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DATA CENTRE REGULATION IN THE PUBLIC INTEREST

A closing window of opportunity in Canada

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Summary

Canada is moving quickly to build the infrastructure for an emerging AI economy, with governments invoking digital sovereignty, economic competitiveness and the need to build up Canadian technology firms to compete in the global 'AI race.'

This report identifies the following emerging trends in Canada:

The economic benefits of data centres are uneven and often overstated. Construction can generate significant short-term employment, but once operational, data centres require relatively few workers and often rely on contracted or lower-wage labour. At the same time, governments and communities can be left to absorb infrastructure, power, environmental and other costs, particularly where developers receive tax incentives or other subsidies.

Claims of digital sovereignty do not necessarily align with who owns or controls Canada's data and digital infrastructure. The majority of data centres in Canada are backed by foreign firms and capital. Increasing domestic ownership alone does not address the broader issue of foreign jurisdiction under the United States *CLOUD Act* or Canadian reliance on American big tech platforms.

Alberta is emerging as a major destination for new hyperscale data centres. This is due to Alberta's abundant natural gas supply and streamlined approval process. Partnerships between data centre developers and Alberta natural gas companies (such as Capital Power and Meta) point to a growing relationship between AI infrastructure and fossil fuels in Canada.

Emissions from data centres fossil fuel use are immense. The majority of data centres in North America are powered by natural gas. Data centre growth could produce approximately 2.5 billion metric tons

of CO_2 equivalent emissions globally through 2030. In Canada, hard won emissions reductions from Alberta's coal phase out are at risk of being erased due to their new hyperscale data centres.

Technology solutions can reduce some environmental impacts while creating others. Closed loop cooling uses less water but more energy, which results in greater indirect water use. Similarly, pairing data centres with wind or solar power can reduce reliance on fossil fuels but requires large quantities of critical minerals. Rapidly directing scarce minerals toward data centres and the energy systems that support them risks competing with other decarbonization priorities, while reinforcing the environmental and social impacts of mining.

Community opposition in Canada is growing and so is the data centre lobby. Communities are raising concerns about water and land use, noise, pollution and the pace of development. The data centre industry is organizing to secure favourable regulatory conditions and delay restrictions (successfully reversing a moratorium in Hamilton, Ontario). Community benefit agreements can help secure local benefits, but they do not substitute for the ability of communities to determine whether a project should proceed in the first place.

Canadian governments are developing policies to facilitate data centre investment faster than they are establishing enforceable public interest protections. The federal government has introduced the *Responsible Data Centre Development Principles*, but these remain voluntary and establish no binding limits on resource use, operational impacts or setbacks from residential communities.

We argue that Canada faces a closing window to establish rules and regulations before data centres create sunk costs, infrastructure dependencies and greater political pressure to accommodate the AI industry. The Appendix provides a detailed catalogue of policies and regulatory tools, with examples, where possible, from the United States and European Union. These examples demonstrate that governments at all levels have policy options beyond facilitating investment for the AI sector and relying on vague industry commitments.

Introduction

Data centres have recently become a flashpoint of political controversy around the world, with the United States leading the buildout. It was only a few years ago that governments across the U.S. were showering data centre developers with lucrative tax incentives and other subsidies in the hope of enticing these Artificial Intelligence (AI)-driven mega-projects to their respective regions. In the last year, however, as the data centre construction boom has spread across the country, grassroots community opposition has ignited over the negative economic and environmental impacts of these facilities, as well as broader concerns with AI itself.[1]

While Canada is still in the early stages of its own data centre construction boom,[2] the American experience looms large as an example not to emulate. Nevertheless, federal and provincial governments seem disinclined to enact concrete rules and regulations for the data centre and broader AI industry that might address Canadians' concerns. Fears that regulations might frighten away investors and leave Canada the odd person out in the AI investment frenzy may explain this reticence.[3] Certainly this was emblematic of the American experience during the early period of their construction boom. This has obviously proven to be short-sighted, as the lack of regulation has stoked popular opposition so intense that it is now working to prevent the further construction of these facilities in multiple states.[4]

Any desire to see a build out of AI infrastructure in Canada will ultimately depend on community acceptance. Economic protections for communities and workers, smart environmental regulations and robust transparency are becoming baseline requirements for residents. Government policy must be geared towards maximizing the benefits that

data centres can bring while minimizing any harms they cause. Crucially, governments must also respect the democratic will of communities that refuse to host data centres, regardless of their purported benefits.

This report recognizes that Canadian policy-makers are in an enviable position right now to shape our regulatory environment. In what follows, we explain the current state of the data centre industry within Canada, identify the major economic, environmental, supply chain, and political implications with these facilities and the ways different governments have sought to solve them (see Appendix). We conclude with a public interest national framework for data centres that would need to be further tailored and implemented in partnership with provincial and local governments as this industry continues to take shape.

State of play in Canada

Data centre construction has exploded in the United States over the past few years. According to the 2026 Stanford AI Index report, the U.S. is now home to over 5,400 data centres—10 times more than any other country.[5] In Canada, the issue has only recently entered public consciousness, driven mainly by high-profile proposals for large, hyperscale facilities.[6] Of course, Canada already has an extensive network of more traditional data centres that have long enabled the functioning of the internet and other digital services. At the outset, it is important to draw a distinction between these more moderately sized and resourced data centres versus the much larger hyperscale facilities that are primarily used for AI training and inference. This distinction is important for two reasons. First, the primary target of recent public opposition against data centres are the hyperscale variety due to their energy and resource intensity.[7] Secondly, the data centre industry often likes to conflate the functions of traditional data centres with those of hyperscale AI data centres, arguing that opposition to hyperscale data centres is opposition to the internet and all the other digital conveniences we enjoy.[8] Making this distinction early can help avoid some of the more intentional confusion and misinformation that have been injected into public debates on this issue.

Defining data centres

There are a variety of categories of data centres that provide different services to clients:

- Co-location facilities lease space and/or equipment to tenants for fixed-term contracts. For example, Bell's AI Fabric facility, which is under construction outside of Regina, is a co-location facility that provides space, energy, cooling and security to two tenants, CoreWeave and Cerebras.[9]
- Edge data centres are smaller data centres designed to be close to end-users or applications to minimize lag-time (latency).[10]
- Enterprise data centres are usually smaller, on-site facilities that process data for a specific firm.
- There are also hyperscale data centres, though the definition of what constitutes "hyperscale" can vary. For example, some define hyperscale based on the physical square footage[11] or facilities with an energy consumption over 50 megawatts (MW).[12] Hyperscale may also emphasize the "scalability" of the data centre to rapidly scale up computing capacity by adding servers.

Data centres can also be categorized by tiers (between tier one and tier four), based on their reliability and uptime. A tier four data centre indicates having sufficient redundant power and cooling systems to operate 99.995 per cent of the year (only 26.3 minutes of downtime annually).[13]

Unless otherwise stated, the primary focus of this report will be on hyperscale data centres that are designed to train and operate AI, due to the number of hyperscale facilities currently in the proposal phase and the growing public concern over their broader impacts.

Data centre distribution across Canada

The estimated number of proposed and operational data centres in Canada varies by source. Alexander Carlo and Lyndsey Rolheiser's Schulich School of Business Real Assets Research Paper appears to work with the most complete data set, putting the number of total data centres proposed or operating in the country at 346, with only 192 operational.[14]

Table 1 / National data centre distribution

Province	Share of operational data centres
Ontario	41%
Quebec	30%
British Columbia	14%
Alberta	10%
Other provinces	5%

Source "Data Centred: The Shifting Landscape of Canada's Digital Infrastructure," Schulich School of Business Real Assets Research Paper Series

They also present the most systematic breakdown of data centre concentration in the country (see Table 1).

While Alberta currently houses 10 per cent of active facilities but that share is estimated to grow to over 90 per cent if we include planned capacity—a testament to Alberta's aggressive data centre development strategy.[15]

Canada is currently home to five 'hyperscale' facilities of more than 50MW, with two in B.C. and the others in Ontario, Quebec, and New Brunswick.[16] An additional 159 hyperscale facilities of over 50 MW are currently in the construction or proposal stage, with the majority planned for Alberta.[17]

Siting factors

Understanding where data centres locate requires understanding the different functions and needs of various data centres.[18] Hyperscale facilities that require massive amounts of electricity will need to be in close proximity to major transmission lines that can deliver the kinds of large electrical loads they require, unless they are approved to operate behind-the-meter through their own on-site source of power. Given the footprint of larger hyperscale facilities, land prices may also be a determining factor in location decisions. Data centres that rely on evaporative cooling systems will need to be in close proximity to an abundant, clean water source. Access to fibre optic transmission is also a must to receive and transmit data at high speed. Access to sufficient pools of skilled labour can also be a consideration—particularly for the

construction phase. Data centres that require low latency will locate close to user populations (urban or suburban) in to reduce any time lags. Data centres devoted to training AI models that have no latency requirements can be built in more rural or remote locations. Data centre developers may also locate in rural areas in the hopes of bypassing more stringent zoning laws, regulatory constraints or extracting more favorable concessions from local governments.[19]

The drivers of Canada's data centre boom

The rapid build-out of hyperscale data centres in the last few years is in response to increasing computing demand to train and operate AI models, with firms scaling up compute in an urgent rush to 'win' the AI race.[20] Unlike earlier digital infrastructure, today's generative AI models—such as ChatGPT, Claude, and Google Gemini—require enormous computational resources during training and throughout their deployment. They are continually updated, fine-tuned and operated at large scales, processing millions of user interactions while relying on vast and ever-expanding datasets. As capabilities grow, so, too, does demand for the data storage, processing power and electricity required to sustain them.

As AI becomes increasingly understood as a strategic technology by governments around the world, the infrastructure needed to support it is also being reframed as a strategic national asset. The build-out in Canada is premised on the need for "sovereign AI infrastructure" that can ensure Canadian data is not subject to foreign disclosure laws, such as the U.S. *CLOUD Act*. The federal government's 'Enabling Large-Scale Sovereign AI Data Centres' initiative aims to facilitate the construction of large-scale sovereign AI data centres with total planned capacities greater than 100 megawatts (MW) throughout the country.[21] The first partnership in this initiative is between the federal government and Telus, which proposes to build a data centre cluster of 150MW in both Vancouver and Kamloops, announced in May 2026.[22]

Canada is also increasingly identified as an ideal location for data centre builds. This is primarily due to a colder climate, which can reduce cooling costs, as well as relatively inexpensive access to renewable energy—particularly hydroelectricity in British Columbia and Quebec.[23] However, Alberta has also leveraged its abundant natural gas resources

and expedited on-site generation in a bid to attract data centre investment.[24]

In concert with the data centre investment boom, the data centre industry has politically organized to lobby for a more favourable policy environment. Canada has seen the birth of two major industry groups over the past year—the Canadian Coalition for Digital Infrastructure and the Western Canada Data Centre Alliance. Membership in these industry advocacy groups include large U.S. tech companies and data centre developers like Amazon Web Services (AWS), Vantage Data Centres, Stack Infrastructure and Beacon Data Centers. As in the United States, the industry has become more politically active in Canada, particularly as communities push back on data centre development proposals and insist on more stringent regulations.[25] Most recently, community groups raised concerns that industry lobbyists appear to have been instrumental in the defeat of a proposed one-year moratorium on data centre construction in Hamilton, Ontario.[26] This political mobilization extends to Canada's fossil fuel industry, which stands to benefit directly from AI's energy demands. Alberta's Capital Power signed a memorandum of understanding to supply Meta's proposed facility with 250 MW and has lobbied the federal government 40 times after Prime Minister Mark Carney took office, pushing to relax clean electricity regulations in favour of gas generation for data centres.[27]

Canada's policy landscape to date

Provincial approaches to data centre development vary widely, and the landscape has moved quickly even over the course of this report's writing. Alberta, Ontario, Saskatchewan and New Brunswick have each released targeted strategies aimed at attracting investment, ranging from Alberta's streamlined approval process and gas-fired power incentives to Saskatchewan's Canadian ownership preference. British Columbia and Quebec have focused on managing grid access, while Manitoba (the outlier) is actively disincentivizing data centres through steep levies and cabinet veto power. Nova Scotia, P.E.I., and the territories currently have no standalone policy, largely for lack of grid capacity to support hyperscale development.[28]

The federal government released its AI strategy, *AI for All,* in June 2026, which commits to expanding Canada's data centre sector. The strategy celebrates scaling Canada's sovereign compute capacity to 850 MW

by 2030, with potential expansion to 2.3 gigawatts (GW), representing tens of billions of dollars in planned investment.[29] Notably absent from this vision is any regulatory commitment to manage the environmental or community impacts of that build-out. In fact, Canada's recent AI transparency consultation makes no mention of data centres at all, despite the industry being notorious for avoiding democratic oversight.

