

DATA CENTERS 101

Presented by: Jason Mohr, Legislative Environmental Analyst



Overview

- **What is a data center?**
- **History**
- **Power and water use**
- **What's happening in Montana?**
- **2027 Legislature**



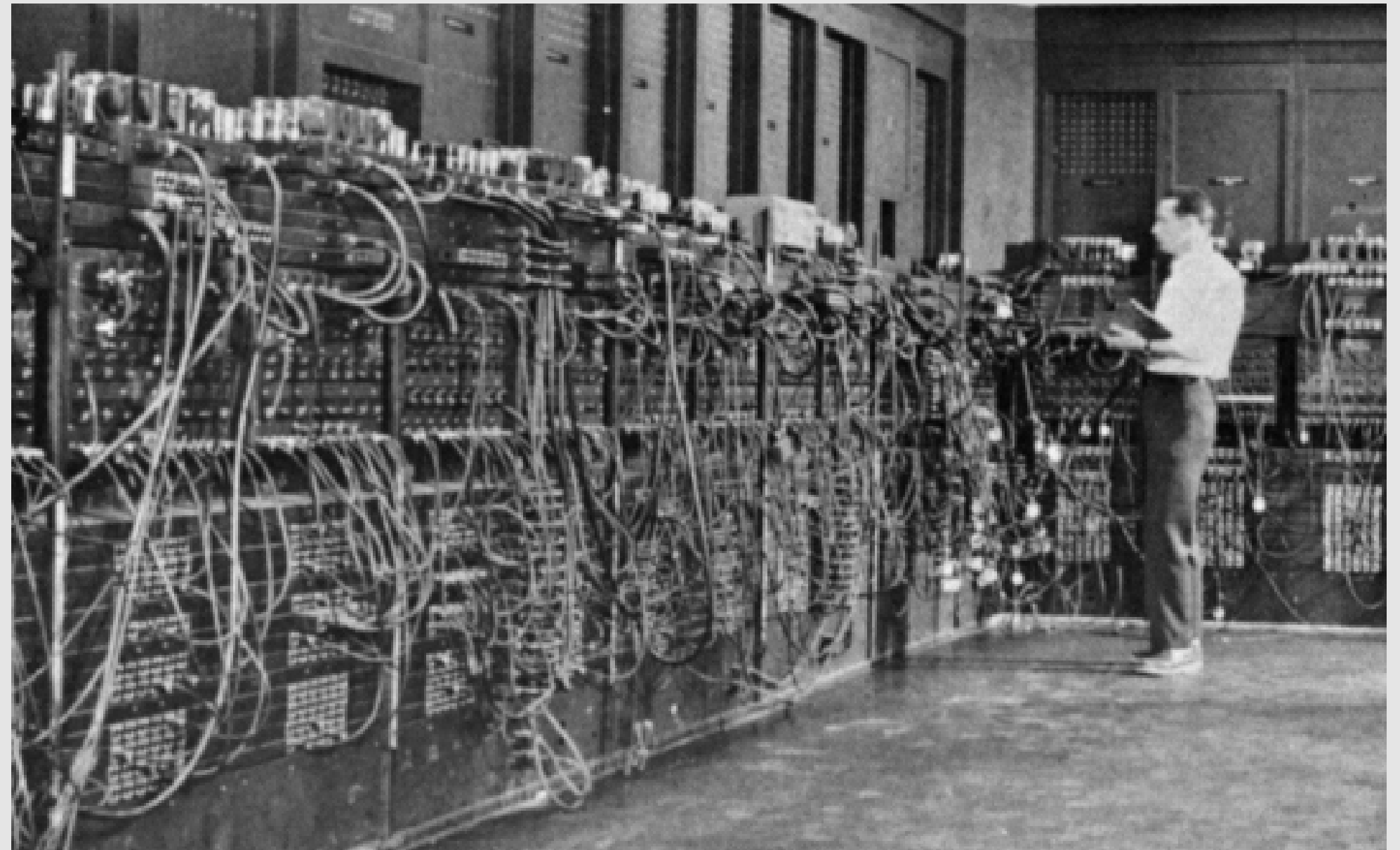
What is a Data Center?

