

The PUC is providing this information for background, planning, and policy development considerations. As you know, the rapid development of large-scale data centers is a topic of growing interest and concern throughout the energy industry. The PUC convened a public Planning Meeting on October 29 to build awareness about this industry and its potential impacts to the state. Following up on that discussion, PUC staff convened an interagency meeting with DEED, Commerce, DNR, MPCA, MDH on December 2 to discuss agency roles and share knowledge. The information provided in this memo is a follow-up to that discussion and is meant for general reference. This memo summarizes key information that was verbally presented in the Planning Meeting, has been shared at industry conferences, or other public venues.

Data Centers Background

Data center development is a big topic, so it is important to first start with some background and definitions. The following types of data centers are common in the industry. The terms provided below are general descriptions for clarity and understanding but are not precise definitions.

- A. **Small data centers:** These are small-scale data centers/server closets in a business, local government, or smaller commercial operation. These are small-500 kilowatt to 2 megawatts (MW).
- B. **Large enterprise data centers:** These are larger facilities that are housed at a corporation that runs the entire enterprise. 10MW-100MW

C. **Hyperscalers:** These facilities are generally above 100MW. Hyperscalers are massive centers owned primarily by companies like Google, Meta, Amazon, and Microsoft that host web services, artificial intelligence, and the cloud offerings of these companies. Not all data centers are alike, HDCs that are primarily used for servers/data storage have high load factors that require 24/7 reliable electricity; whereas, HDCs for artificial intelligence or other energy-intensive processing have more load flexibility to match a utility's generation profile.

The conversation currently at the Minnesota Public Utilities Commission, statewide and nationally is driven by Hyperscaler (HDC) data centers. These facilities are large energy users that affect power flows on the electric grid; may create the need for new infrastructure; can impact rates and affect CO2 emissions; and create significant jobs and economic development. Small and non-hyperscaler data centers account for a much smaller share of energy consumption than HDCs and can be accommodated and served through the regular utility resource planning process. Additionally, the backup generation needs for these smaller facilities generally would not fall under PUC permitting requirements and likely would not create significant planning problems for the utility that serves it. The PUC does not have jurisdiction regarding the water and air permit needs for these non-HDC facilities and have no insights to share.

I. Hyperscaler Data Centers Size and Context

As large data centers, HDCs start large and can rapidly scale to even larger sizes. A 100 MW HDC uses the same amount of electricity as approximately 80,000 homes. A 1000 MW data

center uses the same amount of energy as 800,000 homes-or approximately the size of Minneapolis and St. Paul. From a statewide perspective, a 1000MW data center consumes about 8 million megawatt (MWhs) hours of electricity per year, which is about 12% of Minnesota's statewide consumption of approximately 68 million MWhs of electricity per year. Xcel Energy, Minnesota's largest utility, is about half of the state, a 1000MW data center is approximately 24% of their current consumption. For Minnesota's smaller utilities these numbers are even more impactful. Minnesota's largest electric utilities Xcel Energy and Great River Energy have publicly stated that Minnesota likely will see between 2000 and 3000 MW of data center development in the next decade.

II. Why Now?

Over the last decade several macro-trends have consolidated to drive the development of HDCs. According to industry experts, the major forces driving HDCs are cloud computing; artificial intelligence; the proliferation of interconnected devices; the digitization of the US and global economies; and national security considerations pertaining to U.S. leadership in artificial intelligence. Regionally, the major factors driving Minnesota HDC development include: proximity to the Twin Cities population center to reduce latency between customers and data center processes; availability of carbon free resources (especially existing nuclear generation), the 100% carbon free standard, and new transmission buildout; competitive energy prices; cold climate and water resources necessary to cool HDC equipment; and the Minnesota and Twin Cities skilled workforce.

III. Potential Statewide Benefits of HDCs

From a utility system perspective, large energy consumers with predictable demand can have a beneficial impact. If well-planned, HDCs could potentially bring the following benefits to Minnesota:

1. Downward pressure on electric rates: to the extent that electricity sales to HDCs outpace the increased costs they impose on the system, HDC development can reduce electric rates for other customers of the utility. Two key considerations will be whether there will be adequate existing generation available to serve the HDC load and how flexible the HDC load will be with regard to when it will use electricity.
2. Corporate clean energy goals of HDCs are aligned with Minnesota's energy targets. Google, Amazon, Microsoft, & Meta have made commitments to utilities in other jurisdictions to purchase clean energy resources, invest in weatherization and energy efficiency and in general speed up the energy transition by funding investments in clean energy technologies that may not be commercial today. However, not all backup generation for the large HDCs will use clean energy resources. Some utilities and other stakeholders have said that the increase in data centers could increase reliance on natural gas usage prior to 2040.
3. Economic development in and around the communities that host HDCs.