In September 2026, the federal government released its *Responsible Data Centre Development Principles*, which includes five pillars focused on local benefit, electricity costs, environmental impact, transparency and strategic value.[30] The principles are backed by 23 signatories, including major American tech firms like Microsoft, Open AI, Google and Meta. The federal government has indicated these principles will not be enforced and are, instead, a template for provinces and municipalities to draw from. While the federal government articulates public interest goals, voluntary principles with no binding obligations for developers cannot guarantee those goals will be met in practice.

The "data sovereignty" rationale

As we indicate above, Canadian political and business leaders are quick to justify the rapid build-out of data centres under the auspices of "sovereignty." The term covers more than one argument. In the *AI for All* strategy, the federal government invokes sovereignty in an industrial policy context, meaning support for Canadian-owned developers over foreign firms, and in the security and autonomy context, meaning sufficient domestic compute capacity to avoid dependence on infrastructure controlled by another country. In a more general sense, sovereignty ensures that Canada has control over the hardware, infrastructure, software and data that comprise data storage, as well as AI training and inference.

There are certainly real and valid concerns regarding the security of Canadian's personal and private data—most significantly through the United States government's *CLOUD Act*—that can compel U.S. companies to turn over data to the American government even if it is stored internationally.[31] This means that Canadian-based data centres that host Canadian data on U.S.-based platforms like Microsoft or Google could be compelled to share that data with the Trump administration, even if those data centres are located in Canada.

Escaping the potential legal reach of the *CLOUD Act* for even Canadian-based companies could be daunting. Even Canadian companies like Bell and Telus that have touted their ability to deliver "AI sovereignty" may be compromised if not supplemented with robust safeguards.[32] This is because even providing services to the U.S. or routing data through the U.S. could potentially be subject to *CLOUD Act* jurisdiction. Under this broad interpretation, only very few private Canadian companies could be considered exempt from the Act's jurisdiction. Unfortunately, many of the companies offering to provide "data sovereignty" to the Canadian government are specifically vulnerable—especially American subsidiaries to tech firms like Microsoft, Google and Meta. Regrettably, it appears "data sovereignty" is quickly becoming a meaningless marketing term, exploiting real concerns over data privacy to justify the build-out of AI infrastructure that may not actually enhance Canadian data sovereignty.

Ownership structures and investment

Data centre providers in Canada are overwhelmingly foreign-owned. Based on 2025 data, it is estimated that over 50 per cent of active data centres in Canada were developed by American firms, while over 50 per cent of planned developments are by European-based firms.[33] While Canadian firms dominate the construction phase of data centres, data centre providers and end-users are predominantly foreign. However, given this data was collected prior to the more recent data centre announcements from Canadian-based Bell Canada and Telus, it may under-estimate Canadian providers and end-users.

Some of the largest data centre developers in the U.S., like Equinix and Digital Realty, are incorporated as Real Estate Investment Trusts (REITs), allowing them to avoid corporate income tax.[34] So far, there does not appear to be any major Canadian-based data centre developers incorporated as REITs, but that may change as the industry grows.

Another important development in data centre ownership is the growth in private equity stakes in the industry. In the U.S., private equity firms are the largest owners of data centres, other than the big tech firms.[35] Private equity's unique incentive structure and short-term profit horizon could have consequences for how data centre developers respond to emerging energy and environmental regulations.

The scale of investment also raises the question of whether it is sustainable. S&P Global reported private equity investment in U.S. data centres jumped to $45.7 billion in 2025.[36] Prominent industry figures have acknowledged that current AI valuations may constitute a bubble that is disconnected from underlying revenue, with some drawing comparisons to the 1999 dot-com bubble crash.[37] Data centres are highly specialized and difficult to repurpose if a developer defaults. Should a correction occur and private firms flee, governments that have committed incentives could leave communities absorbing the cost.

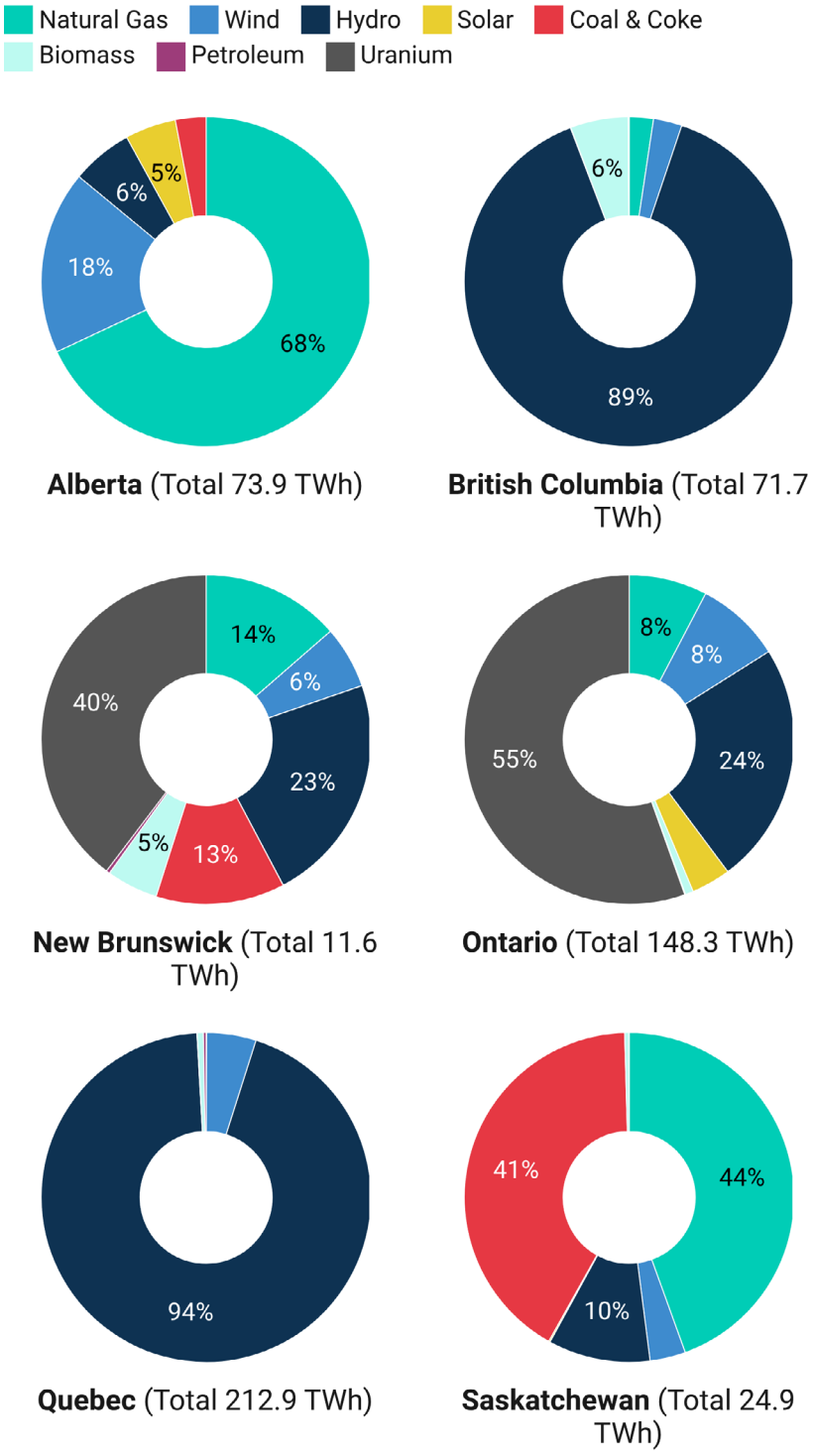
Powering the build-out

Hyperscale data centres require tremendous amounts of energy to operate, with some facilities proposing to consume over a Gigawatt (GW) or more of power, enough energy to potentially power a medium-sized city (or ~700,000 homes).[38] The International Energy Agency (IEA) projects that electricity consumption from data centres will roughly double from 485 terawatt-hour (TWh) in 2025 to 950 TWh in 2030, accounting for around three per cent of global electricity demand by that date.[39] As the Canadian Climate Institute reports, Canada's data centre market is similarly expanding, "projected to grow from its current 750 MW capacity to about 1.16 gigawatts by 2029."[40]

Many of these facilities in Canada will be powered by existing electrical grids, making them only as green as the energy mix of the grids they rely on. The energy mix is important because it determines the extent to which a data centre's electricity demand translates into greenhouse gas (GHG) emissions and local air pollution. Data centres drawing power from grids in provinces with abundant hydropower or other renewable sources (British Columbia, Quebec, Ontario) will have greater claims to environmental sustainability than those reliant on significant amounts of fossil fuel generation (Saskatchewan, Alberta). Canada's *AI for All* strategy leans heavily on the country's 83 per cent renewable grid as a competitive selling point for data centre investment.[41] However, (as seen in the U.S), data centre demand for power has overwhelmed the capacity of existing grids, resulting in growing pressure to allow developers to construct on-site "behind-the-meter" energy generation.[42]

Figure 1 / Breakdown of energy sources by province

Energy source by fuel type for each province that has an operating or proposed hyperscale data centre



Source Provincial Energy Profiles, Canada Energy Regulator

Most on-site generation for data centres is powered by natural gas, which is deemed to be superior due to its perceived reliability, existing infrastructure and abundance. Despite many tech firms' stated commitments to renewable power, the rush to secure energy—any energy—for these massive facilities has seen demand for fossil-fuels grow. In fact, the reliance on gas, coal and other carbon-intensive sources already has tech firms re-assessing their prior climate commitments.[43] Indeed, in the U.S, the data centre construction boom has been accompanied by an equivalent natural gas boom, with data centre developers announcing approximately 101 GW of behind-the-meter natural gas generation capacity in 2026 (equivalent to power roughly ~50 million homes).[44] Investment firm Morgan Stanley estimates that the boom in data centres will produce about 2.5 billion metric tons of carbon dioxide-equivalent emissions globally through the end of the decade—that's equivalent to the annual emissions of the European Union, which is six per cent of world emissions.[45]

