a cumulative 6,309 MW of data centre capacity over 10 years with construction phased over a five-year rollout, Alberta would realize an estimated $74.1 billion in total gross value-added economic activity, reflected as GDP.

This economic growth is composed of an estimated $40.9 billion in one-time GDP generated during the construction phase and $33.1 billion in GDP generated during the operations phase over the remaining years of the 10-year window as facilities progressively come online, reaching a steady-state contribution of approximately $6.6 billion annually when the full 6,309 MW is operational.

This immense injection of capital would be distributed across the provincial economy, providing a massive, multi-year lift to the civil construction supply chain during the build phase and establishing a highly lucrative, recurring tax and operational revenue base when the facilities go live.

Under a high-growth scenario where development accelerates to capture 80% of the entire planned pipeline, capacity would reach its maximum estimated threshold of 10,094 MW. In this aggressive expansion model, the total macroeconomic footprint would scale up to a projected $118.5 billion in provincial GDP over the 10-year period, assuming the same five-year phased construction rollout.

Figure 9. Labour Income from a 400 MW Alberta AI Data Centre ($M)

	Direct	Indirect	Total
Construction (2027–2029, cumulative)	$429.2	$192.4	$621.6 (cumulative)
Operations and maintenance (2030–2036, annual)	$21.2	$8.4	$29.6 (annual)
Total over the period			$828.8

Source: Statistics Canada, Table 36-10-0595; ICTC Analysis.

This is composed of an estimated $65.5 billion in one-time GDP generated during the construction phase, and $53.0 billion in GDP generated during the operations phase as facilities progressively come online, reaching a steady-state contribution of approximately $10.6 billion annually once the full 10,094 MW is operational. This figure represents the wealth generation possible if capital deployment proceeds at pace across all proposed sites in the province's planning horizon.

However, this high-growth projection relies on the critical economic assumption that Alberta's energy infrastructure, supply chains, and skilled-trades and construction workforce can absorb this volume of activity within a five-year construction rollout without encountering severe structural roadblocks. Because of constraints, such as grid capacity limitations, localized supply chain bottlenecks, or acute shortages in specialized engineering and electrical trades, as identified in this study's labour gap analysis, scaling to this magnitude within such a compressed timeframe could remain a significant operational challenge that could diminish these projected macroeconomic returns or require a longer rollout horizon to achieve without labour market disruption.

Beyond the aggregate macroeconomic yields, the deployment of digital infrastructure delivers a direct, high-value financial return to the provincial workforce. Over its 10-year lifecycle, a single 400 MW AI data centre is projected to generate $621.6 million in direct and indirect labour income during construction. Once the facility opens, it continues to inject $29.6 million in wages annually into the local economy over its first seven years of operations, as shown in Figure 9.

A single 400 MW facility could drive just under $828.8 million in estimated earnings straight to Alberta workers over its 10-year lifecycle. The financial breakdown of this workforce compensation highlights the scale of both the initial development investment and the subsequent steady-state operational commitments.

The structural quality of these jobs is further underscored by their competitive compensation profiles, which consistently outperform regional baselines. Most data centre occupations require specialized technical qualifications, rigorous safety certifications, and advanced engineering experience. While individual salaries naturally vary based on a worker's role, seniority, and

specialization, ICTC's economic impact model suggests that average pay rates remain high across both phases:

- **Construction jobs:** Labour compensation averages approximately $87,000 for direct employment and $78,000 for indirect employment per year for tradespeople, field engineers, and project managers during the initial three-year building window.
- **Operational roles:** Compensation averages approximately $94,000 for direct employment and $74,000 for indirect employment per year for the permanent technical and facilities staff managing the data centre once it is running.

The modelled average wages for these occupations greatly exceed Alberta's average individual income of $64,400 (2024).[27]

Labour productivity in Alberta's data centre sector exhibits a dramatic shift when transitioning from the initial build-out to long-term operations (Figure 10). During the intensive three-year construction phase (2027–2029), the sector could generate a cumulative $2,600 million in GDP over 14 million total hours worked, yielding a solid structural productivity rate of $180.86 per hour. However, once the facilities enter steady-state operations in 2030 and beyond, labour productivity could potentially surge to $708.68 per hour, with a lean footprint of just 339 full-time equivalent positions generating $421 million in annual GDP.[28]

This massive disparity underscores the highly automated, capital-intensive nature of operational data centres, where a small, specialized workforce leverages advanced technology to deliver exceptionally high economic output per hour worked. For comparison, the mining, quarrying, and oil and gas extraction sector and real estate, rental, and leasing sector in Alberta had a labour productivity of $222.30 and $476.10, respectively.[29]

Figure 10. Labour Productivity for 400 MW Data Centre (direct + indirect)

	GDP ($M)	Job-Years / FTE	Total Hours	Productivity ($/hour)
Construction (cumulative, 2027–2029)	$2,600	7,392	14,375,962	$180.86
Operations (annual, steady state, 2030+)	$421	339	594,064	$708.68

Source: Statistics Canada, Table: 36-10-0713-01 for hours and productivity.

27 Statistics Canada. April 29, 2026. Income of individuals by age group, gender and income source, Canada, provinces and selected census metropolitan areas, Table: 11-10-0239-01. https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1110023901.

28 These high figures reflect that a 400-MW data centre requires fewer workers per MW. The increase in scale reduces the labour intensity and, consequently, increases the productivity estimate.

29 Statistics Canada. June 26, 2026. Table 36-10-0713-01. https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610071301.

Estimated Employment Impact

The labour market footprint of a major infrastructure project like a data centre is highly dynamic and evolves distinctly across its lifecycle. It begins with an intensive, short-term development surge during the initial build-out and eventually settles into a permanent, highly automated operational baseline.

Accurately capturing this transition is critical for regional planners evaluating grid allocations, tax incentives, and community impacts. To measure and project these complex employment dynamics, economists and industry analysts rely on different analytical frameworks, which can lead to vastly different projections. Understanding the divergence between methodologies is essential, as the choice of analytical model directly shapes how benefits are calculated and how workforce development strategies are deployed.

Three Layers of Employment Impact: Direct, Indirect, and Induced

Employment impact studies categorize job creation into three areas: direct, indirect, and induced effects. Measured separately, these three areas capture the total provincial employment footprint of a major infrastructure project, such as a data centre. Together, they make up the project's total employment impact.

Direct jobs: They represent the immediate jobs created directly at the facility across both project phases. During the building phase, this means the skilled tradespeople, engineers, and project managers who construct the site. During daily operations, it includes the permanent, ongoing workforce required for daily management, such as IT technicians, security, facilities management, and administrative staff.

Indirect jobs: To build and run a data centre, the project operator's procurement of goods and services buys from many other businesses, and those purchases support employment activity further down the supply chain. This includes equipment vendors, engineering and design consultants, material suppliers, electrical and mechanical contractors, and, once the facility is running, energy producers and utilities. Each of those suppliers draws on its own suppliers, extending the ripple outward.

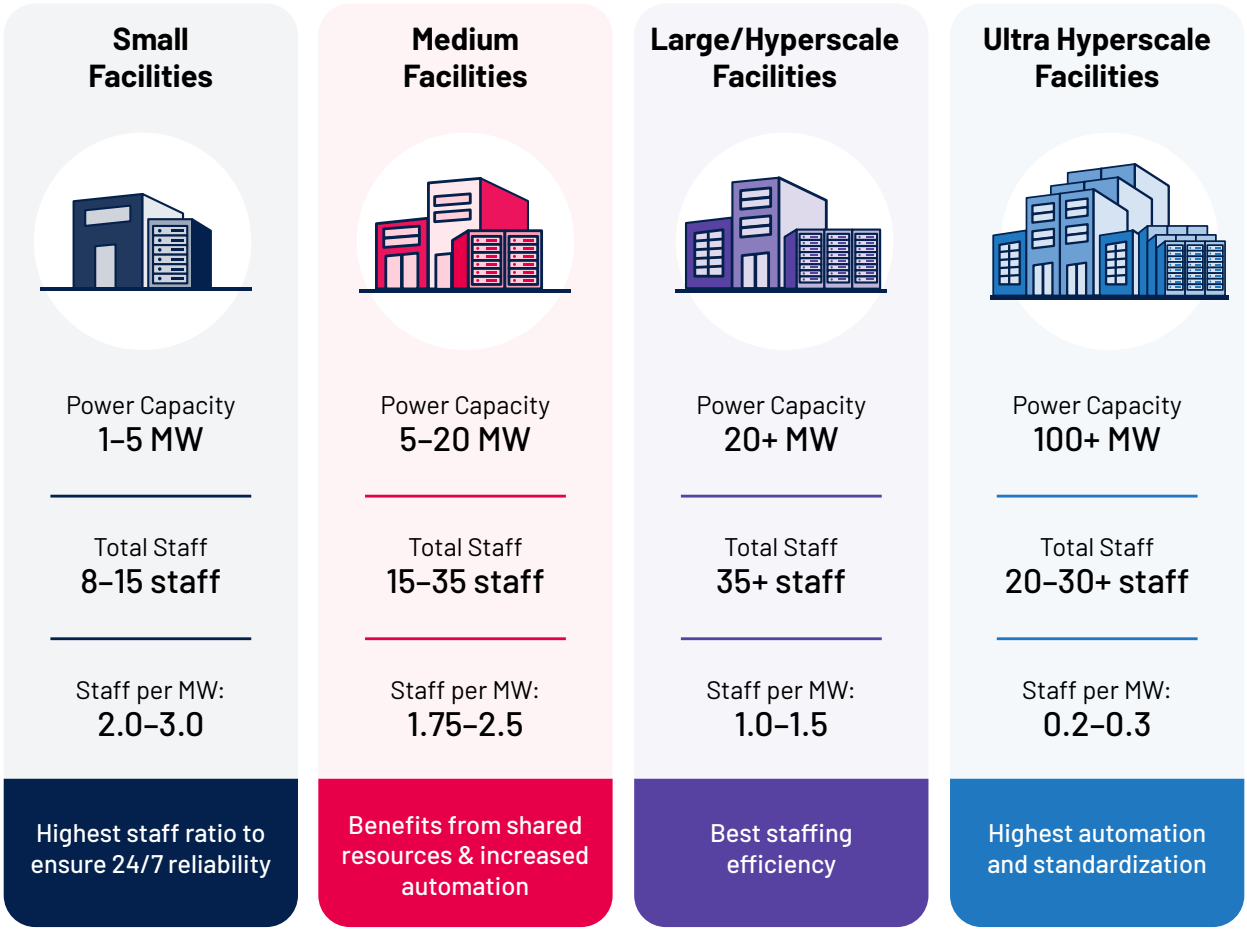
Induced jobs: These are the adjacent economic activity sparked when workers spend their earnings through the broader local economy. In doing so, they support jobs in restaurants, shops, housing, and neighbourhood services, which support further jobs and income in those sectors.

One prevalent framework uses traditional input-output (I-O) models. This macroeconomic approach traces how initial capital expenditures ripple through the broader economy, calculating not only direct on-site jobs but also indirect supply chain employment and induced jobs supported by worker spending. While I-O models offer a holistic view of regional economic stimulation, they can sometimes overstate long-term local employment if the specialized tech talent or equipment must be imported from outside the immediate region.

Alternatively, analysts frequently employ a capacity-based metric, estimating employment effects through a standardized jobs-per-MW ratio (Figure 11). This approach bypasses broader macroeconomic multipliers to focus strictly on the physical scale and power capacity of the data centre, offering a standardized baseline for comparing technology infrastructure across different jurisdictions.

While capacity-based scaling can oversimplify reality by failing to account for regional supply chain integration or variations between hyperscale facilities and multi-tenant co-location centres, it is a widely used methodology across industry to estimate employment at the facility level, especially during the operation and maintenance phase. It is also commonly used in the energy field, particularly in sectors such as oil and gas and renewables.

Figure 11. Comparing Data Centre Staffing Allocations by Facility Size



Source: Adapted from iRecruit.co.[30]

30 iRecruit.co. September 1, 2026. Data center staffing ratios: How many people per MW you actually need in 2026. https://www.irecruit.co/insights/data-center-staffing-ratios-people-per-mw-2026.

Figure 12. Alberta Data Centre Staffing Multipliers

Scale	Example Alberta Data Centres Projects	Construction Workers/MW	Operations Workers/MW
Medium/Large (20–240 MW)	Clive, eStruxture, Bitdeer, K-Tech	8.0–12.0	1.0–2.0
Hyperscale (400–1,500 MW)	Beacon, Crusoe, Mihta Askiy, HubOne, Meta, Wonder Valley	3.0–5.0	0.4–0.7

Source: Construction and operations workforce intensity ratios are derived from Chmura Economics & Analytics, Vantage Data Centers, Data Center Map; ICTC Analysis.[31]

While there are variations in multipliers across North American studies, the multipliers chosen for this study are derived from estimations based on Alberta-based data centres. They also have been estimated separately for construction and operations (Figure 12).

Based on the approach described above, a single 400 MW data centre, which would be the average size planned in Alberta, would have a measured job capacity of 4.0/MW for construction and 0.55 for operation and maintenance (Figure 13). It would generate 7,392 job-years (direct and indirect) during the construction phase and 339 ongoing jobs annually in operation and maintenance at peak capacity once the data centre goes online.[32]

Figure 13. Single Data Centre 400MW, Three Years Construction (job-years)

	Direct	Indirect	Total
Construction (job-year)	4,800	2,592	7,392
Operations and maintenance (peak-year)	220	119	339

Source: ICTC Analysis.

31 Figures based on information from the following sources:
Chmura Economics & Analytics. August 11, 2026. The real bottleneck for data centers isn't power, it's people, (regional occupational staffing matrix, 64 MW facility, and 750 peak construction workers). https://www.chmura.com/blog/the-real-bottleneck-for-data-centers-isnt-power-its-people.
Vantage Data Centers. August 19, 2025. Vantage Data Centers unveils plans for Frontier, a $25B mega-campus in Texas to meet unprecedented AI demand. https://vantage-dc.com/news/vantage-data-centers-unveils-plans-for-frontier-a-25b-mega-campus-in-texas-to-meet-unprecedented-ai-demand/.
1,400 MW facility, 6,500 peak construction workers, and 250 permanent operations staff, reported via Data Center Map. September 3, 2026. Vantage Frontier Campus (Stargate Shackelford). https://www.datacentermap.com/usa/texas/dallas/vantage-shackelford-county/).
Industry/trade press coverage of Hut 8 Energy's River Bend Phase I facility and Meta Platforms' Hyperion campus (both in Louisiana).

32 In contrast, the most automated hyperscale campuses (>100 MW) can operate with as few as 20 to 30 permanent staff per 100 MW, whereas smaller enterprises or regional sites require substantially higher staffing. This contrast highlights how economies of scale and advanced software automation can drive down the direct on-site human footprint in massive infrastructure developments.

Peak Capacity Scenarios

As discussed, the aggregate employment footprint fluctuates based on two variables: the cumulative volume of data centre builds and their multi-year deployment schedules.

A compressed development timeline with overlapping, simultaneous projects would create a more intensive concentration of local labour demand. While sequential scheduling distributes employment steadily over time, concurrent construction phases would amplify peak labour requirements. This could lead to localized shortages in specialized trades, engineering, and project management personnel.

To evaluate these constraints, this analysis uses scenario-based projections. For example, if 50% of the planned data centre capacity were to go ahead (mid-growth scenario), the province would see a surge in construction workforce demand in the early years of the projects. This model assumes that construction workers are highly transient. Instead of facing layoffs, skilled tradespeople and project managers would transition to new job sites as each three-year building phase ends.

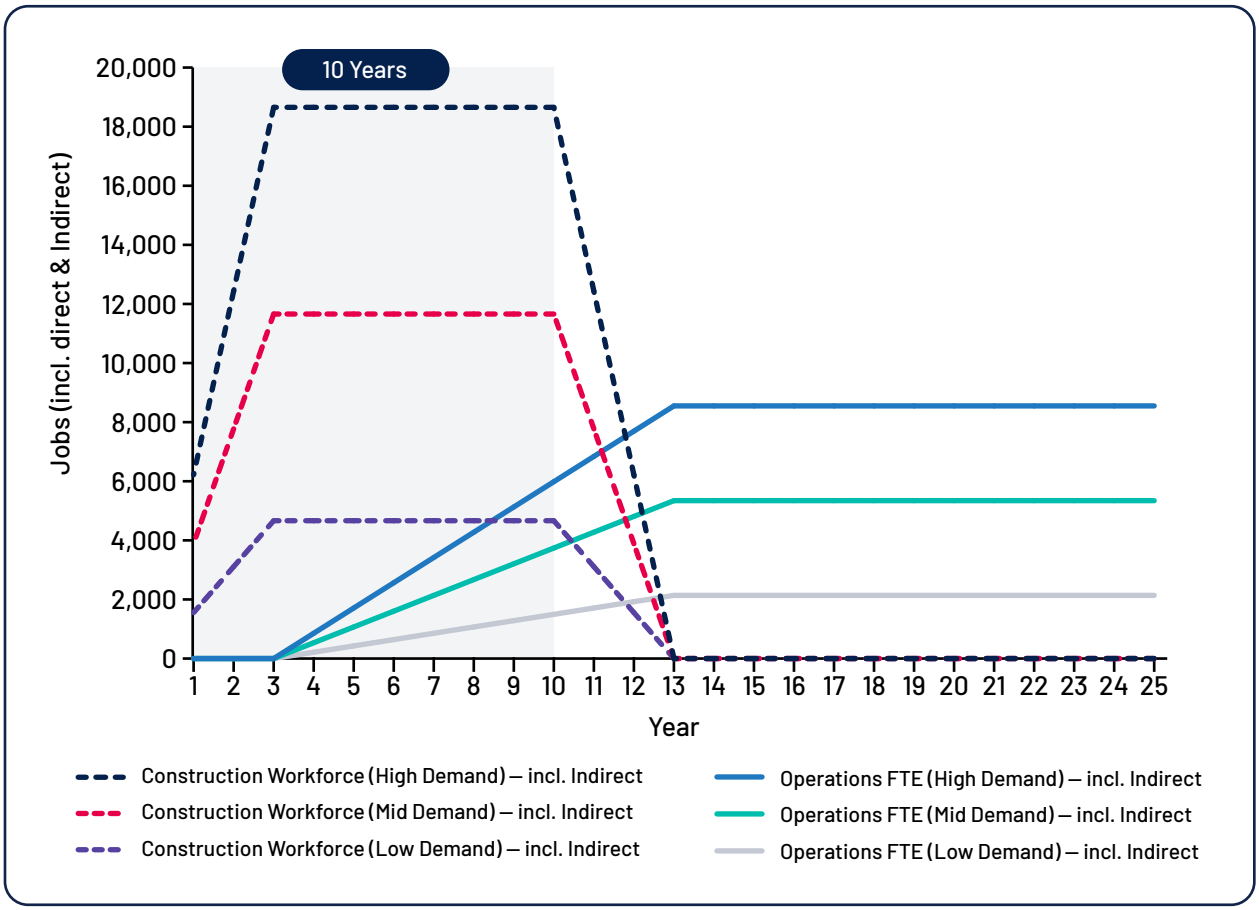
While the temporary construction workforce would be transient and move from project to project, permanent operations and maintenance positions would steadily build up with each completed facility, which could create a growing, stable foundation of long-term tech jobs year after year. Given that the average size of data centre projects in Alberta is in the large hyperscale category, both current and planned, the study assumes mid-range estimates for a 400 MW facility, which are 4.0/MW for construction jobs and 0.55/MW for operation and maintenance.

