Data Centers and Clean Energy:
A Multifaceted Challenge

- 4 gigawatts average DC load growth in the PNW
  - **5x** Seattle's energy use
  - **A typical hyperscale data center has a 100-150 MW capacity**. Several per campus.
- Aging and constrained grid
- A rudimentary regional energy market
- Slow siting process for generation and transmission resources

Relevant OR Climate Policies

Emissions

- Climate Protection Program
- TIGHGER

Clean Electricity

- 100% Clean for All
- Rules restricting development of gas-powered energy facilities

Backsliding on Climate Goals is a Significant Risk

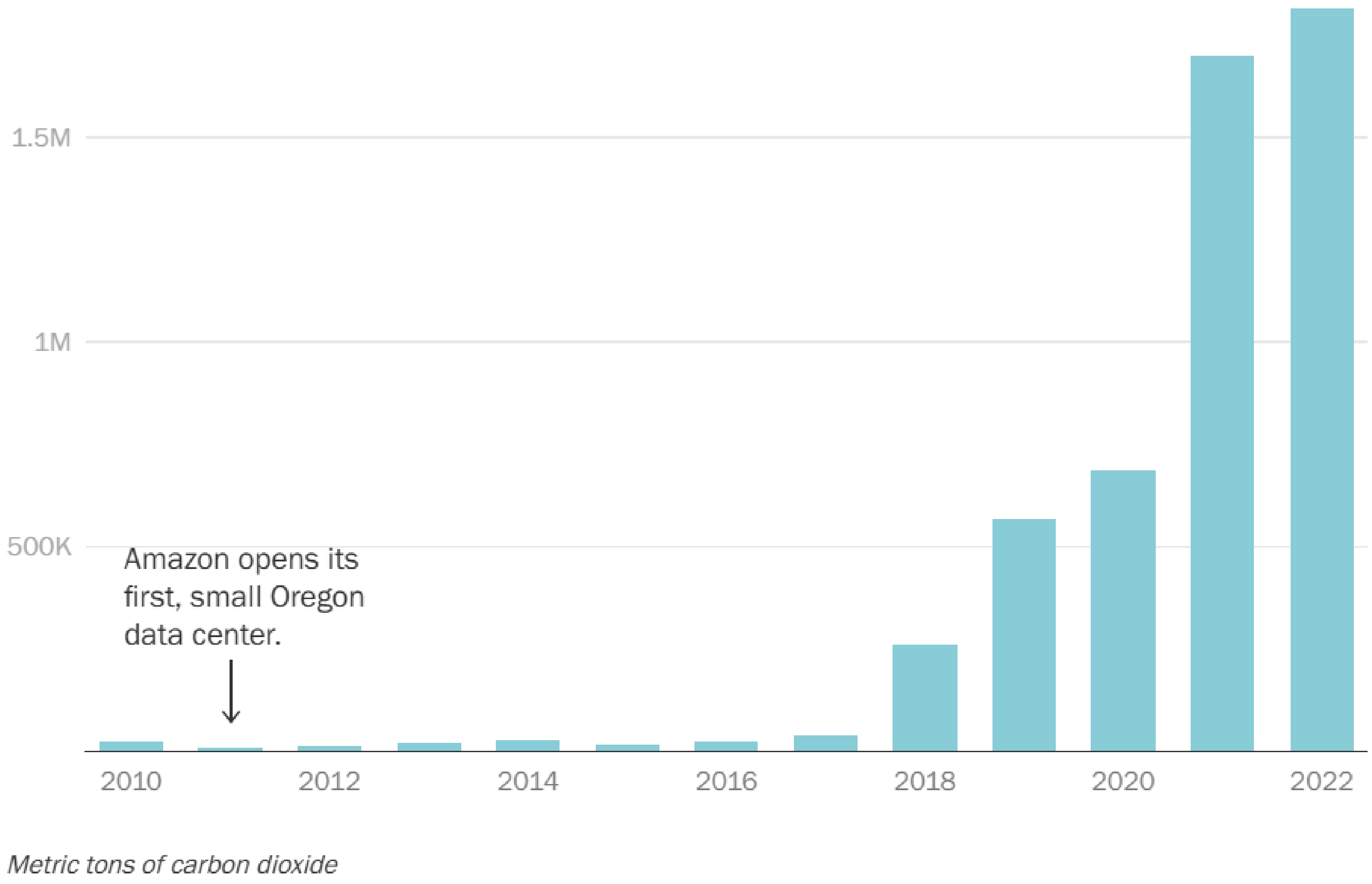
The pathway to achieving clean energy targets has become constrained

Oregon could miss its 2035 decarbonization goal (45% cut) by at least two years due to data center growth

A recent E3 report identified a need for new gas peaker plants due in part to data center load growth

Gas plants over 25 MWs are restricted in Oregon but there is a loophole under 25 MWs

Carbon emissions from Umatilla Electric Cooperate, which serves several data centers, increased 543% from 2010 to 2022



The Key Question:

Can We Accommodate Data Center Growth While Progressing Toward a Clean Energy Transition and Maintaining Affordability and Reliability?

Solution 1: Battery Storage and Grid Flexibility

Diesel generators impact local air quality and release significant GHG emissions

Battery Energy Storage Systems

- ✓ Store non-emitting renewable energy
- ✓ Relieve pressure to build new gas peaker plants
- ✓ Allow data centers to load flex
- ✓ Can replace diesel generators AND provide front of meter grid support
- ✓ Allow flexibility during curtailment events
- ✓ According to a research by Duke University, 1%-5% load flexing significantly reduces need for gas peaker plants. According to Verrus, 25% load flexing is feasible

Successful implementation:
- Google developed large BESS projects in MN and MI to allow load flexing
- First BESS project at a data center in the PNW deploying in 2026

Solution 2: "Bring Your Own New Clean Energy"

- Enables major capital expenditures in utility-scale wind and solar plus emergent renewables like next-generation geothermal
- Energy resources should be **new** and compliant with HB 2021
- Aligned with voluntary sustainability goals of industry
- **A risk** – data centers procure significant resources on the market rather than *expanding* the market

Successful implementation:
Google and AES – new co-located clean power in Wilbarger County, Texas

Solution 3: Efficient cooling

- Energy efficient hardware
- Liquid immersion
- Waste heat reuse
- “Free cooling”

Successful implementation:

- Virginia – **HB 323 and HB 2578** – requires studying waste heat reuse and ties tax incentives to energy reclaim metrics
- Amazon captures waste heat from the Westin Building Exchange data center in Seattle
- A Microsoft study found liquid immersion reduces GHG emissions by up to 21%

Solution 4: Funding residential efficiency measures and DERs

- Benefits low income residential ratepayers and improves grid reliability, energy affordability, and efficiency
- Frees up capacity on the grid, which enables data centers to come online faster
- One option - a fee (~ 2 cents per kwh) collected from data centers to fund the program

Successful implementation:
Minnesota - $2 - $5 Million in fees to support weatherization and energy efficiency programs for low-income households

Solution 5: Data Transparency

- Necessary for accountability and good policymaking
- In the best interest of the industry to maintain social license
- Publicly accessible monthly reports with several components including:
  - Energy and water use + sources
  - Peak energy demand
  - Ability to load flex
  - Emissions and effluents
  - Estimated energy and water use in first five years (new data centers)

Successful implementation:
Florida **– SB 484** Requires public disclosure of data center development deals, large load tariffs, and water usage.