- A physical location designed to house and protect computer systems, data storage systems, and associated components such as telecommunications and network devices
- A hub for an organization's IT operations & equipment



History

- Data centers have been around since the late 1950s
- Google constructed its first hyperscale data center in 2006
- Cloud computing and rise of A.I. accelerated the need for new data centers



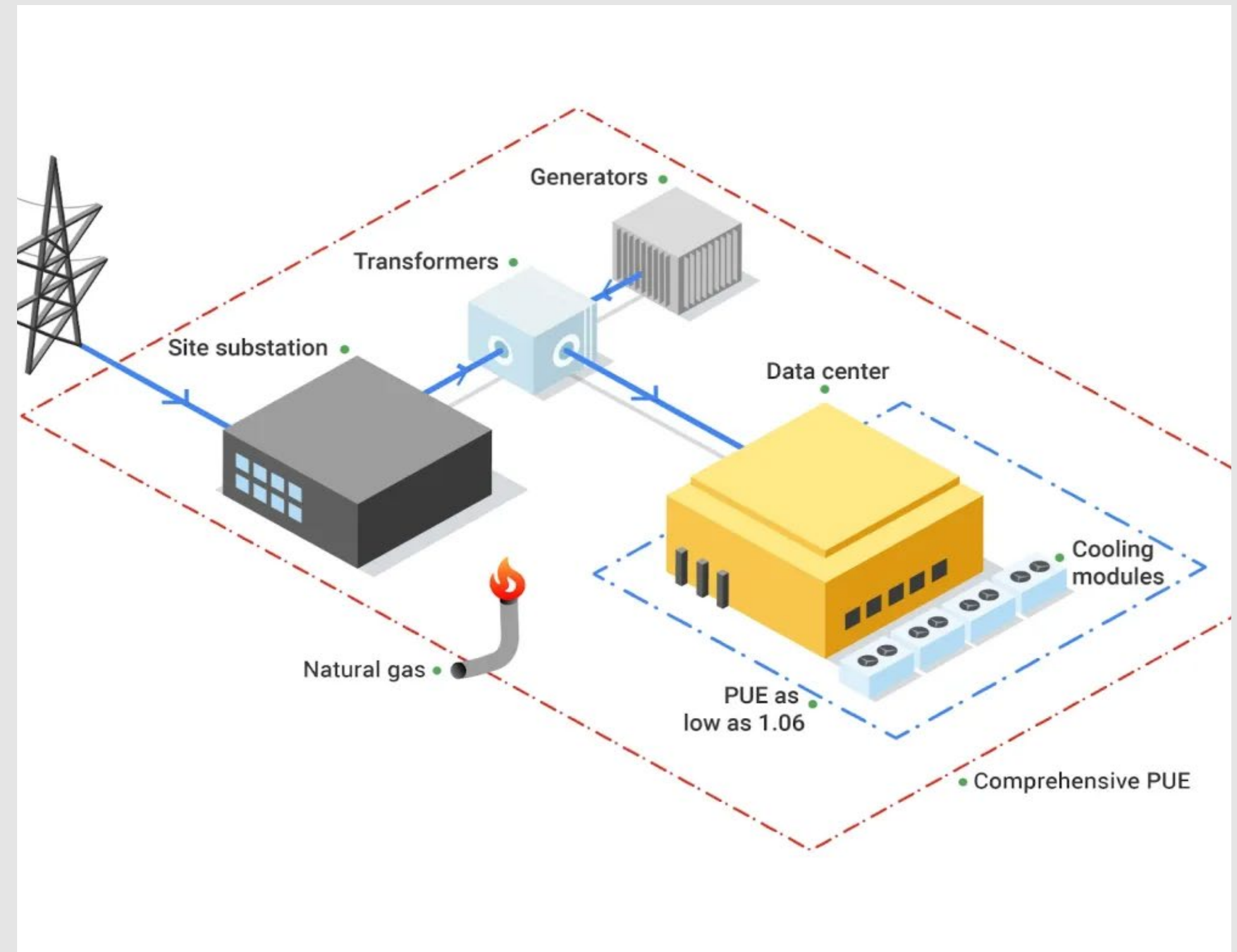
Types of Data Centers

- Enterprise
- Hyperscale
- Edge
- Modular
- Multi-tenant



Power Consumption

- In 2024, U.S. data centers consumed 183 terawatt/hours (TWh) of electricity, or 4% of the country's total consumption
- According to the International Energy Agency (IEA), consumption is expected to more than double by 2030
- 60% of the electricity a data center uses powers servers and equipment
- 7-30% of power is used for cooling