The explosive growth in natural gas generation driven by the data centre build-out threatens to erase hard-won emissions reductions that Canada has achieved in the past decade. For example, Alberta's progress in reducing GHG emissions through its phase-out of coal-fired power could be effectively wiped out if planned natural gas generation to power data centres proceeds apace.[46]

Despite its obvious detriment to our national climate policy, it appears the federal government views the industry's increasing natural gas consumption as a positive, noting in a leaked privy council document that one of the top "public policy benefits to Canada of constructing a national network of data centres is creating new markets for Canadian natural gas producers."[47] Indeed, the federal government rescinded its own clean energy requirements in its recent Memorandum of Understanding (MOU) with the Alberta government with specific reference to on-site power generation of data centres.[48] This tension between climate goals and the urgent need to "win" the AI race is playing out all over the world. European Union proposals to mandate clean energy requirements for data centres are being vigorously opposed by tech firms that argue renewable sources of energy and storage will take too long to build out to meet current demand, sacrificing the AI race to those countries that do not quibble about how they power their AI infrastructure.[49]

Cooling systems and their trade-offs

The energy needs and processing power of the larger hyperscale data centres means that these facilities require constant cooling to ensure equipment does not overheat during operation. This heat comes primarily from the processors inside of the servers: Central processing units (CPUs), which handle general computing tasks and graphics processing unit (GPUs), are specialized accelerators built for the kind of parallel processing that AI training and inference require. The IEA notes that these accelerated servers are also the primary driver of rising data centre electricity demand, which is part of why cooling capacity has become such a pressing constraint on hyperscale facilities.[50]

Most currently operational data centres use "evaporative cooling systems."[51] Often used in large-scale operations, this method can be more energy-efficient and handle higher heat load.[52] However, although less energy is used, significant water is lost as it evaporates with waste heat. Approximately 80 per cent of the water (typically freshwater) withdrawn by data centres evaporates, with the remaining water discharged to municipal wastewater facilities.[53] It is equally important to note that data centres also contribute to indirect water consumption depending on the cooling needs of the power generation upon which the facility relies. Water consumption has become a significant flashpoint of public opposition to data centre construction—particularly in areas already under significant water stress.[54]

Overall water consumption for a data centre can vary greatly depending on its size, energy requirements and the climate where it

operates. Moreover, because many firms treat water consumption data as a proprietary secret, accurate estimates of total water consumption can be hard to come by.[55] Google released the most detailed data of water consumption by their data centres in 2025. Their Council Bluffs, Iowa, facility consumed the most water of all their data centres, at one billion gallons per year (the equivalent of 6.7 golf courses, according to Google). Google's Mayes County, Oklahoma, facility was second, consuming 833 million gallons per year, while their Berkeley County, South Carolina, facility rounded out the top three at 776 million gallons per year.[56] All three of these facilities are hyperscale-sized data centres of over 100 MW that rely on evaporative cooling systems.

As Canada embarks on its data centre construction boom, developers have been cognizant of the need to address public water concerns. Recent announcements have emphasized the use of "closed-loop" cooling systems that promise to substantially reduce the amount of water consumed by up to 70 per cent.[57] There are trade-offs to implementing a closed-loop system, however. One is that they are less energy-efficient, requiring more power to run than an evaporative system—increasing the already substantial energy draw these facilities require.[58] This, in turn, could result in greater *indirect* water use, depending on the energy mix used. Secondly, closed-loop systems often require chemical additives to prevent corrosion, freezing or algae growth within the closed lines.[59] These chemicals need to be periodically purged and can affect water quality if not adequately treated. Other, less utilized, cooling systems include immersion cooling, where "electronic components or entire servers are submerged in a thermally conductive, but electrically insulating, liquid coolant."[60] Direct-to-chip cooling is a server cooling method that establishes a liquid cooling loop which absorbs the thermal energy from GPUs and CPUs through conductive metal plates (cold plates) mounted over the hottest components.[61] While these methods provide greater cooling, they are also often prohibitively expensive and can require greater maintenance in comparison to the much more frequently employed evaporative cooling system.[62]

As GPU processing power increases, and climate change heat events become more profound, cooling solutions will become more important. Indeed, Microsoft views a key constraint on AI advancement is the inability to properly cool processing chips through conventional cooling means.[63] Proposed solutions include "microfluidics," where coolant actually travels through microscopic channels in the chip itself.[64] However, the complexity of fabrication and concerns about contamination have rendered this approach largely experimental. It is important to note

that, so far, technological advances in cooling systems have still required a trade-off between energy versus water, complicating the overall environmental impact of these technologies.[65]

Economic benefits and costs

Data centre advocates often promise host communities three primary economic benefits: job creation, local economic spin-offs and tax revenues. Employment tied to data centres comes in two phases, the construction phase and the operations phase. Employment tends to be front-loaded during the temporary construction phase, which normally lasts from 12 to 18 months, depending on the size of the facility and/or campus.[66] The construction phase will also see the most significant use of high-paid, high-skilled tradespeople due to the employment of site developers and surveyors, equipment operators for land clearing and levelling, construction trades workers to assemble steel building frames and concrete walls, electricians installing cabling, equipment, and generators, and pipefitters and HVAC technicians installing piping and cooling equipment.[67]

However, job creation from data centres, once operational, are limited. Indeed, the Cooper Center at the University of Virginia estimates that only 15 per cent of the total output of an operational data centre comprises labour expenditures.[68] A 2024 report for the Governor of Virginia on the economic and environmental impacts of the burgeoning data centre industry in that state estimates that a typical 250,000-square-foot facility may have approximately 50 full-time workers (one employee per 5,000 square feet versus one employee per 650 square feet for some distribution centres).[69] Various economic impact assessments of data centres find the same result, limited and front-loaded job creation (see Table 2).

Of the direct jobs created once the data centre is operational, many of these can be temporary, contracted positions. A University of Michigan study observes the precarious nature of many of these jobs:

> The jobs that data centers do create locally are typically low-wage, term-limited, non-technical positions such as security, maintenance, and janitorial work. These roles are often filled by contractors rather than full-time employees, meaning they lack union protections, benefits, and job security. As a result, these positions tend to be short-term and do not contribute to sustained economic growth or long-term career opportunities for local residents.[70]

Indirect job creation is also minimal due to the limited and unique inputs of the data centre. Data centre equipment (which can amount to 70 per cent of total capital expenditures) is highly specialized—not something that can be easily sourced from local, regional or even national businesses.[71] Nathan Jensen, a professor at the University of Texas at Austin who researches economic development strategies, argues that "unlike many industries, like automobile manufacturing, there isn't a clear case for suppliers locating near data centres" and "they don't need much of an ecosystem around the facility."[72] Some proponents argue that data centre construction will attract other tech firms to the region, creating a "tech eco-system or AI hub," however, these appear to be more promise than reality—at least so far.[73]

Tax revenue is another economic benefit promised to host communities. Certainly, tax revenue from data centres can be significant, but the amount of revenue and how it is distributed is often influenced by the incentives offered to attract data centre investment in the first place. Prior to the backlash against data centres, U.S. state governments competed ferociously for this investment, offering massive tax concessions, energy subsidies and regulatory relief in a bid to entice developers to their region. According to a 2024 Illinois Department of Commerce report, 32 states offered some kind of financial incentive to attract data centre construction.[74] These concessions can be substantial: Ohio recently reported that its data centre tax exemptions had cost the state treasury $1.6 billion in 2025.[75] LeRoy and Tarczynska have identified 10 states with data centre subsidy packages costing over $100 million in foregone tax revenue.[76] With the economic and environmental costs of data centre development becoming more apparent, certain U.S. states are considering reducing or eliminating these subsidies altogether.[77]

Tax revenue can also be affected by how it is distributed between various levels of government. For instance, Alberta, which does not

Table 2 / Construction versus operational jobs from data centre development

Economic Impact Study	Constructions Jobs (temporary)	Operational Jobs (on-going)
PwC (2023)	1,000–10,000	50–300
JLARC (2024)	3,000–5,000	100–400
Sage Policy (2024)	~2,000	~200
Thompson (2019)	~1,200	100–150
Morrow County (2024)	~1,500	80–120

Source Michael J. Hicks, "Data Centers and Local Job Creation," The Country Economist, November 10, 202

collect a provincial sales tax, has set a two per cent levy on computer hardware on data centres 75 MW or greater that rely on the provincial grid.[78] Rural municipalities in Alberta will only be permitted to assess and tax data centre land and buildings, not computer hardware, despite that hardware having the highest assessable value.[79] This drastically reduces the potential revenue local governments can expect from these projects in Alberta, which will no doubt factor into community deliberations over whether these facilities will provide a net economic benefit. There have been promises that the province will redistribute some of this tax downwards, but this remains speculative. Lastly, there is the potential for indirect subsidies, such as when infrastructure for a data centre that would otherwise not be required is paid for by the public. For example, state regulators in Virginia noted that a $23 million electrical substation "likely, if not certainly, would not be needed at this time if not for data centers." The utility said the project would be paid for through its regulated transmission tariff, half of which is ultimately assigned to residential ratepayers.[80]

Along with economic benefits, there is the question of the potential economic *costs* data centres may impose on a community. The most common concern is that growing data centre demand for electricity, coupled with the cost of new generation and infrastructure, will raise electricity rates for consumers.[81] While there is no doubt that electricity rates are rising, how much of this rise is the sole responsibility of data centres can be difficult to measure, particularly because aging grids already required millions of dollars in upgrades and equipment prior to the data centre boom.[82] There is better evidence that data centres can inflate regional electricity prices, particularly in markets where they are densely clustered—like northern Virginia.[83] Indeed, a Bloomberg investigation found that electricity in this area of the United States now

costs as much as 267 per cent more for a single month than it did five years ago in areas located near significant data centre activity.[84] A recent analysis from the Pembina Institute estimates that between 2027 and 2032, Alberta households are at risk of paying an additional $267 to $462 per year for electricity once the new Meta data centre becomes operational.[85] Irrespective of the evidence, it is fast becoming a certainty among a majority of the public in both the United States and Canada that data centres equal higher utility rates, further contributing to the public backlash against these facilities.[86]

Communities can try and extract greater economic benefits by negotiating project labour agreements and community benefit agreements with data centre developers. Project labour agreements (PLA) usually include quotas for local hiring of skilled labour and procurement from local business.[87] These tend to be most operative during the time-limited construction phase and can ensure that local communities capture as much of the potential economic spin-offs as possible. Community benefit agreements (CBA) usually look more long-term, ensuring that data centre developers make community investments in local infrastructure, skills and workforce training or support other philanthropic causes in the community.[88]

Another potential economic costs to communities stem from the impermanence and mobility of data centres. Approximately 70 per cent of capital expenditures for a data centre is for the chips and servers housed within it. With an operational life of between two to six years for most GPUs, firms will be required to make massive re-investments in equipment quite regularly. Firms may reassess the economic viability of certain data centre locations during these re-investment decisions. They may also leverage the threat to wrest concessions from local and regional governments that they may not have been able to extract during the initial development stage.[89] The potentially footloose nature of data centres means that communities may not even receive the limited economic benefits of their operation for long enough to recoup local investments in roads, infrastructure and energy to service the facility.

