Data Center Development in the Great Lakes Region

Landscape Overview

DECEMBER 5, 2025

FRESH COAST
Climate Solutions

Bold Solutions. Transformative Action.

Our Vision

We work to reverse climate change by helping clients achieve bold, equitable, and impactful solutions.

Our Core Services

Our Clients

We consider friends and collaborators

Presenter

Paul Gruber - Program & Engagement Lead, Fresh Coast Climate Solutions

- 20+ years working in clean energy and transportation and community engagement
- Leading the Sustainability Solutions team at Fresh Coast, including the data center impacts project with Joyce Foundation
- Supported 50 southeast MI businesses 2023-2025 on sustainability planning, greenhouse gas assessments, and environmental management via Centrepolis Accelerator *MI Climate Wise Business Program* and City of Ann Arbor's *Green Business Challenge*
- MBA/MS in sustainable business, University of Michigan
- pgruber@freshcoastclimate.com

Fresh Coast's Data Center Project with the Joyce Foundation

UNDERSTAND MARKET ACTIVITY

IDENTIFY BETTER PRACTICES

SHARE KNOWLEDGE

Themes

Market, Investment, Technology, Policy, Research, Impacts, Frameworks

Market Research

- 4,500+ media articles/reports reviewed since April 2025
- Key themes, impacts, and insights

