British Columbia Broadband Association

HYPERSCALER AI INFRASTRUCTURE DEPLOYMENTS IN NORTH AMERICA

Physical Layer · Fiber Infrastructure · Sovereign Compute

BC BROADBAND CONFERENCE · Richmond, BC · April 28–29, 2026

YOUR SPEAKER

Scott Jamieson

General Manager · PBI Fiber

ABOUT PBI FIBER

- Plenary Broadband Infrastructure (PBI) owns, develops, operates and commercialises middle-mile fiber routes across North America.
- Consortium of Plenary Americas (CDPQ-backed; $23.5B+ portfolio) and Tikehau Star Infra.
- Unique ROW access: Pennsylvania Turnpike, North Carolina DOT, Georgia DOT interstate highway systems.
- Services: Dark Fiber IRU · Dark Fiber Lease · Lit Services · Colocation · Custom Network Solutions.
- Customers: hyperscalers, telecom carriers, FTTH providers, data center operators.

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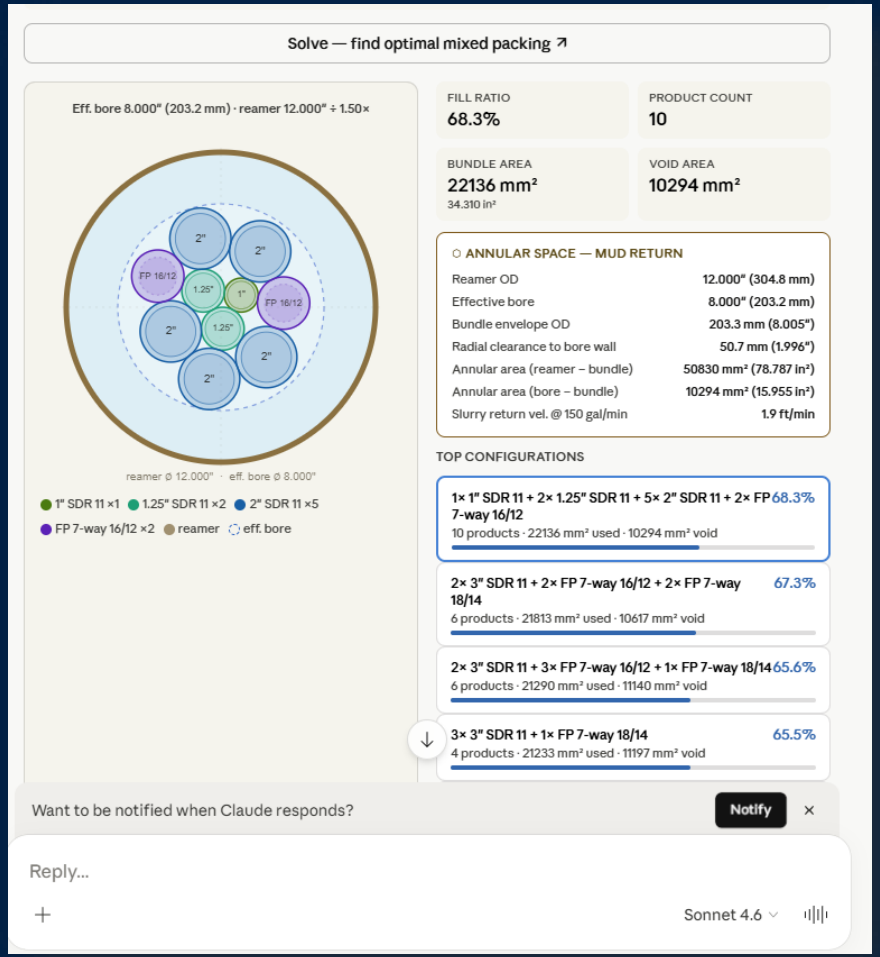


CLAUDE AI

Let me build a proper solver for this.
The core challenge here is that mixed-radius packing is an NP-hard combinatorial + geometric optimization problem. The approach I'll use is:
*A **branch-and-bound search** over pipe count combinations (n×2" + m×3") with a small-gap tolerance*
*A **physics-based placement engine** using repulsion/gravity simulation to find valid geometric arrangements for each combination*
Ranked results by fill ratio with full visualization of the winning layout

Agenda

01	Global Context & Fiber Infrastructure
02	The Regulatory Landscape
03	Case Study: Microsoft Mega-Campus
04	Case Study: Equinix Hampton vs. Homer City PA
05	Case Study: TELUS + Canadian Sovereign AI
06	Lessons, Outlook & Q&A