Operational impacts

Once a data centre becomes operational, it generates a distinct set of ongoing impacts for surrounding communities and the environment. The following sections examine three of the most pressing: greenhouse gas emissions, noise, and the electronic and chemical waste generated by short hardware lifecycles and cooling system maintenance.

Emissions

Given the massive amounts of energy consumed by these facilities, their growing contribution to greenhouse gas emissions and climate change is an obvious concern. It is important to note that because AI hyperscale-size data centres are a relatively recent phenomenon, they are not considered prolific emitters in comparison to other more well-established industries. For example, the IEA estimates that data centres are responsible for around 180 Mt of indirect CO_2 emissions from the consumption of electricity, not including any emissions from backup power generation.[90] Overall, data centres are currently responsible for just over one per cent of global electricity demand and 0.5 per cent of CO_2 emissions. However, data centre emissions are one of the few sectors—alongside road transport and aviation—that the IEA predicts will grow in coming years, as most other industries decarbonize.[91]

As previously mentioned, the future carbon footprint of data centres will depend, to a great extent, on the energy mix required to power them. As demand for power outstrips the supply of renewable energy, we are seeing data centre energy demands drive increased fossil-fuel powered generation, both through the construction of new natural gas plants and delays in decommissioning coal-fired plants.[92] Indeed, Alberta's data centre strategy hinges on its ability to provide cheap natural gas generation onsite to prospective data centres built in the province.[93] Even data centres that do source their power from renewable energy rely on large diesel back-up generators to ensure continuous operation during a power failure. While such back-up generators are only supposed to run in an emergency, governments have considered ordering data centres to run solely on generators when grids come under significant strain.[94] Diesel generators are a significant source of carbon emissions and they emit dangerous pollutants like Nitrogen Oxides (NOx) that are strictly regulated due to the harm they can cause to the public.[95]

The growing emission profile of data centres is most evident among the tech giants that have seen massive increases in their own emissions as they have pursued the rapid build-out of these facilities in their competitive quest to win the "AI race." Google's own sustainability report from 2024 noted a staggering 48 per cent increase in the company's greenhouse gas emissions since 2019, attributable to data centre and supply chain emissions.[96] Similarly, Microsoft's emissions increased by 29 per cent between 2020 and 2024, attributable to data centres carrying out AI-supporting processes.[97] Indeed, recent reports suggest that increasing emissions from data centres are forcing Microsoft and Google to re-evaluate their previous 2030 net-zero commitments.[98]

Noise

Constant noise is one of the more common public complaints from residents living in close proximity to data centres. Data centres can host on-site gas generators, diesel generators, HVAC systems and industrial fans for cooling, all of which emit a consistent and constant low-frequency noise.[99] This persistent noise can adversely affect the sleep patterns and health of residents who live close to data centres.[100] While data centres often operate below the threshold of most noise by-laws, the problem is that most noise ordinances "weren't written with 24-hour data center operations in mind."[101] The thresholds of most noise by-laws

(typically 50 to 60 decibels near residential areas) are maximums that most businesses might approach sporadically but not constantly, the way data centres do. While noise suppression systems can reduce certain frequencies of noise from data centres, these can prove costly and have not always successfully mitigated the problem to the satisfaction of local residents.[102] Communities have begun to consider greater setback limits from residential neighbourhoods as a way to try and mitigate the acoustic impacts of these facilities. Noise and light pollution considerations can extend beyond human residents, as there is the potential for data centres to be "sensory danger zones" that adversely affect local wildlife, if not effectively mitigated.[103]

E-waste, chemical waste and waste heat

While concerns over the energy and water consumption of data centres tend to be front and centre in public debates, the volume of electronic waste (e-waste) they produce is another important—if often neglected—environmental impact of these facilities. The servers and GPUs that are the operational heart of data centres have a lifespan of as little as two to six years, producing millions of tons of outdated and obsolescent equipment, the majority of which is discarded.[104] The waste from generative AI alone could contribute up to an additional one to five million tons of e-waste annually.[105] This waste often includes hazardous materials—such as lead, mercury, and chromium—that can leach into surrounding environments if not disposed of properly. In Canada, the laws governing e-waste largely fall under provincial jurisdiction, with most provinces enforcing an extended producer responsibility model, where producers must ensure they provide for the end-of-life management of their products.[106] Despite these efforts, it is estimated that only about 20 per cent of Canada's e-waste is effectively recycled.[107] This means that a significant amount of precious metals, minerals and rare earth materials are discarded rather than re-used, further exacerbating the environmental impacts of the AI infrastructure supply chain, as we discuss in the next section.

Beyond improving the effectiveness of current programs, efforts to reduce the electronic waste stream from data centres could include expanding the lifespan of technologies by using equipment for longer—although in the hypercompetitive race for ever faster processing power, this would be difficult to legislate.[108] Refurbishing and reusing

components could also play a significant role, as can designing hardware in ways that makes it easier to recycle and upgrade.[109] All of this would require national governments to enforce standards on the manufacture of such components, which would likely require a collaborative, multilateral effort to enforce.

Data centres that adopt "closed loop" cooling systems will also have to manage the disposal of chemicals used to maintain these systems. These chemicals may be periodically flushed from the system, requiring local wastewater treatment facilities to have the capacity to treat these chemicals. Recently, Cheyenne, Wyoming, was forced to shut down its water system after detecting bacteria flushed from a closed loop system from a data centre.[110] The city has since banned effluent from closed loop systems entering the city's sewer system.

Lastly, heat is another waste product of data centres that could be put to more productive use. Data centres generate an enormous amount of heat, most of which is discarded into the atmosphere via the cooling process. However, this heat could be captured and transferred for re-use. Under the European Energy Efficiency Directive, new or refurbished data centres over 1MW must perform a cost/benefit analysis to determine whether heat capture and re-use is feasible.[111] Germany has introduced even more stringent regulations, mandating that data centres must use a 10 per cent minimum share of reused energy (which includes waste heat) beginning July 1, 2026. There are useful examples from Scandinavia where waste heat from data centres is captured and transferred for use in district heating systems that service local residences.[112] While district heating systems are not as prevalent in North America as Europe, co-location of data centres with facilities like commercial greenhouses, recreation centres or residential hot water systems could provide opportunities to ensure this valuable resource doesn't go to waste.[113]

Critical minerals and the data centre supply chain

Every stage of AI infrastructure—from constructing data centres and electricity transmission networks to manufacturing semiconductors and maintaining backup power systems—depends on critical minerals. Unlike most consumer electronics, which gradually create demand as markets expand, hyperscale AI infrastructure requires enormous volumes of materials all at once. As governments and technology companies race to build AI capacity, they are placing new pressure on mineral supply chains already strained by the global energy transition.[114] For example, copper is essential for expanding electricity grids, lithium and graphite underpin battery storage, while rare earth elements are used in both wind turbines and advanced computing hardware.[115]

The importance of these minerals is increasingly shaping industrial policy. Governments across the world, particularly superpowers like the U.S. and China, view secure access to critical minerals as a prerequisite for technological competitiveness and national security. In Canada, governments have prioritized expanding critical mineral extraction as demand from data centres adds to growing competition for these finite commodities, with no policy framework yet in place to determine how that supply should be allocated.

Demand and supply constraints

Steel and aluminum form the physical infrastructure of data centres, while copper underpins electricity transmission, cooling systems and circuit boards. Large-scale battery systems depend on lithium, cobalt, graphite and nickel to provide uninterrupted power during outages. Advanced semiconductors require silicon, gallium, germanium and rare earths to manufacture the high-performance processors that power AI systems. Gallium is also used in fibre optics. According to the World Economic Forum, each megawatt of data centre capacity embeds approximately 65 to 70 tons of minerals, and a single hyperscale campus can require roughly 10,000 tons of steel [116]—comparable to the amount required to build a mid-sized wind farm. It is estimated that the data centre build-out could increase global critical mineral demand in the next five years by approximately two per cent for copper, three per cent for rare earths and up to eleven per cent for gallium.[117]

Although global investment in critical mineral extraction and processing reached $128 billion in 2025, a 62 per cent increase from 2023 levels, meeting global demand will not be straightforward.[118] First, new mines require an average of 16 years to move from discovery to production, while data centres only need two to three years to become operational.[119] Second, mining production remains heavily concentrated in a small number of countries.[120] For example, cobalt is mined predominantly in the Democratic Republic of Congo,[121] lithium in Chile, Argentina and Bolivia (the lithium triangle),[122] and copper in Chile and Peru.[123] More than 60 per cent of the world's lithium and cobalt, and over 85 per cent of rare earth elements, are refined in China before becoming usable industrial inputs.[124] At the end of this supply chain, Taiwan dominates semiconductor manufacturing, producing more than 90 per cent of the world's most advanced chips used in AI data centres.[125] Finally, recycling capacity is not expanding quickly enough to offset rising demand. According to the World Resources Institute, the share of global copper demand met by secondary or recycled copper actually fell from 37 per cent in 2015 to 33 per cent in 2023, indicating that near-term improvements in recycling are being outpaced by rising material consumption.[126]

Demand for critical minerals is beginning to raise costs and constrain supply across the electricity grid and consumer technology markets. For example, Micron, Samsung and SK Hynix (the three companies that dominate global memory chip production) have shifted manufacturing capacity away from consumer electronics and toward AI chipmakers like

Nvidia, who can pay more for the same components.[127] The same dynamic is emerging in electricity transmission. According to the IEA, rising costs for cables and other grid components are slowing the construction of transmission infrastructure, a trend it links, in part, to surging demand from the AI sector, alongside broader electrification pressures.[128] The IEA found cable costs have nearly doubled since 2019, and power transformer prices have risen by roughly 75 per cent.

Implications

Mining, processing and refining the materials required to construct and operate data centres carries significant environmental implications across the globe. Steel production accounts for approximately seven to nine per cent of global carbon dioxide emissions.[129] Copper mining generates large quantities of waste rock and toxic tailings.[130] Lithium extraction consumes vast quantities of freshwater.[131] And rare earth processing produces hazardous chemical waste and air pollution.[132] For example, communities surrounding cobalt mines in the Democratic Republic of Congo (DRC) experience elevated rates of respiratory illness and heavy metal contamination, while reports continue to document inhumane working conditions and wages that bear little relationship to the value of what is being extracted.[133] In Chile's Atacama Desert, producing a single tonne of lithium requires approximately 500,000 litres of fresh water, raising concerns among Indigenous communities about declining water availability for agriculture and ecosystem degradation in one of the driest regions in the world.[134]

Meanwhile, companies—including Google, Amazon and Microsoft—have committed billions of dollars to reduce the environmental impact of data centres, primarily through renewable electricity procurement to 'sustainably' power expanding data centre fleets.[135] While renewable electricity can reduce a data centre's operational emissions, it does not eliminate the substantial embodied emissions associated with the extracting and manufacturing required to build them. Nor does it remedy the local environmental and social consequences of mining.