IV. Potential downsides of HDC development

If not well-planned for, HDC development in the state:

1. will increase in natural gas generation electric system wide, which could also impact natural gas availability for heating and other purposes, or may increase use

of diesel fuel for back up generation during an outage as is proposed for the Amazon HDC facility in Becker, or for economic purposes such as to shave peak time costs or to reduce demand charges through self-generation. This could slow the pace of or jeopardize utility compliance with the Carbon-Free and/or Renewable standards if carbon resources are used to meet new HDC load.

2. May result in cross subsidization of rates by non-data center customers if projects do not materialize after investments are made, or if the Electric Service Agreements (that often need to be approved by the PUC) between the utility and the HDC do not fully account for the costs to the overall energy system.
3. May create impacts to water resources and air emissions regulated by other state agencies based on utility fuel mix or the use of back up generation.

V. Minnesota State Government Touch Points

Below is a preliminary list of touch points where HDCs will likely need state action. It is important to note though that HDCs will likely first have conversations with Minnesota electric utilities. Under Minnesota statutes, section 216B.04, Minnesota's electric utilities have a statutory obligation to provide safe, adequate, efficient, and reasonable service to any person in their service territory that requests service . However, how the utility serves this load and the permits and conditions placed on the load are state concerns.

1. Electric infrastructure planning and the need for additional system generation and/or transmission (PUC and Division of Energy Resources at Commerce)
2. Electric rates and affordability (PUC and Division of Energy Resources at Commerce)

3. Compliance with state carbon-free requirements (PUC and Division of Energy Resources at Commerce)
4. Backup Generation (Behind the meter/not system power/not owned by the electric utility)
5. Air Permits for onsite Backup Generation (PCA)
6. Certificate of Need and site permits for onsite Backup Generation in excess of 50MW (PUC and Division of Energy Resources at Commerce)
7. Energy Security and Emergency Response planning (OERS, DPS)
8. Water Permits (PCA and DNR)
9. Economic Development Grants (DEED)
10. Tax considerations (Revenue and local units of governments)

VI. Facts on the ground as of January 2025

This is a list of the HDC developments that the PUC has been made aware of as of January 2025. This is not meant to be a complete list and is done simply to share knowledge of what we know or have heard is likely to be developed. In most cases, applications have not been submitted on these projects, so there are very few details available.

1. PUC is aware of at least 5 HDC data centers in Minnesota. (Not all of these are publicly announced).
 - a. Meta-Rosemount, Xcel Energy, ESA secured, in construction
 - i. Final PUC Order approving ESA: <https://bit.ly/40o3Qbu>
 - b. Amazon, (Becker, Xcel Energy, no ESA, land acquired)

- i. Amazon has filed for an exemption from Certificate of Need for back-up generation for this facility. This is an open docket at the PUC, see <https://bit.ly/41WpyVs>.
 - c. Google (likely Becker, Xcel Energy, no ESA, not announced)
 - d. Microsoft, (Becker, Xcel Energy, no ESA, announced)
 - e. TRACT, Rosemount, Dakota Electric/Great River Energy, announced)
 - f. CloudHQ, Anoka/Chaska Municipal Utilities/MN Municipal Power Agency, in construction
2. Xcel has publicly announced 1300MW of HDC in 7 years and likely 2000MW of HDCs in 10 years.
 3. GRE has indicated probably 1000MW in 10 years.

VII. Preliminary and high-level stakeholder feedback so far to the PUC

In the PUC planning meeting, stakeholders expressed the following:

1. They are concerned about affordability impacts of new large data centers and the potential for cost-shifting to non-HDC customers.
2. Some stakeholders are concerned about impacts on water resources.
3. Many stakeholders are concerned about the ability for Minnesota to meet its clean energy targets and to be 100% carbon free by 2040.
4. Stakeholders are concerned about the slow pace of the regulatory process both to make sure we adequately vet new projects but also to make sure we don't miss opportunities.

5. State employees and some stakeholders are concerned that the slowness of the state's integrated resource planning process, for instance, won't keep pace with the projected load growth.
6. Some stakeholders are skeptical that these energy projections will materialize.
7. Stakeholders are enthusiastic about the potential for jobs and other economic development from these facilities.

VIII. Commission Questions re: HDC Development in MN

To give you what the MN PUC is interested in with regard to HDC issues within its jurisdiction, here is a link to questions the Commission posed at its October planning meeting: <https://bit.ly/3C0Ckrj>

Recommendation

The Administration, either through the Governor's Office or an assigned agency, should convene ongoing interagency dialogue. Because of the independent regulatory function of the PUC, the Commission likely should not serve in this role. The PUC relies on the substantive work of our sister agencies in evaluating the impacts of pending decisions, and making public-interest based recommendations. This interagency coordination would benefit the state in helping to expedite public inquiries and develop policy. In the absence of more deliberate interagency coordination, the PUC (and other agencies) will have to continue to take matters up in piecemeal fashion as they are presented. Our

recommendation is that we have a consistent enterprise-wide response to HDC development.