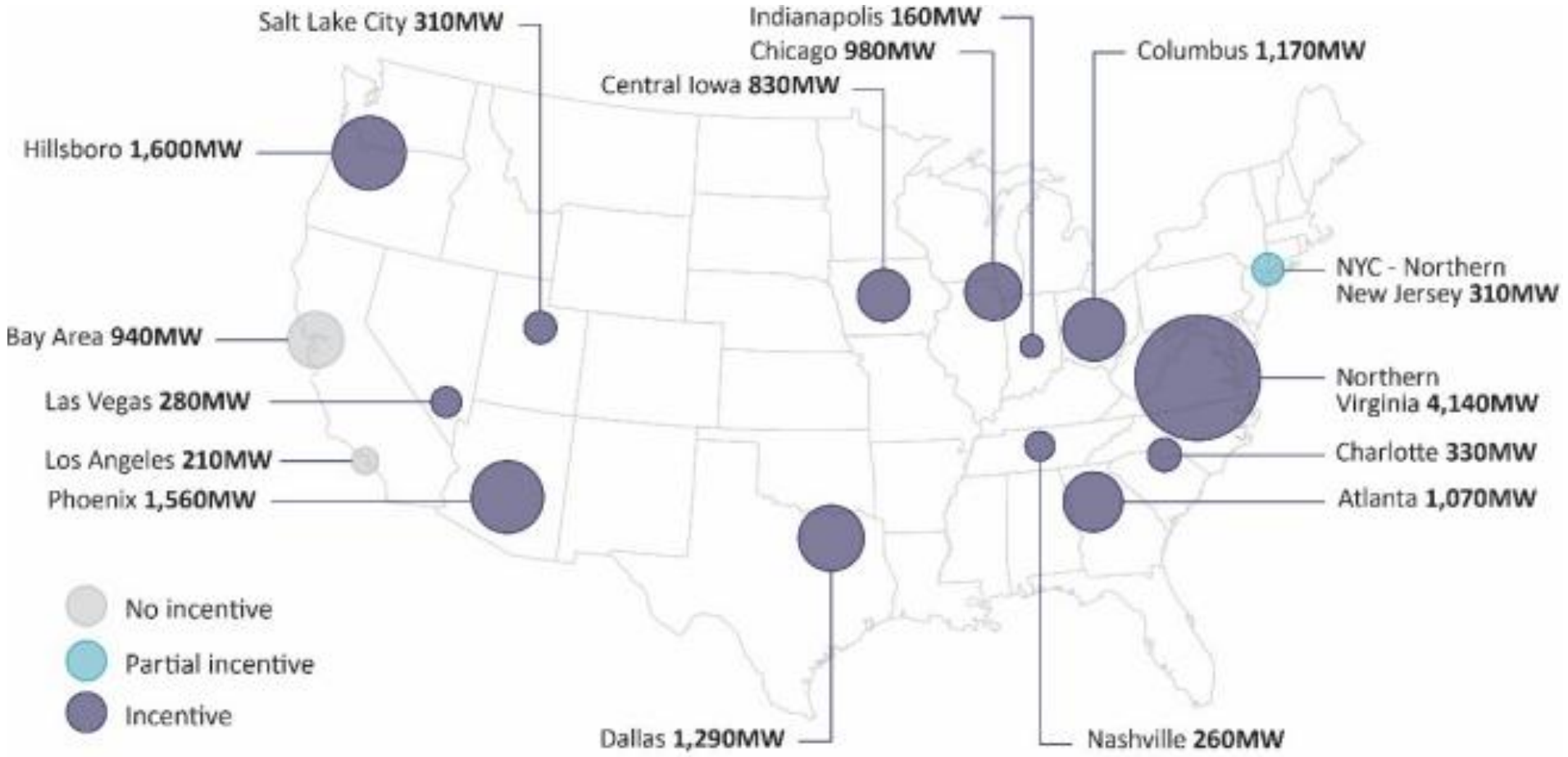
Better Practices

Practices currently established, or recommended, that will likely minimize negative impacts of data center development to people and nature and maximize potential benefits.

Advancing Knowledge with Joyce and Stakeholders

- Emerging Trends & Insights webinar
- Better Practices webinar
- Bi-weekly news updates

~2,717 Data Centers Operating in the U.S.



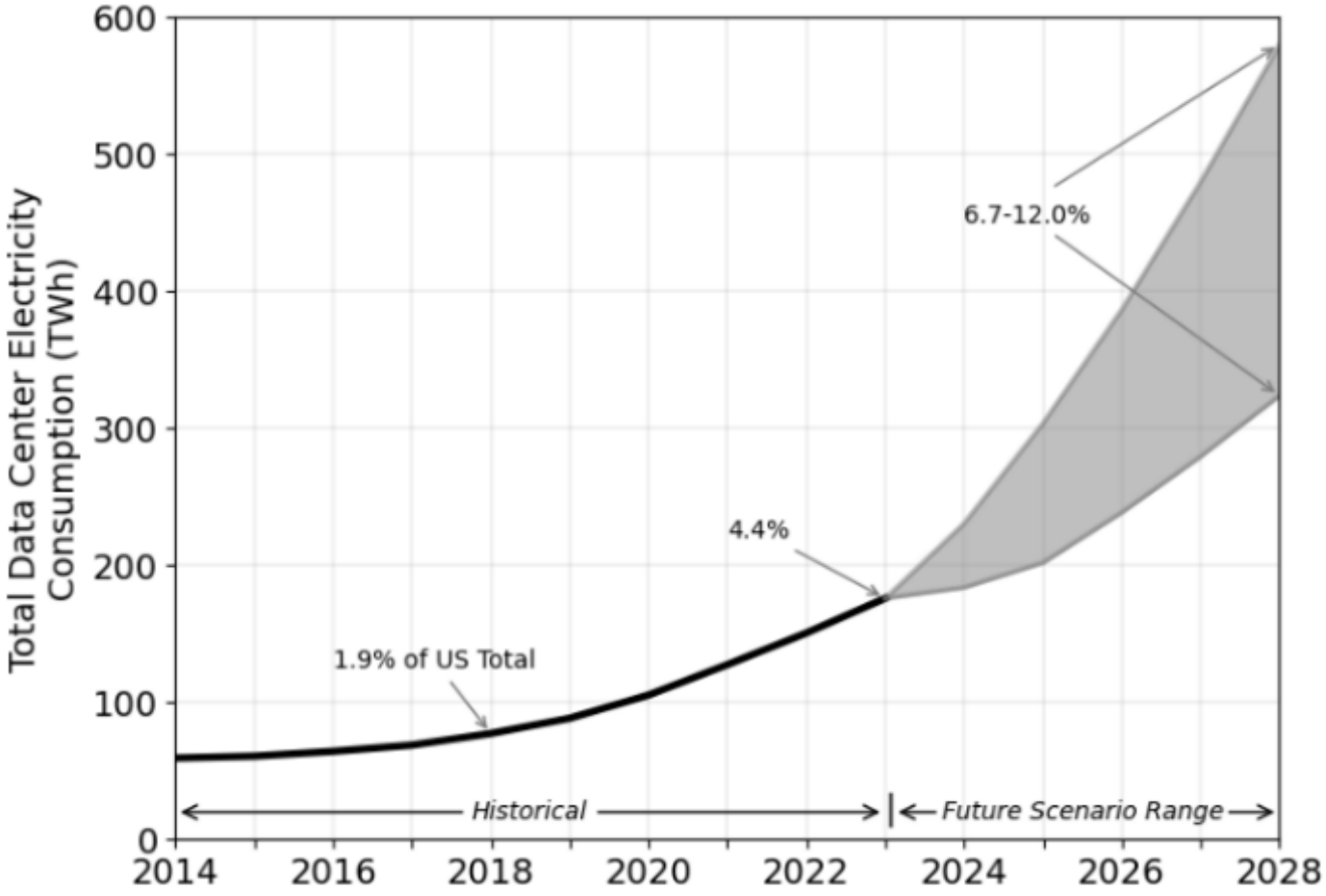
Joint Legislative Audit & Review Commission. (2023) "Report to the Governor and the General Assembly of Virginia: Data Centers in Virginia 2024." Virginia.gov

U.S. Electricity Demand Growth

Historical and projected

- In 2023, data centers consumed 4.4% of U.S. electricity.
- In 2028, data centers are projected to consume up to 12.0% of U.S. electricity.