Geopolitical risks and industrial policy

States increasingly view access to critical minerals as a matter of economic security, technological leadership and national sovereignty. China has steadily expanded its control over upstream mining assets, including acquiring roughly 70 per cent of cobalt production in the DRC through mining acquisitions and infrastructure-for-minerals agreements.[136] The United States has responded with an onshoring strategy that frames domestic mining and processing as national security priorities, including direct federal investments and equity stakes in rare earth producers.[137]

In Canada, the political response to critical mineral demand is trending towards a broader restructuring of environmental regulation and industrial policy. Prime Minister Mark Carney's Major Projects Office has fast-tracked mining developments under a "nation-building" designation.[138] Under this framework, the federal government is streamlining regulatory approvals while specifically directing public financing toward copper and graphite projects in an effort to strengthen North American supply chains. Natural Resources Minister Tim Hodgson has publicly stated that Canadian investment is necessary to counter what he describes as authoritarian control over global copper markets.[139] Canada currently operates 56 critical mineral mines, with approximately 140 mining projects planned or proposed for the next decade.[140]

The imperative to invest in mining in the name of sovereignty sits alongside an unresolved problem: Canada remains, in practice, a mine-and-ship jurisdiction.[141] Domestic processing and manufacturing capacity that could absorb these minerals at home is minimal, and traceability and data collection across the Canadian supply chain remains weak.[142] This gap raises concern because critical mineral supply is finite, and technology, data centres and green energy infrastructure are all drawing on the same constrained pool of copper, lithium, graphite, gallium and rare earths. Leaving mineral allocation to whichever buyer pays the most, for example, rather than to public policy, means the sector with the deepest pockets and the most political urgency secures the supply, not the sector with the greatest public benefit.

The long-term implications of these competing demands remain uncertain. New battery chemistries, including sodium-ion technologies, improved recycling systems and advances in material efficiency, may reduce dependence on some critical minerals over time.[143] However, these technologies remain in the early stages of commercialization and are unlikely to substantially relieve supply pressures in the near future.

Preferential access to the U.S. data centre market and a growing emphasis on critical minerals as strategic assets may create economic opportunities for Canada, but they also lock in dependence on an extractive development model whose costs—environmental, social and fiscal—are increasingly borne by communities and the public rather than the companies driving demand. Data centres have become a powerful new market for critical minerals, and Canada's current policy framework has no answer for how finite resources should be allocated across competing public priorities, or whether the consequences of expanding extraction are justified by the forms of AI development currently being pursued.

From principles to protections

Across Canada, opposition to data centre development is mobilizing before projects break ground. Recent polling found 68 per cent of respondents would oppose a hyperscale data centre being built near their home, with rural Canadians slightly more resistant, at 73 per cent.[144] As the costs of data centre development become harder to ignore—increased emissions, compounding water stress and the presence of big tech in local communities—citizens and local governments are pushing back. As we illustrate in the Appendix, this resistance is translating into policies such as moratoria, zoning restrictions, renewable energy requirements and more.

Being a relative late comer to the data centre investment boom affords Canada the foresight to learn from the experience of other jurisdictions. We are not yet locked into the sunk costs, subsidy commitments and grid dependencies that now make regulation in the U.S. an uphill battle. As governments and communities in other regions struggle to re-regulate an industry allowed to expand with little, if any, ground rules, Canadian policy-makers have the good fortune to potentially avoid many of these mistakes. Unfortunately, the federal government has been reticent to propose any binding national standards for data centre development even though lower levels of government are specifically asking for more guidance.[145]

Informed by the preceding analysis, the following policy framework is presented as a set of national standards designed to provide a consistent baseline across Canada while preserving the ability of provinces,

Indigenous governments, municipalities and utilities to adopt stronger protections where appropriate. Rather than leaving communities to negotiate ad hoc with developers, a suggested national regulatory floor could reduce fragmentation, prevent jurisdiction shopping and create a level playing field across the country.

It is worth acknowledging that this framework addresses the physical, economic and environmental dimensions of data centre development, rather than the full scope of public apprehensiveness about AI. For some, data centres are inseparable from broader concerns about the AI economy these facilities enable. A national survey conducted by Leger provides insight into what is top of mind for Canadians: 78 per cent polled believe AI threatens jobs, spreads false information during elections and lacks the emotional and empathetic judgement needed to make good decisions. Another 83 per cent worry about privacy and fear that society is becoming too dependent on technology.[146] These are valid concerns that better data centre regulation alone cannot resolve. Even if every recommendation below got adopted in full, public opposition to the build-out of AI infrastructure would not necessarily disappear. The recommendations that follow are, nevertheless, a necessary and achievable starting point. They can ensure that data centre development itself does not become a further, avoidable source of public harm and mistrust.

Mandate transparency and public reporting as a condition of approval

Transparency is a prerequisite for democratic oversight of the data centre industry. It is an essential safeguard against regulatory capture and a necessary condition for maintaining public trust in decisions that allocate public resources and shape communities. Developers should be required to:

- Disclose full ownership structure, including shell companies, special purpose vehicles (SPVs), data centre operators, and financers, as well as potential end-users.[147]
- Report monthly electricity consumption, water withdrawals, waste disposal and noise monitoring results.

- Forgo non-disclosure agreements or 'proprietary trade secret' claims that restrict public engagement or hide environmental, servicing or financial information.

Governments should maintain public records of meetings with project proponents and lobbyists, and hold a specified number of public hearings as part of the approval process.

Claims of "data sovereignty" have become a marketing tool, even when facilities remain subject to foreign ownership structures or legal regimes, such as the U.S. *CLOUD Act*. Without transparency, governments, First Nations and local communities cannot make informed decisions about proposals if they do not know who controls the infrastructure and whose interests it will serve.

Restrict siting through zoning, setback, and consultation requirements

Not every location is appropriate for hyperscale data centres. Proximity to electricity and water infrastructure can influence siting decisions, but these services can be developed or supplied across various locations. This gives policy-makers greater scope to direct data centre development away from locations where the opportunity costs of industrial development are particularly high. National standards should require:

- A prohibition on siting in water-stressed regions, prime agricultural land, environmentally sensitive ecosystems, or areas of cultural, historical or archaeological significance.
- Minimum setback guidelines of 300 metres from residential neighbourhoods.
- Noise standards calibrated for continuous 24-hour operation to protect public health and quality of life.[148]
- Consultation with Indigenous governments as rights holders, consistent with the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) framework requiring free, prior and informed consent.

Without an established regulatory floor and consistent rules across the country, developers can shift proposals toward communities with weaker planning requirements, fewer regulatory resources or less

political capacity to resist development. This dynamic perpetuates the concentration of environmental burdens in lower-income, Indigenous, rural, and racialized communities while rewarding jurisdictions willing to weaken protections.[149]

We recognize that siting and land use fall primarily under provincial and municipal jurisdiction, and the federal government's ability to impose national siting rules is limited. Even so, the federal government has a range of indirect levers, including attaching conditions to federal funding and programs, introducing federal incentives and/or cost-sharing agreements to fulfill certain policy goals, using federal regulatory authorities where possible, and setting expectations through intergovernmental agreements. The recent MOU with Alberta, where the federal government rescinded clean energy regulations, illustrates the limits of relying on negotiated national standards when provincial governments resist. While a full legal or constitutional analysis of federal and provincial powers is beyond the scope of this report, we acknowledge that the federal government has tools available to uphold existing environmental, community and public health protections and should not trade them away when a province is pursuing investment.

Establish binding limits on energy and water use

Data centres are increasingly integrating on-site gas generation, locking in fossil fuel demand at the exact moment climate action requires the opposite. Furthermore, cleaner engineering is not the same as a cap. Commitments to implement closed-loop cooling, waste heat recovery and renewable sourcing can all reduce harm without limiting it. A meaningful framework needs binding restrictions, not just better technology:

- No data centres in Canada should be permitted to run on natural gas, coal or any other fossil fuel generation, whether grid-sourced or behind the meter.
- Grid power drawn in provinces with hydro capacity must be additional, with new renewable generation built to serve the new load, not existing hydro capacity diverted away from existing customers.
- Binding water withdrawal caps must be in place for all permitted facilities and reviewed on a regular basis.
- Waste water discharge and disposal rules must be set before approval.

Without hard limits, "green" technology commitments describe intent without ensuring the outcome.

Require community benefit agreements as a condition of approval

National standards and guidelines provide an important floor of support that ensures communities are not negotiating at a profound disadvantage. Community benefit agreements (CBAs) should be mandatory for any hyperscale infrastructure. To be meaningful, a CBA must include (at minimum) the following points:

- Local health and infrastructure contributions;
- Tax revenue projections;
- Workforce training programs;
- Quantifiable commitments on local job creation (disaggregated by construction phase and permanent operational roles, given how heavily front-loaded data centre employment is);
- Site decommissioning and clean up requirements.

All of the above recommendations should be tied to specific metrics and enforceable timelines. Regular public reporting on these metrics should be a condition of a facility's continued operational permit, with penalties or permit review triggered by non-compliance.

Even with these provisions in place, the imbalance in power, resources and expertise between small municipalities and large tech firms can be immense.[150] Barriers such as limited funding, procedural or legal expertise, and technical knowledge should be addressed in the language and provisions of the agreement to try and remedy this imbalance to the extent that it can be.[151]

Conclusion

Canada is currently in an advantageous position relative to other jurisdictions that failed to properly regulate the development of the data centre investment boom. This report has traced the scope of that challenge: the strain data centre growth places on critical mineral supply chains and Indigenous rights, the water, noise and emissions impacts on host communities, the gap between promised economic benefits and the more limited reality of job creation and tax revenue, and a set of federal policy recommendations that offer a concrete path forward.

The current policy environment lacks basic rules of transparency and accountability, which is fostering real anxiety and uncertainty in the public. Without clear ground rules to govern the build-out of these facilities, the public is left to evaluate their impact based on the experiences of other (largely unregulated) jurisdictions. As the record shows, this does not inspire confidence. Without these basic rules, political leaders may see the public appetite to even consider these facilities quickly diminish. That is the experience of the United States, where public opinion has fast become the primary constraint to continued expansion of the data centre build-out.[152]

On the other side of the coin, the organized political power of the data centre industry and its convergence with the oil and gas sector in Canada to influence the policy environment is starting to take shape. This will make trying to regulate in the public interest more difficult. While the data centre industry in Canada is not yet as politically organized as in the U.S., it is already in the process of emulating the kinds of advocacy and lobbying practices of its American counterpart.[153] For these reasons, it is urgent that political leaders and policy-makers in Canada recognize and take advantage of the unique window of opportunity we currently have to

develop and institute a regulatory environment that adequately addresses public concerns and ensures ongoing democratic accountability over Canada's data centre industry.

Appendix

Data centre policy database

The following database compiles policy tools and recommendations to regulate data centre development encountered during our research. The intent is to give policy-makers and community advocates a working reference, so that Canada's own regulatory response can be built from evidence. For each tool, the database identifies the level of government best positioned for implementation and provides a description from real-world examples, where available.

It is important to note that many of these policies work best in combination, and some (such as restricting behind-the-meter generation or fenceline monitoring) only function as intended when paired with transparency and public reporting requirements listed elsewhere in the table. They are organized by policy domain and presented in no specific order.