As illustrated in Figure 14, just below 12,000 construction workers (both direct and indirect) would need to be mobilized during the simultaneous construction of the data centres at the peak of the mid-case scenario, before winding down once these projects are completed. Once each project construction is complete and data centres progressively go online, there is a gradual increase in the number of workers in operations, eventually reaching a peak just above 5,000 once all the data centres are operational. As modern data centres are heavily automated, they need only a small number of operational and maintenance staff.

In the high-demand scenario, assuming 80% of the planned capacity were to move forward over the same period, the province would experience a more intensive surge in peak labour demand, substantially multiplying local employment figures. In this case, just over 18,000 construction workers (both direct and indirect) would be needed during the peak construction period, which would involve the simultaneous build of data centres. Once each data centre is built and goes online, the number of workers in operation (both direct and indirect) would progressively increase to reach just over 8,000.

Alternatively, under a low-growth scenario where only 20% of the planned capacity is constructed over the 10-year outlook, construction employment would peak at just under 10,000 jobs, while operational staffing would top out at just over 2,000 jobs.

Figure 14. Scenario: Hyperscale (400–1500 MW+) over 10 years

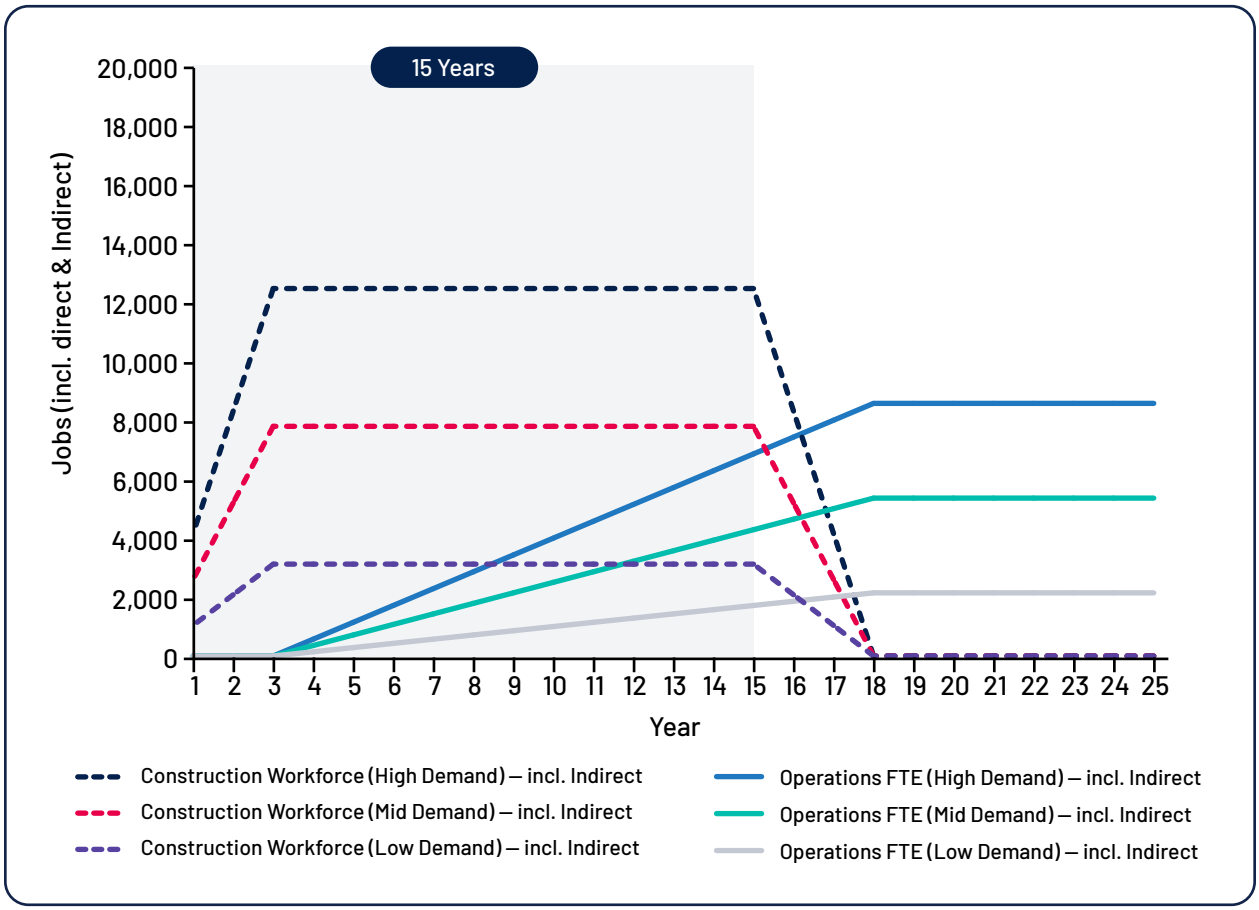


Source: Statistics Canada; industry per-MW workforce benchmarks (CBRE, Chmura, Vantage Data Centers, Ryu and Hiatt 2025); ICTC analysis.

Extending the construction timeline by an additional five years would significantly alleviate labour market pressures (Figure 15). Spreading the capital expenditure over a longer horizon flattens the peak labour demand, making workforce requirements easier for the provincial market to absorb. For instance, under this extended timeline, the mid-growth scenario would require approximately 8,000 construction and skilled trade workers during its peak period. Under the same timeline, the high- and low-growth scenarios would require peak workforces of roughly 12,000 and 3,000, respectively. While peak employment for operations and maintenance would be deferred to a later date, the total number of permanent long-term jobs would remain unaffected.

To evaluate whether these labour demand scenarios could lead to a workforce shortage or market imbalance, we must contrast these projections against the province's current labour supply.

Figure 15. Scenario: Hyperscale (400–1500 MW+) over 15 years



Source: Statistics Canada; industry per-MW workforce benchmarks (CBRE, Chmura, Vantage Data Centers, Ryu and Hiatt 2025); ICTC analysis.

The AI Data Centre Workforce and Talent Picture

With the labour and skill requirements of AI data centres established, the central question is whether Alberta's workforce can deliver both the volume of personnel and the highly specialized expertise this industry will demand. To answer this, we must evaluate the province's existing labour pool across two streams: the temporary workforce needed for complex, high-voltage construction and the permanent technical talent required for running the data centres once online.

Comparing Alberta's current labour supply against our projected growth scenarios reveals potential talent bottlenecks under certain conditions. This analysis highlights where the province's workforce is already well-equipped and where targeted training or immigration strategies may be necessary to prevent project delays.

Construction and Skilled Trades

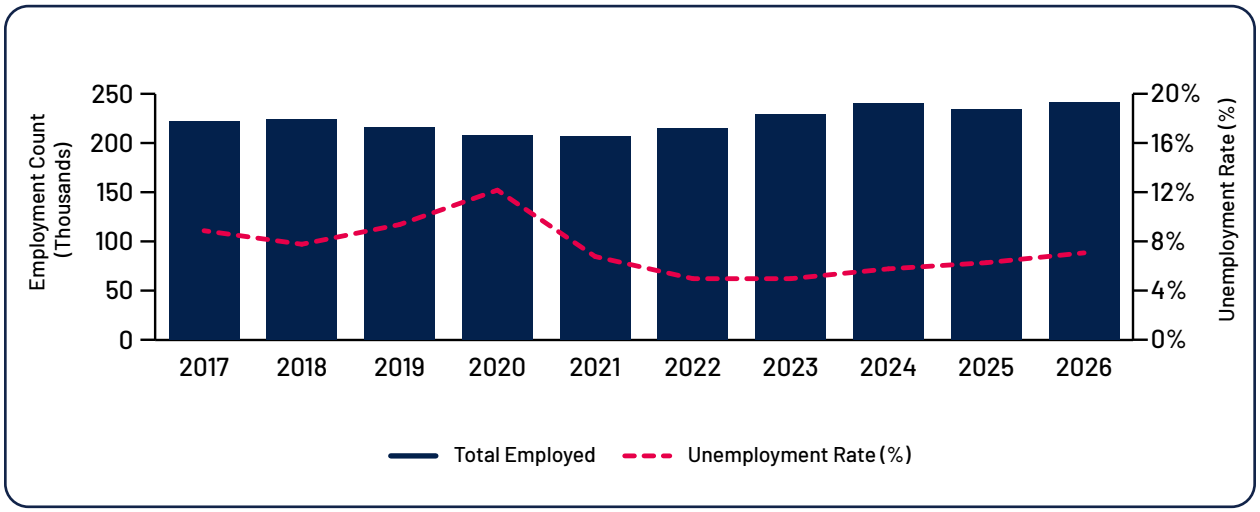
Alberta has a strong base of construction and energy workers, but the province faces upcoming labour shortages due to aging tradespeople and a lack of experience with AI data centres. While local construction, engineering, and skilled-trades talent have highly transferable skills, relevant to data centre construction, they have rarely worked on large-scale facilities required for AI compute tasks. Employers worry that the currently favourable job market will tighten

quickly as more AI data centre facilities are built. New projects will need to compete for specialized electrical, mechanical, and technical and engineering talent required for projects in other sectors.

BuildForce Canada's 2026–2035 outlook for Alberta, which projects the province must recruit 59,000 construction workers over the next decade—mostly to replace 43,400 retiring workers—would still face a shortfall of 15,400 workers even after accounting for new entrants into the trades.

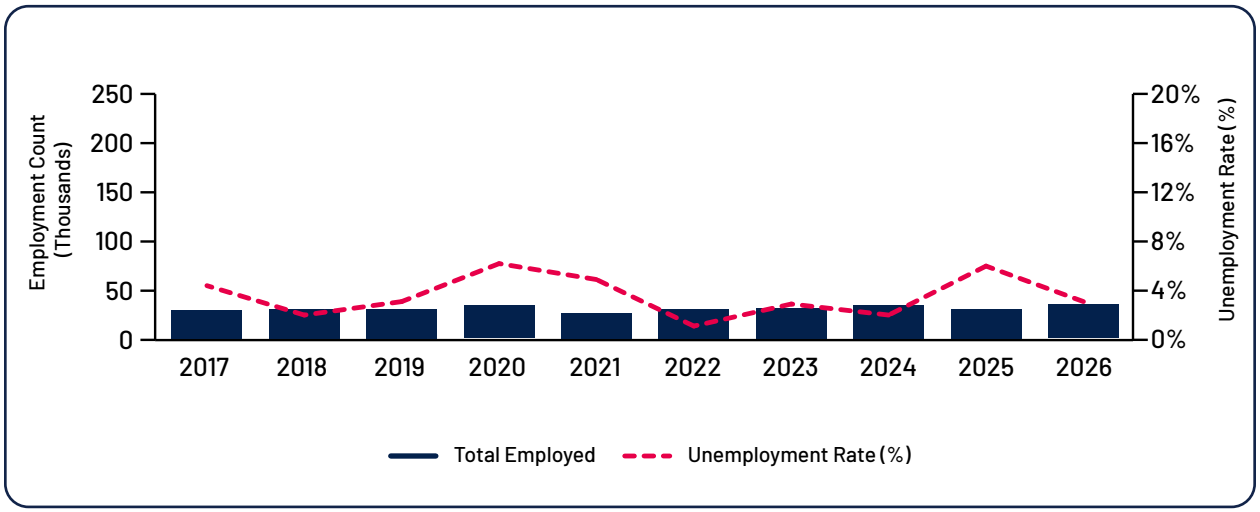
As Figures 16 to 18 demonstrate, while Alberta is home to significant numbers of engineering, construction and skilled-trades, and electrical talent that could be employed for AI data centre construction, key roles like engineering and electrical occupations, such as electricians and linemen presently enjoy relatively low rates of unemployment in the province. In July 2026, Alberta had a strong baseline of about 260,250 construction and skilled trade workers, along with 35,464 engineers and 42,536 electrical tradespeople.[33]

Figure 16. Construction and Skilled-Trades Occupations Employment Count and Unemployment Rate, Alberta, 2017–2026



Source: Statistics Canada Labour Force Survey, June 2026; ICTC calculations.

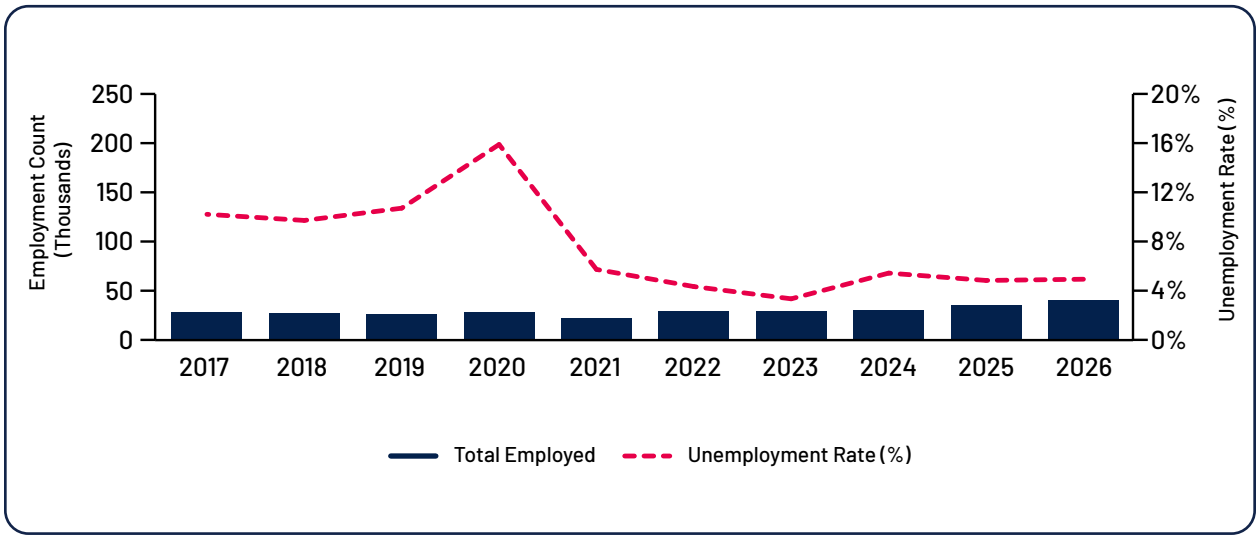
Figure 17. Engineering Occupations Employment Count and Unemployment Rate, Alberta, 2017–2026



Source: Statistics Canada Labour Force Survey, June 2026; ICTC calculations.

33 A list of NOC 2021 codes used in Figures 16 to 18 is provided in Figure 37 in the Appendix.

Figure 18. Electrical Occupations Employment Count and Unemployment Rate, Alberta, 2017–2026



Source: Statistics Canada Labour Force Survey, June 2026; ICTC calculations.

Most skilled tradespeople are already fully committed to existing infrastructure pipelines. Pulling workers from these projects would trigger labour market competition and workforce substitution to backfill vacant roles. More specifically, approximately 18,500 skilled workers are unemployed and immediately available for deployment, while an estimated 15% of individuals outside the labour force could be incentivized to return if well-paying, localized opportunities become available (Figure 19).

Unemployment for construction and other skilled-trades talent is significantly higher at present, but this trend is likely to reverse as more construction and infrastructure projects start throughout Alberta. As experts engaged for this study indicate, the simultaneous start of a few large-scale data centre projects in Alberta could place strain on the province's construction workforce.

Moreover, Alberta faces a growing skilled-trades replacement challenge as large

Figure 19. Available Labour Supply for Data Centre Construction Phase, by Occupational Group (Alberta, 2026)

Occupational Group	Unemployed	NILF (activated share)	Gross Available Supply	Net Available Supply (after competing demand)
Construction and skilled trades (excluding Electrical trades)	16,464	1,870	18,344	5,683
Electrical trades	2,071	263	2,334	724
Engineers	1,071	536	1,607	498
Construction-phase labour pool:				6,905

Source: ICTC Analysis.

numbers of experienced workers approach retirement. The pipeline of new entrants and apprentices entering skilled construction trades may not fully offset ongoing retirement of skilled tradespeople.

Simultaneously, delays in recognizing international work credentials make it difficult for skilled newcomers to obtain certification and fill these workforce gaps quickly. While these issues have not caused an immediate province-wide shortage, they reduce Alberta's ability to handle a sudden increase in demand should more large-scale AI data centre projects be announced soon.

Finding specialized service technicians to install and test complex electrical and mechanical systems is another major hurdle. These experts are in high demand across Canada. One electrical vendor noted that finding technicians with both the right electrical licences and specific data centre experience is incredibly difficult nationwide. Fortunately, Red Seal certification allows these specialists to travel between provinces to support local projects. However, relying on this small and in-demand national pool of service and installation technicians will become more difficult if several provinces experience rapid data centre growth concurrently.

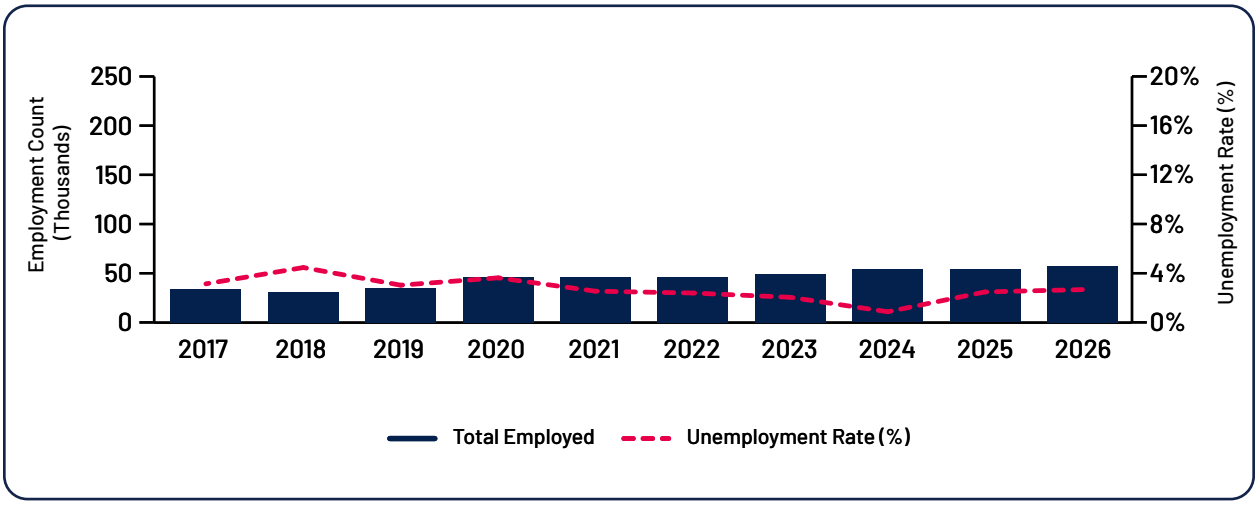
Operational Talent

Employers report the current labour supply for Alberta's data centre sector to be manageable, but the local talent pool is thin and risks being quickly overwhelmed by rapid industry growth. As of March 2026, operations and IT infrastructure (60,071), facilities and physical infrastructure (26,679), and health and safety, risk management, and security (28,679), together accounted for a pool of 115,429 workers.

As Figures 20 to 22 demonstrate, while Alberta is home to a significant talent pool capable of filling operational data centre roles—including roles across operations and IT infrastructure and facilities and physical infrastructure, as well as health and safety, risk management, and security—workers across these categories enjoy relatively low unemployment rates.[34]

Like the construction occupations discussed previously, the labour supply for data centre operations and business support is highly constrained due to intense cross-sector competition. While Alberta's data centre market is currently balanced, it remains highly sensitive to demand shocks. If multiple large-scale AI data centre projects were to come online simultaneously, the rapid spike in labour demand could outpace the available supply, resulting in labour shortages across these occupations.