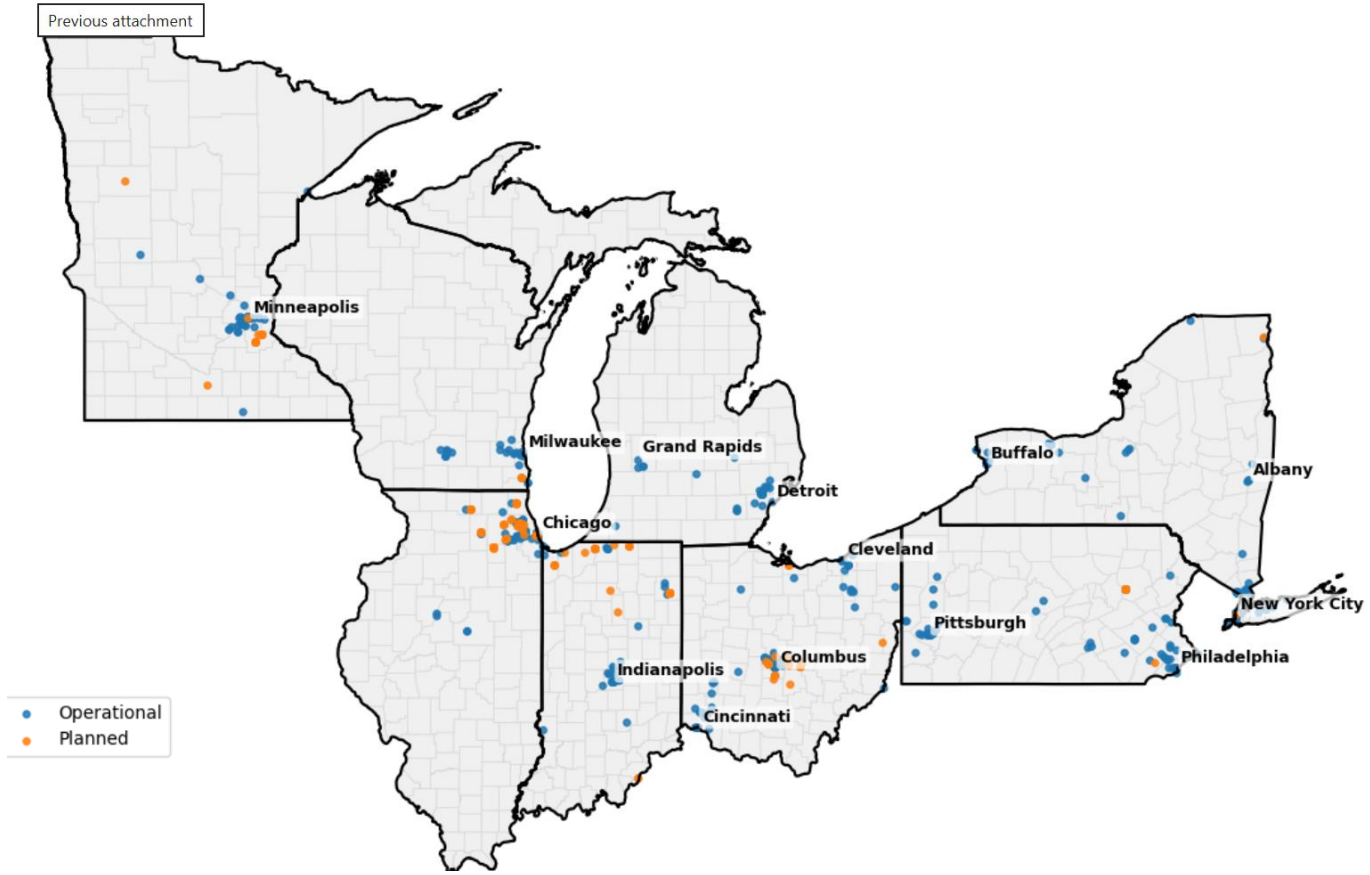
Total U.S. data center electricity use from 2014 - 2028



1 Shehabi, A.; Newkirk, A.; Smith, S.; Hubbard, A.; Lei, N.; Siddik, M., et al. (2024). 2024 United States Data Center Energy Usage Report. *Lawrence Berkeley National Laboratory*. Report #: LBNL-2001637.

