Northwest **Power** and **Conservation** Council

December 3, 2024

MEMORANDUM

TO: **Council Members**

FROM: **Bill Edmonds, Executive Director**

SUBJECT: **Data Center Landscape Update**

BACKGROUND:

Presenters: Brian Janous, Cloverleaf Infrastructure (data center perspective); Sarah Smith, Lawrence Berkeley Laboratory (policy perspective); Robert Cromwell, consultant and former VP of Power Supply at Umatilla Electric Coop (utility perspective)

Summary: This panel is meant to be a high-level look at data centers – their operation and energy needs, the key opportunities and challenges for utilities in serving this new load, and the policy and planning issues that the Council should understand in advance of our work on the Ninth Plan.

The presenters will have short presentations and will be fielding questions from the Council members. Member Golden and Chair Allen will lead the discussion, but there will be ample time for members' questions and discussion among the panelists. The three presenters are as follows:

- Brian Janous, Cloverleaf Infrastructure – Brian is co-founder and COO of Cloverleaf Infrastructure, a company that develops ready to build sites for large electric loads including data centers. Prior to this, he was Vice President of Energy at Microsoft, overseeing the company's global data

center energy footprint. At Microsoft, Brian managed the execution of over 15 GW of renewable energy power purchase agreements. He also played a critical role in developing siting and growth strategies for over 4 GW of data centers in 40+ countries.

- Dr. Sarah Smith, Lawrence Berkeley Laboratory – Sarah is a research scientist in LBL's Sustainable Energy Systems group. She specializes in energy use modeling across end-use, customer, and industry-wide scales. Her current research focuses on modeling design, load response, costs, and benefits of dynamic electricity tariffs and other load flexibility technologies, and on understanding the energy use and environmental impacts of data centers.
- Robert Cromwell, consultant – Robert is a self-employed consultant focusing on power supply, risk management, regional energy markets, and decarbonizing the power supply of data centers. Before consulting, Robert served as vice-president of Power Supply at the Umatilla Electric Cooperative. Prior to that he worked at Seattle City Light.

Relevance: The Council is preparing for its Ninth Power Plan. While previous power plans have accounted for data center load growth, the upcoming Ninth Plan will need to take a more focused look at this sector due to its rapid growth in the region. This panel will provide the Council with important framing around this sector in advance of starting on the deeper analytical work in the plan.

The growth of new loads of all kinds is one of the important inputs into our future resource plan. It will be the Council's job to account for these new loads in our resource recommendations as we achieve our core objectives including: resource adequacy; building a system that is efficient and economical; and meeting loads reliably as the system relies more heavily on intermittent resources. Given the importance of the topic and fast-moving developments in the field, the Council hopes to foster broader regional understanding and transparency on this subject.

Background:

New large loads including data centers and new industrial sources like chip manufacturing are growing dramatically. The issue of industrial load growth was brought before the Council during our March, 2024 meeting where we heard presentations from both Portland General Electric and Bonneville Power Administration. Both entities projected substantial new industrial load growth, with PGE projecting a near doubling of industrial load during the coming decade.

As part of this growth, the northwest region has experienced significant growth in data centers, driven by increasing demand for cloud services and advanced computing capabilities. Data center load growth is occurring throughout the county but is concentrated in a few areas. According to the Electric Power Research Institute, 15 states account for 80% of the national data center load: Virginia, Texas, California, Illinois, Oregon, Arizona, Iowa, Georgia, Washington, Pennsylvania, New York, New Jersey, Nebraska, North Dakota, and Nevada.

There has been a steady stream of reports regarding both new data center loads as well as novel new partnerships between utilities and data center owners to bring on new generation resources. This panel is meant to help the Council and the region stay abreast of these new developments in advance of our coming work on the ninth plan.