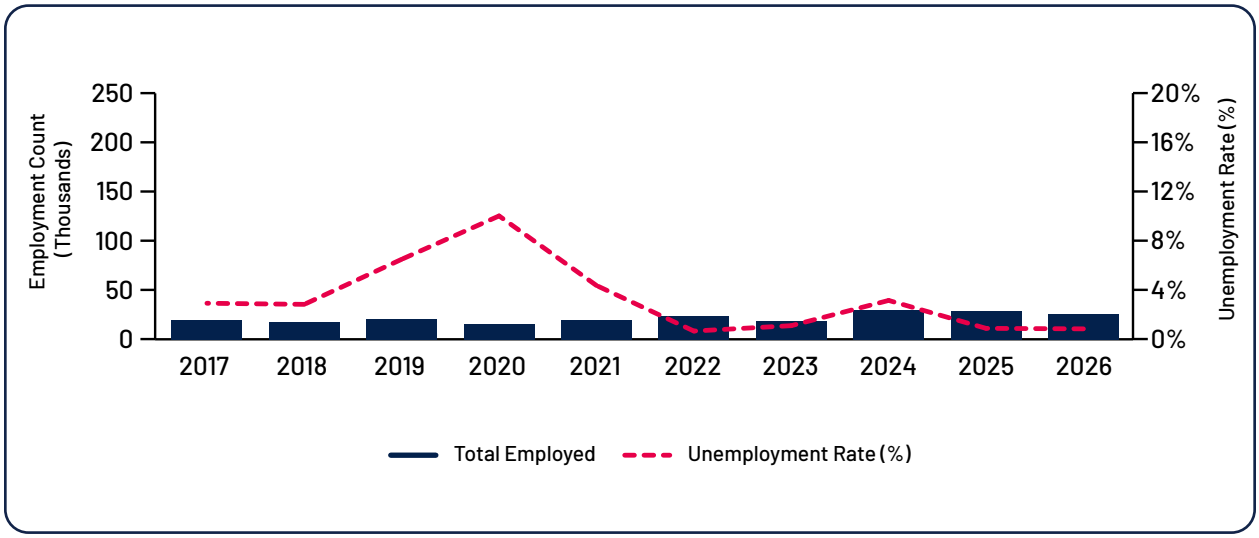
Figure 20. Operations and IT Infrastructure Occupations Employment Count and Unemployment Rate, Alberta, 2017–2026



Source: Statistics Canada Labour Force Survey, June 2026; ICTC calculations.

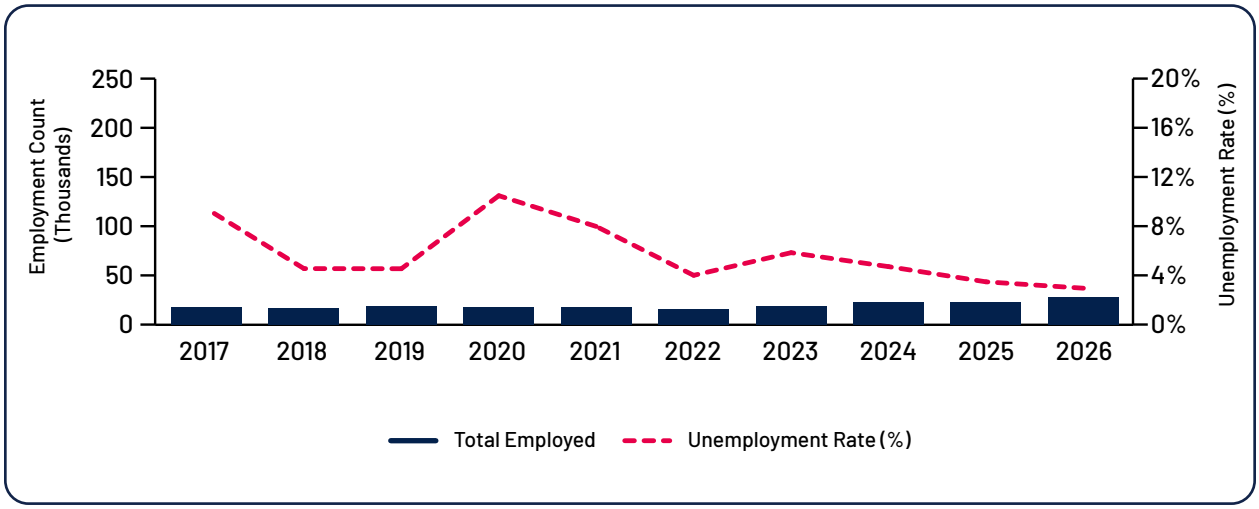
34 A list of NOC 2021 codes used in Figures 20 to 22 is provided in Figure 38 in the Appendix.

Figure 21. Facilities and Physical Infrastructure Occupations Employment Count and Unemployment Rate, Alberta, 2017–2026



Source: Statistics Canada Labour Force Survey, June 2026; ICTC calculations.

Figure 22. Health and Safety, Risk Management, and Security Occupations Employment Count and Unemployment Rate, Alberta, 2017–2026



Source: Statistics Canada Labour Force Survey, June 2026; ICTC calculations.

However, similar to construction and skilled trades, the available pool is about 3,325, including a small number of people out of the labour force who could be enticed to re-enter the labour market to work in new data centres (Figure 23).

Figure 23. Available Labour Supply for Data Centre Operations Phase, by Occupational Group (Alberta, 2026)

Occupational Group	Unemployed	NILF (activated share)	Gross Available Supply	Net Available Supply (after competing demand)
Operations and IT infrastructure	1,607	139	1,746	1,746
Facilities and physical infrastructure	250	236	486	486
Health and safety, risk management, and security	857	236	1,093	1,093
Operations phase labour pool:			3,325	3,325

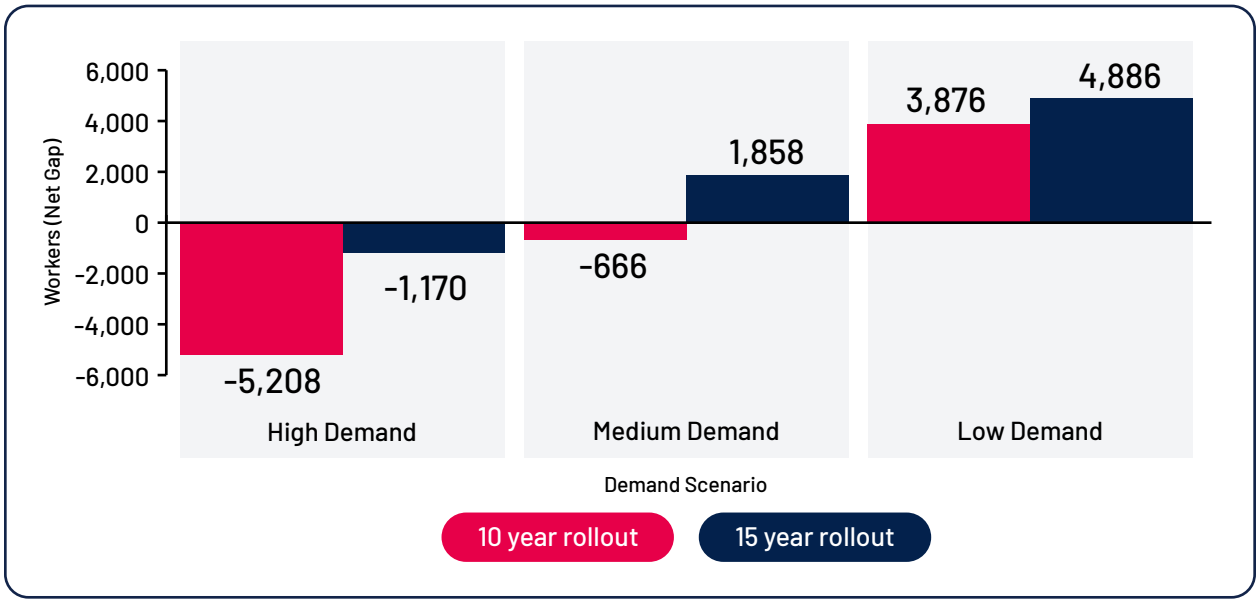
Source: Statistics Canada, Labour Force Survey, March 2026; ICTC analysis.

Assessing Labour Market Balance

Because the active talent pool is constrained, in some outlined scenarios, this suggests that it may be unable to meet demand for construction talent by the data centre industry in Alberta. In other cases, it shows that the province may possess a small margin of unallocated construction labour. Also, these numbers indicate only the potential pool of workers in these occupational groups, not the number of certified or qualified people available.

Constraints are clearly apparent in a case where 80% of the planned data centre capacity would be built in 10 years (Figure 24). In this case, the province could face a deficit of about 5,200 construction and skilled trade workers. Labour shortages would be less, but still present, in a medium-case scenario where 50% of planned capacity would be built (–666). Only in a case of 20% of planned capacity, would a 10-year planning horizon achieve a balanced labour market for these categories of workers.

Figure 24. Labour Supply vs. Peak Demand Gap, Data Centre Construction Phase



Source: Statistics Canada, Labour Force Survey; BuildForce Canada; ICTC analysis.

The first two cases imply that building AI data centres at scale in Alberta could require more than just tapping the existing unemployed labour pool. It could require attracting workers from other provinces, other countries, or other industries, or training new workers faster than they are currently entering the trades.

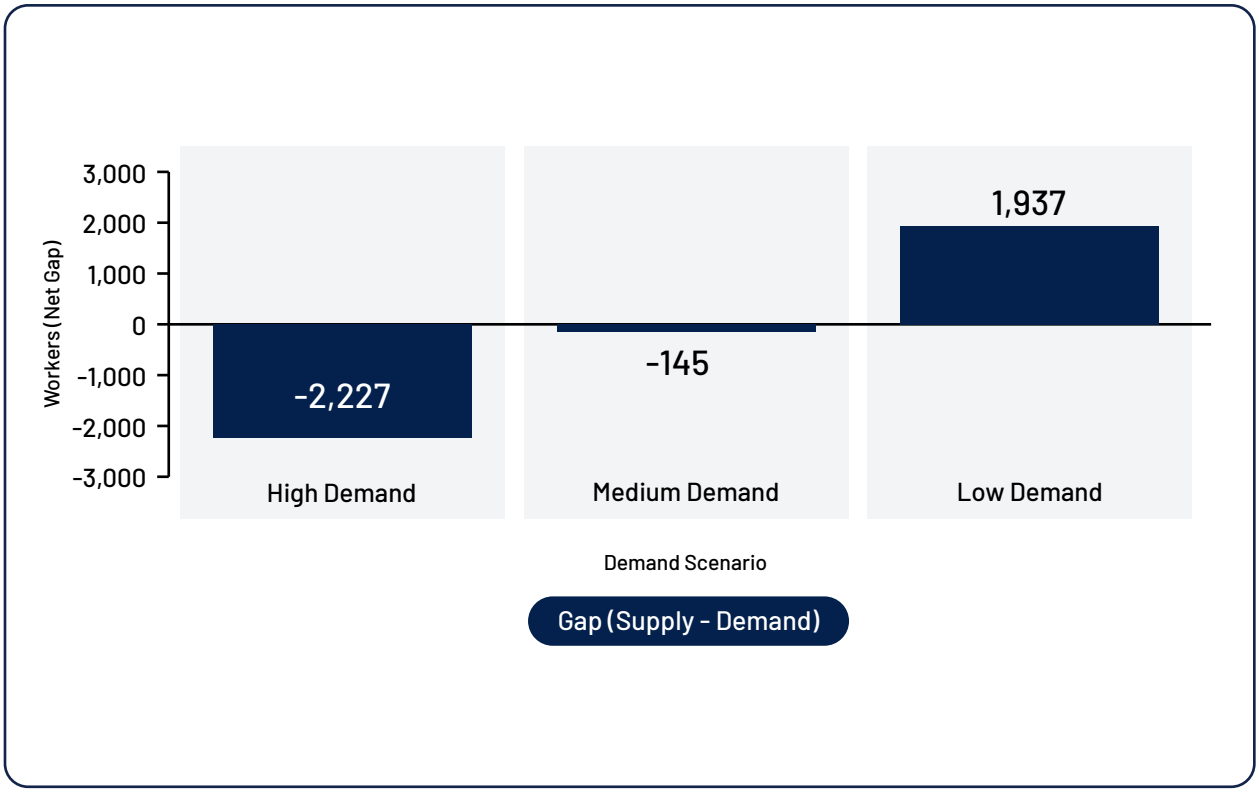
Stretching the construction timeline over a 15-year period would significantly alleviate the severe labour market pressures experienced under a more condensed schedule. Extending the rollout would allow the local workforce to absorb the demand incrementally, smoothing out the sharp staffing peaks that typically trigger severe labour shortages and intense competition across the broader construction sector.

However, the feasibility of this labour market balance depends heavily on the chosen planned capacity. While an extended 15-year build would be viable under low- and medium-demand scenarios, it would still face labour shortages under a high-demand scenario that requires 80% of planned capacity to be built out rapidly.

As these facilities transition from construction to active operations, projecting any potential imbalances during the operation and maintenance phase also becomes essential for regional economic and workforce planning. Because the final scale of deployment remains constant, the pressure exerted on the local labour market depends heavily on future demand scenarios rather than fixed rollout schedules like it is in construction.[35]

In a high-demand scenario, where 80% of the proposed data centres proceed, the provincial workforce could face significant strain. A gap analysis reveals a labour deficit of 2,227 full-time equivalents (FTEs), indicating that the provincial workforce may not be sufficient to supply enough personnel under this scenario (Figure 25).

Figure 25. Labour Supply vs. Peak Demand Gap, Data Centre Operations Phase



Source: Statistics Canada, Labour Force Survey; BuildForce Canada; ICTC analysis.

35 As this gap analysis compares the current labour supply with future labour demand, the supply pipeline does not account for future workforce expansion, replacement demand from retirements, or new graduates entering the labour market.

On the other hand, a medium-demand scenario projects a near-balanced outcome as the labour market would face a marginal deficit of 145 FTEs. However, only under the low demand scenario would the province transition into a labour surplus, where fewer data centres are built and brought online and the operational workforce supply exceeds industry demand. The small gap or surplus in these cases suggests that local workforce growth, normal recruitment cycles, or minor upskilling initiatives could be sufficient to fulfill staffing needs without disrupting the broader regional labour supply.

These projections evaluate labour dynamics purely on occupational quantities in Alberta. Because raw headcount does not guarantee qualified expertise, the imbalances highlighted may underestimate the true severity of the recruitment shortfall. In fact, qualitative factors like experience and precise skill alignment are equally critical. Overcoming this imbalance could require more aggressive talent attraction, specialized training programs, or targeted labour immigration to keep these data centres running safely and efficiently, although as discussed below, some of these measures would face their own constraints.

Other Potential Risks: Labour Competition and Wage Inflation

Despite stable current conditions, the primary concern among industry experts interviewed by ICTC is that the labour market could tighten rapidly if several proposed projects launch simultaneously. While the existing operation and maintenance workforce can easily support modest new developments, experts fear the current talent pool is unequipped for sustained, concurrent hyperscale builds.

Alberta's planned AI data centre projects could likely compete directly with other large-scale construction projects for the same pool of skilled workers and engineers. This situation could risk pulling essential workers away from existing provincial infrastructure projects and local enterprises. Like past oil and gas boom cycles, such a surge in labour demand could create a crowding-out effect, reducing the available labour pool for other local infrastructure projects. This would occur where a compressed, intense hiring spike could threaten to overlap with existing regional projects, creating immediate labour bottlenecks across the province.

Construction industry leaders ICTC engaged with for this research identified critical infrastructure such as hospitals, public transit lines, and oil and gas installations as major competitors for skilled labour. As one interviewee phrased it, this environment risks creating a talent "tug-of-war" between data centre developers and the established oil and gas sector. Both industries rely heavily on identical, high-demand skillsets, including specialized engineers, industrial electricians, pipefitters, and HVAC technicians.

Because these projections look at Alberta in isolation, they may underestimate the true extent of labour market pressures under certain scenarios. Both Canada and the United States are experiencing synchronized infrastructure booms driven by energy, supply chain reshoring, and continental defence modernization. As a full evaluation of Alberta's data centre workforce demands would need to be assessed within this integrated macroeconomic environment, it would likely confirm more severe systemic strains on labour and skills availability.

Specialized Trade Demand in the United States

Evidence from the United States suggests that demand for electricians is rising sharply, partly due to the rapid expansion of data centres. To illustrate this boom, the U.S. Bureau of Labor Statistics projects electrician employment to grow by 9% between 2024 and 2034, three times the projected growth rate for all occupations. This rapid growth translates into roughly 81,000 vacant electrician positions each year.[36] Construction contractors are acutely aware of this trend. The Associated General Contractors of America also reports that 65% of general contractors expect data centre construction to increase in 2026.[37]

Intense competition for specialized talent could also put upward pressure on wages. To secure the substantial workforce required for concurrent data centre developments, builders will likely rely on increased wage rates, aggressive signing bonuses, and guaranteed overtime to incentivize localized talent. In this scenario, compensation packages could rapidly outpace core inflation. In response to this development, local Alberta businesses could be forced to raise their baseline salaries to prevent their personnel from moving to lucrative data centre construction projects.[38]

Managing these risks may require a thorough assessment of the capacity, availability, and growth trends in local construction trades, engineering networks, and technical specialist pools. If the broader talent pipeline fails to keep pace with more intense overlapping building schedules, the provincial industry could face project delays and rising costs.

Conversely, if the existing workforce possesses sufficient depth and scalability, the province could more smoothly absorb this rapid infrastructure expansion without destabilizing its labour market.

The next section explores options to deal with these constraints, particularly what training strategies would be most appropriate. Specifically, it evaluates targeted upskilling frameworks, public-private academic partnerships, and standardized certification pathways designed to bridge the immediate technical skills gap. By focusing on rapid workforce readiness, these interventions aim to transform localized labour pressures into a sustainable, competitive advantage for the province's growing digital ecosystem.

36 U.S. Bureau of Labor Statistics. August 28, 2025. Electricians. Occupational outlook handbook. https://www.bls.gov/ooh/construction-and-extraction/electricians.htm.

37 Associated General Contractors of America. July 22, 2026. Data centers: Economic impact. https://www.agc.org/datacenters/economic.

38 Consequences could be broader. In a condensed rollout, the economic ripple effects of these labour distortions could quickly expand across the province. Companies facing inflated labour bills would likely pass increased operational costs directly onto consumers by raising the prices of goods and services. This could trigger a wage-price spiral where rising labour costs and elevated consumer prices continuously reinforce each other. Ultimately, this dynamic would drive up the cost of living and compound regional displacement risks for vulnerable residents.

Job and Skills Requirements

Key Takeaways:

1. ICTC analysis of data centre job postings across Canada suggests that while specialist data centre operations workforce is concentrated in Eastern Canada, due to the large number of AI data centre projects under development in Alberta, larger numbers of specialist data centre operational roles will be in the province in the coming years.
2. While Alberta's pre-existing oil and gas workforces may provide the province with an important labour pool crucial to building and operating AI data centres, this local talent must be aligned with the skill requirements of the industry.
3. Alberta faces a critical skilled-trades shortage as a wave of experienced workers approaches retirement, and the incoming pipeline of apprentices is insufficient to replace them.
4. Data centre operators increasingly prioritize talent with specialized AI infrastructure experience.
5. Beyond pure digital technology, Canadian data centre employers prioritize a broad set of skills.

Once data centres are built, they will need highly skilled workers to keep their facilities and infrastructure running. These operational jobs are well-paying roles that require advanced education, professional certifications, and years of hands-on experience. Employers do not just look for technical expertise. To succeed on a data centre team, workers also need strong communication skills, business knowledge, and a deep understanding of physical infrastructure and equipment.