Energy Sources

- **Natural Gas – 40%**
- **Renewables - 24%**
- **Nuclear- 20%**
- **Coal- 15%**



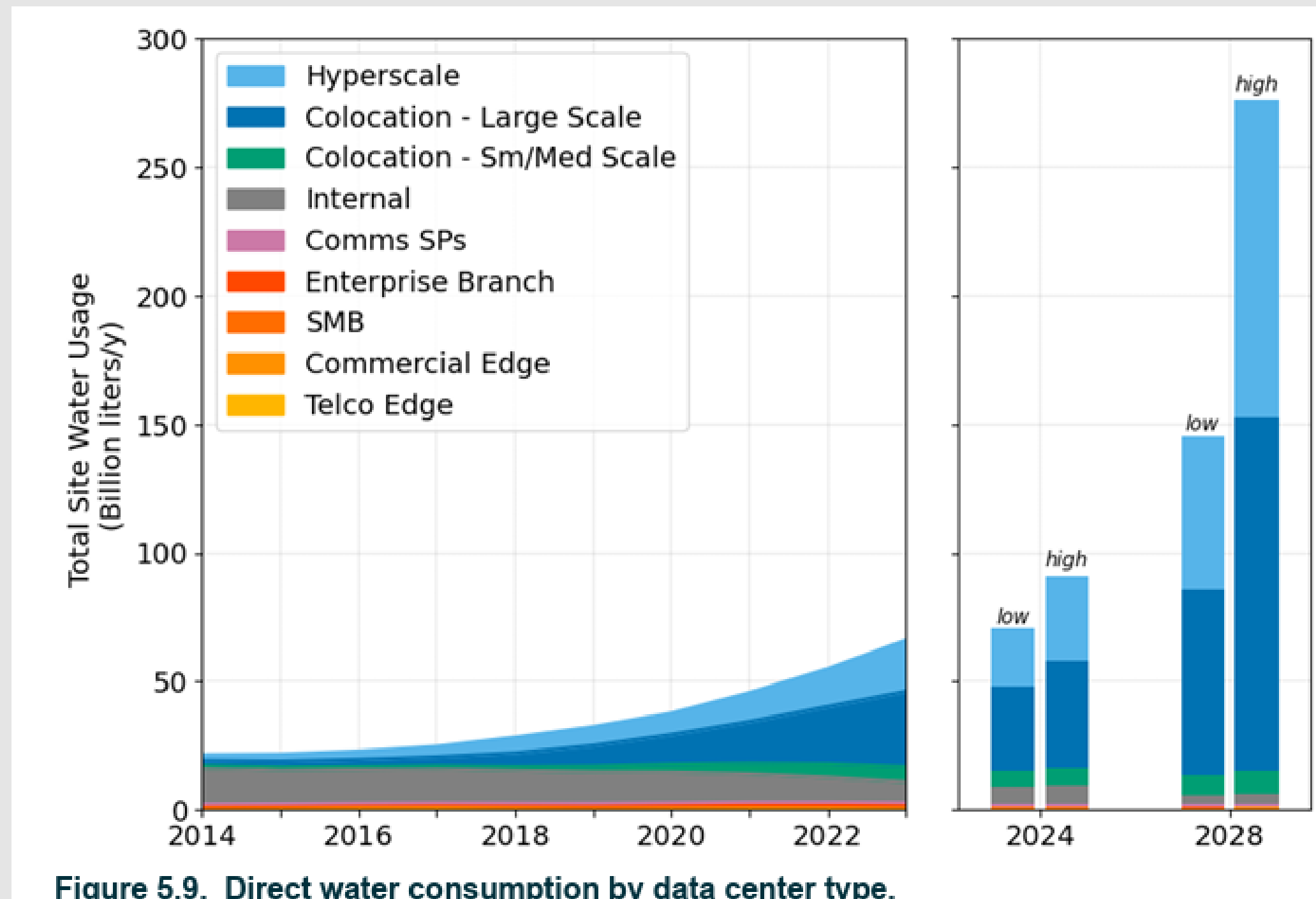
Water Usage & Cooling

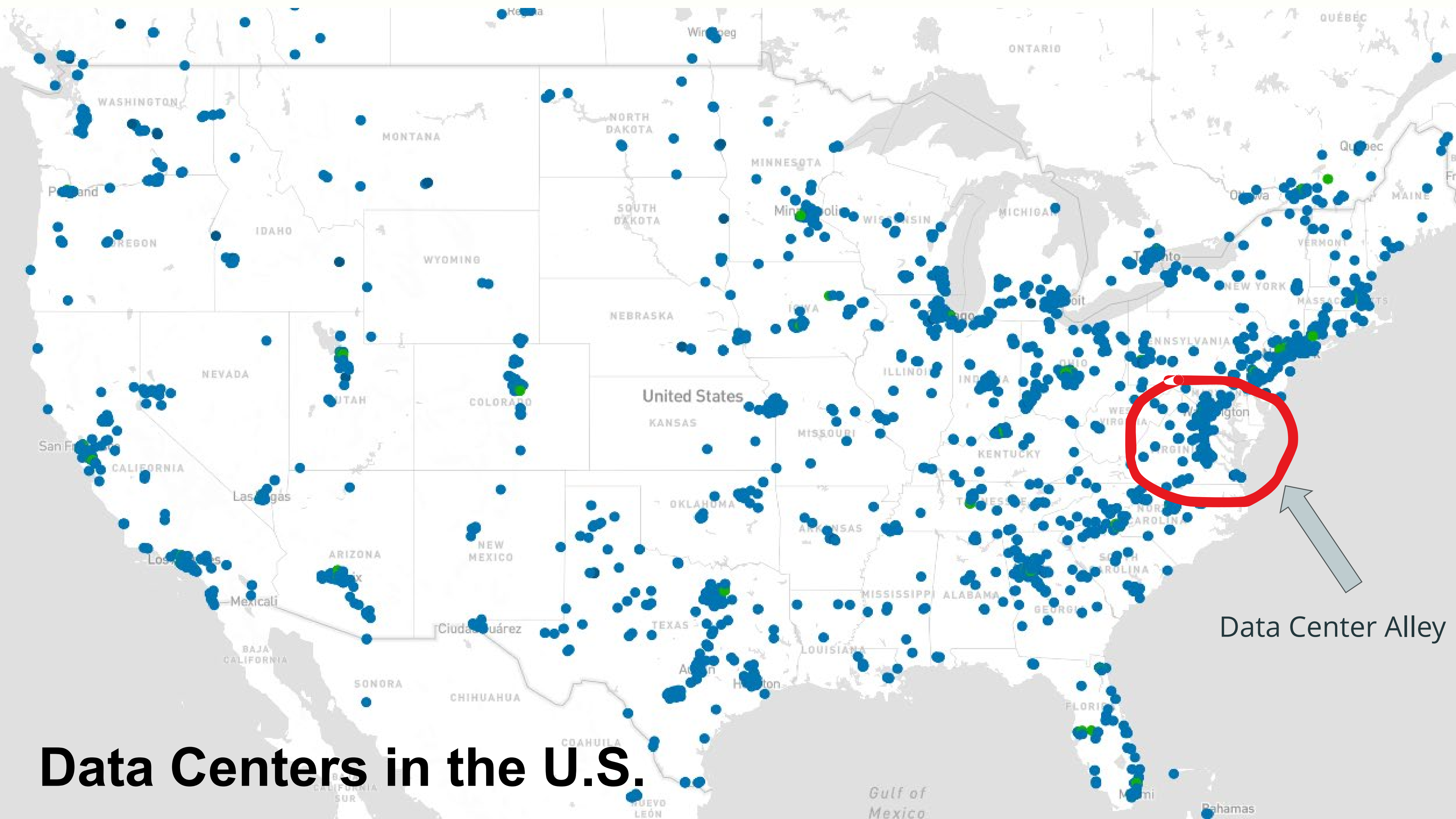
- How much water a data center uses is dependent on the cooling system, location and water source
- Traditionally, data centers have relied on evaporative cooling, which requires more water
- Today, some plan to use reclaimed wastewater or employ closed-loop and “waterless” cooling designs.