GLOBAL AI DATA CENTER SNAPSHOT · 2026

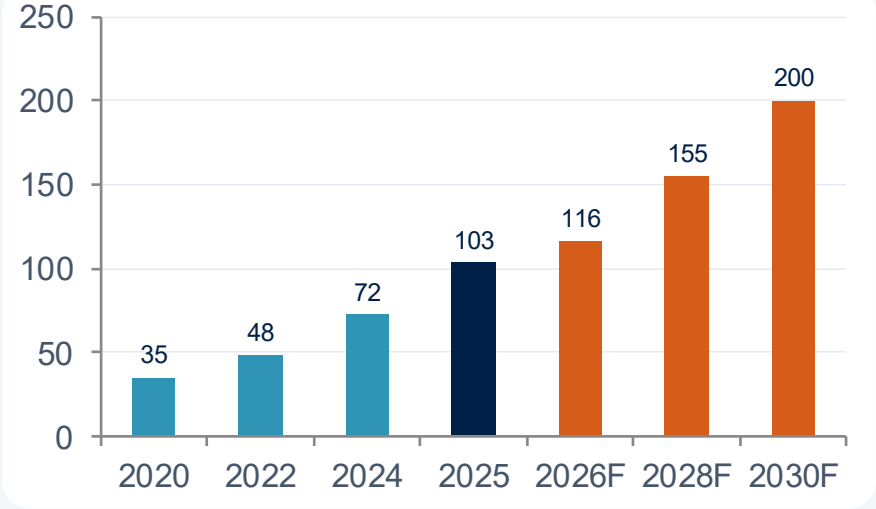
11,800+
Data centers worldwide [1]

103 GW
Current global capacity [2]

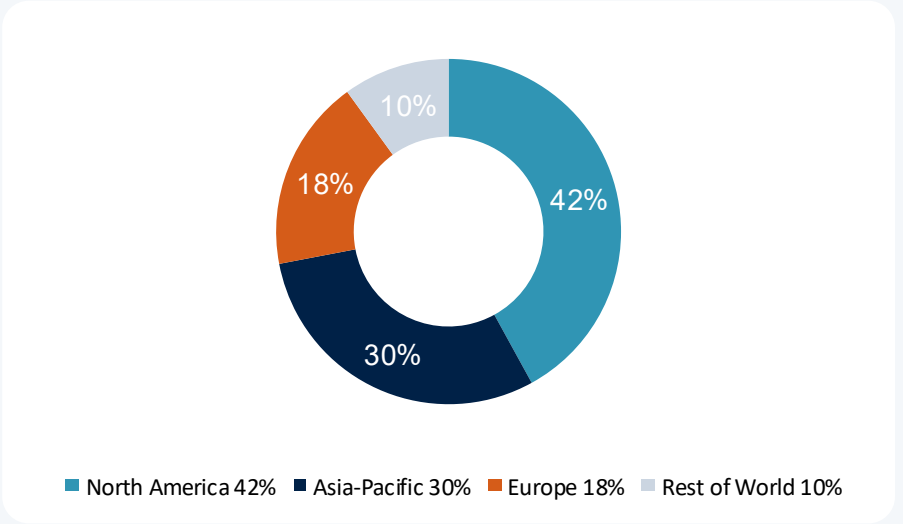
200 GW
Forecast by 2030 [2]

$7T
Global invest. 2025–30 [3]

Global Data Center Capacity (GW) 2020–2030F [2][9]



North America Share of Global Capacity 2026 [9]



Sources: JLL 2026 Global Data Center Outlook [2]; ABI Research [9]