Table 3 / Data centre policy database

Policy tools and recommendations to regulate data centre development, organized by policy domain

Title	Jurisdiction	Description
Zoning and Land Use		
Prohibit data centres (bans)	Municipal	Ban new data centre construction or expansion via municipal bylaw amendment under provincial legislation. This can be a full prohibition or restricted by zoning district, floor area or resource use (MW). For example, Groton, Connecticut banned data centres larger than 12,500 square feet following a year-long moratorium.[154]
Data centre moratorium	Municipal, provincial, federal	Impose a time-bound prohibition on new data centre approvals, with a recommended minimum duration of 180 days, while the jurisdiction develops permanent zoning, environmental, and energy regulations. For example, Ireland's utility regulator imposed a four-year moratorium in 2022 due to rising energy consumption (up to 22 per cent of their national electricity). The moratorium has been lifted, and data centres are now required to supply their own power, 80 per cent of which must be renewable.[155]
Setback, rezoning, and design requirements	Municipal, federal, provincial	Limit siting through setback requirements from residential areas and transit hubs, prohibit rezoning of agricultural districts, historic sites, and protected wildlife areas, and require green building standards. For example, Minnesota passed a bill in 2024 that requires green building standards for data centres within the three years of construction.[156]
Decommissioning and remediation requirements	Municipal, provincial	Require binding provisions for site decommissioning and remediation, funded through a bond or trust set aside by the developer, with no public subsidy.
Energy and Grid Stability		
Energy transparency mandate	Provincial, utility provider	Require monthly public reporting of electricity use as a condition of ongoing approval, with penalties if actual use exceeds application thresholds. Enforceable through utility rate filings or municipal permit conditions. For example, Pennsylvania now requires data centres to report annual power and water use, with a fine of $10,000 per day until reports are submitted.[157]
Restrict off-grid and behind-the-meter generation	Provincial, utility provider	Restrict "bring your own power" arrangements unless generation is additional and renewable. Ban or tightly permit backup diesel generation, with pollution controls and cumulative impact reporting required under provincial environmental permitting.

Title	Jurisdiction	Description
Waste heat recovery requirements	Municipal, provincial, federal	Require proponents to capture and contribute waste heat to local district energy projects. For example, Germany's Energy Efficiency Act (EnEfG) requires data centres to achieve a minimum Energy Reuse Factor of 10 per cent for facilities commissioned from July 2026, rising to 15 per cent in 2027 and 20 per cent in 2028.
Emissions accounting requirement for behind-the-meter gas generation	Provincial	Require any on-site natural gas generation to be metered and reported separately from grid-sourced electricity. Disclosure should be mandatory and public, filed alongside existing utility or environmental permit reporting, with penalties for non-disclosure matching those for permit violations. This should apply retroactively to existing on-site generation as well as new builds.
Water		
Full water footprint accounting	Provincial	Mandate disclosure of all projected water use and water sources at the application stage, covering construction-phase use, ongoing cooling needs, and ancillary uses like landscaping or fire suppression systems. Disclosure should specify whether the water is potable, surface, or groundwater, since the source matters as much as the volume in water-stressed regions. For example, Colorado's proposed SB26-102 would require all data centres to estimate both direct and indirect water use and planned water sources in their permit applications.[158]
Water supply moratorium	Provincial	Establish a moratorium of 180 days to 12 months on new water withdrawal applications for data centre use, giving regulators time to develop conservation rules and assess cumulative regional water stress before approving further large-scale draws. For example, Ypsilanti, Michigan's water utility passed a 12-month moratorium on supplying water to data centres.[159]
Water conservation requirements and enforcement penalties	Provincial	Enforce water conservation rules with meaningful penalties, including the ability to shut off water service for repeat violations, rather than nominal fines that operators can absorb as a cost of doing business. Conservation plans must be legally binding commitments, not voluntary pledges, with regular compliance audits. For example, Aurora, Colorado prohibits new development of high-water use industries without water sustainability measures.
Public monthly water reporting	Provincial	Mandate monthly public disclosure of water usage volumes, water source type, water quality testing results, and conservation plan compliance, filed as public record and accessible to residents without a formal request process.

Title	Jurisdiction	Description
Noise		
Enforce lowest achievable noise limits	Municipal	Set strict maximum decibel limits calibrated for continuous, 24-hour operation rather than intermittent industrial noise, including specific limits for low-frequency noise, which travels further and is harder to mitigate than standard mid-range frequencies. For example, Divide County, North Dakota, establishes the max continuous sound level for data centers as 50 dBA daytime, 45 dBA at night.[160]
Enclosed generator housing	Municipal	Require all backup and on-site generators to be housed in enclosed, acoustically insulated, and properly ventilated buildings to reduce noise transmission to surrounding areas, rather than allowing open-air generator installations.
Noise enforcement mechanisms	Municipal	Establish a formal resident complaint process, with defined response timelines, and attach meaningful penalties for violations up to and including revocation of the occupancy certificate.
Mandatory noise study and mitigation plan	Municipal	Require a noise mitigation plan and a comprehensive noise study prior to approval covering impulse noise, continuous background noise, low-frequency noise, and generator noise, conducted specifically during peak operational conditions.
Air Quality		
Fenceline monitoring	Provincial	Require continuous, real-time monitoring at the facility's property boundary for air pollutants, thermal impacts, water salinity, and cooling system chemicals and metals, with results made public in near-real-time rather than aggregated into periodic reports.
No emissions exemptions	Provincial, federal	Prohibit data centres from receiving any carve-outs or special exemptions from standard provincial or national air quality standards, closing a pathway by which large facilities can be treated differently from other industrial emitters.
Prohibit backup diesel generators	Provincial	Ban on-site diesel backup generators outright, given their contribution to both carbon emissions and localized nitrogen oxide pollution. This is a stronger measure than restriction or permitting and applies where diesel backup poses an unacceptable air quality risk to nearby communities.

Title	Jurisdiction	Description
Public Health		
Cumulative health impact assessments	Federal, provincial	Require a full environmental impact assessment that includes cumulative health analysis for surrounding communities before approval, accounting for the combined effect of noise, air quality, water stress, and other nearby industrial activity (not just the incremental impact of the single proposed facility in isolation).
Public records and complaint mechanisms	Municipal, provincial	Ensure all permits, environmental assessments, and compliance reports are public record by default, with an accessible complaint and enforcement channel that does not require residents to file formal freedom-of-information requests to see basic compliance data. For example, Tucson, Arizona requires all documents and studies related to data centre projects to be public 90 days before any public meeting.[161]
Corporate Influence		
NDA disclosure condition on public permits/subsidies	Municipal, provincial	Prohibit the use of non-disclosure agreements by data centre proponents where those agreements would limit meaningful public engagement or suppress transparent disclosure of project risks, financial terms, or environmental impacts during the approval process. For example, Minnesota has proposed a bill that would ban local officials from signing NDAs or contracts that restrict municipalities from disclosing information about projects using public funding.[162]
Servicing agreements tied to measurable outcomes	Municipal	Require servicing agreements between municipalities and developers to include specific, measurable conditions of approval as quantified targets.
Private equity ownership disclosure and screening	Federal (registry), municipal (permit condition)	Require developers to disclose private-equity ownership stakes, fund structures and investment horizons as a condition of federal registry listing or municipal permit approval. Given private equity's growing role in data centre ownership and its short-term profit incentives, disclosure allows regulators and communities to assess whether a facility's ownership structure is likely to prioritize long-term compliance with environmental and community commitments or exit the investment before those commitments come due.

Title	Jurisdiction	Description
Critical Minerals and Supply Chain		
Right-to-repair and hardware lifespan standards for AI-specific hardware	Federal	Require minimum serviceable-life standards for servers, GPUs, and other AI-specific hardware, paired with repairability provisions guaranteeing access to replacement parts, diagnostic tools, and repair documentation, to prevent premature replacement driven by planned obsolescence rather than genuine performance limits.
Recycled content minimum for data centre construction	Federal, provincial	Set minimum recycled-copper or recycled-metal content requirements for data centre builds.
Governance		
National data centre inventory and monitoring	Federal	Create a centralized national inventory tracking every operating and proposed data centre, enabling coordinated oversight and enforcement of water, energy, and emissions standards at a scale that individual municipalities cannot achieve alone.
UNDRIP-based consultation requirements	Federal, provincial, municipal	Require immediate, meaningful engagement with Indigenous governments on all data centre approvals and related resource development, using the UN *Declaration on the Rights of Indigenous Peoples* as the binding operative framework rather than a discretionary consultation, recognizing Indigenous jurisdictional authority as foundational rather than an additional layer of review.
National e-waste harmonization framework	Federal, provincial	Establish a single federal e-waste standard specifically for data centre hardware, mandating certified recycling or refurbishment pathways, chain-of-custody tracking for decommissioned hardware, and public reporting of volumes processed annually, preventing operators from routing hardware through whichever province has the weakest disposal rules.
Community benefit agreements (CBA)	Municipal	Require data centre proponents to commit to legally binding CBAs with host communities. CBAs can ensure developers commit to local hiring targets, living wages, noise mitigation measures, environmental monitoring, and ongoing community oversight. For example, California's SB 887 conditions expedited approval on legally binding CBAs plus zero-carbon energy, water-efficient cooling, and full repayment of any grid/interconnection costs.[163]

Title	Jurisdiction	Description
Labour		
Construction-phase labour standards and local hire requirements	Provincial, municipal	Mandate project labour agreements with binding local-hire quotas for skilled trades throughout the construction phase, covering site developers, surveyors, equipment operators, electricians, pipefitters, and HVAC technicians, with enforceable procurement targets for sourcing materials and services locally wherever feasible.
Contract worker protections for data centre operations staff	Provincial, municipal	Extend baseline labour protections—including union access, benefits eligibility, and job security—to contracted security, maintenance, and janitorial workers at operational facilities, regardless of whether they are directly employed or hired through third-party contractors, including minimum contract length requirements and wage floors tied to local living-wage benchmarks.

Notes

1 Joe Wilkins, "Americans' Anger Against AI Data Centers Is Boiling Over," Futurism, March 14, 2026.

2 Modor Intelligence, Canada Data Centre Market Size & Share Analysis - Growth Trends and Forecast 2026-2031, January 2026.

3 See, for example: Kate Lanau, "Evan Solomon Wants Canada to Trust AI. Can We Trust Evan Solomon?," *The Walrus*, January 15, 2026.

4 Ella Nilsen, "Data centers are spreading around the country. Now, data-center bans are, too," *CNN*, April 12, 2026.

5 Sha Sajadieh, et al., The AI Index 2026 Annual Report, Institute for Human-Centered AI (Stanford University), April 2026.

6 See, for example: Drew Anderson, "A $10-billion AI data centre races ahead in a rural Alberta town, population 9,679," *The Narwhal*, February 23, 2026; Alexander Quon, "Neighbours of proposed AI data centre near Regina raise concerns about water usage, noise," *CBC*, February 12, 2026.

7 James O'Donnell and Casey Crownhart, "We did the math on AI's energy footprint. Here's the story you haven't heard," MIT Technology Review, May 20, 2025.

8 See, for example: Juan Thomas, "AI data center vs traditional data center – what is the difference?," RCR Wireless News, March 27, 2025; AI Infrastructure Coalition, "A Moratorium on Data Centers Is a Moratorium on the American Economy," AIIC, March 25, 2026.

9 PR Newswire, "Bell AI Fabric Expands National Network with 300 MW Data Centre in Saskatchewan," Newswire, March 16, 2026.

10 "Edge data centers versus traditional data centers." Databank. May 10, 2024.

11 Phil Powell and Ian Smalley, "What is a hyperscale data center?" IBM. n.d.

12 Alexander Carlo and Lyndsey Rolheiser, "Data Centred: The Shifting Landscape of Canada's Digital Infrastructure," Schulich School of Business Real Assets Research Paper Series, York University, July 3, 2026.