Water Usage & Cooling (cont.)

- Water usage difficult to assess
- Water usage is
 - direct (cooling)
 - indirect use (electricity generation)





Data Centers in the U.S.

Existing data centers

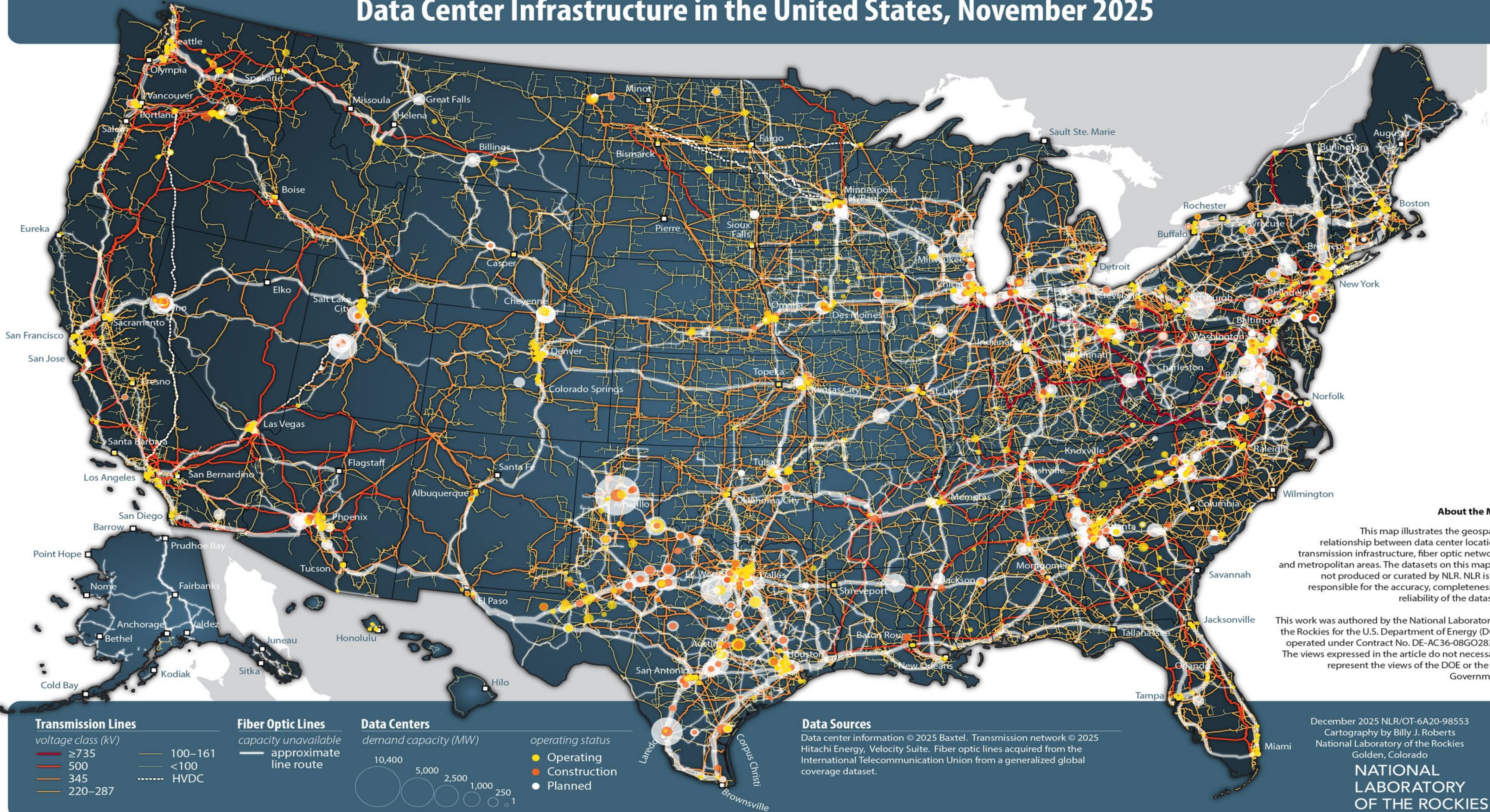
Rank	State	Data Centers
1	Virginia	665
2	Texas	413
3	California	321
4	Illinois	244
5	Ohio	203
6	Arizona	164
7	Georgia	163
8	New York	142
9	Oregon	137
10	Washington	134
11	Florida	126
12	North Carolina	110
13	Iowa	105
14	Pennsylvania	101