THE PHYSICAL LAYER: FIBER IS THE NERVOUS SYSTEM

L1 — **Physical ★ FOCUS**

Dark fiber, conduit, transceivers, cabling plant, submarine cables

L2 — **Data Link**

400GbE / 800GbE switching, RoCEv2, InfiniBand

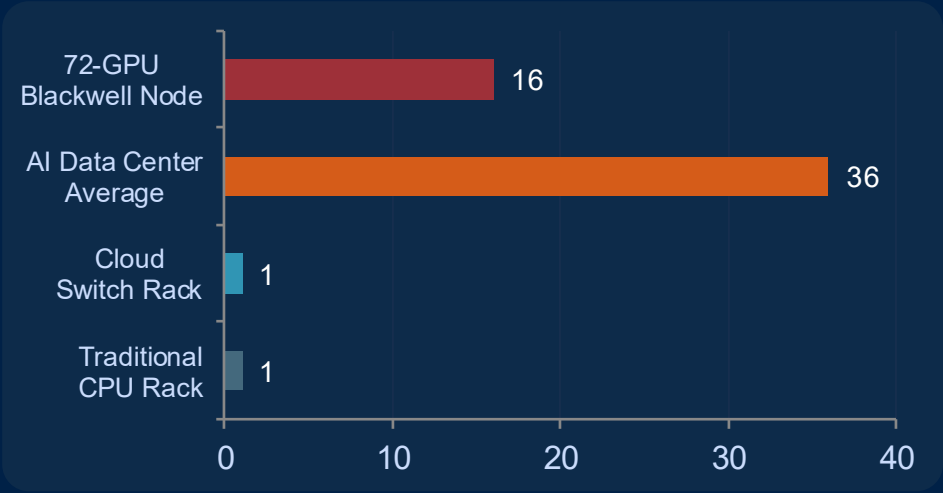
L3 — **Network**

BGP peering, IP fabric, SDN overlays

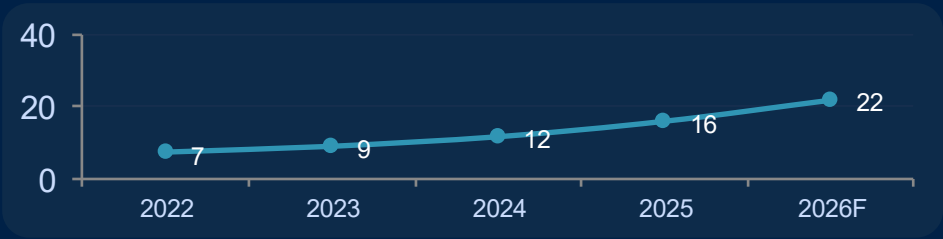
L7 — **Application**

AI model APIs, inference endpoints, control planes

Fiber Per Rack: AI vs Traditional Infrastructure [6]



Optical Transceiver Market Growth ($B) [10]



REGULATORY HEADWINDS: MORATORIUMS & INVESTMENT CLIMATE

11
States with moratorium bills 2026 [13]

$162B
Investment disrupted 2024–2025 [14]

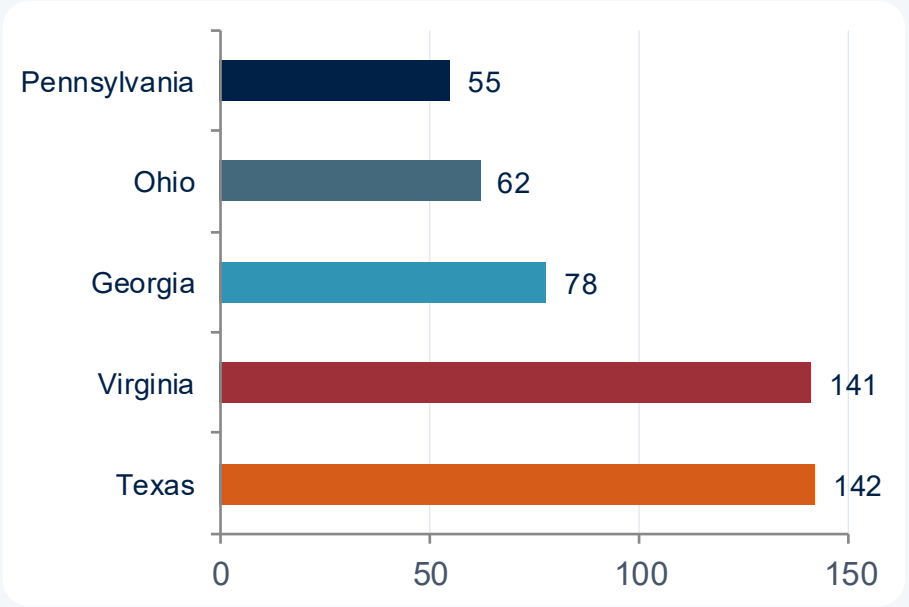
36+
States with data center incentives [15]

300+
State bills filed in 6 weeks 2026 [16]

RESTRICTED / MORATORIUM

Virginia	By-right zoning ended; HB 1515 grid freeze [17]
New York	NY A10141: proposed 3-year halt [13]
Georgia	Beltline ban; county moratoriums [18]
Oklahoma	SB 1488: >100MW freeze to 2029 [13]
Vermont	S.205: moratorium through 2030 [15]

Data Centers Under Construction — Top 5 States, 2026 [19][11]



Source: Grist / Aterio analysis Apr 2026 [19]; CBRE H2 2025 [11]

US STATE DEEP DIVE: TEXAS · PENNSYLVANIA · GEORGIA

TEXAS

Centers

300+ operating; 142 under construction — #1 US [19]

Stargate

Abilene: $100B, 5 GW [20]

Vantage Frontier

Shackelford Co: $25B, 1.4 GW, 1,515 acres [22]

Fermi Campus

5,800 acres; 18M sq ft; 1 GW Phase 1 [22]

Fiber

W. Texas: thousands of new route miles (FiberLight, Zayo, Globelink) [11]

Risk

ERCOT grid; $3B+/yr tax exemptions under legislative review [19]

PENNSYLVANIA

Amazon

$20B; Salem Twp. adj. Susquehanna nuclear — direct power connect [20]

Homer City

3,200 acres; 4.5 GW; 7 GE Vernova turbines; EQT gas supply [75]

Power scale

4.5 GW ≈ 28–39× City of Richmond BC (~115–160 MW continuous) [PBI est.]

PAX Digital I

700 acres; 1.35 GW; 17 metro fiber networks; Ashburn peering [81]

Power

PJM deregulated; NE PA in CBRE H2 2025 top markets [11]

Status

Pro-development; part of $90B state AI infrastructure commitment [24]

