Homer City AI Datacenter Project: Opportunities, Challenges, and Sustainability

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Overview

Project Transformation Vision

Converting an old coal power plant into a modern AI-driven energy and data campus redefines industrial reuse.

Economic and Capacity Benefits

The project aims to boost the local economy and meet rising national AI computing demand by leveraging gas-fired generation capacity.

Environmental and Community Concerns

Concerns remain about environmental sustainability, the balance of job creation, and community well-being amid public incentives.

Strategic Trade-offs

The project highlights trade-offs between economic progress, technology advancement, and environmental stewardship.

Economic and Employment Impacts of AI and Data Centers

Economic Contributions of Data Centers

Data centers contribute millions to local economies through taxes, utilities, and service contracts, yet provide limited permanent jobs.

Employment and Job Displacement

AI automation threatens to displace 15–19% of jobs, particularly in administrative, creative, and analytical roles, thereby altering the labor market landscape.

Emerging Technical Roles

Growth in AI and data centers is creating specialized jobs that require advanced technical skills, thereby displacing workers.

Policy and Workforce Reskilling

Programs for reskilling and AI literacy aim to bridge skills gaps, but often lag behind rapid technological advances.

Environmental Impacts of AI Data Centers Energy, Water, and Resource Challenges

High Energy Consumption

AI data centers consume enormous electricity due to continuous operation of high-performance chips.

Water Usage Challenges

Cooling systems in AI data centers require large volumes of water, stressing scarce water resources.

Environmental Impact

Manufacturing AI hardware uses raw materials and creates hazardous e-waste, increasing environmental burdens.

Mitigation Strategies

Energy-efficient models, low-energy hardware, liquid cooling, water recycling, and renewable energy reduce impacts.

The Homer City AI Datacenter and Energy Campus
Project Scope and Community Implications

Project Overview and Investment

The redevelopment plans a $10+ billion investment transforming a coal plant into a gas-fired power and AI data campus, optimizing existing infrastructure.

Employment and Economic Impact

Construction will create thousands of temporary jobs, with about 1000 long-term positions, boosting local employment and tax revenues.

Environmental Concerns

Switching from coal to gas lowers some pollutants but the large gas facility will still emit significant greenhouse gases and impact local air quality.

Community Health and Safeguards

Concerns include water use and air quality risks; project advocates stress the need for thorough environmental and health reviews with safeguards.

Best Practices for a Sustainable Community Strategies for Green Data Centers and Community Well-being

Renewable Energy and Efficiency

Green data centers prioritize renewable energy use and implement efficient cooling to reduce environmental impact and energy waste.

Transparency and Accountability

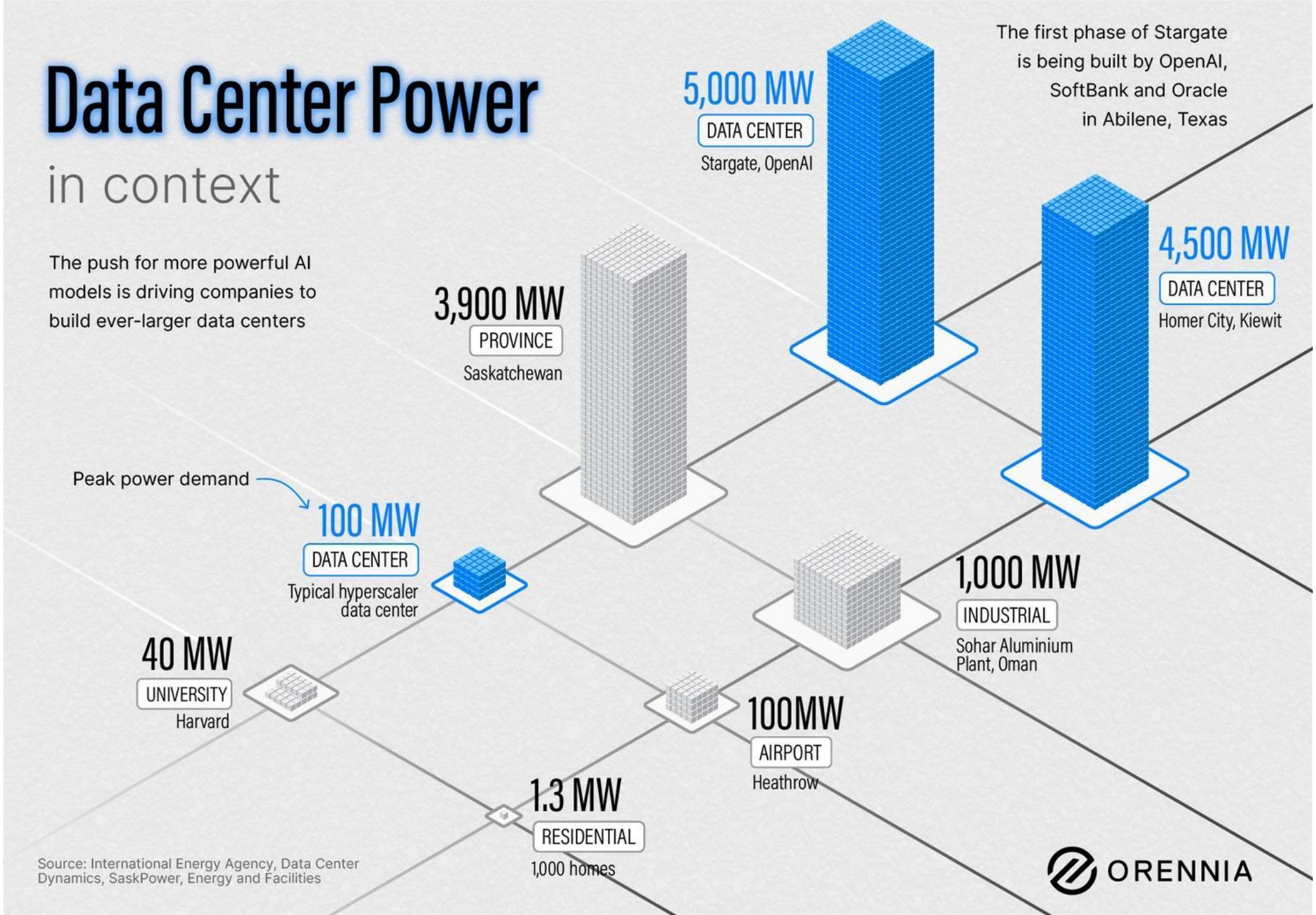
Public reporting of energy, water, and emissions data enables community monitoring and fosters corporate transparency.