Why the Interest in Montana?

- **geographic position to long-haul fiber**
- **low land and energy costs**
- **cooler climate**



Data Center Infrastructure in the United States, November 2025



About the Map

This map illustrates the geospatial relationship between data center locations, transmission infrastructure, fiber optic networks, and metropolitan areas. The datasets on this map are not produced or curated by NLR. NLR is not responsible for the accuracy, completeness, or reliability of the datasets.

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Transmission Lines

voltage class (kV)	
—	≥735
—	500
—	345
—	220–287
—	100–161
—	<100
- - - - -	HVDC

Fiber Optic Lines

capacity unavailable
 — approximate
 line route

Data Centers

demand capacity (MW)



operating status

- Operating
- Construction
- Planned

Data Sources

Data center information © 2025 Baxtel. Transmission network © 2025 Hitachi Energy, Velocity Suite. Fiber optic lines acquired from the International Telecommunication Union from a generalized global coverage dataset.

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Cartography by Billy J. Roberts
National Laboratory of the Rockies
Golden, Colorado

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Current state of development

- **Approx. 15 small-scale data centers operating in Montana**
- **Several large-scale data center projects in the planning phase**
- **NorthWestern Energy signed power agreements with 3 projects**



Big Sky Digital Infrastructure

- South of Broadview
- 5,000-acres
- Owner: Quantica Infrastructure
- Intended purpose: high-performance computing campus to support A.I.
- Power requirement: 1,000 MW



Sabey Data Center - Butte

- Butte Connections Business Park
- Owner: Sabey Data Centers
- Intended purpose: high-performance computing campus to support A.I.(multi-tenant)
- Power requirement: 250 MW
- Buy-Sell agreement terminated May 13, but Sabey is still interested in constructing in the area



Atlas Power Expansion - Butte

- First opened in 2018, but shutdown due to legal troubles
- Owner: Atlas Power (formerly CryptoWatt)
- Purpose: Currently crypto-mining, but future purpose unclear
- Power requirement: 75 MW, with an additional 150 MW planned