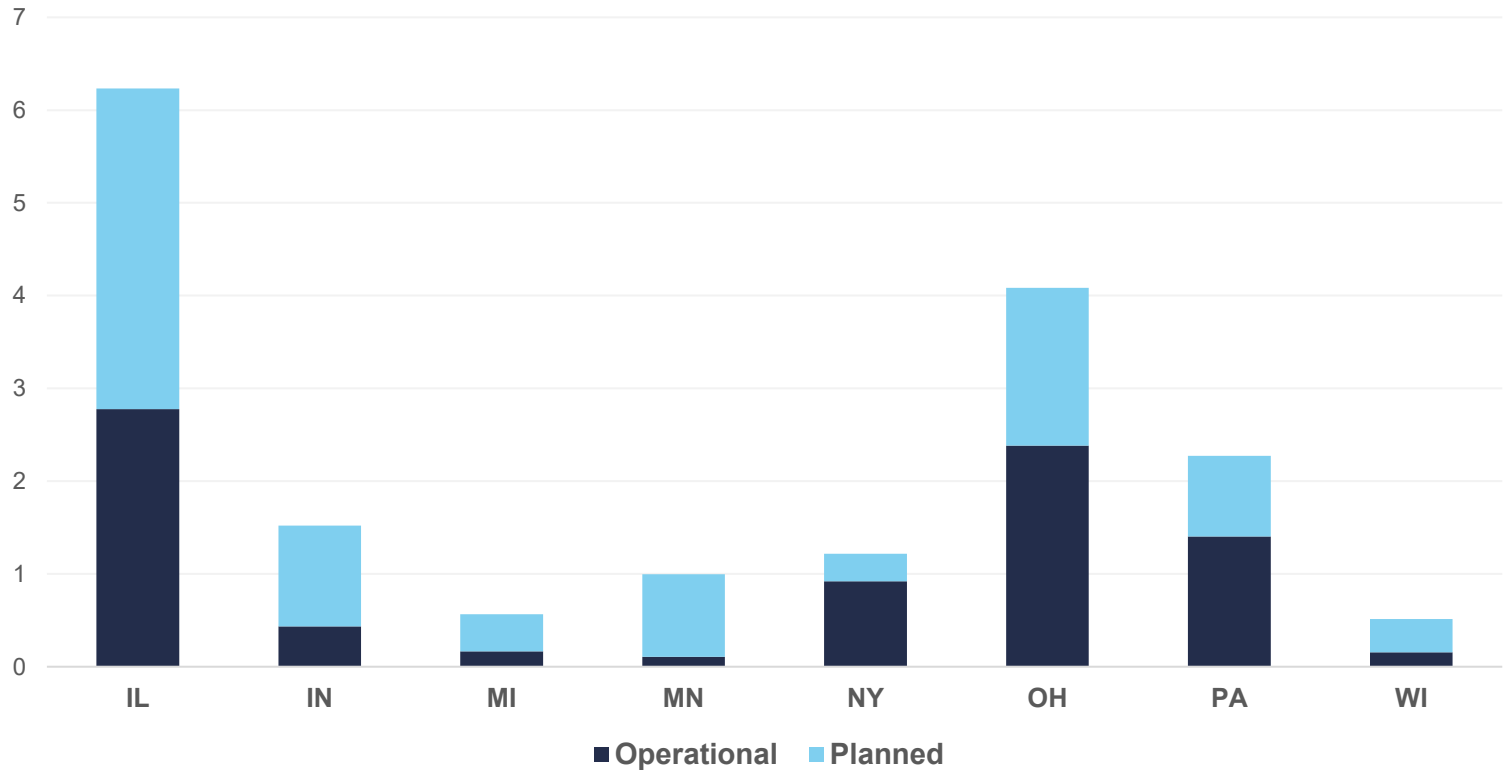
~524 Data Center Operating in the Great Lakes Region (19% of US total)

Most in large metro areas; many near Great Lakes



- **~223** planned data centers in Great Lakes region
- S&P dataset presents a lower number of data centers than others
  - Reduces double-counting and includes decommissioned facilities
  - Includes detailed information on square feet and energy-related data.

Surging Energy Demand with 200+ New Data Centers



Existing and Planned UPS Power (GW) of Data Centers

Several GL data centers are expected to significantly increase their electricity demand

- **Illinois**
  leads in both current and planned UPS power capacity even though many facilities are wholesale
- **Ohio**
  shows one of the highest total demands, and planned growth will push even further
- **Minnesota and Indiana**
  have steep percentage increases in planned energy use—indicating these states may face the most rapid change relative to their current footprint.