Community Benefit Agreements

These agreements support local employment, education, and environmental conservation to promote social equity and well-being.

Long-term Climate Planning

Strategic planning aligned with climate goals ensures sustainable growth and resilience of data center projects and communities.


Data Center Power
in context
The push for more powerful AI models is driving companies to build ever-larger data centers
5,000 MW
DATA CENTER
Stargate, OpenAI
The first phase of Stargate is being built by OpenAI, SoftBank and Oracle in Abilene, Texas
4,500 MW
DATA CENTER
Homer City, Kiewit
3,900 MW
PROVINCE
Saskatchewan
Peak power demand
100 MW
DATA CENTER
Typical hyperscaler data center
1,000 MW
INDUSTRIAL
Sohar Aluminium Plant, Oman
40 MW
UNIVERSITY
Harvard
100MW
AIRPORT
Heathrow
1.3 MW
RESIDENTIAL
1,000 homes
Source: International Energy Agency, Data Center Dynamics, SaskPower, Energy and Facilities
ORENNIA

Project Pillars

POWER BLOCK

Industry-Leading Natural Gas Turbines

GE VERNOVA

SITE FUEL

Long-Term Partnership with EQT

EQT

ADVANCING TECHNOLOGY

Data Center Customer(s)

…… Work is underway to secure data center customer(s)

Source: Homer City Redevelopment. “Project Pillars.” Accessed January 11, 2026. https://www.homercityredevelopment.com/project-pillars

Key Questions for Homer City Data Center

Will the Homer City AI data center use much electricity, and what does that mean for the community?

AI data centers require significant electricity, demanding integration of gas plants and renewable sources to ensure grid stability.

Is the community at risk of environmental harm?

High energy and cooling demands increase emissions and water stress, which efficient designs and clean technologies can mitigate.

Will Homer City actually see economic benefits from the project?

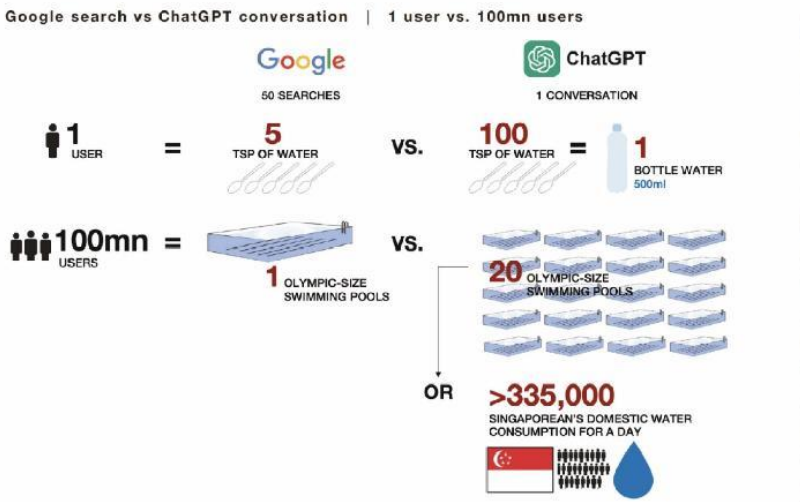
Data centers can boost local economies via construction jobs, permanent employment, and increased tax revenues.

How will traffic, noise, or daily life be affected?