13 See, for example: Nlyte Software, "What Is a Data Center? Tiers, Types, and More," n.d.

14 Alexander Carlo and Lyndsey Rolheiser, "Data Centred: The Shifting Landscape of Canada's Digital Infrastructure," Schulich School of Business Real Assets Research Paper Series, York University, July 3, 2026.

15 Government of Alberta, "Alberta's AI data centre strategy: powering the future of artificial intelligence," December 2024.

16 Kyle Bax, Nora Young, and Rukhsar Ali, "Supersized data centres are coming to Canada," *CBC News*. June 4, 2026.

17 Alexander Carlo and Lyndsey Rolheiser, "Data Centred: The Shifting Landscape of Canada's Digital Infrastructure," Schulich School of Business Real Assets Research Paper Series, York University, July 3, 2026.

18 Tommy Pan Fang and Shane Greenstein, "What Really Drives Data Center Location Decisions in the U.S.?, *Rice Business*, 2025.

19 Jowi Morales, "AI data center developers target rural territory to bypass city construction bans and regulations," Tom's Hardware, May, 11, 2026.

20 Jesse Noffsinger, Mark Patel, and Pankaj Sachdeva, "The cost of compute: A $7 trillion race to scale data centers," *McKinsey Quarterly*, April 28, 2025.

21 Innovation, Science and Economic Development Canada, "Enabling large-scale sovereign AI data centres," Government of Canada, June 2026.

22 Innovation, Science and Economic Development Canada, "Government of Canada and TELUS Advance Work to Build Sovereign AI Infrastructure," Government of Canada, May 11, 2026.

23 Kate Harland, "Is there a smart way to integrate artificial intelligence data centres into Canada's electricity grids," Canadian Climate Institute. March 31, 2025.

24 Government of Alberta, Alberta's AI data centre strategy: powering the future of artificial intelligence, December 2024.

25 Simon Enoch, "Strange bedfellows: How the tech industry learned to love fossil fuels," CCPA, July 21, 2026.

26 Nathan Bawaan & Mac Christie, "Hamilton mayor calls special meeting on AI data centres," *Hamilton Spectator*, July 10, 2026.

27 Taylor Noakes, "After intense lobbying, Carney allows gas powered data centres in Alberta," *The Walrus*, March 27, 2026.

28 Jessica Cole, "Here's how every Canadian province and territory is governing data centres," betakit, September 8, 2026.

29 Innovation, Science and Economic Development Canada, Canada's National artificial intelligenceStrategy: AI for All, Government of Canada, June 2026.

30 Innovation, Science & Economic Development Canada, "Canada's Responsible Data Centre Development Principles," Government of Canada, September 3, 2026.

31 Barry Appleton, Whose Law Governs Canadian Data? The CLOUD Act, Executive Agreements and Digital Sovereignty, Balsillie School of International Affairs, March 11, 2026.

32 Joshua van Es, "Can Canada Ever Have True Digital Sovereignty?," *The Globe and Mail*, March 25, 2026.

33 Alexander Carlo & Lyndsey Rolheiser, "Data Centred: The Shifting Landscape of Canada's Digital Infrastructure," *Schulich School of Business Real Assets Research Paper Series*, York University, March 25, 2026.

34 Allwyn Dsouza, "Building the Backbone of the Digital Economy: Canada's Data Centre Opportunity," Real Estate Institute of Canada, January 10, 2025.

35 Jim Baker, "Private Equity Cash Fuels Data Center Buildout," PESTS (Private Equity Stakeholder Project), May 26, 2026.

36 Joyce Guevarra, Kelly Morgan, and Shambhavi Gupta, "Private equity investment surge sends data center deals to 5-year high," S&P Global, May 12, 2026.

37 Simon Enoch, "What happens to data centres when the AI bubble pops?," Canadian Centre for Policy Alternatives, April 10, 2026.

38 See, for example: Steven Wilhelm, "Alberta May See 'Gigawatt-Scale' AI Data Centres Under Construction This Year," *Calgary Herald*, June 10, 2026.

39 International Energy Agency, Key Questions on Energy and AI, IEA, 2026.

40 Kate Harland, "Is There a Smart Way to Integrate artificial intelligenceData Centres into Canada's Electricity Grids?," Canadian Climate Institute, March 31, 2025.

41 Innovation, Science and Economic Development Canada, Canada's National artificial intelligenceStrategy: AI for All, Government of Canada, June 2026.

42 See, for example: Christopher Louney, "Natural Gas Powers the Data Center Boom," RBC Capital Markets, May 14, 2026.

43 See, for example: Reuters, "Microsoft May Shelve 2030 Clean Energy Target as AI Lifts Power Use, Bloomberg News Reports," *Reuters*, May 6, 2026.

44 Molly Taft, "Data Centers Are Driving a US Gas Boom," *Wired*, January 28, 2026.

45 Reuters, "Global Data Center Industry to Emit 2.5 Billion Tons of CO2 Through 2030, Morgan Stanley Says," *Reuters*, September 3, 2024; European Commission Joint Research Centre, *GHG Emissions of All World Countries: 2024 Report*, Emissions Database for Global Atmospheric Research (EDGAR), 2024.

46 Joel Dryden, "Alberta Wants to Build Huge Data Centres for AI. That Could Bring a Big Emissions Challenge," *CBC News*, December 18, 2024.

47 Geoff Dembicki and Jen St. Denis, "Federal Adviser Says Data Centres 'Provide Markets' for Gas," *The Tyee*, June 11, 2026.

48 Taylor Noakes, "Carney Allowed Gas-Powered AI Data Centres After Lobbying From Alberta Energy Company," *DeSmog*, February 25, 2026.

49 See, for example: Elena Giordano, "Brussels to Big Tech: Embrace Sustainable AI or Go Away," *Politico Europe*, May 31, 2026; Elena Giordano, "Europe Must Choose Between AI and Climate Goals, Data Center Lobby Says," *Politico Europe*, June 17, 2026.

50 International Energy Agency, "Energy demand from AI," IEA.

51 Christopher Tozzi, "Evaporative Cooling in Data Centers: Why the Industry Hesitates to Move On," *Data Center Knowledge*, June 19, 2026.

52 Mara Pusic, "AI's Cooling Problem: How Data Centers Are Transforming Water Use," Environmental Law Institute, October 23, 2025.

53 Miguel Yañez-Barnuevo, "Data Centers and Water Consumption," Environmental and Energy Study Institute, June 25, 2025.

54 See, for example: Liz Mineo, "Why Are Communities Pushing Back Against Data Centers?," *Harvard Gazette*, April 9, 2026.

55 Peyton McCauley & Melissa Scanlon, Data centers consume massive amounts of water – companies rarely tell the public exactly how much, *The Conversation*, August 19, 2025.

56 Google, Environmental Report 2025.

57 See, for example: Justin Longo & Margot Hurlbert, "Opportunity Knocks: How Should Saskatchewan Answer? A Critical Assessment of the Regina-Area AI Data Centre," Johnson Shoyama Graduate School of Public Policy, University of Regina, June 4, 2026; World Economic Forum, "Why Circular Water Solutions Are Key to Sustainable Data Centres," November 7, 2024.

58 Uttam K. Saha, "Understanding How Data Centers Impact Surface and Ground Waters," University of Georgia College of Agricultural and Environmental Sciences, June 2026.

59 *Ibid.*

60 JetCool, "Direct Liquid Cooling vs. Immersion Cooling," April 24, 2024.

61 JetCool, "What Is Direct Liquid Cooling for AI Data Centers?," June 11, 2024.

62 Christopher Tozzi, "Data Center Cooling Methods: Costs vs. Efficiency vs. Sustainability," *Data Center Knowledge*, October 31, 2025.

63 Catherine Bolgar, "AI Chips Are Getting Hotter. A Microfluidics Breakthrough Goes Straight to the Silicon to Cool Up to Three Times Better," Microsoft.

64 Christopher Tozzi, "Is Microfluidics Ready to Cool the Next Generation of Data Centers?," *Data Center Knowledge*, March 30, 2026.

65 Ariel Wittenberg and Arianna Skibell, "AI's No-Win Choice: Using Huge Amounts of Water or Energy," *E&E News*, July 9, 2026.

66 João-Pedro Ferreira "Economic, Fiscal and Energy- Related Impacts of Data Centers in the Great Lakes," Weldon Cooper Center for Public Service, University of Virginia. November 6, 2025.

67 Joint Legislative Audit and Review Commission, "Data Centers in Virginia," Report to the Governor and the General Assembly of Virginia, December 9, 2024.

68 João-Pedro Ferreira, "Economic, Fiscal and Energy Related Impacts of Data Centers in the Great Lakes," Weldon Cooper Center for Public Service, University of Virginia, November 6, 2025.

69 Joint Legislative Audit and Review Commission, "Data Centers in Virginia," Report to the Governor and the General Assembly of Virginia, December 9, 2024.

70 Terry Nguyen and Ben Green, What Happens When Data Centers Come to Town?, Science, Technology, and Public Policy Program, Gerald R. Ford School of Public Policy, University of Michigan, July 2025.

71 João-Pedro Ferreira, "Economic, Fiscal and Energy Related Impacts of Data Centers in the Great Lakes," Weldon Cooper Center for Public Service, University of Virginia, November 2025.

72 Joe Castaldo, "Data Centres Are Popping Up Everywhere, but a Jobs Boom Is Unlikely," *The Globe and Mail*, June 2, 2025.

73 See, for example: City of Chestermere, "Beacon Data Centre," February 27, 2025; Daniel Goetzel, Mark Muro, and Shriya Methkupally, "Turning the Data Center Boom into Long-Term, Local Prosperity," Brookings Institution, February 5, 2026.

74 Illinois Department of Commerce and Economic Opportunity, "Data Center Investment Program: 2024 Annual Report," Office of Business Development, 2024.

75 Marc Levy, "Ohio Suspends Data Center Tax Break as Tech Firms Face Pressure to Pay the Cost to Power AI," *Associated Press*, May 28, 2026.

76 Kasia Tarczynska, Cloudy with a Loss of Spending Control: How Data Centers Are Endangering State Budgets, Good Jobs First, April 2025.

77 See, for example: National Conference of State Legislatures, "Subsidizing Servers: How States Are Competing to Attract Data Centers," April 1, 2026.

78 Government of Alberta, "Alberta Introduces New Levy Framework for AI Data Centres," August 27, 2025.

79 Rural Municipalities of Alberta, "Data Centre Levy Announcement," September 19, 2025.

80 Jeffrey Tomich, "Utility customers already subsidizing data center boom — study," *E&E News Politico*, March 7, 2025.

81 See, for example: Liz Mineo, "Why Are Communities Pushing Back Against Data Centers?," *Harvard Gazette*, April 9, 2026; Ari Peskoe and Eliza Martin, "How Your Electric Bill May Be Paying for Big Data Centers' Energy Use," *The Conversation*, June 5, 2025.

82 Bank of America Institute, "Is the AI Revolution Raising Consumers' Utility Bills?," October 17, 2025.

83 Michael Cembalest, "Eye on the Market," J.P. Morgan, March 3, 2026.

84 Josh Saul, Leonardo Nicoletti, Demetrios Pogkas, Dina Bass, and Naureen Malik, "AI Data Centers Are Sending Power Bills Soaring," *Bloomberg Technology*, September 29, 2025.

85 David Pickup and Will Noel, "Footing the Bill: How hyperscale data centres could increase electricity bills in Alberta," Pembina Institute, August 26, 2026.