AI Data Centre Job Profiles

According to representatives from the data centre industry and other experts that ICTC engaged with for this study, Alberta currently has a strong foundation of transferable industrial, construction, engineering, and ICT expertise, but a comparatively smaller pool of workers with direct data centre experience, particularly when it comes to building and operating large-scale AI data centre facilities. To build and run these data centres successfully, workers must combine established skills in trades, engineering, power systems, and information technology (IT) with the specialized expertise needed to design, construct, and operate highly reliable AI computing hubs.

The province's oil and gas sector has, for example, developed considerable capability and expertise in power systems and large-scale industrial facilities, although, as one participant noted, transferring this pre-existing expertise into a "data-centre-specific

Figure 26. Data Centre Construction, Operations, and Maintenance Participating Firms/Industries

Phase	I. Construction	II. Operations and Maintenance
Timeframe	**12 to 36 months.**[39]	**20 to 30 years.**[40]
Example Industries/ Firms	› Data centre developers › Electrical contractors › Electrical/cooling equipment vendors › Engineering, procurement, and construction (EPC) companies › Fibre-optic installers › Fire protection firms › Gas turbine generator suppliers › General/construction contractors › Mechanical systems/HVAC contractors › Microchip (i.e., GPU) suppliers › Network/IT equipment vendors › Telecommunications carriers	› Data centre operators › Electrical contractors › e-Waste managers › Facilities management companies › Managed IT services/cybersecurity firms › Mechanical systems/HVAC contractors › Microchip (i.e., GPU) suppliers › Power/energy suppliers › Security companies › Telecommunications carriers › Utilities and natural gas suppliers/distributors

capability remains a challenge." While Alberta's strong energy and industrial background provide workers with many relevant foundational skills, it does not automatically supply the experience required to manage critical computing environments, redundancy systems, high-density power and cooling, and integrated IT and facility infrastructure.

As the preceding economic analysis shows, AI data centres generate two job profiles: a large, short-term crew for project development and construction, and a smaller, highly specialized team for long-term operations and maintenance. This section outlines the main roles, hard-to-fill occupations, and critical skills required to build and run these high-tech facilities.

To visualize how these roles fit together, Figure 26 outlines the project timelines and highlights example industries and types of firms involved in the construction and operational phases of an AI data centre.

In-Demand Construction and Skilled-Trades Roles

Alberta's broader development environment was viewed positively by industry leaders and experts ICTC engaged with for this study. Participants described Alberta as having strong industrial construction and skilled-trades workforces that can support construction of AI data centres.

Industry experts with experience in data centre construction note that this phase creates the absolute highest demand for skilled trades, contractors, and equipment installation specialists. Labour pressures during this stage are heavily concentrated among core skilled trades like electricians, plumbers, and sheet metal workers. Success also relies on construction engineers and project managers who possess the unique expertise needed to oversee such technically complex projects.

39 Somala, V., and Cottier, B. November 10, 2025. Build times for gigawatt-scale data centers can be 2 years or less. Epoch AI. https://epoch.ai/data-insights/data-centers-buildout-speeds.

40 STACK Infrastructure. August 13, 2026. Aging data centers and why enterprises shouldn't retrofit them. https://www.stackinfra.com/resources/collateral/aging-data-centers-and-why-enterprises-shouldnt-retrofit-them/.

The building phase requires a substantial mechanical workforce, including plumbers, HVAC technicians, pipefitters, and welders, who have hands-on experience with advanced heating and cooling pipework, high-pressure welded systems, and intricate plumbing infrastructure. Additionally, these projects depend on specialized installation and testing roles. These include electrical contractors who wire uninterruptible power supply (UPS) systems; technicians dispatched by equipment manufacturers, who commission and test them; and datacom contractors who install server racks and related equipment.

While overall construction employment is huge, demand for individual specialist functions often involves surprisingly small teams working for short windows. For example, one interviewee reported that a pair of electrical technicians commissioned four 750-kVA UPS units across two data centre sites in about one week. This highlights how data centre construction blends many core electrical and mechanical trades with small, agile teams of highly specialized technicians who drop into the project for specific testing and setup tasks.

In-Demand Data Centre Operational and Maintenance Roles

According to data centre staffing and professional-services specialists ICTC engaged with for this study, direct experience in critical AI data centre environments is exceptionally hard to find in Alberta because the industry is new. As one data centre staffing and professional-services specialist explained, "Data centre experience is a little bit harder to find because it hasn't been around for so long. So typically, we kind of leverage adjacent industries where we can."

To bridge this gap, recruiters frequently pull skilled workers from adjacent, more established technology and infrastructure sectors. As one interviewee said, Alberta simply does not have enough experienced people in the province to run all the proposed facilities. The primary challenge is not a lack of general applicants, but a severe shortage of professionals who have hands-on experience managing critical infrastructure, data centre facilities and systems, and IT operational environments.

As another interviewee observed, there are "… not enough experienced people in the province to operate all the proposed data centres," suggesting that the challenge is not simply finding workers, but finding people with direct experience in critical data centre environments, including in IT-related operational roles, as well as in facilities and critical infrastructure management.

This local shortage reflects a broader North American trend. A leader from a large IT professional-services firm noted that because the data centre sector is still emerging compared to traditional technology industries, specialized talent remains scarce across the continent. Simultaneously, the demand for these workers is accelerating rapidly as new facilities finish construction and transition into active service.

To understand the local job landscape, a scan of 174 job postings by data centre operators in Alberta was collected between January 2022 and April 2026. This job scan revealed a diverse range of open operational positions, which generally fall into three categories:

- **IT infrastructure and operations:** Roles focused directly on managing servers, networking gear, and cloud environments.
- **Facilities and physical infrastructure:** Roles dedicated to maintaining critical power grid backups, cooling systems, and physical plant operations.
- **Business and support operations:** Essential supporting roles covering customer service, sales, human resources (HR), administration, health and safety, risk management, and facility security.

To give a clearer picture of these career paths, Figure 27 outlines the most common job titles currently advertised in the data centre industry in Alberta.

Figure 27. Alberta Data Centre Example Operations and Maintenance Job Titles

Data Centre Operations and IT Infrastructure	Data Centre Facilities and Physical Infrastructure	Customer Service and Sales	Health and Safety, Risk Management, and Security	HR, Business Operations, and Administration
› Data centre manager › Data centre technician › Data centre operator › IT support technician › Network engineer › Network specialist	› Building operator › Building systems coordinator › Facilities tech. › Maintenance tech. › Power engineer › Property/ facilities manager	› Account executive › Business development rep. › Customer service rep. › Leasing manager › Marketing manager	› Health and safety coordinator › Security enablement specialist › Security guard › Security operations manager › Risk management assessor	› Controller › Community manager › HR business partner › Logistics specialist › Office coordinator › Site administrator

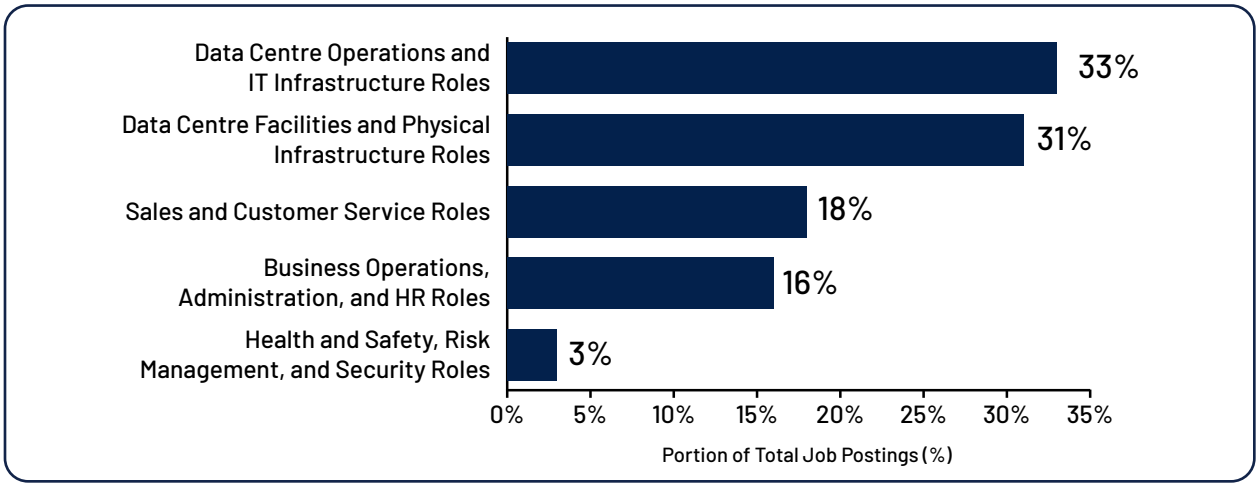
Source: ICTC's custom list of Canada-based data centre operators; Vicinity Jobs, ICTC analysis. Job posting data collected between January 1, 2022, and April 30, 2026.

According to ICTC's analysis of local job postings, technical and facility-management roles make up most of the employer demand in Alberta. Combined, these two technical categories account for 64% of all job postings in the industry, as shown in Figure 28. The breakdown of job postings reveals where employers focus their hiring efforts:

- **IT infrastructure and operations (33%):** This is the most sought-after category, focusing on the core technology, servers, and digital networks.
- **Facilities and physical infrastructure (31%):** This closely follows as the second largest category, targeting heavy machinery, power grids, and cooling systems.

The remaining job postings are spread across vital business support and safety functions. Customer service and sales roles make up 18% of the demand, while HR, business operations, and administrative roles account for 16%. Finally, positions dedicated to health, safety, risk management, and security drive the remaining 3% of direct hiring, which likely undercounts the actual number of security jobs created by the data centre industry. Data centre operators frequently hire third-party contractors for roles like security guards rather than employing them directly.

Figure 28. Alberta-Based Data Centre Operational Roles by Category



Source: ICTC's custom list of Canada-based data centre operators; Vicinity Jobs, ICTC analysis. Job posting data collected between January 1, 2022, and April 30, 2026. Note: Percentages may total more or less than 100% due to rounding.

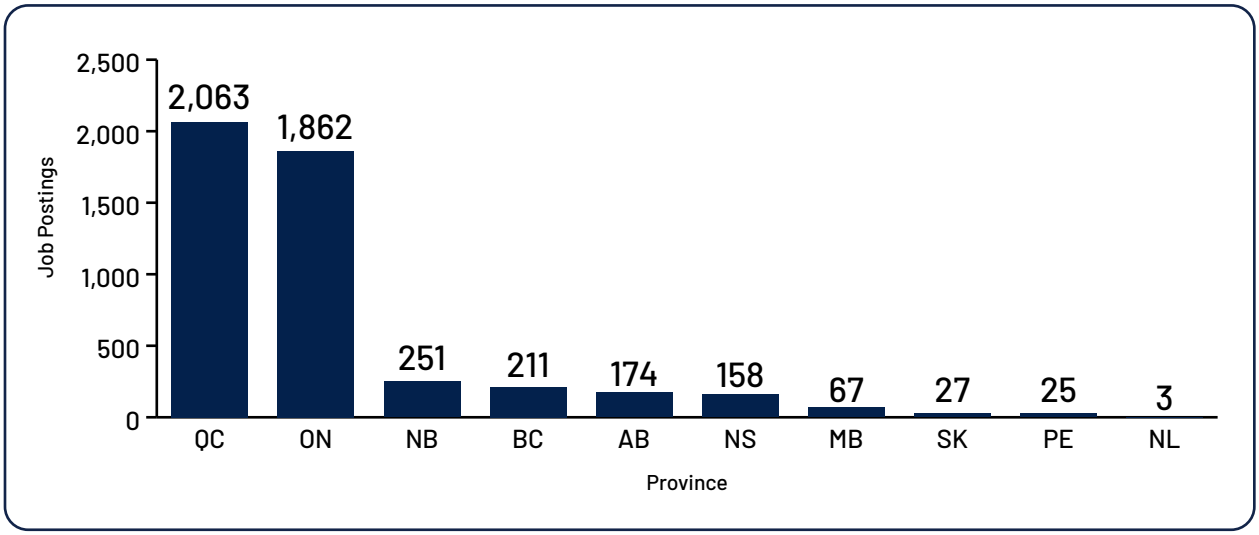
According to ICTC's analysis of national job postings between January 2022 and April 2026, data centre employment in Canada is heavily concentrated in two provinces. Ontario and Québec dominated the landscape, accounting for 81% of all data centre job advertisements across the country. By comparison, Alberta accounted for a mere 3.6% of Canadian data centre job postings, highlighting that the province currently has a relatively low share of national data centre employment, as shown in Figure 29.

However, this dynamic could change dramatically in the coming years. Given the rapid build-out of AI data centres and supporting infrastructure currently underway in Alberta, these job numbers are expected to surge over time. As these multi-billion-dollar construction projects wrap up and transition into active service, the province could see a significant, long-term increase in permanent data centre operational roles.

Beyond the workforce required during the construction phase, skilled tradespeople and equipment service technicians are essential for the ongoing maintenance of data centres throughout their lifecycles. These experts keep critical infrastructure—such as high-density cooling, advanced electrical networks, and complex HVAC systems—running smoothly day and night, on a twenty-four-hour basis. Industry representatives note that these professionals, including electricians, HVAC technicians, and plumbers, may be hired directly as full-time staff by data centre operators or they may work for third-party contractors.

However, simply having a trade qualification may not be enough according to interviewees. Individuals maintaining these facilities must ideally possess hands-on experience working inside active, operational data centres. Because the AI data centre industry is still new to Alberta, finding local tradespeople who understand the strict rules and high stakes of a live computing environment is exceptionally difficult. This novelty means that experienced data centre maintainers will likely remain a highly scarce and competitive resource in the province as the local industry grows.

Figure 29. Canadian Data Centre Operator Job Postings by Province



Source: ICTC's custom list of Canada-based data centre operators; Vicinity Jobs. ICTC analysis. Job posting data collected between January 1, 2022, and April 30, 2026.

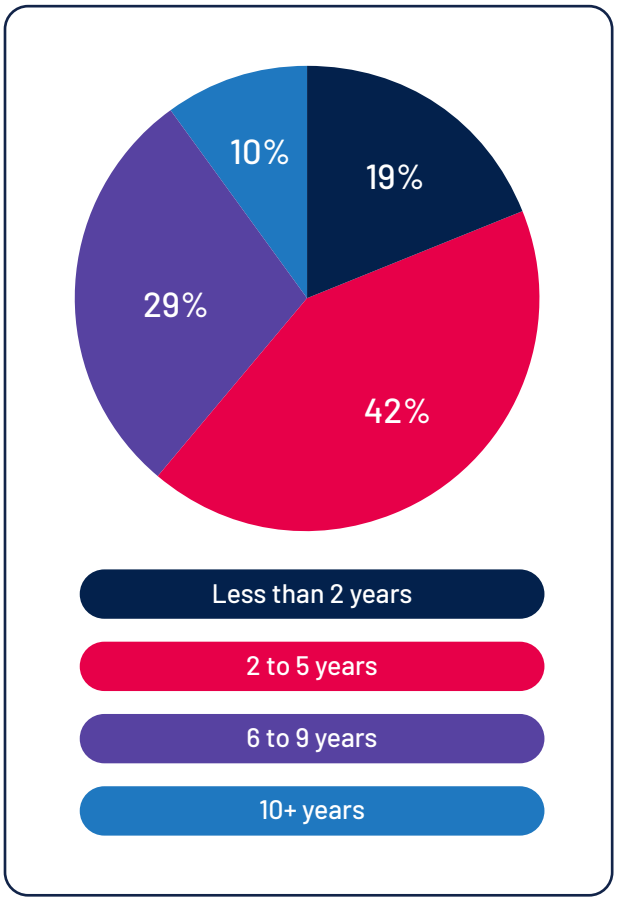
Years of Experience, Education, and Certification Requirements

To further understand data centre employer requirements, ICTC conducted an analysis of over 4,800 job postings by 74 Canadian data centre operators, collated between January 2022 and April 2026, using an LLM to parse individual job postings for education, qualification, and skills frequencies across the job postings. Because there were not enough job postings in Alberta to get clear data, ICTC looked at data from across Canada. The analysis assumes that data centre jobs in Alberta will have the same overall requirements as those in the rest of the country.

The findings show that Canadian data centre employers heavily favour experienced workers (Figure 30). For the jobs that listed specific experience requirements, the breakdown shows that 19% of jobs required less than two years of experience, 42% of jobs required two to five years of experience, and 29% of jobs required six to nine years of experience. Ten percent of jobs required 10 or more years of experience.

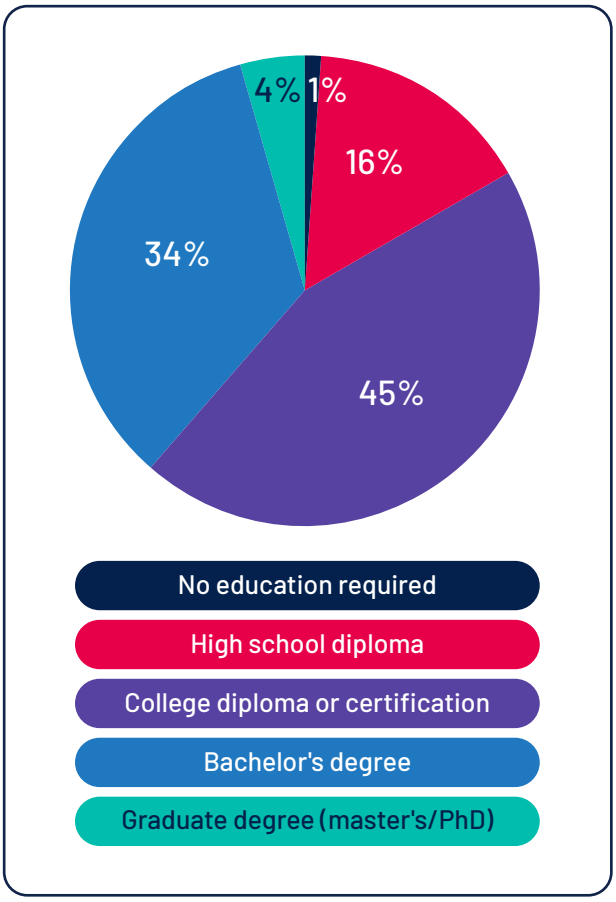
Canadian data centre employers normally require completion of post-secondary education for operational roles at data centres. Of the job postings with a specified education level, 16% required at least a high school diploma, 45% required a college diploma or certificate, 34% required a bachelor's degree, and 4% required a graduate degree (master's or PhD), while only 1% of job postings specified no education being required (Figure 31).

Figure 30. Required Years of Experience – Canadian Data Centre Operator Job Postings



Source: ICTC's custom list of Canada-based data centre operators; Vicinity Jobs, ICTC analysis. Job posting data collected between January 1, 2022, and April 30, 2026.