Data Center Industry Map

DEVELOPERS

Prometheus
CHIRISA
DATABANK
WHITEFIBER
IRON MOUNTAIN
BELLTOWNPOWER
related DIGITAL
rowan digital infrastructure
AVAIO DIGITAL
Princeton Digital Group
edged
DIGITAL REALTY
SOLUNA
Energy Abundance
cologix
POWERHOUSE PRIME DATA CENTERS
HATCHWORKS
APPLIED DIGITAL
DATAVOLT
EdgeCore Digital Infrastructure
SURGE
ENDEAVOUR INSPIRED INFRASTRUCTURE
DIGITALBRIDGE
CleanArc DATA CENTERS

BACKERS

Microsoft
Alphabet
SoftBank
MGX TECHNOLOGIES
amazon
Meta
ORACLE

INVESTORS

ENGINENO.1
ARCLIGHT CAPITAL PARTNERS
BLUE OWL
quinbrook infrastructure PARTNERS
BLACHAMBER
AUTODESK FOUNDATION
ENERGY IMPACT PARTNERS
GIGAFUND
DIGITALBRIDGE
ECP
SPRING LANE CAPITAL
SIP Global Partners
Breakthrough Energy
catalus
KKR
OPPIDAN
Blackstone
GLOBAL INFRASTRUCTURE PARTNERS
nuveen A TIAA Company
SNOWHAWK

POWER PROVIDERS

TPG
OKLO
DEEP FISSION
LAST ENERGY
Intersect Power

WORKFORCE

SALUTE
edgeconnex

ENERGY TECHNOLOGIES

XL Batteries
wind CORES
dug
STEELIUM DATA CENTERS
wiwynn
aggreko
DELTA
TAGORE TagoreTech Inc.
LAST ENERGY
Schneider Electric
Saitek
BLACK BOX

COOLING TECHNOLOGIES

motivair
Chemours
arteco ENGENIOUS COOLANTS
Immersion4
FLUIX
wafr
submer
ICEOTOPE PRECISION LIQUID COOLING
DCK
jetcool A Flex Company
CoolIT systems
SRC GREEN REVOLUTION COOLING The Immersion Cooling Authority
ThermalWorks
ALLIED CONTROL IMMERSION COOLING
liquidstack
TEIMMERS
KAORI
CHILLDYNE
Asperitas IMMERSED COMPUTING
STULZ
MIDAS IMMERSION COOLING
BOYD CORPORATION
FUJITSU
ENGINEERED FLUIDS
Airedale APPLIED THERMAL INNOVATION

REITS

DIGITAL REALTY
IRON MOUNTAIN
EQUINIX

Scale of Data Center Investments is Increasing

Tally of U.S. data center announcements - to be constructed between 2025 and 2030

Estimated in early 2025

~$300-500 B

Estimated in September 2025

$1.4 T+

From Billions to Trillions: Data Centers' New Scale of Investment

Chernicoff, D. "From Billions to Trillions: Data Centers' New Scale of Investments." Data Center Frontier, 3/13/2025

...Along with Scrutiny of an AI Bubble Forming...& Recent Market Reactions

Why fears of a trillion-dollar AI bubble are growing

Seth Fiegerman and Carmen Reinicke, "Why fears of a trillion-dollar AI bubble are growing," TechXplore, 11/6/2025

Is it Big Short 2.0? Deutsche Bank reportedly shorting AI stocks as data center risks emerge

Global Desk, "Is it Big Short 2.0? Deutsche Bank reportedly shorting AI stocks as data center risks emerge," The Economic Times, 11/5/2025

AI valuation fears grip global investors as tech bubble concerns grow

Hugh Leask, "AI valuation fears grip global investors as tech bubble concerns grow," CNBC, 11/7/2025

What Do *Developers* Look For In A Location?