86 See, for example: Valerie Volcovici and Jason Lange, "Americans Wary of AI-Driven Data Center Boom, Reuters/Ipsos Poll Shows," *Reuters*, June 11, 2026; Anja Karadeglija, "Fears Are Widespread About Data Centre Impacts on Canada's Water, Environment: Poll," *Global News*, July 18, 2026.

87 Tim Rowden, "Developers Agree to PLAs on Area Data Center Projects," *Labor Tribune*, March 26, 2026.

88 Vincent Nolette, "Community Benefits Agreements and Data Center Development," Sabin Center for Climate Change Law, Columbia Law School, May 28, 2026.

89 Julia Velkova, "Data Centres as Impermanent Infrastructures," *Culture Machine*. Vol. 18, 2019.

90 International Energy Agency, "AI and Climate Change," in *Energy and AI*, IEA.

91 *Ibid.*

92 Miguel Yañez-Barnuevo, "Data Center Buildout Is Hungry for Fossil Fuels," Environmental and Energy Study Institute, January 26, 2026.

93 Government of Alberta, "Artificial intelligenceData Centres Strategy," December 2024.

94 See, for example: Arianna Skibell, "Trump Recruits Diesel Power as Cold Sets In," *Politico*, January 29, 2026.

95 Shaolei Ren and Adam Wierman, "Mitigating the Public Health Impacts of AI Data Centers," *Harvard Business Review*, November 5, 2025.

96 Google, "Environmental Report 2024," 2024.

97 Microsoft, "2024 Environmental Sustainability Report," 2024.

98 See, for example: Dara Kerr, "Google to Tap into Gas Plant for AI Datacenter in Sharp Turn from Climate Goals," *The Guardian*, April 2, 2026; *Reuters*, "Microsoft May Shelve 2030 Clean Energy Target as AI Lifts Power Use, Bloomberg News Reports," May 6, 2026.

99 Yu Tao and Peng Gao, "Global Data Center Expansion and Human Health: A Call for Empirical Research," *Eco-Environment & Health,* vol 4 (no. 3), September 2025.

100 See, for example: Neha Gour, Ed Maibach, and Luis Ortiz, "5 Ways Data Centers Endanger Their Local Communities and the Country as a Whole," *The Conversation*, June 8, 2026.

101 Christopher Connell, "Why Are Data Centers So Noisy? Loose Rules, Pricey Solutions, Critics Say," *Prince William Times*, November 17, 2022.

102 Adeel Hassan, "The Cloud Has Sound: The Unrelenting and Unseen Cost of A.I. Data Centers," *The New York Times*, June 17, 2026.

103 Ambika Kandasamy, "More Data Centers, More Environmental Problems?," *National Wildlife*, September 24, 2025.

104 Casey Crownhart, "AI Will Add to the E-Waste Problem. Here's What We Can Do About It.," *MIT Technology Review*, October 28, 2024.

105 Huilai Gu, "The Hidden Environmental Cost of Data Center Growth — Millions of Tons of E-Waste," CELI (Center for Environmental Law & Innovation), *Medium*, December 9, 2024.

106 Allison Boutillier, "Extended Producer Responsibility: Designing the Regulatory Framework," Environmental Law Centre, May 2020.

107 Government of Canada, "Unpacking the Environmental Effects of AI," December 17, 2025.

108 Casey Crownhart, "AI Will Add to the E-Waste Problem. Here's What We Can Do About It.," *MIT Technology Review*, October 28, 2024.

109 Peng Wang, Ling-Yu Zhang, Asaf Tzachor, and Wei-Qiang Chen, "E-Waste Challenges of Generative Artificial Intelligence," *Nature Computational Science*, October 2024.

110 Richard Luscombe, "Wyoming Tightens Wastewater Rules After Meta Datacenter Contractor Flushed Contaminated Water," *The Guardian*, July 8, 2026.

111 Covington & Burling LLP, "The EU's Energy Efficiency Directive and Its Impact on Datacenters," September 2025.

112 See, for example: World Economic Forum, "Here's How Data Centre Heat Can Warm Your Home," June 18, 2025.

113 Hersh Seth, "Use It Twice: A Data Centre We Could Support," *Winnipeg Free Press*, July 30, 2026.

114 Thijs van de Graaf, "Inside the AI-Led Resource Race," *Finance & Development*, International Monetary Fund, December 2025.

115 International Energy Agency, "Mineral Requirements for Clean Energy Transitions," in *The Role of Critical Minerals in Clean Energy Transitions*, IEA.

116 World Economic Forum, "Metals at Scale for AI at Scale: Securing the Data Centre Materials Backbone," December 10, 2025.

117 Lynne Schneider, "Supply Chain Considerations for AI Implementation: Critical Minerals, Data Centers, and the Environment," conference paper, Springer Nature, June 3, 2026.

118 Sustainability Atlas, "Trend Watch: Critical Minerals Supply Chains (Lithium, Cobalt, Rare Earths) in 2026 — Signals, Winners, and Red Flags."

119 FP Analytics, "artificial intelligence and the Critical Minerals Crunch: Strategies for Resilient Supply Chains," *Foreign Policy Analytics*, October 2025.

120 *Ibid.*

121 Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development, "Commodity Profile: Cobalt," IISD, May 2026.

122 Samar Ahmad, "The Lithium Triangle: Where Chile, Argentina, and Bolivia Meet," *Harvard International Review*, January 15, 2020.

123 S&P Global Market Intelligence, "Chile and Peru's Copper for Energy Transition," S&P Global, April 5, 2023.

124 Lauren E. Bridges, "Environmental Impacts of AI," *Oxford University Press*, June 25, 2026.

125 U.S. International Trade Administration, "Taiwan: Semiconductors Including Chip Design for AI," Taiwan Country Commercial Guide, U.S. Department of Commerce.

126 Serena Li & Ke Wang, "The Critical Minerals Conundrum: What You Should Know," World Resources Institute, October 8, 2025.

127 Rashi Shrivastava, "The World's Largest Tech Companies: Memory Chips Skyrocket Amid AI Data Center Buildout," *Forbes*, June 24, 2026.

128 International Energy Agency, "Rising Component Prices and Supply Chain Pressures Are Hindering the Development of Transmission Grid Infrastructure," February 25, 2025.

129 World Steel Association, "World Steel in Figures 2024," 2024.

130 IERE Team, "Does Copper Mining Affect the Environment?," Institute for Energy Research, May 31, 2025.

131 Renjith Krishnan and Gokul Gopan, "A Comprehensive Review of Lithium Extraction: From Historical Perspectives to Emerging Technologies, Storage, and Environmental Considerations," *Cleaner Engineering and Technology*, vol. 20, June 2024.

132 Lauren E. Bridges, "Environmental Impacts of AI," *Oxford University Press*, June 25, 2026.

133 Connor W. Brown, Charlotte E. Goldfine, Lao-Tzu Allan-Blitz, and Timothy B. Erickson, "Occupational, Environmental, and Toxicological Health Risks of Mining Metals for Lithium-Ion Batteries: A Narrative Review of the Pubmed Database," *Journal of Occupational Medicine and Toxicology,* vol 19 (no. 1), August 2024.

134 Nicole Greenfield, "Lithium Mining Is Leaving Chile's Indigenous Communities High and Dry (Literally)," Natural Resources Defense Council, April 26, 2022.

135 João Henrique Santana Stacciarini and Ricardo Junior de Assis Fernandes Gonçalves, "Data Centers, Critical Minerals, Energy, and Geopolitics: The Foundations of Artificial Intelligence," *Sociedade & Natureza,* vol. 37, June 2025.

136 Lauren E. Bridges, "Environmental Impacts of AI," *Oxford University Press*, June 25, 2026.

137 *Ibid.*

138 Government of Canada, Privy Council Office, "Major Projects Office."

139 Jenna Benchetrit, "Ottawa Is Counting on Copper to Be a Nation Builder — and Canada Has to Play Catch-Up," *CBC News*, September 13, 2025.

140 Government of Canada, "Canada's Critical Minerals Strategy: Progress Update," February 27, 2026.

141 Nikki Skuce, "The Data Deficit: Canada's 'Critical Minerals' Dilemma - Closing Information Gaps for a Resilient, Responsible Mineral Future," Reform BC Mining, May 2026.

142 *Ibid.*

143 Teo Lombardo, Leonardo Paoli, Araceli Fernandez Pales, and Timur Gül, "Sodium-Ion Battery Momentum Grows, but Challenges Remain," International Energy Agency, February 17, 2026.

144 Angus Ried Institute, "Canadians call for heavy AI regulation, but three-quarters doubt any government can keep up with the technology," June, 1, 2026.

145 See, for example: City of Burlington, "Motion by Mayor Marianne Meed Ward, Seconded by Councillor Kelvin Galbraith," Burlington City Council, July 21, 2026; Kristen Holliday, "Kamloops City Councillors Say Municipalities Need Federal Guidance on AI Data Centres," *Castanet Kamloops*, June 18, 2026.

146 Leger, "Views on Artificial Intelligence," August 28, 2026.

147 AI Now Institute, "Transparency," North Star Data Center Policy Toolkit.

148 See, for example: Anika Jane Beamer, "Facing Its Third Data Center, an Iowa County Rolls Out Extensive Zoning Rules," *Inside Climate News*, March 1, 2026.

149 Adam Mahoney, "After a White Town Rejected a Data Center, Developers Targeted a Black Area," *Green Social Thought*.

150 Vincent Nolett, Community Benefits Agreements and Data Center Development. Sabin Center for Climate Change Law, May 28, 2026.

151 Emily Martin, The Little Salmon Carmacks First Nation and Ben Bradshaw, "Expectations for meaningful free, prior, and informed consent: an exploration by the Little Salmon/Carmacks First Nation," *The Extractive Industries and Society*, Volume 23, 2025.

152 University of Virginia, Data Center Opinion Project. National Security Data and Policy Institute, June 2026.

153 Simon Enoch, "AI data centres: From boom to backlash," Canadian Centre for Policy Alternatives, March 26, 2026.

154 Peter Judge, "Groton CT Blocks Large Scale Data Center Projects, Thwarting NE Edge," *Data Center Dynamics*, June 29, 2023.

155 James Delahunt, "Ireland's Data Centre Policy Reset," KPMG Ireland, February 11, 2026.

156 Minnesota Legislature, "HF 4929: A Bill Relating to Taxation; Sales and Use; Modifying the Exemption for Data Centers," 93rd Legislature (2023–2024), introduced March 14, 2024.

157 Diana DiGangi, "Pennsylvania Data Centers Face Increased Oversight Under New Law," *Utility Dive*, July 14, 2026.

158 Colorado General Assembly, "SB26-102: Large-Load Data Centers," 2026 Regular Session.

159 Brian Allnutt, "Ypsilanti Utility OKs 12-Month Ban on Supplying Water for Data Centers," *Planet Detroit*, April 22, 2026.

160 Divide County, "Divide County Zoning Ordinance," revised March 25, 2025.

161 City of Tucson, "Regulations for Large-Scale Data Centers: Fact Sheet," Planning and Development Services Department, March 2, 2026, revised May 28, 2026.

162 Minnesota Legislature, "HF 4077," 94th Legislature (2025-2026).

163 California Legislature, "SB-887: California Environmental Quality Act: Environmental Leadership Development Projects: Data Centers: Clean Energy Powerplant Projects," 2025-2026 Legislative Session.

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