GEORGIA

Equinix Hampton

262 acres; 240 MW; first US xScale; hyperscale pre-leased Q1 2026 [90]

QTS Atlanta-1

99 acres; 278 MW; 3 Georgia Power substations; redundant fiber [54]

QTS Fayetteville

Project Excalibur: 615 acres; $1B+; 16 buildings to 2032 [50]

Fiber

2 largest US fiber routes intersect in metro Atlanta [67]

Moratorium

Atlanta Beltline banned; Douglas & Clayton county pauses [18]

Tax

State estimates $2.5B/yr in tax breaks — under review [15]

CASE STUDY 01

Hyperscaler Mega-Campus

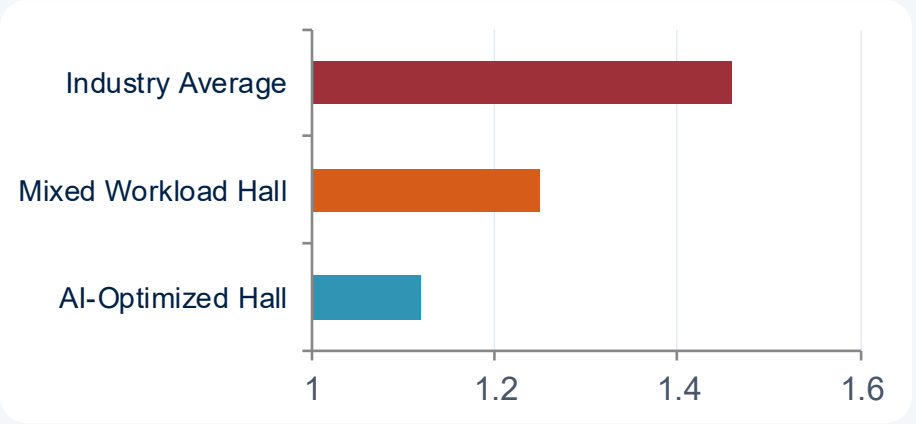
Microsoft's Iowa & Virginia Expansion

Fiber Topology · Power Co-Investment · 120,000-Mile Dedicated WAN

MICROSOFT: IOWA + VIRGINIA — PHYSICAL INFRASTRUCTURE

Fiber WAN	120,000 miles dedicated AI-WAN fiber; interconnects all campuses globally [12]
Long-haul	Dark fiber to Chicago IX; <4ms to US East hubs; 3+ diverse carrier paths
Optical	800GbE campus fabric; 400G DWDM long-haul between sites
Power	500+ MW; Iowa wind PPAs; utility co-funded substation with MidAmerican Energy
Scale	3.2M sq ft (Des Moines); PUE 1.12 AI halls vs 1.25 mixed workload
Timeline	Phase 1 live Q3 2023; Phase 3 completing Q2 2026

PUE: AI-Optimized vs Mixed Workload Halls [12]



Lower PUE = more efficient. 1.0 = theoretical perfect.

KEY LESSON

Fiber procurement leads compute by 18–24 months. Dark fiber routes and conduit rights-of-way must be secured before campus design is finalised. Physical fiber plane separation — not logical path diversity — is the real resilience measure.

CASE STUDY 02

Greenfield Hyperscale vs. Brownfield Energy Campus

Equinix xScale Hampton

Hampton, GA (Henry County)
AT10x — First US xScale Campus

262 acres · 240 MW · $2.4–2.9B value
GIC + CPP Investments JV · Hyperscale colo

Homer City Energy Campus

Indiana County, PA
Homer City Redevelopment (HCR)

3,200 acres · 4.5 GW · $10B+
Kiewit EPC · Coal→AI brownfield

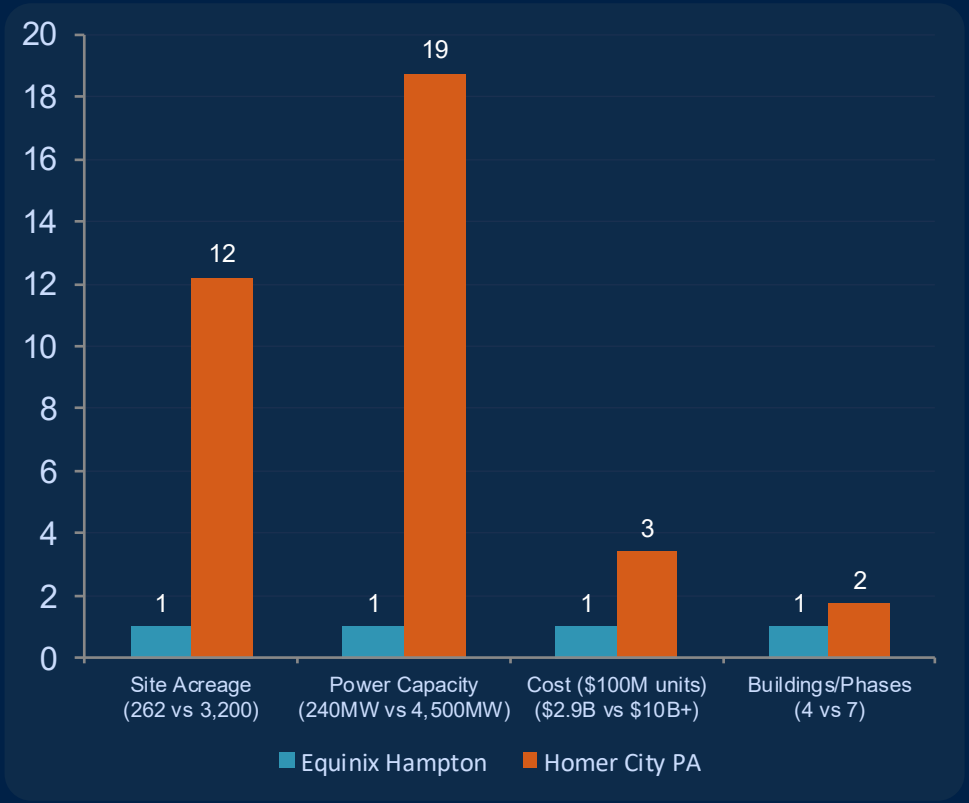
Power · Fiber · Ownership Model · Comparative Metrics