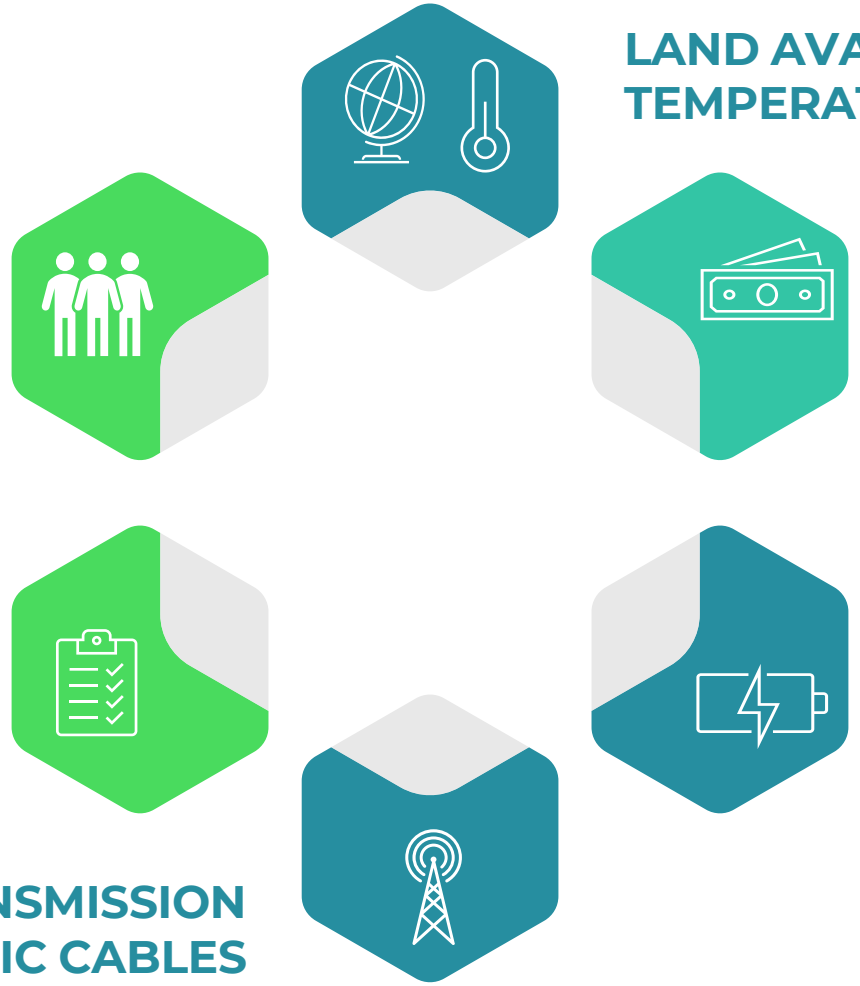
Key Attributes: **Access**, **Requirements**, **and** **Economics**

Developer

Real estate entity that plans, designs, finances, constructs, and may operate data center facilities; typically sources capital from outside investors

COMMUNITY REQUIREMENTS, IMPACTS, ENGAGEMENT & RISKS

LAND AVAILABILITY & TEMPERATE CLIMATE



LAND/ENERGY/ WATER COSTS & INCENTIVES

STATE/MUNICIPAL/UTILITY REQUIREMENTS

POWER CAPABILITIES AND EASE OF INTERCONNECTION

ACCESS TO POWER, TRANSMISSION LINES, & FIBER OPTIC CABLES

Case Study: Saline, Michigan

A precedent for more lawsuits and/or better community benefits?

As AI 'arms race' and data centers hit Michigan, rural farm town feels left in the dust

Whitmer: Multi-billion-dollar Saline Township data center 'largest investment in Michigan history'

Environmental groups call for safeguards as state courts more projects

Towns are saying no to AI data centers. One got sued over it.

Data center divides Saline Township as DTE seeks to bypass public hearings

Nessel: MPSC under political pressure to pass DTE data center deal

Sources: MLive, Washington Post, MichiganAdvance, WXYZ Detroit, Detroit Free Press

Sources: WXYZ Detroit, WEMU News

Case Study: Saline, Michigan

A precedent for more lawsuits and/or better community benefits?

Background Information

Project Proposal:

- $7B, 250-acre hyperscale campus near Ann Arbor
- Part of the Stargate Project – Nationwide AI development effort ($500B)
  - Backers: OpenAI, Oracle
  - Developer: Related Digital

Timeline of Events:

- **July 10** - Developer filed re-zoning application from Ag to Industrial
- **September 10** - Township voted 4-1 against re-zoning request
- **September 12** – Developer files lawsuit for exclusionary zoning
- **September 24** – Township Board + Planning Commission hold public information meeting
- **October 15** - Lawsuit settled by Township Board vote (4 to 1)
- **October 30** – Public announcement by backers and Governor Whitmer
- **December** – MPSC decision or pause
- **Early 2026** - Construction scheduled to start

Next Steps:

- DTE applied for electric service contract, but has faced scrutiny over lack of transparency and effort to avoid public comment
- Michigan Public Service Commission will hold a virtual, 2-hour public comment session to continue reviewing the contract on December 3rd