Figure 31. Requisite Education – Canadian Data Centre Operator Job Postings



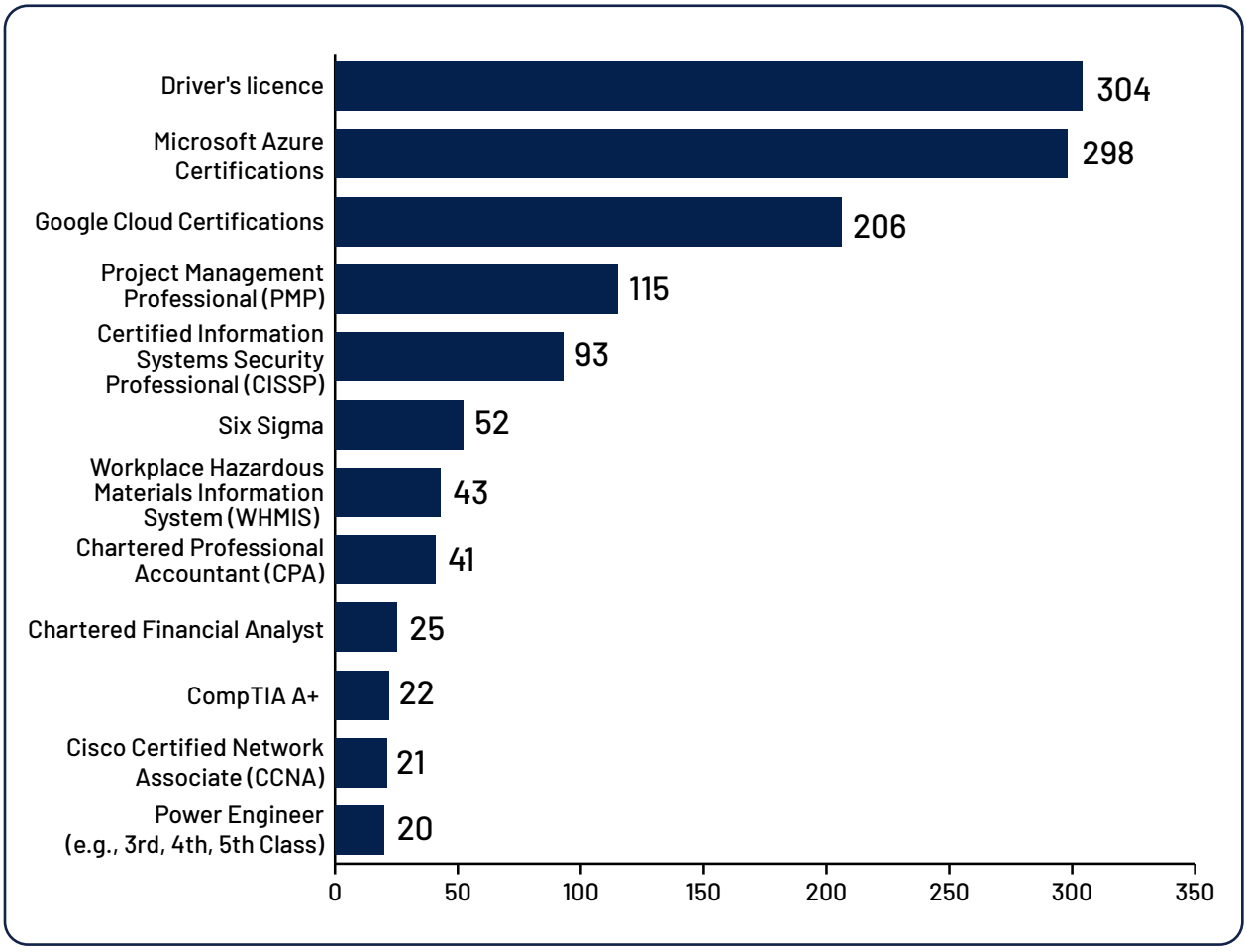
Source: ICTC's custom list of Canada-based data centre operators; Vicinity Jobs, ICTC analysis. Job posting data collected between January 1, 2022, and April 30, 2026.

In addition to education requirements, Canadian data centre employers look for a variety of industry certifications depending on the job role. For technical positions, companies frequently require certifications in cloud platforms like Microsoft Azure and Google Cloud. They also look for project leadership credentials like the project management professional (PMP) certification. Other common technical credentials found in job postings include security and networking certificates like CISSP, CompTIA A+, Cisco Certified Network Associate (CCNA), and Six Sigma (Figure 32).

Different roles in the data centre require different skills. For business and finance positions, employers often require a chartered financial analyst (CFA) or chartered professional accountant (CPA) designation. On the other hand, workers handling power and facility maintenance may require power engineering certifications (3rd, 4th, or 5th Class) along with WHMIS safety training for handling workplace hazards.

Interestingly, the most common requirement across all operational job postings was a standard driver's licence. This is likely because many Canadian data centre operators run multiple data centre facilities in a region. Employees, especially those working in power and facilities management, may frequently travel between different sites during their workday.

Figure 32. Common Requisite Certifications and Credentials Across Canadian Data Centre Operator Job Postings (January 2022–April 2026)



Source: ICTC's custom list of Canada-based data centre operators; Vicinity Jobs, ICTC analysis. Job posting data collected between January 1, 2022, and April 30, 2026.

Common Data Centre Skill Requirements

The data collected by ICTC shows that Canadian data centre employers look for a core set of skills across four areas: digital technology, equipment and facilities, social-emotional or "soft skills," and business knowledge. While the exact requirements change depending on the company and the job, the analyzed job postings reveal several common skills that are highly valued across the country.

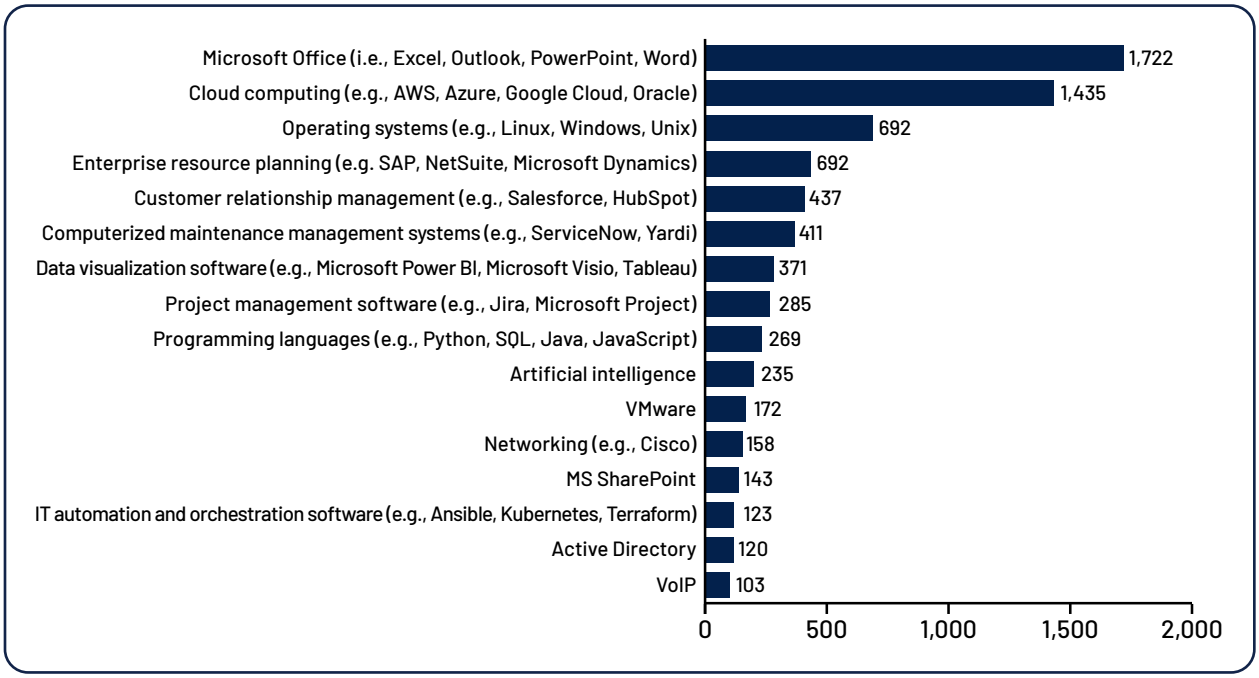
Common Data Centre Digital Technology Skills

When it comes to digital technology, employers frequently ask for everyday office tools like Microsoft Office and SharePoint. For data storage and computing, familiarity with major cloud platforms—such as Amazon Web Services (AWS), Microsoft Azure, Google Cloud, and Oracle—is highly important. Workers also must know how to navigate various computer operating systems, including Linux, Windows, and Unix. Additionally, job ads often mention software used to run large businesses, such as customer relationship management (CRM) tools, enterprise resource planning (ERP) systems, and computerized maintenance management systems (CMMS; Figure 33).

Data centres also rely heavily on tools that help organize and visualize information. Software packages like Microsoft Power BI, Visio, and Tableau are common technical requirements. To keep teams organized, companies look for experience with project management platforms like Microsoft Project and Jira.

To keep systems running automatically, knowledge of IT automation and coordination tools, such as Ansible, Kubernetes, and Terraform, were also common across data centre job postings. Finally, coding and automation skills are in high demand. Job postings frequently list programming languages like Python, SQL, Java, and JavaScript. Employers are also searching for workers who understand AI, computer networking, and VMware.

Figure 33. Count of Digital Technology Skill Requirements Across Canadian Data Centre Job Postings (January 2022–April 2026)



Source: ICTC's custom list of Canada-based data centre operators; Vicinity Jobs. ICTC analysis. Job posting data collected between January 1, 2022, and April 30, 2026.

In addition to these technical skills captured in ICTC's job posting analysis, interviews with experts noted that skills in data centre infrastructure management (DCIM) applications, digital twins, and virtual and extended reality (VR/XR) technology will become increasingly important to operate and maintain increasingly complex and automated AI data centre infrastructure.

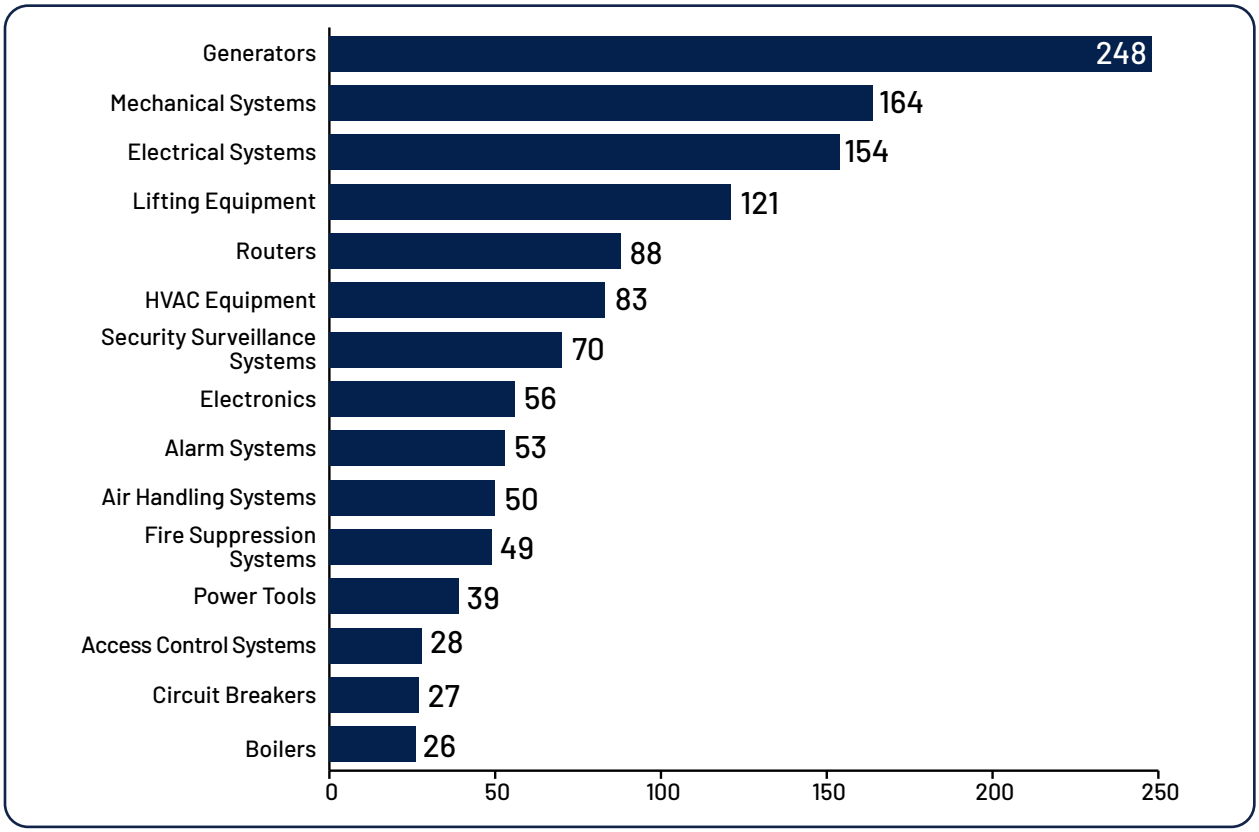
Common Data Centre Equipment, Tools, and Facilities Skills

Beyond pure digital technology, Canadian data centre employers also heavily prioritize heavy machinery, physical infrastructure, tool, and building maintenance skills. Job postings frequently ask for experience with backup power generators, along with the ability to operate and maintain complex mechanical and electrical systems. Workers are often expected to safely operate heavy lifting equipment and standard power tools.

Additionally, data centre roles demand a strong understanding of essential facility machinery and IT hardware, such as server racks. Employers want technicians who know how to manage physical and electrical infrastructure. This includes HVAC and air handling systems, boilers, and circuit breakers. On the technology side, a firm grasp of hardware like internet routers and various electronics is essential.

Finally, keeping the facility safe and secure is another major skill requirement. Operational job postings frequently list experience with site security hardware. Workers are tasked with maintaining active security surveillance assets, managing electronic access control systems, and monitoring and maintaining emergency alarms and automatic fire suppression systems (Figure 34).

Figure 34. Count of Equipment, Tools, and Facilities Skills Requirements Across Canadian Data Centre Job Postings (January 2022–April 2026)



Source: ICTC's custom list of Canada-based data centre operators; Vicinity Jobs, ICTC analysis. Job posting data collected between January 1, 2022, and April 30, 2026.

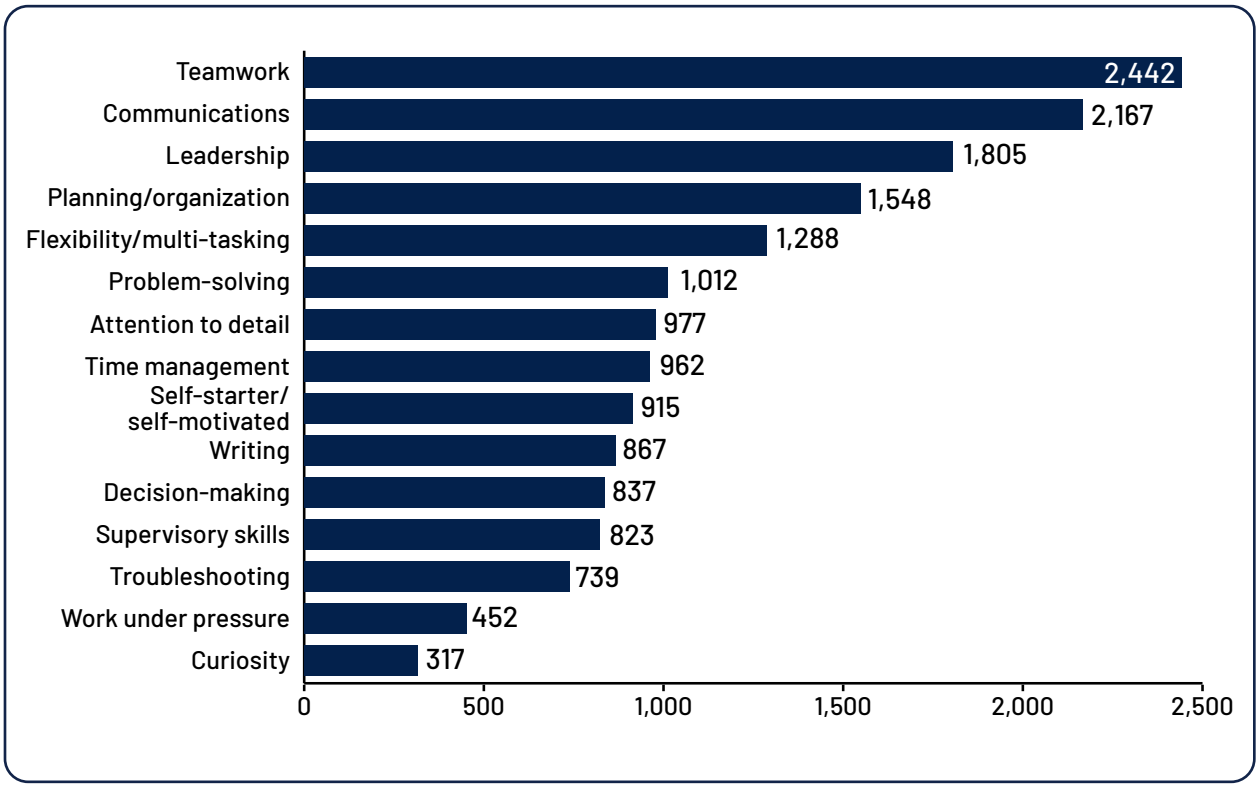
Common Data Centre Social-Emotional Skills

Social-emotional skills, often called "soft skills," are essential for almost every job in Canada today. A 2025 report by the Future Skills Centre highlighted that these personal traits are critical for success in the modern workplace.[41] The Canadian data centre industry is no exception. Job postings collected by ICTC show that employers heavily emphasize these human skills for everyday data centre operations (Figure 35).

The most common soft skills found in the job advertisements include teamwork, clear communication, and leadership. Employers want workers who excel at planning, staying organized, and multitasking in a flexible environment. Job postings also frequently mention the need for strong problem-solving abilities, sharp attention to detail, and good time management. While listed slightly less often, skills like independent decision-making, technical writing, natural curiosity, supervisory experience, and the ability to work well under pressure are still highly valued.

Taken together, the social-emotional skills in demand by data centre employers point to a fast-paced, high-reliability, team-based work environment. Staff must be ready to solve complex problems and fix technical glitches at a moment's notice to maintain data centre uptime. Because keeping the data centre online and running efficiently is so critical, employers look for team members who stay calm under pressure, take initiative, and feel confident making difficult decisions.

Figure 35. Count of Social-Emotional Skills Across Canadian Data Centre Operator Job Postings (January 2022–April 2026)



Source: ICTC's custom list of Canada-based data centre operators; Vicinity Jobs, ICTC analysis. Job posting data collected between January 1, 2022, and April 30, 2026.

41 Richter, S., and McDonough, L. October 2025. Resilient by design: The skills Canadians need now and for the future. Future Skills Centre. https://fsc-ccf.ca/projects/sos-resilient-by-design/.