EQUINIX HAMPTON, GA vs. HOMER CITY, PA — SIDE BY SIDE

	Equinix Hampton	Homer City PA
Site	262 acres, Hampton GA ~40 miles SE of Atlanta [90][101]	3,200 acres, Indiana County PA (former coal plant site) [75]
Developer / Ownership	Equinix (NASDAQ: EQIX) GIC 37.5% + CPP 37.5% + EQIX 25% [94][105]	Homer City Redevelopment (HCR) Kiewit EPC; Knighthead Capital [80]
Power Capacity	240 MW: 4 × 60 MW buildings One independent 60 MW block each [90][101]	4.4–4.5 GW on-site generation 7× GE Vernova 7HA.02 turbines [75][80]
Power Source	Georgia Power grid connection LEED target; SMR agreements filed [87][105]	On-site natural gas (Marcellus Shale) EQT Corp exclusive gas supply [83]
Fiber & Connect.	2 largest US fiber routes in metro ATL [67]; carrier-neutral; 30+ MW min tenant [87]	PJM + NYISO transmission lines already on-site from prior coal plant [76]
Investment	$2.4–2.9B campus value ($10–12M/MW build cost) [92]; part of $15B JV [103]	$10B+ power infra; billions more for data center build [76]
Timeline	Site grading Aug 2025; JV Jan 2026; hyperscale pre-leased Q1 2026; live 2027 [87][103]	Construction underway 2025; first power generation 2027/28 [84]
Key Risk / Advantage	First US xScale; pre-leased Q1 2026 [94] Hampton 120-day moratorium possible [85]	4.5 GW on-site power (grid-neutral) Environmental permit scrutiny [84]

EQUINIX HAMPTON vs. HOMER CITY — KEY METRICS COMPARED

Scale Comparison (Normalized to Equinix = 1×) [75][80][90][101][105]



STRATEGIC DIFFERENTIATORS

Power model	Grid-dependent; Georgia Power + SMR pipeline	Self-generation; 4.5 GW on-site (grid-neutral)
Tenant model	xScale hyperscale colo; 30+ MW min deployment [87]	Hyperscale anchor tenant; full campus or multi-phase
Land type	Greenfield; graded ~40 mi SE of Atlanta [87]	Brownfield; former PA coal plant
Ownership	Equinix REIT + GIC/CPP; $15B total JV [105]	HCR + Knighthead; EQT gas supply [83]
Fiber	Atlanta IX ecosystem; carrier-neutral [67]	PJM/NYISO transmission already on-site [76]
Regulatory	Hampton 120-day moratorium under consideration [85]	Air quality permit in 6 months [84]

Note: Equinix = 262 acres, 240 MW, ~$2.9B, 4 buildings. Homer City = 3,200 acres, 4,500 MW, $10B+, 7 turbine/data hall phases.

CASE STUDY 03

Sovereign AI Compute

TELUS + NRC — Canada's Provincial Build-Out

Bill C-27 · Data Residency · Fiber Connectivity · Province-by-Province Investment

TELUS + NRC (NATIONAL RESEARCH COUNCIL): SOVEREIGN AI — PHYSICAL & CONNECTIVITY FOCUS

PROJECT OVERVIEW

Mandate	Canadian data residency for federal AI workloads (Bill C-27)
Compute	2,048 H100 GPUs across Toronto + Calgary (hydroelectric)
Fiber	Dual-diverse long-haul; Protected B L1 encryption; no US IXP routing
Connectivity	Private SD-WAN bridging TELUS cloud to SSC legacy systems
Security	CCCS Protected B compliance; air-gap option for secret workloads
Energy	100% Hydro-Québec + BC Hydro sourcing; PUE 1.11