Settlement Agreement

Township had to get up to speed quickly on potential economic benefits and impacts, sustainable technologies, and other considerations of large data center deployment

Summary:

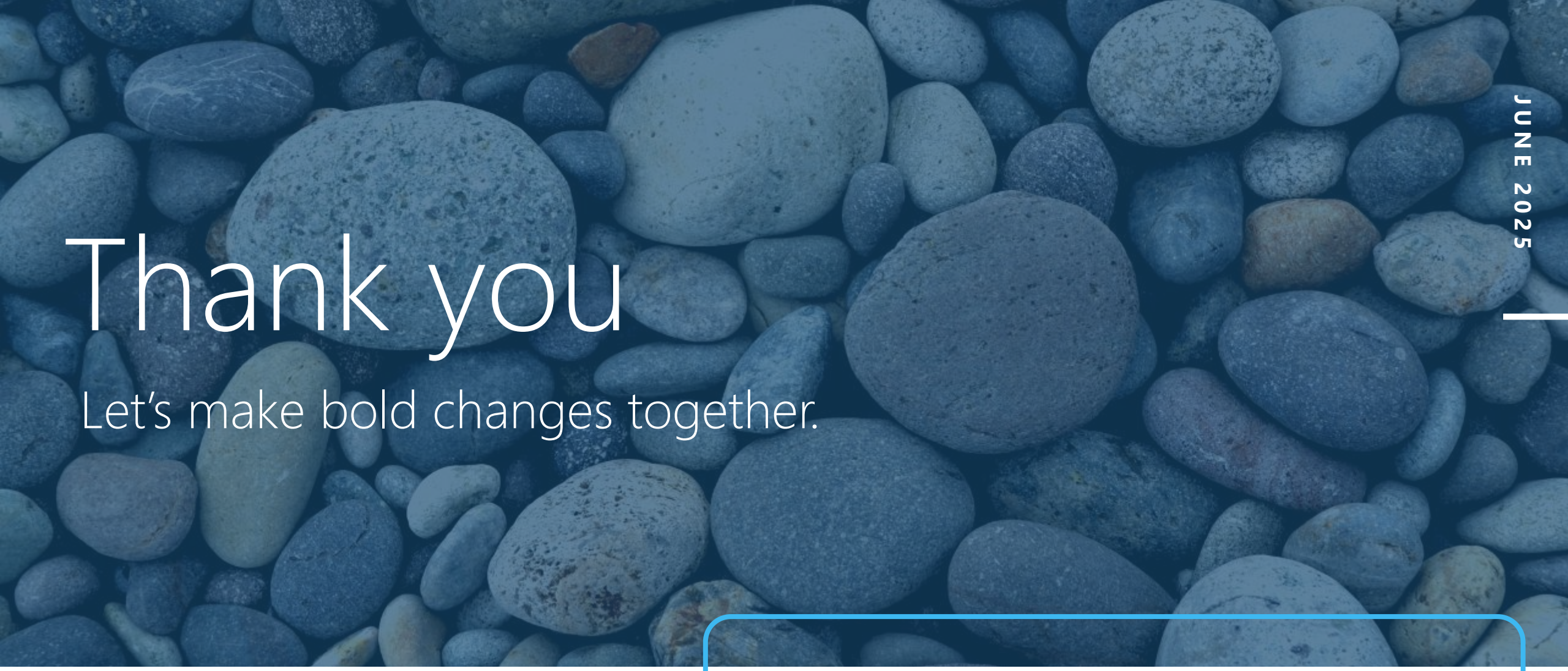
- Agreement not to expand the data center
- Conservation easements (wetland and woodland)
- Prohibition of water-intensive evaporative cooling
- Noise limits
- Prohibition of solar on property (due to reduced site size and conservation easements)
- $2M Community Investment Fund
- $4M Farmland Preservation Trust
- $8M Fire Department contributions
- Est. $1.6M in tax revenue through 2039

Key Opportunities

- Local ordinances / legislation to recognize the new/unique business category → enable local governments to pause
- Early public engagement – development proposals move quickly
- Prepare a Playbook: strategies to maximize benefits and minimize impacts (Emerging Better Practices)

Sources:

Washtenaw County Court Consent Judgement; Related Digital



Thank you

Let's make bold changes together.

JUNE 2025

FRESH COAST
Climate Solutions

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APPENDIX

Data Center Development Activities

"Better practices" are beginning to be emerge

Better Practices
Practices currently established, or recommended, that will likely minimize negative impacts of data center development to people and nature and maximize potential benefits.