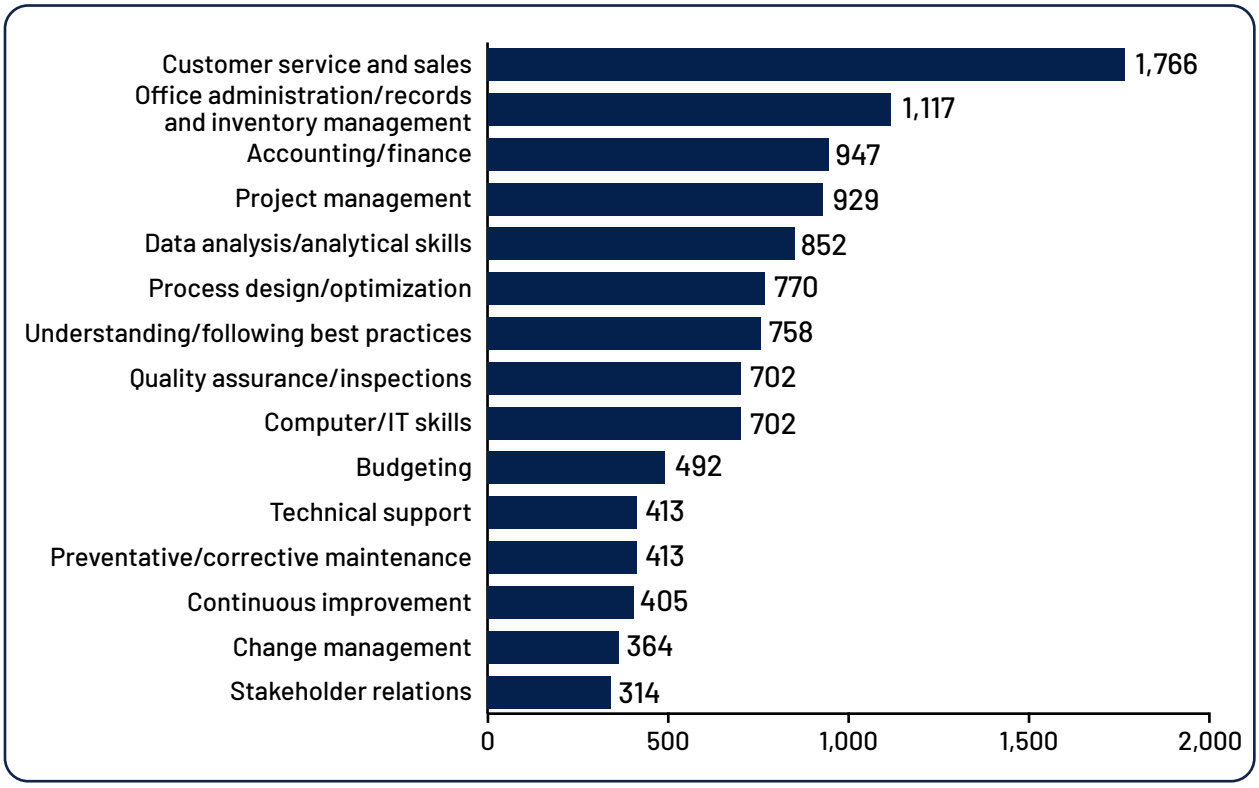
Common Data Centre Business Skills

Transferable business skills were frequently included in operational data centre job postings. These skills are valuable in almost any industry, including for running a successful data centre business.

The most common business skills listed in the job postings include customer service, sales, general office administration, and record-keeping. Employers also look for accounting, finance, project management, and data analysis skills. Additionally, companies want workers who understand process design and optimization, which means finding ways to make daily work systems faster, smoother, and more efficient (Figure 36).

Other crucial business skills include understanding and following best practices, handling quality assurance, and performing facility inspections. Computer literacy and general IT skills are also expected. Furthermore, job postings frequently mention budgeting, providing technical support, performing preventative and corrective maintenance, and driving continuous improvement. Skills in change management and managing stakeholder relationships are also highly valued. Together, these required business skills show that data centres in Canada are complex, highly reliable, and deeply optimized workplaces.

Figure 36. Count of Transferable Business Skills Across Canadian Data Centre Operator Job Postings (January 2022–April 2026)



Source: ICTC's custom list of Canada-based data centre operators; Vicinity Jobs. ICTC analysis. Job posting data collected between January 1, 2022, and April 30, 2026.

ICT and AI Talent

While local businesses easily find entry-level and junior workers, executives face a clear talent gap for experienced ICT and AI professionals. This hiring squeeze comes at a time of record-high tech employment, where Alberta's digital economy saw 5.7% annual job growth and a rock-bottom unemployment rate of 2.3% as of July 2026.[42]

This talent shortage is especially noticeable in advanced AI fields. Employers engaged for this study identified "a notable deficit in advanced AI talent," including applied-AI, machine-learning, and LLM specialists, with employers sometimes looking to Montréal and other Canadian and international regions for experienced AI technologists.

National research underscores the scale of this pressure; Canada's AI market is projected to grow at a compound annual rate of roughly 34% between 2023 and 2028, deepening competition for the applied-AI, machine-learning, and data-engineering talent, which Alberta's technology sector is already struggling to recruit.[43] A 2025 report by ICTC found AI engineering and development roles of critical importance to Canada's AI industry include:[44]

- AI engineers
- AI researchers
- AI software developers
- Computer vision engineers
- Data engineers
- Data scientists
- Machine-learning engineers

Additionally, while recent corporate investments have strengthened Alberta's cybersecurity workforce,[45] the province must continuously expand this talent pool to protect the wave of new data centres and critical digital infrastructure being built. This includes protecting traditional IT systems in data centres, but also protecting operational technology (OT), such as digitally connected data centre power and mechanical systems, from cyberattacks. Experienced OT cybersecurity specialists were noted by industry representatives to be particularly scarce in Alberta.

This relative shortage of experienced ICT and AI technology talent creates a strategic talent bottleneck for Alberta. The province may lack enough senior ICT and AI talent to capitalize on the vast AI compute data centres are poised to deliver in the coming years. Without a deep bench of senior ICT and AI technology professionals, Alberta risks not being able to fully capitalize on the AI data centre opportunity.

This pattern predates the current data centre build-out and reflects a broader structural challenge in Alberta's digital labour market. ICTC found that the province can generally meet employer demand for entry-level technology talent, while demand for mid- and senior-level technology professionals outpaces supply.[46] AI data centres intensify this challenge because many roles require not only several years of experience, but specialized knowledge of critical computing environments, power and cooling infrastructure, cybersecurity, and operational reliability.

42 Information and Communications Technology Council (ICTC). July 2026. eTalent Canada: Job market information – Alberta. https://etalentcanada.ca/locations/alberta.

43 Innovation, Science and Economic Development Canada. December 2024. Consultations on artificial intelligence (AI) compute. https://ised-isde.canada.ca/site/ised/en/public-consultations/consultations-artificial-intelligence-ai-compute.

44 Legere, T., Lopez, S., and Lubendo, N. February 2025. Canada's AI ecosystem: A brief overview of in-demand skills and trends. Information and Communications Technology Council (ICTC). https://ictc-ctic.ca/reports/canadas-ai-ecosystem-a-brief-overview-of-indemand-skills-and-trends

45 Calgary Economic Development. March 8, 2024. Multinational firm Fortinet invests $30 million to build cybersecurity tech hub in Calgary. https://www.calgaryeconomicdevelopment.com/news/multinational-firm-fortinet-invests-30-million-to-build-cybersecurity-tech-hub-in-calgary/.

46 Ivus, M., Lindstrom, C., McGeer, H., and Podolna, O. March 2025. Alberta's digital economy: Outlook 2030. Information and Communications Technology Council (ICTC). https://ictc-ctic.ca/reports/albertas-digital-economy-outlook-2030.

If substantial proposed capacity is developed, Alberta could host a significant share of Canada's future AI compute infrastructure. Keeping these high-value innovation opportunities in the province requires a focus on building an inclusive, domestic talent pipeline. A critical, yet underused, part of this workforce strategy lies in partnering with local Indigenous communities who have a direct stake in the region's economic future. Alberta could then foster an inclusive tech ecosystem that integrates homegrown talent from all backgrounds.

Data Centre Spinoff Innovation and Entrepreneurship Opportunities

Data centre development may create opportunities for Alberta firms in areas such as cooling, energy efficiency, power management, and related infrastructure technologies, even if the computing power is used by customers outside Alberta. Industry experts noted that Alberta's greatest opportunity does not necessarily lie in competing to become a software or app development hub. Instead, the province is perfectly positioned to solve the significant energy and hardware challenges.

An expert in Alberta's technology and innovation sector suggested that the rise of AI data centres opens opportunities for local businesses in the province. This remains true even if the actual computer power is used by customers outside the province. Alberta's opportunity with AI data centre spinoff innovation is not necessarily limited to becoming a software or AI hub, but may lie in solving the physical, energy, and infrastructure challenges created by data centre growth.

Drawing a comparison to the oil sands, an interviewee noted that the situation is somewhat similar. The oil sands prove that traditional industries can still drive technological breakthroughs. Alberta could lead in hardware and infrastructure innovation because it already possesses the right strengths. This expert noted that Alberta innovators can focus on energy efficiency, engineering, cooling systems, and behind-the-meter power: "While tech hubs like Silicon Valley might dominate software and coding, Alberta has the human capital and engineering talent to rebuild the physical side of data centres."

A good example of this success is CoolIT Systems, a company based in Calgary, specializing in liquid-cooling systems for high-performance AI data centres. Their technology is used in more than 300 data centres worldwide.[47] Its recent acquisition by Ecolab, valued at approximately US$4.75 billion,[48] illustrates how Alberta-based firms can become globally relevant suppliers to the data centre industry by addressing major infrastructure challenges such as cooling, energy efficiency, and water use.

This boom in AI data centre development creates an exciting path for local entrepreneurs and start-ups. Building new products for data centre power and cooling can spark strong economic growth and create many new jobs. Because data centres are expanding rapidly across North America and the globe, successful innovations built in Alberta could have a world market ready for them.

47 CoolIT Systems. July 22, 2026. About CoolIT Systems. https://www.coolitsystems.com/about/coolit-overview/.

48 Ecolab. July 2, 2026. Ecolab closes CoolIT acquisition and expands AI cooling platform as global high tech business targets $4 billion by 2030. https://www.ecolab.com/media-center/news/ecolab-closes-coolit-acquisition-and-expands-ai-cooling-platform.

Indigenous Participation and Economic Reconciliation Opportunities

Key Takeaways:

1. **Indigenous participation in AI data centre development can advance economic reconciliation while also strengthening Alberta's capacity to grow the sector.** Indigenous communities could participate as rights-holders, workers, contractors, suppliers, business partners, infrastructure partners, and project owners. In addition to creating opportunities for Indigenous communities, deeper participation could expand the talent, industrial supply chain capacity, infrastructure expertise, and investment capital available to Alberta's data centre build-out. Indigenous participation should be understood as distinct from a conventional diversity or workforce-inclusion strategy and should reflect Indigenous rights, nationhood, relationships to land, and community-defined economic priorities.
2. **The most durable economic benefits extend beyond jobs to Indigenous business participation, equity, and ownership.** Indigenous procurement strategies; supplier-development supports; joint ventures; revenue-sharing arrangements; and ownership of data centre, energy, or connectivity infrastructure can help keep economic value in communities and build long-term capacity. Success should therefore be measured through outcomes such as employment retention and career progression, repeat Indigenous contracting and supplier growth, equity participation, revenue generation, and other community-defined benefits.
3. **Early engagement and ongoing co-design are essential to meaningful participation.** There is no single model for Indigenous participation in data centre development. Project proponents must engage affected Indigenous communities early and continue that engagement throughout project development, working directly with communities to co-design training, procurement, community-benefit, and ownership arrangements that reflect their priorities, capacity, and preferred forms of involvement.
4. **Employment opportunities will not automatically translate into lasting Indigenous workforce participation.** Alberta's Indigenous population continues to face structural barriers to participation in the digital economy. Durable workforce benefits will require formal pathways that connect training to paid work experience and permanent employment, supported by mentorship, culturally safe delivery, flexible credential and skills-based entry routes, and practical supports such as transportation, connectivity, and financial assistance where needed.

The development of AI data centres in Canada presents significant opportunities for Indigenous peoples to participate in the country's growing digital economy. In Alberta, this expanding industry allows Indigenous communities to engage deeply as rights-holders, employees, contractors, suppliers, business partners, and project owners. To explore these opportunities, this study engaged with Indigenous tech entrepreneurs and business leaders, as well as data centre developers active across Western Canada.

Economic inclusion opportunities presented by AI data centre development can also help advance economic reconciliation. They align closely with the Truth and Reconciliation Commission of Canada's Call to Action 92: Business and Reconciliation, by moving Indigenous participation beyond basic consultation, promoting meaningful economic inclusion through jobs, training, commercial decision-making, and long-term control over the benefits generated on or near Indigenous lands and communities.[49]

Indigenous participation can also strengthen Alberta's strategic capacity to develop its AI data centre industry. Indigenous communities and businesses represent potential sources of talent, industrial supply chain capacity, infrastructure development expertise, and investment capital.

Canada's Responsible Data Centre Development Principles (2026) emphasize the importance of engaging with and seeking the approval of host communities and Indigenous rights-holders. The principles also stress transparency regarding local data centre development impacts, while promoting training, apprenticeships, and procurement opportunities for Indigenous workers and businesses.[50]

Alberta has the largest number of Indigenous-owned businesses of any province, while ICTC research has identified strong foundational digital skills and growing interest in AI, cybersecurity, data analytics, and entrepreneurship among Indigenous youth. Indigenous communities are also increasingly participating in major energy and infrastructure projects as suppliers, developers, and equity owners.[51] As Alberta seeks to rapidly scale data centre construction, supporting infrastructure, and the workforce required to operate it, deeper Indigenous participation can expand the pool of workers, businesses, infrastructure partners, and investors.

These opportunities emerge against a backdrop of persistent underrepresentation and barriers to participation in Alberta's digital economy. ICTC's research, developed in partnership with the First Nations Technology Council, found that Indigenous Peoples account for approximately 1% of the digital workforce, while Indigenous unemployment in Alberta stood at 11.9% in 2024 and 17.5% among Indigenous peoples.[52]

The study also identified significant structural barriers affecting participation, including gaps in connectivity, access to education and training, recruitment practices, and culturally safe employment pathways. This means that the employment benefits associated with data centre development should not be assumed to flow automatically to Indigenous workers and communities. Deliberate pathways are required to translate investment into sustained participation.

From this perspective, engagement, economic participation, and ownership are connected to wholistic economic sovereignty, rather than

49 Crown-Indigenous Relations and Northern Affairs Canada. April 1, 2022. Delivering on Truth and Reconciliation Commission Calls to Action: Business and reconciliation. https://www.rcaanc-cirnac.gc.ca/eng/1524506030545/1557513309443.

50 Innovation, Science and Economic Development Canada. September 3, 2026. Canada's responsible data centre development principles. https://ised-isde.canada.ca/site/ised/en/canadas-responsible-data-centre-development-principles.

51 Statistics Canada. 2024. Indigenous-owned businesses in Canada, 2005 to 2021. Economic and Social Reports. Information and Communications Technology Council, First Nations Technology Council, and Engage Delaney. 2026. Shaping a digital future for Indigenous Peoples: Alberta labour market study. https://ictc-ctic.ca/reports/shaping-a-digital-future-for-indigenous-peoples.

52 Information and Communications Technology Council, First Nations Technology Council, and Engage Delaney. 2026. Shaping a digital future for Indigenous Peoples: Alberta labour market study. https://ictc-ctic.ca/reports/shaping-a-digital-future-for-indigenous-peoples.

short-term benefits. True ownership provides Indigenous communities with lasting control and equity. As one interviewee noted regarding Indigenous ownership, "It's not a rental—you own the pink slip."

Indigenous participation in data centre development should therefore be understood as distinct from a conventional workforce-inclusion or diversity strategy. Indigenous peoples are rights-holders, and meaningful participation must account for Indigenous rights, nationhood, relationships to traditional lands, and community-defined economic priorities. Thus, economic reconciliation is not simply about increasing representation in jobs. It is about expanding Indigenous agency across decision-making, workforce development, business participation, infrastructure, and ownership.

Early and Meaningful Engagement

Meaningful engagement requires full respect for Indigenous sovereignty and rights. Indigenous communities must be treated as full and equal decision-makers and governing partners on their traditional lands. For data centre developers in Alberta, this engagement is a crucial early step that heavily influences site selection, regulatory approvals, and overall project structure.[53]

To ensure this happens correctly, developers work closely with Alberta's Aboriginal Consultation Office (ACO). The ACO reviews applications for major projects, including data centres, to identify potentially affected communities. This ensures that consultations happen well before projects are publicly announced, allowing communities to understand the plans, raise concerns, and identify economic opportunities early. As one data centre developer noted, "We don't announce these projects publicly until we've held those consultations."

The same developer emphasized that direct and meaningful engagement allows Indigenous communities to shape project development and identify the forms of participation that best align with community priorities, rights, and development objectives. This proactive approach ensures that Indigenous engagement is built directly into project planning, rather than treated as a late procedural step.

Because specific priorities differ by community, a single, uniform engagement model would not work. Depending on the project and the nation, goals may include employment, training, construction contracting for Indigenous-owned businesses, revenue sharing, equity stakes, or direct ownership. Data centre developers must then work directly with each affected community to understand their economic priorities and desired level of involvement.

Meaningful engagement should continue beyond the formal consultation and project-approval process. Where communities identify economic participation as a priority, Indigenous partners should be involved in co-designing the mechanisms intended to deliver those benefits, including training pathways, procurement programs, community-benefit arrangements, and ownership structures.

Experience from Indigenous digital initiatives suggests that programs are more relevant, trusted and effective when Indigenous participants help shape their design and governance, rather than being invited to participate only after the model has already been established.

53 Papillon, M., and Thierry, R. 2019. From consultation to consent: The politics of Indigenous participatory rights in Canada. In The prior consultation of indigenous peoples in Latin America, 261–276. Routledge.

Employment, Training, and Workforce Development

Employment and workforce development opportunities were frequently highlighted as major benefits of data centre projects. Interviewees identified potential jobs in construction, skilled trades, power generation, site operations, environmental monitoring, security, business operations and administration, and technical support. However, a significant gap remains between identifying these job opportunities and creating formal training pathways to access them.

Expanding Indigenous workforce participation could help Alberta respond to the labour constraints identified in this report. Indigenous Peoples represent a comparatively young and underrepresented source of talent. In 2021, the average age of Alberta's Indigenous population was 31.3 years, compared with 39.1 years among non-Indigenous Albertans.[54]

ICTC's recent research also found strong interest among Indigenous youth in emerging technology fields and that approximately 70% of surveyed Indigenous job seekers considered themselves somewhat or fully prepared for technology roles.[55] Developing pathways into data centre construction, operations, and technical occupations can therefore serve both Indigenous employment objectives and Alberta's need to expand the future workforce available to a rapidly growing industry.

To bridge this gap, the industry could look to transferable skills and internal training. Many operational roles, such as repairing IT equipment and server racks, can be taught directly on the job. Meanwhile, power-generation roles can easily draw on workers with experience from the oil, gas, and heavy industrial sectors. Transitioning workers into these roles is vital because construction jobs are temporary and taper out once a data centre construction project is completed. Long-term economic benefits come from permanent operational, technical, supervisory, and managerial positions.

To secure these permanent careers, interviewees urged the creation of training partnerships. These networks should connect Indigenous communities, data centre developers, colleges, and employment training providers. Effective programming should include pre-employment preparation, student apprenticeships, paid co-op placements, and equipment-specific training. Programs should also offer direct pathways into certifications like power engineering, helping workers transition from temporary construction jobs into long-term data centre careers.

Evidence from ICTC's broader research on Indigenous participation in Alberta's digital economy suggests that program design will matter as much as the technical curriculum. Training pathways are more likely to be accessible and sustainable when they are co-designed with Indigenous communities and Indigenous-led organizations, provide flexible delivery options, connect learners to paid work experience and mentorship, and include practical supports that address barriers to participation and completion. These may include transportation support, living allowances, scholarships, and other wrap-around services. Culturally safe learning and workplace environments are also important to recruitment, retention, and long-term career progression.[56]

54 Statistics Canada. August 24, 2026. Focus on geography series, 2021 census of population: Alberta. https://www12.statcan.gc.ca/census-recensement/2021/as-sa/fogs-spg/page.cfm?dguid=2021A000248&lang=E&topic=8.

55 Information and Communications Technology Council, First Nations Technology Council, and Engage Delaney. 2026. Shaping a digital future for Indigenous Peoples: Alberta labour market study. https://ictc-ctic.ca/reports/shaping-a-digital-future-for-indigenous-peoples.

56 Information and Communications Technology Council, First Nations Technology Council, and Engage Delaney. 2026. Shaping a digital future for Indigenous Peoples: Alberta labour market study. https://ictc-ctic.ca/reports/shaping-a-digital-future-for-indigenous-peoples.

Workforce pathways should also distinguish between qualifications that are genuinely required for safe and effective data centre work and conventional credential requirements that may unnecessarily restrict entry. For roles where competencies can be developed and demonstrated through work-based learning, industry-recognized certification, and supervised experience, employers could adopt skills- or capability-based hiring approaches. This could widen access to technical careers while maintaining clear competency standards.