Temporary traffic and noise disruptions occur during building, reduced by sound mitigation and traffic management plans.

What safeguards protect the community’s long-term well-being?

Environmental permits, continuous monitoring, transparency, and enforceable agreements protect community health and welfare.



Source: China Water Risk (CWR) - China ICT running dry? The rise of AI & climate risks amplify existing water risks faced by thirsty data centres.

Existing Homes

Homer City
Luther Ford
Scary Harry's Haunted Trails

Homer City
Sarso's Pizza
Cherry Run Rd
Luther Ford
Waterman
WM Homer City, PA
McFadden Machine Company
3017
GRACETON
CORAL
State Rte 2019
Almost 500 FT
Google Earth
N

Data centers produce noise that can be heard up to two miles from the facility, with the worst noise being up to 3000 feet from the facility. Between (55dB - 85dB)

Source: Sierra Club. (2025, July). Data center noise and community impacts (Fact sheet). Sierra Club.

- Large data buildings all within close proximity would amplify the sound.

Source: Curtis, S. (2023, January 31). Scientific study says data center noise would hinder operations at Bristow, Gainesville schools. Bristow Beat.

Pittsburgh - Buffalo Hwy

Google

Uses recycled water and air-cooling to minimize freshwater use while maintaining efficiency.

Type: Known AI Campuses
- **Educational AI Campus (London):** 1
- **Quantum AI Research Campus (Santa Barbara):** 1
- **AI/Data Center Campuses (Texas):** 3
- **Nuclear-Powered AI Campuses:** 3 (in development)
- **Total:** 8

Google operates roughly **35–40 data center facilities worldwide.**
Eco-friendly AI campuses (announced as AI-specific): Texas (3 campuses ~200–500 acres each)
Eco-friendly general-purpose campuses (support AI but not branded as AI campuses): Douglas County, Council Bluffs, Saint-Ghislain.
Douglas County, Georgia – Uses **reclaimed wastewater** for cooling instead of potable water.

Council Bluffs, Iowa – Employs **air-cooling combined with recycled water** to minimize freshwater use.

Belgium Data Center – One of the first to use **air-cooling without chillers**, reducing water demand significantly.

Microsoft

Over **400 data centers across 70+ regions**, part of **more than 300 facilities** supporting Microsoft Azure and AI services.
Cold plate liquid cooling reduces GHG emissions by ~15% and water use by 30–50%; closed-loop systems save 125M liters annually.

- **Distinct AI campuses:** Fairwater (WI), planned UK & Norway sites, plus Co-Innovation labs.
- **Facility count:** Over 300 Azure data center buildings across 70+ regions.
- **Green facilities:** All AI campuses use advanced cooling; many are water- and energy-efficient. Overall, hundreds of Microsoft facilities operate with **cold-plate cooling**, **renewable energy**, and **water conservation**.

- This demonstrates both the **scale of Microsoft's AI infrastructure** and its leadership in **sustainable, green data center operations**.

Microsoft operates **over 300 data center facilities worldwide** across 70+ regions, with several dedicated AI campuses:
- **Fairwater AI Campus (Wisconsin, USA):** 315 acres, three buildings totaling 1.2M sq. ft., advanced liquid cooling, on-site solar, and wetland restoration.
- **Planned AI campuses in the UK and Norway:** Focused on renewable energy and large-scale AI training.

- **Five AI Co-Innovation Labs globally** (e.g., UW-Milwaukee) are supporting AI adoption.

Green Data Centers:
- All new AI campuses use **cold-plate liquid cooling** and **closed-loop systems**, reducing GHG emissions by ~15% and water use by 30–50%, saving 125M liters annually.
- Microsoft aims for **water positivity by 2030** and has cut water intensity by 80% since early 2000s.
- Committed to **100% carbon-free energy** by 2030, contracting 19 GW of renewables in 2024.

Meta (Facebook):

Global Scale:
Meta operates **24 data center campuses worldwide**, comprising **104 buildings** across 37 markets, totaling ~53 million sq. ft. and backed by a $30 billion investment.

Distinct AI Campuses:

Beaver Dam, Wisconsin: AI-optimized campus with **dry cooling (zero water use)**, wetlands restoration (570 acres), and water-positive design.

Richland Parish, Louisiana: Largest under development—**2,250 acres**, 4M sq. ft., scalable to 5 GW compute capacity.

Jeffersonville, Indiana: 619-acre campus, LEED Gold target, $800M investment.

Facility Count:
24 campuses, 104 buildings globally.

Green Facilities:

All campuses run on **100% renewable electricity** and meet **LEED Gold certification**.

Advanced cooling systems: **StatePoint Liquid Cooling (SPLC)** and **dry cooling**, reducing water use by **20–90%**.

Water-positive goal by 2030, restoring 200% of water in high-stress regions; funded 40+ watershed projects.

Efficiency:

- **PUE:** ~1.08 globally (Luleå site ~1.07).
- **WUE:** ~0.18 L/kWh; new AI campuses use dry cooling (zero water).