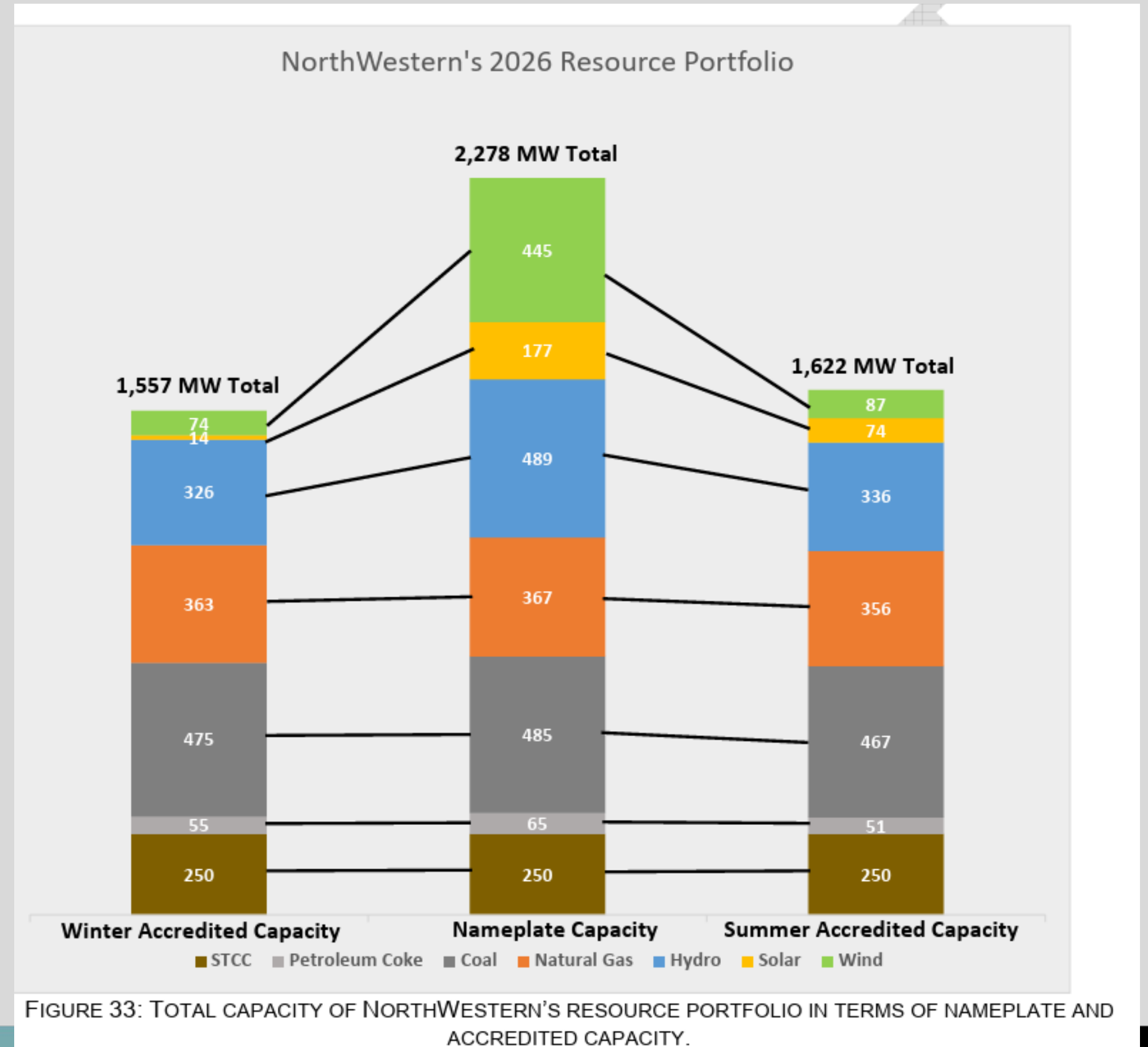
Krambu- Bonner

- Bonner industrial Park
- Owner: Krambu (Idaho-based data center company)
- Purpose: high-performance computing to support A.I.
- Power requirement: 7MW, with potential to expand to 29MW
- In Missoula Co. review process



Why the Concern?

- Where is the power going to come from?
- How is it going to get there with limited transmission capacity?
- Potential data center load growth could be 1400MW or more.
- Will retail customers be paying for new generation and capacity upgrades?
- Questions about water, air, land use



What's good?

- Tax revenue
- Jobs for construction and maintenance
- Load growth may lead to lower electricity prices
- Provides essential infrastructure



What Regulations Apply?

- Local permitting
- Local land use
- Floodplains
- Environmental review (MEPA)
- Water use, water quality
- Air quality
- Transmission lines (MFSA)
- Utility regulations (PSC)



Legislative trends

- In 2025, U.S. legislators considered 238 data center-related bills and enacted more than 40 of them in 21 states
- Bills related to:
 - Energy
 - Water
 - Taxation, including incentives
 - Zoning
 - Land use



2027 session

- Large-load tariffs?
- Data center power and water reporting?
- Separate customer class for electricity rates?
- Changes to tax incentives or property tax rates?
- BYOP initiatives?
- Moratoriums?
- HB877 (2025)?



Questions?