PHYSICAL & CONNECTIVITY CHALLENGES

Fiber sovereignty

All transit paths must stay on Canadian soil — eliminates routing through US IXPs even for domestic traffic

Encrypted transport

Layer-1 encryption required on all Protected B dark fiber segments; adds latency vs unencrypted paths

Procurement

Federal RFP added 14 months; sovereignty requirements eliminated most US hyperscalers from bidding

Talent gap

~40 ML infra engineers in Canada with required clearances; parallel training program launched

CANADA: PROVINCE-BY-PROVINCE INVESTMENT COMPARISON

ONTARIO ★★★★☆

Market:	35.8% of Canada market (2025) [26]
Pipeline:	500 MW dev pipeline [27]
Power:	Mixed grid; ~$0.08–0.10 CAD/kWh
Fiber:	151 Front St W; Chicago/NY links
Highlight:	Cohere/CoreWeave: C$240M federal funding [28]

QUÉBEC ★★★★★

Market:	24.6% share; fastest CAGR 5.44% [26]
Pipeline:	Mega-scale >60MW: 23.9% CAGR [26]
Power:	99% renewable; $0.036 USD/kWh [26]
Fiber:	Montréal <8ms to NYC; major IX
Highlight:	Microsoft: 4 hyperscale campuses QC+ON [27]

ALBERTA ★★★★☆

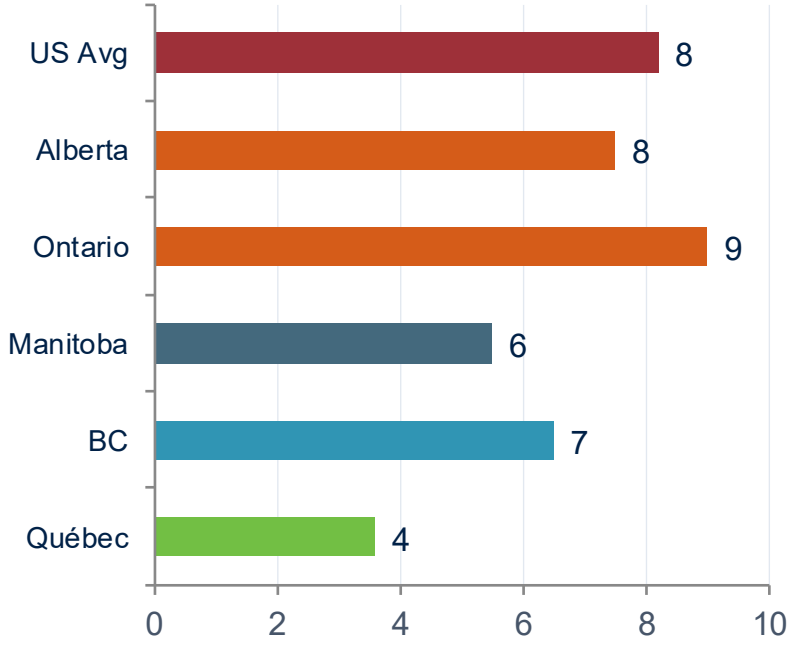
Market:	Fastest incremental build; >25% colo pipeline [28]
Pipeline:	Beacon AI: 5×400MW = 2 GW [28]
Power:	Deregulated; no carbon tax on DC
Fiber:	Calgary/Edmonton hubs; long-haul to Vancouver
Highlight:	Target: C$100B AI DCs by 2030 [29]

BRITISH COLUMBIA ★★★☆☆

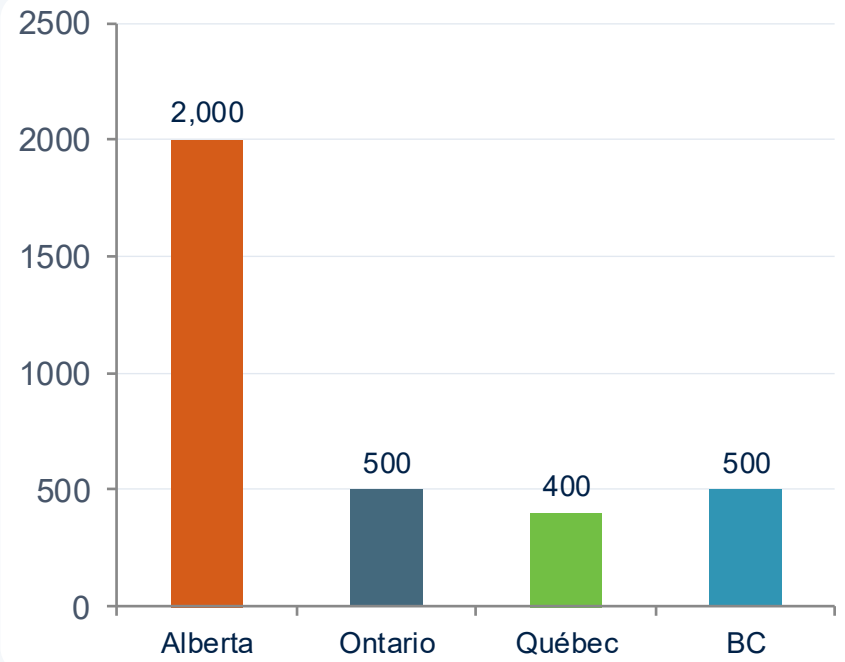
Market:	3rd cumulative IT load; Pacific gateway [26]
Pipeline:	Bell AI Fabric: 500 MW 6 BC sites [30]
Power:	BC Hydro >95% renewable; $0.06–0.07 CAD/kWh
Fiber:	Vancouver: key sub-Pacific cable landing
Highlight:	Gryphon Digital: 850-acre site, 130 MW by 2026 [27]