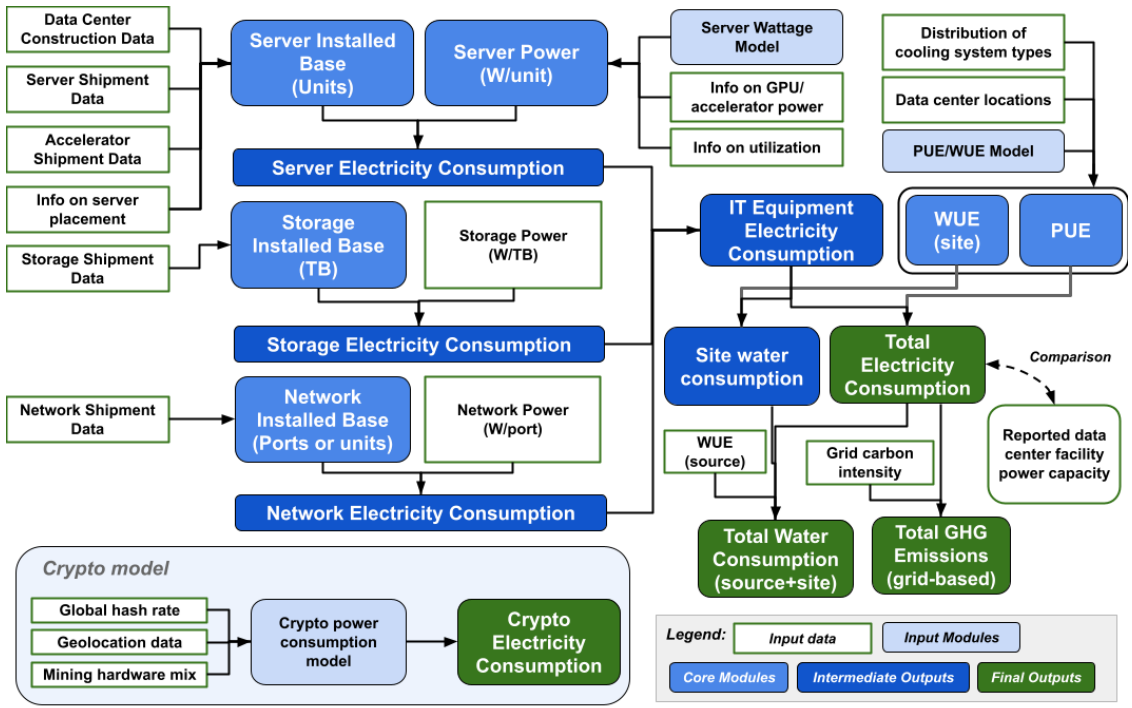
The panel also will explore some of the opportunities we may expect to see as Artificial Intelligence (AI) is used within the utility sector to help utilities operate a more resilient and efficient grid. For example, AI technologies are expected to enhance grid management through real-time data analysis and predictive modeling, enabling utilities to better anticipate and respond to demand fluctuations and potential outages.

How did we get here? A history of US data center electricity demand

Dr. Sarah Smith
Research Scientist

ENERGY TECHNOLOGIES AREA
BERKELEY LAB

Berkeley Lab data center energy use modeling



Additional new/upcoming DOE-funded efforts:

- Large load forecasting
- Data center tariff assessment
- Load flexibility analyses
- AI load profiles
- Topic- and region-specific convenings

DOE'S APPROACH TO LOAD GROWTH

- **DOE is focusing on four solution areas**:
  - Revitalizing existing infrastructure
  - Behind the meter flexibility
  - Innovative rate and regulatory designs
  - Commitments for longer-term technologies

- **Select resources** at **energy.gov/electricitydemand**
  - Coal Site Redevelopment
  - Financial and technical assistance resources
  - Expanding Clean Energy Generation on DOE Lands
  - Pathways to Commercial Liftoff (recent: nuclear, load growth)

- **Data Center Engagement Team** with support from every DOE office
  - Contact us at: **businesshub@hq.doe.gov**