Practices likely to result in mostly
POSITIVE Impacts

Technologies/System Design
- Energy efficiency; heat recovery
- Water efficiency/reuse
- Net Zero/Renewables commitments and investments
- Evidence that renewables/battery can lead to DC operation faster than new fossil fuel plants
- Advanced communications/IT infrastructure
- Advanced building materials and construction + requirements (zoning, setbacks, screening)
- Design for upgrades/end-of-life

Power/Grid/Load Management
- Demand Side Management (DSM)
- Virtual Power Plant (VPP)
- Energy storage (incl. long duration, second life); Renewables

Market/Economics
- Repurposing industrial/brownfield sites

State/local Policymaking
- "Qualified Data Centers" new business category/requirements
- Fair cost allocation
- Interconnection standards (load/reliability)
- Energy requirements
- Water requirements (evaluation, use, reuse, disclosure)
- Public transparency

Private-Public Collaboration
- Sustainability standards/Lifecycle metrics
- State + Local policy coordination
- Transparency
- Site specific impact analysis; verification
- Sustainable Development Playbook

*List compiled from reviews of 1,000+ news, academic, industry, and govt. news and reports

"Better Practices" are being established by some Developers and Investors

Fresh Coast has compiled a list of 87 developers and investors of data centers in the U.S.

Efficiency

- Aligned with business incentive
- Energy (PUE) & Water (WUE)
- Design, tech, & operational practices

Load Management

- Automation and optimization
- Demand flexibility (timing)
- Energy storage

Clean Energy & Off-set

- Energy procurement strategy
- Power Purchase Agreements (PPAs + VPPAs)
- Renewable Energy Certificates (RECs)

Transparency

- Share metrics + publish sustainability reports
- Share project development plans (no NDAs)
- Share status of implementation

Commitments / Frameworks

- Sustainability targets / industry associations
- 3rd-party verified sustainability frameworks
- Green buildings, energy efficiency, water, etc.

Private + Public Coordination

- Collaborate with community stakeholders
- State / local policy cooperation
- Investment in communities

Examples of Better Practices

Developer & Investors

Developer (Large)

- **100%** renewable energy matching for **185 operational data centers**
- Green building certifications for (15M / 40M ft^2)

Developer (Medium)

- 16/30 sites comply with 24/7 Carbon-Free Energy (CFE) Compact
- Goal to elevate carbon-free matching to **hourly basis** instead of **annual**

Developer (Small)

- Waterless cooling technology with ThermalWorks
- Competitive PUE – Edged average of **1.15** compared to **1.54** industry average

Investor

- Invests in two data center developers with sustainable focus
- CleanArc Data Centers
  - True Additionality
- Prime Data Centers
  - Leading WUE
- Invests in cloud-compute optimization company PropserOps, Inc

Investor

- Invests in supporting the clean energy transition
- GlidePath
  - Battery energy storage system (BESS)
- Primergy Solar
  - Utility-scale Solar + BESS
- Purpose Energy
  - Renewable fuels
- Invests in one data center developer with sustainable focus
  - Rowan Digital Infrastructure

Emerging ideas for a mutually beneficial relationship between developers and communities

Leverage investments to improve benefits for local communities

Community energy programs

- Reduces residential demand
- Off-sets data center demand on the grid
- Lowers community energy bills

Add new renewable resources to the local grid

- Increases energy supply to compensate for increased demand
- Accelerates progress toward decarbonization targets
- Mitigates capital expense for long-term investments in low-cost, clean energy

Data use disclosures

Disclose end-results of computational capacity

- Share type and volume of data planned for the facility with the public
- Ex: Concerns about the Ypsilanti, Michigan data center proposal
- Partnership between U-M and Los Alamos National Laboratory
- Potential focus on classified federal research priorities supporting national defense, nuclear weapons, etc.

Landscape of Sustainability Frameworks for Data Centers

Voluntary frameworks and associations to track sustainability efforts

ASSOCIATIONS & COALITIONS

CDP

GRI

The iMasons Climate Accord™

SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

GRESB

the green grid®
enabling data center efficiency

ASHRAE®

ENERGY EFFICIENCY STANDARDS

ENERGY STAR

ISO 50001
ENERGY MANAGEMENT

WATER STEWARDSHIP

ALLIANCE FOR WATER STEWARDSHIP

WATER STEWARDSHIP WAVE VERIFIED
BY SCS GLOBAL SERVICES

GREEN BUILDING STANDARDS

GREEN GLOBES
BUILDING CERTIFICATION

Better Buildings CHALLENGE
U.S. DEPARTMENT OF ENERGY

U.S. GREEN BUILDING COUNCIL
LEED CERTIFIED
USGBC

CODE FOR A SUSTAINABLE BUILT ENVIRONMENT
BREEAM