CANADA POWER COST & PIPELINE BY PROVINCE [26][27][31]

Industrial Power Cost (USD¢/kWh) [26][31]



Data Center Capacity Pipeline (MW) by Province [28][29][30]



Optional supplementary slide. Alberta 2GW = Beacon AI Centres (5×400MW). Sources: Mordor Intelligence [26]; Outpost Recruitment [28]; TD Economics [29]; LandGate [30].

LESSONS: FIBER, POWER & PHYSICAL INFRASTRUCTURE

Fiber First — 18–24 month lead time

Dark fiber routes, conduit rights-of-way, and carrier agreements must precede campus design. High-fiber-count assembly lead times: 9–12 months.

Physical ≠ Logical Redundancy

Two carriers sharing the same conduit offer zero real resilience. Equinix Hampton and Homer City both require diverse physical fiber plant verification.

Power Model Defines Strategy

Equinix Hampton is grid-dependent (Georgia Power). Homer City brings 4.5 GW on-site — eliminating multi-year grid connection waits entirely.

Brownfield Permitting Can Be Faster

Homer City's air quality permit cleared in 6 months [84]. Equinix Hampton faces a potential 120-day moratorium [85]. Brownfield sites often win on timeline.

Moratoriums Redirect, Not Stop Investment

VA/NY/GA tightening pushes capital to TX, PA, WV, Ohio. Equinix filed Hampton despite Atlanta-area restrictions; Homer City benefits from PA's open-door stance.

CA Sovereignty = Physical Routing Constraint

Canada's Bill C-27 mandates fiber paths stay on Canadian soil. Not a logical constraint — a physical one requiring dedicated dark fiber between all sites.

WHAT'S COMING: 2026 OUTLOOK

01

Nuclear & SMR Power

Microsoft TMI restart + Amazon Talen Energy deals. Fermi America (TX) filed for 4× AP1000 reactors. Homer City model (on-site gas generation) becoming template for large new campuses.

02

Fiber Corridors Accelerating in Secondary Markets

CBRE H2 2025: West Texas, Columbus OH, Alabama are fastest-growing new fiber corridors. Zayo's Chicago→Columbus (385 mi) and Chicago→Minneapolis (520 mi) routes for hyperscale. [11]

03

Moratorium Map Bifurcates North America

VA and GA tighten → TX, PA, Ohio, WV compete aggressively. Equinix Hampton faces potential 120-day moratorium [85]; Homer City benefits from Pennsylvania's open-door stance. [13][16]

04

Canada Sovereignty Mandates + Bell AI Fabric

Bill C-27 enforcement live in 2026; Bell Canada's 500 MW BC hydro-powered AI supercluster (6 facilities) is Canada's largest single AI compute project. Alberta targeting C$100B by 2030. [29][30]