Where possible, workforce development should also enable Indigenous learners to build skills without requiring permanent relocation from their communities. Indigenous-led education models across Canada have demonstrated the value of distributed, community-based and hybrid learning that combines remote course delivery with local or accessible mentorship and hands-on experience. In Alberta, for example, SCcyber was developed by members of Sunchild First Nation to provide community-led e-learning to Indigenous learners in remote locations, supported by regular interaction with teachers.[57]

Data centre training models could similarly combine community-based or online foundational learning with concentrated periods of hands-on technical training and paid work placements. This approach may be particularly valuable for communities located far from Alberta's major post-secondary and technology hubs.

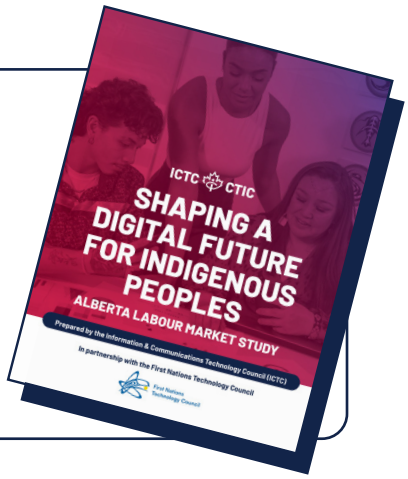
Digital access is also a prerequisite for many of these pathways. Community-based and hybrid training models depend on reliable broadband, appropriate devices and technical support. These conditions cannot be assumed across rural and remote Indigenous communities. Workforce partnerships should therefore assess digital-access barriers when programs are designed and, where necessary, include access to equipment, connectivity, or community-based training facilities as part of program delivery.

Workforce initiatives should also recognize that barriers are not experienced uniformly across an Indigenous community. There are distinct additional barriers for Indigenous women and youth, including access to financing and equipment, caregiving and time constraints, limited mentorship, and delayed exposure to digital skills.[58] Program designers should therefore consider targeted mentorship, flexible delivery, early exposure to data centre and digital careers, and financial supports where these barriers are identified by participating communities.

Related ICTC Research

Shaping a Digital Future for Indigenous Peoples: Alberta Labour Market Study

In 2026, ICTC partnered with the First Nations Technology Council to conduct this multi-year labour market study to identify opportunities and challenges for Indigenous job seekers, training institutions, and employers within Alberta's growing digital sector.



57 Lubendo, N., Rice, F., Toor, M., and Quan, T. October 2023. Indigenous-led E-learning and enabling technologies: A scan of programs in Canada. Information and Communications Technology Council (ICTC). https://ictc-ctic.ca/reports/indigenous-led-e-learning-and-enabling-technologies.

58 Indigenous Prosperity Foundation. 2025. Bridging the digital divide: Enhancing access for Indigenous entrepreneurs in Canada: Summary report. https://www.indigenousfoundation.ca/digital.

Canadian Model: The IT Apprenticeship Program for Indigenous Peoples

Canada already offers evidence that Indigenous-specific apprenticeship models can successfully create pathways into technical occupations. The Government of Canada's IT Apprenticeship Program for Indigenous Peoples combines a two-year paid work placement with structured learning, using an 80% work and 20% learning model. The program was designed by, for, and with Indigenous Peoples and removes a significant entry barrier by recognizing combinations of education, training, and experience instead of requiring a conventional post-secondary IT credential. Apprentices also receive support from supervisors, peer partners, and Indigenous success facilitators, with remote participation available where possible so that participants can remain connected to their home communities.

ICTC contributed to the program's development by conducting labour market analysis of private-sector IT occupations, identifying in-demand entry-level skills and certifications, and convening Canadian employers to provide input on the program's curriculum, implementation, and credential design. ICTC co-authored a case study with Employment and Social Development Canada officials examining the program's design, early outcomes, and potential lessons for apprenticeship models in rapidly changing technical fields.

Early program results are promising. The program reported 186 Indigenous apprentices and a 96% retention rate, while all 19 graduates reported in the available outcome data had either secured employment or were pursuing longer-term employment. Forty-one participants were working from or living in an Indigenous community.[59]

Although a data centre apprenticeship would require different technical content and delivery arrangements, the model demonstrates how paid work experience, flexible credential requirements, mentorship, and culturally relevant supports can be combined to create durable pathways into rapidly evolving technical occupations.

59 Rice, F., Thomas, V., and Lalonde, J. The IT apprenticeship program for Indigenous Peoples: A model for reconciliation and digital inclusion in Canada's public sector. Manuscript submitted for publication, OECD Cedefop.
Government of Canada. 2023. IT apprenticeship program for Indigenous Peoples – Alternative educational requirements. Treasury Board of Canada Secretariat. https://www.canada.ca/en/treasury-board-secretariat/services/information-notice/it-apprenticeship-program—indigenous-peoples-alternative-educational-requirements.html.

Project Procurement for Indigenous-Owned Businesses

Indigenous-owned businesses could benefit significantly from contracting and procurement opportunities throughout the construction and development of data centres. These opportunities span a wide range of services, including civil construction, site preparation, building access roads, and installing pipeline and power infrastructure. Additionally, data centre developers require equipment rentals, environmental services, transportation, site security, ongoing maintenance, and various other supporting services.

Demonstrating this potential, one data centre company currently operating in Northern Alberta described its engagement with Indigenous communities as both a crucial consultation responsibility and a valuable economic opportunity for local Indigenous communities, noting, "We're working on the traditional lands of several First Nations. Working with them to understand their relationship with the land has been really important. There's a lot of economic opportunity as well for the First Nations and Indigenous-owned contractors that we work with throughout development."

Indigenous procurement and direct business partnerships were also identified as important channels for participation in data centre development. Local Indigenous-owned contractors can contribute across the construction and development phases.

Furthermore, regular purchasing processes can be designed to match existing community strengths. This approach creates space for long-term business relationships once data centres become operational. Embedding these businesses directly into supply chains ensures that economic benefits stay in nearby communities, strengthens Indigenous enterprises, and builds lasting partnerships.

Alberta begins from a substantial base of Indigenous entrepreneurship. Statistics Canada estimates that Alberta accounted for 21.8% of Indigenous-owned businesses in Canada in 2021, the largest share of any province.[60] This existing business base represents potential economic capacity for data centre development, particularly where firms have capabilities transferable from Alberta's energy and industrial sectors into construction, logistics, environmental services, maintenance, and other data centre supply chain requirements.

Alberta's oil and gas sector provides examples of how Indigenous-owned businesses have participated in major industrial development through procurement, community-owned corporations, joint ventures, supplier networks, and equity ownership structures.[61] In the Alberta oil sands, Indigenous-affiliated vendors have supplied goods and services across construction, maintenance, reclamation, logistics, and operational support.

In fact, Indigenous-owned firms like Acden and the Fort McKay Group of Companies have grown into major industrial service providers.[62] Indigenous communities have also taken on larger ownership roles, such as holding equity stakes in pipeline infrastructure backed by the Alberta Indigenous Opportunities Corporation.[63] Data centre developers and Indigenous communities have the opportunity to use these examples to build similar pathways for procurement, training, and ownership from the start.

60 Gueye, B. December 19, 2024. Indigenous-owned businesses in Canada, 2005 to 2021. Statistics Canada, Economic and Social Reports. https://doi.org/10.25318/36280001202401200005-eng.

61 Canadian Association of Petroleum Producers. June 19, 2025. Twelve Alberta oil and natural gas companies spent approximately $14.4 billion with Indigenous-affiliated businesses and community investments from 2021 to 2023. https://www.capp.ca/en/media/twelve-alberta-oil-and-natural-gas-companies-spent-approximately-14-4-billion-with-indigenous-affiliated-businesses-from-2021-to-2023/.

62 Acden. July 22, 2026. About. https://www.acden.com/about.
Fort McKay Group of Companies LP. July 22, 2026. About us. https://fortmckaygroup.com/about-us/.

63 Alberta Indigenous Opportunities Corporation. August 10, 2026. About us. https://theaioc.com/who-we-are/about-us/.

Increasing Indigenous procurement will require attention to supplier readiness as well as procurement policy. Indigenous-owned firms may have the underlying expertise to participate in data centre supply chains but still encounter barriers related to working capital, bonding and insurance requirements, technical certifications, procurement systems, or the administrative capacity needed to compete for large contracts.[64] Developers can address these barriers through advance notice of upcoming opportunities, supplier-development programs, technical assistance, mentorship, partnership and joint-venture models, and connections to Indigenous-led sources of business financing.

To achieve this, data centre developers could establish formal Indigenous procurement strategies early in the planning stages. This could include identifying qualified Indigenous-owned suppliers, breaking large contracts into accessible work packages to encourage bidding by small- and medium-sized Indigenous-owned businesses, communicating upcoming procurement needs, and supporting Indigenous-owned businesses in meeting technical, insurance, and financing requirements.

Equity, Asset Ownership, and Economic Sovereignty

Experts and industry leaders overwhelmingly agree that equity participation and project ownership are the most transformative ways for Indigenous communities to participate in the build-out of data centre infrastructure in Alberta. As one interviewee noted, although Indigenous participation has traditionally been concentrated on the energy side of infrastructure developments, opportunities are emerging for "ownership, or fractional ownership of a portion, of a data centre itself."

This co-ownership model embeds Indigenous communities across the entire value chain. As one interviewee explained: "We build data centres as co-owners, as opposed to just a checkbox. We actually bring data centres through and develop them along the whole value chain—in terms of equity, in terms of employment, and in terms of revenue sharing."

This approach could include ownership in power-generation and distribution assets, data centre infrastructure, fibre and telecommunications connectivity, or a portion of a larger data centre campus.

Alberta also has financing mechanisms that can support Indigenous participation at the scale required for major infrastructure. The Alberta Indigenous Opportunities Corporation has up to $3 billion in loan-guarantee capacity to facilitate Indigenous equity investment in major projects, with technology and telecommunications among its eligible sectors. Eligible loan guarantees generally range from $20 million to $250 million. At the federal level, the Canada Infrastructure Bank (CIB) has identified digital infrastructure and AI as a priority sector for Indigenous infrastructure investment and provides financing for Indigenous communities to acquire equity stakes in infrastructure projects in which the CIB is already investing.[65] These mechanisms create potential pathways for Indigenous communities to participate not only as workers or suppliers, but as investors and infrastructure partners in Alberta's emerging data centre economy.

64 Indigenous Prosperity Foundation. 2025. Bridging the digital divide: Enhancing access for Indigenous entrepreneurs in Canada: Summary report. https://www.indigenousfoundation.ca/digital.

65 Alberta Indigenous Opportunities Corporation. August 24, 2026. About us and Loan guarantees. https://theaioc.com/who-we-are/about-us/ and https://theaioc.com/indigenous-groups/loan-guarantees/.
Canada Infrastructure Bank. August 24, 2026. Indigenous infrastructure and Priority sectors. https://cib-bic.ca/en/indigenous-infra/ and https://cib-bic.ca/en/sectors/priority-sectors/.

Another practical approach involves setting up an Indigenous-owned utility. One data centre developer explained this strategy: "We'll create a Nation power company as part of it and we'll buy power from that created entity." This arrangement could secure a steady, long-term source of revenue, build local business capacity, and give Indigenous communities a direct stake in the digital economy.

Indigenous ownership or control of digital infrastructure could create new opportunities to advance Indigenous data sovereignty. For example, Indigenous-owned or controlled hosting infrastructure can provide communities with greater ability to determine where certain data is stored and the governance conditions under which it is accessed and used. ICTC has identified examples of Indigenous-led digital platforms that support Indigenous-owned hosting as part of Indigenous data-sovereignty approaches.[66] Infrastructure ownership alone does not determine data sovereignty, but it can form part of a broader governance and technology strategy that strengthens Indigenous control over digital assets.

The durability of these benefits also matters. Indigenous participation should therefore be assessed through outcomes, not simply activities such as the number of consultations held or individuals entering training.

Depending on community priorities, meaningful measures could include training completion and employment retention, progression into permanent technical and leadership roles, Indigenous supplier expenditures and repeat contracts, the growth of Indigenous-owned businesses, equity participation and revenue generation, and other community-defined economic outcomes. The Government of Canada's Indigenous IT apprenticeship provides one example of this outcome-oriented approach, tracking retention in addition to recruitment, as well as long-term employment and the number of participants who can remain in Indigenous communities.

Realizing these employment, procurement, and ownership opportunities, for Indigenous communities and Alberta's workforce as a whole, will depend on deliberate strategies to build the necessary skills, training pathways, and supply chain access. The following section turns to those workforce gaps and the potential steps to close them.

66 Lubendo, N., Rice, F., Toor, M., and Quan, T. October 2023. Indigenous-led E-learning and enabling technologies: A scan of programs in Canada. Information and Communications Technology Council (ICTC). https://ictc-ctic.ca/reports/indigenous-led-e-learning-and-enabling-technologies.

Catalyzing AI Data Centre Talent

Key Takeaways:

1. Although Alberta possesses a strong foundation of transferable engineering and skilled-trades talent relevant to the AI data centre industry, it must rapidly expand its specialized technical workforce to meet future demand.
2. Alberta's biggest workforce challenge may not only be a shortage of experienced workers, but an absence of clear, coordinated training and career pathways to increase the pipeline of data centre talent in the province.
3. Alberta can learn from examples of AI data centre workforce development and training best practices from global data centre development hubs like the United States, China, and Europe. Workforce development programs, such as skill academies and bootcamps, cross-industry reskilling, standardized qualification mapping, and industry-academic embedded certification programming, are all interesting training models Alberta can derive best practices from.

Experts and data centre industry leaders interviewed for this study suggest that the Alberta workforce could handle a few new data centre projects. While the province boasts a deep pool of transferable talent in engineering and heavy construction, it faces an immediate test in scaling up its specialized technical talent. Consequently, long-term expansion of AI data centres could require a stronger system for training and developing workers. Navigating this balance will be essential to prevent local talent shortages from stalling broader regional infrastructure projects.

Assessing Workforce Gaps

Alberta's pre-existing skilled workforce in fields such as heavy industrial construction and oil and gas provides the province with a strong foundation to build and operate AI data centres. Alberta's well-established oil and gas sector provides a major strategic advantage for this growth. Because data centre operators often look for "behind-the-grid" power solutions—generating electricity directly on-site—Alberta's abundant natural gas resources offer opportunities for energy workers to transition into the data centre industry.

Additionally, the province can capitalize on these tech investments by encouraging local start-ups to invent new tech solutions, like advanced cooling systems. This opens the door for Alberta's start-ups and small- and medium-sized businesses to become key suppliers in the emerging AI supply chain.

A major gap however is a lack of experience in designing, building, and running large AI data centres. While Canadian companies are skilled at creating traditional commercial and industrial infrastructure, they have limited experience delivering the massive facilities needed for intense AI training and computing workloads.

Simultaneously, Alberta faces a shortage of high-tech talent in advanced software and AI roles. Interviewees explained that the province

does not have a deep enough pool of experts in applied AI, machine learning, and LLMs. Many internationally trained graduates end up leaving the province after finishing school.

This talent gap is most severe for experienced intermediate and senior workers, but it also affects entry-level graduates. While these AI specialists might not work directly inside physical data centres, their skills are needed to build the next generation of AI models and applications that will run using compute resources provided by data centres. Keeping these specialists in Alberta is crucial to enjoy the economic benefits and innovation that come with the AI industry.

Finally, new automation technologies inside data centres are making this skills gap even wider. One expert explained that automation is eliminating some entry-level tasks, making it harder for recent graduates to gain the hands-on experience needed to reach senior roles. Another interviewee noted that AI now handles most routine problems at modern data centres. This means human workers need advanced technical knowledge and high-level troubleshooting skills to fix the complex issues that AI cannot solve on its own. As a result, schools training future data centre workers may need to focus less on routine technical tasks and more on teaching analytical thinking, communication, teamwork, and decision-making.

Training Pathway Gaps

Experts and industry leaders consulted for this study emphasized that Alberta's biggest workforce challenge may not only be a shortage of experienced workers, but an absence of clear, coordinated training and career pathways.

Alberta's AI data centre industry is highly reliant on recruiting skilled workers from adjacent industries and adapting their skills to data centre development, construction, and operational roles. While this workplace learning has created a small group of skilled professionals, it cannot scale fast enough to meet future demands. Alberta does not have enough existing data centres to provide on-the-job training for the wave of workers that future AI projects will require. As one participant observed, "There are not enough existing data centres to train, through on-the-job experience, all the operators that new projects will require."

Even when qualified workers are hired, they still face a "substantial learning curve on the job" because every data centre environment is unique, fast evolving, and technologically complex. This training gap is worsened because post-secondaries do not currently teach the complete data centre ecosystem.

Evidence from mature data centre markets demonstrates that continuous, large-scale construction places severe strain on electricians, mechanical trades, general contractors, and local apprenticeship programs. In fact, Turner & Townsend's 2026 market research of the global construction sector highlights data centres as one of the most short-staffed construction sectors. More than 70% of surveyed markets report tightening contractor capacity, with severe shortages in specialist mechanical, electrical, and plumbing trades.[67] Rapid AI data centre growth in Alberta could create similar workforce gaps in these specialized areas, even though hiring has been manageable so far.

Currently, the province lacks formal data centre training. Schools face a "chicken-and-egg" dilemma when trying to expand training. Institutions are hesitant to spend money on new data centre education programs before massive projects are delivered. At the same time, technology companies are hesitant to invest in building these multi-million-dollar projects until they know a trained workforce is available.

67 Dixon, B. July 8, 2026. AI demand is increasing labor shortages and skills pressure in data center construction—Report. Data Center Dynamics. https://www.datacenterdynamics.com/en/news/ai-demand-is-increasing-labor-shortages-and-skills-pressure-in-data-center-construction-report/.

Some actions are already being taken by Alberta post-secondaries. In May 2026, the University of Calgary, University of Alberta, and Red Deer Polytechnic entered a partnership with the Digital Research Alliance of Canada to host the Alberta-based portions of the Distributed Storage and Compute Grid (DSCG). The DSCG will provide secure and scalable academic compute resources nationally.[68] Red Deer Polytechnic is also in the process of building a small data centre to be used for both academic research as well as hands-on student training.

Post-secondary institutions were described by some interviewees as lacking awareness about data centre roles across "business, IT, trades, operations, and facilities." Consequently, students in Alberta pursuing data centre careers may graduate with strong knowledge of one technical discipline but limited understanding of how electrical, mechanical and cooling, computing, and business systems interact in a continuously operating large-scale AI data centre.

The pace of technological change is also creating an additional challenge. Updating school curricula takes years, while novel data centre technologies, such as liquid-cooling systems and automation, change continuously. One interviewee characterized education as "years behind industry" and argued that infrastructure-related knowledge is frequently overlooked because it is rarely taught in post-secondary programs. Emerging requirements in liquid-cooling, high-voltage systems, automation, facility digital twins, OT cybersecurity, and AI infrastructure may therefore develop faster than formal programs can respond. This leaves education lagging far behind industry.

Experts also noted a lack of coordination in workforce planning. For instance, one expert noted that there is no meaningful connection between energy sector planning and data centre workforce planning. This is a problem because data centres must compete for the same construction and skilled trade talent, such as electricians, pipefitters, construction engineers, and contractors, needed by utilities, the oil and gas sector, and other major building projects. Additionally, another expert worried that current workforce planning and immigration policies are not aligned enough to recruit the skilled workers needed to build Alberta's planned infrastructure.

Finally, a lack of strong partnerships between schools and employers may limit hands-on opportunities for students. Some interviewees noted that there are too few employers willing to take on apprentices or offer work-integrated learning (WIL) placements. Without these practical, entry-level job experiences, young Albertans cannot gain the cross-disciplinary experience required for specialized roles.