Thank You

Key Takeaways

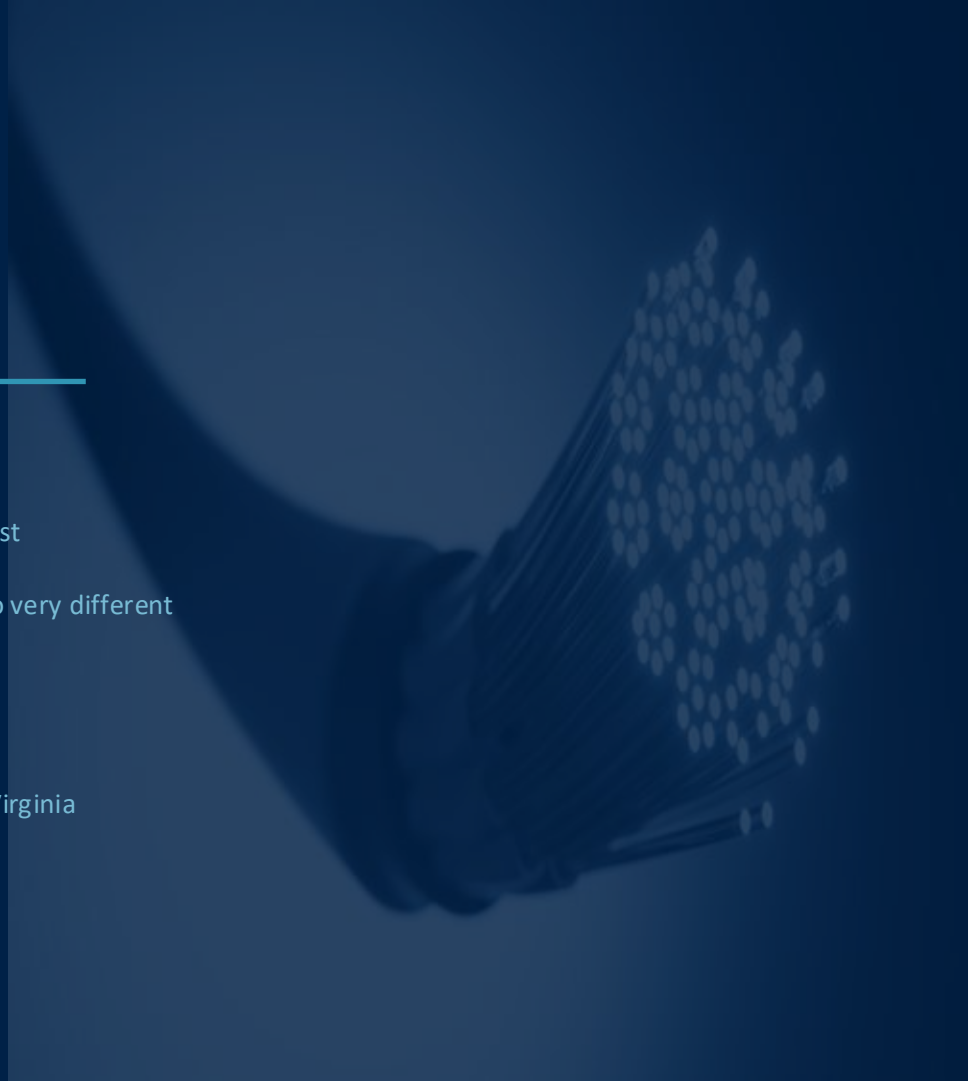
· Fiber procurement leads compute by 18–24 months — physical layer first

· Equinix Hampton (240MW, grid) vs Homer City (4.5GW, self-gen) — two very different power models

· Canada: Québec wins on cost, Alberta on speed, BC on Pacific fiber

· Moratoriums redirect, not stop — PA and Texas are the new Northern Virginia

Questions & Discussion · Sources on following slide



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GLOSSARY OF ACRONYMS

	MEANING
AI	Artificial Intelligence
ASN	Autonomous System Number
BGP	Border Gateway Protocol
CAGR	Compound Annual Growth Rate
CAPEX	Capital Expenditure
CCCS	Canadian Centre for Cyber Security
CDPQ	Caisse de dépôt et placement du Québec
CNS	Custom Network Solutions
CPP	Canada Pension Plan
DC	Data Centre
DOT	Department of Transportation
DWDM	Dense Wavelength Division Multiplexing
ERCOT	Electric Reliability Council of Texas
FTTH	Fibre to the Home
GIC	Singapore's Sovereign Wealth Fund
GPU	Graphics Processing Unit
GW	Gigawatt
HCR	Homer City Redevelopment
HDD	Horizontal Directional Drilling

	MEANING
ILA	In-Line Amplifier
IRU	Indefeasible Right of Use
IX / IXP	Internet Exchange / Internet Exchange Point
JV	Joint Venture
L1	Layer 1 (Physical Layer — OSI model)
L2	Layer 2 (Data Link Layer — OSI model)
L3	Layer 3 (Network Layer — OSI model)
L7	Layer 7 (Application Layer — OSI model)
LNG	Liquefied Natural Gas
LSZH	Low Smoke Zero Halogen (cable jacket type)
MD	Multi-Duct (conduit)
MW	Megawatt
NRC	National Research Council (Canada)
NYISO	New York Independent System Operator
O&M	Operations & Maintenance
OSI	Open Systems Interconnection (7-layer network model)
OSP	Outside Plant
OSFP-XD	Octal Small Form-factor Pluggable — Extra Density (transceiver)
P3	Public-Private Partnership

	MEANING
PBI	Plenary Broadband Infrastructure
PJM	PJM Interconnection (US regional grid operator)
PoP	Point of Presence
PPA	Power Purchase Agreement
PTC	Pennsylvania Turnpike Commission
PUE	Power Usage Effectiveness
RDMA	Remote Direct Memory Access
REIT	Real Estate Investment Trust
RFP	Request for Proposals
RoCEv2	RDMA over Converged Ethernet version 2
ROW	Right of Way
SDN	Software-Defined Networking
SD-WAN	Software-Defined Wide Area Network
SMR	Small Modular Reactor
SSC	Shared Services Canada
TELUS	Telecommunications company (formerly BC Tel)
WUE	Water Usage Effectiveness
xScale	Equinix's hyperscale data centre joint-venture platform

All sources accessed April 2026. · pbifiber.com