This is particularly important because Alberta's principal constraint is experienced talent, rather than the number of people entering the labour market. ICTC's broader Alberta labour market research finds that WIL can be a career-progression mechanism, helping new entrants move toward intermediate-level roles by building practical skills and industry-specific experience.[69] In data centres, structured placements could therefore help close the gap between entry-level technical qualifications and the hands-on critical environment experience that operators identify as difficult to find.

To address this gap, experts and data centre industry leaders interviewed for this study believed that Alberta can build closer industry-post-secondary partnerships, speed up curriculum updates, improve credential recognition, expand student apprenticeships and WIL opportunities, and better align tech investment with provincial training strategies.

Moreover, international examples from leading data centre hubs in the United States, China, and Europe can also provide helpful examples for workforce development strategies for Alberta to consider.

68 Digital Research Alliance of Canada. May 22, 2026. The Digital Research Alliance of Canada Invests over $15M in Foundational Infrastructure to Drive Next-Generation Research Services. https://www.alliancecan.ca/en/latest/news/the-digital-research-alliance-of-canada-invests-over-15m-in-foundational-infrastructure-to-drive-next-generation-research-services.

69 Ivus, M., Lindstrom, C., McGeer, H., and Podolna, O. March 2025. Alberta's digital economy: Outlook 2030. Information and Communications Technology Council (ICTC). https://ictc-ctic.ca/reports/albertas-digital-economy-outlook-2030.

Data Centre Workforce Development: Some International Approaches

Different models for data centre workforce development have been adopted in various parts of the world, notably in the United States, Europe, and China. The five models below could be instructive for Alberta, each with a clear provincial application that builds on the province's existing industrial and post-secondary strengths.

I. Co-investment academies (United States). Hyperscalers embed dedicated training facilities in community colleges and trade institutions in infrastructure zones rather than drawing on generic talent pools. The Microsoft Datacenter Academy and AWS Workforce Accelerator supply partner schools with curriculum, mentorship, and decommissioned server equipment, giving students hands-on experience in simulated critical environments before entering live facilities. Alberta could partner with SAIT and NAIT to host specialized data centre operations certificates, funded through tech-infrastructure tax credits.

II. Accelerated trades bootcamps (United States). Construction of data centre infrastructure demands a rapid surge in heavy industrial trades—fibre technicians, industrial electricians, welders, and specialized pipefitters. In response, major operators fund short-form workforce academies: Meta's America's Workforce Academy is a free five-week program that guarantees graduates immediate employment with contractors building local facilities, while Google's STAR Program offers paid bootcamps in communities undergoing rapid construction. This model maps directly onto Alberta's existing pool of oil and gas pipefitters, heavy electricians, and structural welders, who can be upskilled within weeks for high-density equipment installation.

III. Cross-industry reskilling (United States). To address the operational talent shortage, operators recruit from adjacent sectors experienced in high-uptime critical infrastructure, notably military veterans and commercial maritime engineers already trained in high-pressure equipment, backup power generation, safety compliance, and calm response to systems failures. In Alberta, power engineers, refinery technicians, and plant operators hold the technical, mechanical, and safety credentials needed to run advanced liquid-cooled, gas-powered data centre microgrids.

IV. Standardized qualification mapping (Europe). European jurisdictions map data centre curricula to Levels 3–7 of the European Qualifications Framework, ensuring a technician trained in Denmark or Finland holds the same accredited competencies required in Frankfurt, Dublin, or Milan. Alberta could replicate this by establishing a Western Canadian Data Centre Education Consortium, uniting post-secondary institutions such as SAIT, NAIT, Red Deer Polytechnic, and the University of Alberta under a single framework to standardize dual-credit programs. Rural colleges near natural gas fields could then produce technicians meeting the operational and environmental, social, and governance (ESG) criteria international investors demand.

V. Embedded certification alliances (China). Under initiatives such as the Huawei ICT Academy, tech firms partner with polytechnics and universities to place professional-grade certifications directly inside standard degree programs, supplying thousands of industry-certified graduates annually. Alberta could adapt this model by brokering dual-credit partnerships among regional energy providers, hyperscalers, and institutions like the University of Alberta, University of Calgary, and Athabasca University, weaving practical infrastructure certifications into standard engineering degrees.

Recommendations

To capitalize on the progress already enjoyed by Alberta's rapidly developing AI data centre ecosystem, data centre industry ecosystem participants have offered suggestions on how the province could address its current talent and workforce gaps. Based on these interviews, Alberta's AI data centre ecosystem could take the following steps to catalyze talent:

1. **Develop an Alberta AI data centre workforce observatory:** Create a dedicated provincial labour market information program, with a mandate to track, study, and publish real-time job market data, including developments and emerging trends in talent as well as highlight skills gaps. In a rapidly growing industry like AI data centres, generating contemporary labour market information is crucial for workforce planning.

2. **Build industry awareness:** Promote career pathways and access to quality jobs in the data centre industry for young people, recent graduates, newcomers, jobseekers, and career-changers. In doing so, highlight data centre construction as a major source of steady, high-quality jobs for skilled tradespeople.

3. **Strengthen industry-post-secondary partnerships:** Strengthen linkages and formalize partnerships between Alberta's quickly growing AI data centre industry and post-secondary institutions, including universities, polytechnics, and regional colleges.

4. **Create formal education and training pathways:** Once partnerships are established, college and university programs could be designed and tailored to data centre careers. As data centre facilities grow larger and more complex, workers will need formal training in specialized areas like data centre engineering design, IT operations, and facilities maintenance.

5

Expand student work placements: Develop formal and ongoing WIL programs, such as internships, co-op programs, student capstone projects, and practicums, between AI data centre operators and post-secondary institutions. Instead of offering these opportunities on an ad hoc basis, data centre companies should build student placements directly into their long-term hiring and HR plans.

6

Support competency-based upskilling and cross-training for specialized data centre skills: Post-secondary institutions, training providers, and industry should jointly develop short, accessible, and employer-recognized training programs, including professional workshops and micro-credentials, for scarce and emerging skills such as critical facility operations, high-density cooling, power systems, OT cybersecurity, and data centre infrastructure management. Programs should include clear competency assessment and credible verification so employers can readily understand and trust the skills represented by the credential. Companies should also cross-train existing staff across technical functions to build broader systems knowledge and deepen the interdisciplinary expertise required in modern data centre environments.[70]

7

Build Indigenous-led and co-designed data centre workforce pathways: Data centre developers, post-secondary institutions, training providers, and governments should work directly with Indigenous-led partners to develop pathways into data centre construction, operations, and technical careers. Programs should connect technical training and certification to paid WIL, apprenticeships, and employment opportunities, while incorporating mentorship, culturally safe delivery, and practical wrap-around supports. Pathways should be designed with affected communities to reflect local priorities, existing skills, and preferred forms of participation.

70 McGeer, H. and Henningsmoen, E. March 2024. Accelerating Canada's workforce: Micro-credentialing in the digital economy. Information and Communications Technology Council (ICTC). https://ictc-ctic.ca/reports/accelerating-canadas-workforce.

8

Enable Indigenous equity participation in data centre and supporting infrastructure: Governments, developers, and Indigenous partners should explore existing financing mechanisms, including the Alberta Indigenous Opportunities Corporation and CIB, to support commercially viable Indigenous equity participation in data centres and related power, telecommunications, and other enabling infrastructure. Early consideration of equity structures can create long-term revenue opportunities for participating communities while expanding the pool of investment and infrastructure partners available to Alberta's data centre sector.

9

Boost the skilled-trades pipeline: The build-out of AI data centres and their ongoing maintenance will necessitate more skilled tradespeople in Alberta, including electricians, plumbers and pipefitters, and HVAC technicians. Training and apprenticeship capacity for the critical trades that build and maintain data centre facilities should be expanded.

10

Improve project procurement access for local and Indigenous businesses: Make it easier for Alberta's small- and medium-sized businesses to bid on data centre contracts. Developers could offer transparent tendering and information sessions for new data centre projects. They could also create bidding processes that actively welcome Indigenous entrepreneurs and Indigenous-owned businesses into projects.

Appendix: Research Methods

Mixed-Methods Research

ICTC uses a mixed-methods approach for research on Canada's digital economy, including this study of AI data centres in Alberta. Mixed-methods research fuses qualitative and quantitative research methods into an integrated whole, allowing researchers to answer research questions in a nuanced way from multiple perspectives. Triangulating findings from qualitative and quantitative methods can increase confidence in results by highlighting areas of convergence across multiple sources of evidence, while also providing deeper insight into factors shaping observed trends.

Qualitative Methods

Literature Review

ICTC researchers reviewed existing published literature on AI data centres, Alberta's existing data centre industry, and the current build-out of AI data centre infrastructure throughout Canada and in comparator jurisdictions, such as Virginia and Texas. This literature review helped ICTC define the scope of the study and compile lists of potential data centre industry leaders and experts to interview and invite to industry roundtables. The literature review also helped ICTC structure its economic impact analysis of AI data centre development in Alberta.

Key Informant Interviews

ICTC researchers conducted 21 semi-structured key informant interviews (KIIs) with data centre business leaders, technologists, and other experts on Alberta's data centre industry and current build-out of AI data centres. Each interview lasted approximately 30 to 45 minutes. Interviewees represented data centre operators; data centre developers; construction firms working on AI data centre projects; and equipment vendors, utilities, and energy providers; consulting firms; recruiters and HR firms; and industry associations and non-profits.

KIIs were conducted virtually between March 2026 and July 2026. The goal was to help ICTC understand local context, labour force challenges, and ongoing development in Alberta's data centre industry. Interview data collected were transcribed, coded, and quantitatively analyzed. The KIIs helped ICTC validate and contextualize findings from the qualitative methods used, as well as help inform the content of the final report.

Industry Roundtables

ICTC hosted a series of two virtual industry roundtables in June 2026. During the roundtables, representatives from the data centre industry working in Alberta and throughout Canada shared their views on AI data centre development and workforce challenges in Alberta. Each industry roundtable was 90 minutes. Participant feedback from the roundtables was analyzed qualitatively to identify common themes, insights, and divergent viewpoints. Industry perspectives and feedback gathered during the roundtables helped ICTC validate and contextualize findings from the qualitative methods, as well as help inform the content of the final report.

Research Advisory Committee

This study was informed by a research advisory committee of subject matter experts from industry, local government, non-profits and associations, and academia. The 11-member advisory committee helped guide and validate ICTC's research, providing strategic advice on direction and developments in Alberta's AI data centre build-out. The advisory committee convened three times between January and September 2026.

Quantitative Methods

Economic Impact Model

ICTC modelled the economic impact of building and operating a 400 MW AI data centre in Alberta over 10 years (2027–2036) using Statistics Canada's I-O multipliers for Alberta (Table 36-10-0595-01, 2022 data, within-province scope). The model allocates investment spending across 11 data centre construction-phase industries and 13 operations-phase industries. These industry parameters are based on prior economic impact studies on the Alberta data centre industry and ICTC's literature review.[71]

The data centre facility modelled is assumed to require a $4 billion investment over three years, followed by $536 million annually in ongoing operating costs once the facility is operational.

The model measures spending flows through Alberta's economy, including:

1. **Direct effects:** Jobs and income derived directly from the construction and operation of the data centre.
2. **Indirect effects:** Economic activity generated across the data centre supply chain, such as equipment and materials, energy, and support services.
3. **Induced effects:** Spending by data centre workers earning wages through direct and indirect labour activities in the local economy (such as restaurants, shops, and local services).

Labour Force and Employment Model

To complement the I-O economic impact model, ICTC developed a second labour force availability and employment model to estimate the workforce required to build and operate AI data centres in Alberta and assess whether the province's available labour supply can meet demand.

Unlike the I-O model's broad, industry-average employment multipliers, this model uses field-observed on-site staffing benchmarks drawn from real-world hyperscale data centre projects, since generic industry multipliers do not reflect labour-saving automation characteristic of AI-scale facilities.[72]

Construction and operations workforce intensity are expressed as workers per MW of capacity, applied to Alberta's project pipeline, and validated against multiple independent sources, including CBRE's North America Data

71 ICTC's Alberta data centre economic impact model also drew inspiration from Serena (Thi) To's 2025 master of public policy capstone project on data centre investment in Alberta; see: To, S(T). August 31, 2025. Alberta's AI data centre opportunity: Economic impacts and investment strategy. University of Calgary School of Public Policy. https://ucalgary.scholaris.ca/items/d3e6d47f-4419-4d95-b34d-0494701f451f.

72 Ryu, A., and Hiatt, S.R. December 3, 2025. Data center employment forecast analysis. Zage Business of Energy Initiative, University of Southern California. https://hamminstitute.org/site-files/documents/data_center_workforce.pdf.

Center Trends, Chmura Economics & Analytics' regional labour-shed studies, and disclosed staffing figures from comparable North American projects (e.g., Vantage Frontier Data Center Campus in Texas).[73]

The model estimates employment in two forms:

1. **Construction job-years:** The total volume of labour required over a data centre's building phase. It represents temporary, project-based work, where the trades and headcount may change as construction progresses.
2. **Operations FTEs:** The steady-state, permanent workforce sustained annually for the operational life of the facility.

This employment estimate is then compared against Alberta's available labour supply, drawn from Statistics Canada's Labour Force Survey data for occupational categories relevant to data centre construction and operations (e.g., construction and skilled trades, engineers, data centre operations and IT infrastructure, data centre facilities and physical infrastructure).

The comparison accounts for workers not currently in the labour force who could be drawn into employment (a "NILF activation rate") and for competing demand from Alberta's existing construction pipeline, informed by BuildForce Canada's 2026–2035 provincial labour market outlook.[74] This gap analysis identifies where Alberta's current workforce may be sufficient to meet data centre labour demand, and where it may not, providing a basis for workforce planning recommendations.

When extending this model from a single 400 MW facility to Alberta's broader project pipeline, two timing parameters are used and should not be conflated. Construction duration (three years) refers to how long any individual facility takes to build once construction begins and remains fixed across all scenarios in this report. Rollout horizon refers to how many years it takes for the pipeline's approximately 15 to 20 individual projects to each begin construction, staggered rather than simultaneous.

For the construction workforce scenarios presented in Figure 24, a 10-year rollout horizon is assumed, with new projects beginning construction throughout that period and each facility independently taking three years to complete. Construction therefore continues beyond the rollout window as the final projects are completed.

Construction and Operations Talent Supply Analysis

To assess talent supply available in Alberta for construction and operations roles relevant to AI data centres, ICTC used employment data from Statistics Canada's Labour Force Survey.[75]

Figure 37 outlines National Occupational Classification (NOC) 2021 codes used by ICTC in its talent supply analysis for engineering, electrical occupations, and construction and skilled-trades roles, while Figure 38 outlines NOC 2021 codes used by ICTC in its talent supply analysis for operational data centre roles.

73 Construction and operations workforce intensity ratios are derived from:
Chmura Economics & Analytics. The real bottleneck for data centers isn't power, it's people, (regional occupational staffing matrix, 64 MW facility, and 750 peak construction workers). https://www.chmura.com/blog/the-real-bottleneck-for-data-centers-isnt-power-its-people.
Vantage Data Centers. August 19, 2025. Vantage Data Centers unveils plans for Frontier, a $25B mega-campus in Texas to meet unprecedented AI demand. https://vantage-dc.com/news/vantage-data-centers-unveils-plans-for-frontier-a-25b-mega-campus-in-texas-to-meet-unprecedented-ai-demand/ (1,400 MW facility, 6,500 peak construction workers, and 250 permanent operations staff). https://www.datacentermap.com/usa/texas/dallas/vantage-shackelford-county/).
Industry/trade press coverage of Hut 8 Energy's River Bend Phase I facility and Meta Platforms' Hyperion campus (both in Louisiana).

74 BuildForce Canada. July 2026. Construction and maintenance looking forward, 2026–2035: Alberta highlights. https://buildforce.ca/en/lmi-2026/.

75 Statistics Canada. July 17, 2026. Labour force survey (LFS). https://www.statcan.gc.ca/en/survey/household/3701.

Figure 37. AI Data Centre Construction NOC 2021 Reference Codes

Job Category	NOC 2021 Codes	Description
Engineering	2230	Technical occupations in civil, mechanical, and industrial engineering
	20010	Engineering managers
	2131	Electrical, electronics, and computer engineers
	2130	Civil and mechanical engineers
	2231 (except 22313)	Technical occupations in electronics and electrical engineering
Electrical occupations	7220	Technical electrical trades and electrical power line and telecommunications workers
Construction and skilled trades	70010	Construction managers
	720	Technical trades contractors and supervisors
	721	Technical industrial trades
	722	Technical electrical trades
	723	Technical construction trades
	72400	Construction millwrights and industrial mechanics
	72402	Heating, refrigeration, and air conditioning mechanics
	731	General construction trades
	7511	Trades helpers and labourers

Source: Statistics Canada.[76]

76 Statistics Canada. September 28, 2021. National Occupational Classification (NOC) 2021 Version 1.0. https://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=1322554.

Figure 38. AI Data Centre Operations NOC 2021 Reference Codes

Job Category	NOC 2021 Codes	Description
Data centre operations and IT infrastructure	20012	Computer and information systems managers
	2122	Computer and information systems professionals
	21311	Computer engineers
	22220	Computer network and web technicians
Data centre facilities and physical infrastructure	70012	Facility operation and maintenance managers
	72201	Power system electricians
	72202	Industrial electricians
	72402	Heating, refrigeration, and air conditioning mechanics
	92100	Power engineers and power systems operators
Health and safety, risk management, and security	22232	Occupational health and safety specialists
	6441	Security guards and related security service occupations

Source: Statistics Canada.[77]

Job Posting Data Analysis

To better understand job qualifications, skills, and knowledge needed by Alberta data centre operators, ICTC conducted an analysis of Canadian data centre job postings. ICTC researchers identified 74 data centre operators with job postings in the Vicinity Jobs database between January 1, 2022, and April 30, 2026, yielding 4,841 job postings.

Raw job titles from the job postings were cleaned and standardized using Qwen3-8B, an open-weight LLM. Frequencies of common roles, job locations, and job requirements, such as education and certifications, technology and equipment skills, soft skills, and business and domain knowledge, were compiled across the dataset. Figure 39 outlines the job posting analysis process.

77 Ibid.

Figure 39. Job Posting Data Analysis Process

Phase I:	**Scope Definition**	1. Develop curated list of Canada-located data centre operators. 2. Develop list of common data centre key terms.
Phase II:	**Data Acquisition**	3. Parse Vicinity Jobs postings against list of Canada-located data centre operators (January 2022 to April 2026). 4. Verify job posting data against a customized list of key data centre industry terms.
Phase III:	**Data Analytics/ Dashboard**	5. Aggregate job posting data to generate key statistics on data centre job posting trends in Canada: › Job titles › Employers › Education requirements › Skills/qualifications › Location (province) › Years of experience 6. Deploy data dashboard for visualization.

Limitations of Research

Alberta's data centre industry and the build-out of AI data centres represent an unprecedented amount of investment and construction of digital infrastructure. Likewise, the technology incorporated into new data centres and the scale at which they are being built are unprecedented. Announcements for new data centre investments in Alberta are now commonplace.

The scale of announced, proposed, or under-construction data centre capacity should not be interpreted as a forecast of realized development or corresponding workforce demand. Labour requirements will depend on which projects proceed to construction and operation, their final scale and technology choices, construction schedules, and the degree to which major projects overlap. Workforce pressures could therefore vary significantly depending on the timing and realization of Alberta's project pipeline.

This study should be thought of as a snapshot for a quickly developing industry rather than the final word on data centre development in the province. Data centre workforce needs and industry dynamics are subject to rapid change in this quickly growing industry.



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