EXTENSION

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Considerations for communities evaluating proposed data centers

July 2026

This document compiles key questions raised by researchers and community stakeholders regarding data center development. It is intended to highlight important considerations when evaluating proposed projects and does not represent an official position of Oklahoma State University. These questions were reviewed by the Oklahoma State University Data Center Research Committee prior to publication.

The OSU Data Center Committee is a collaborative working group focused on informing the public and identifying research needs related to data centers. The Committee is developing a series of research-based fact sheets addressing topics such as water use, energy demand, economic impacts and other relevant considerations.

Questions about this document, other related fact sheets, data centers in general or any answers to these questions obtained from town or city hall meetings may be directed to the Oklahoma Water Resources Center at water@okstate.edu.

Understanding the proposal and what is being approved

- Is this proposal for a single building, or is it part of a larger campus or phased development?
- How many phases are planned?
- What specifically triggers approval of each future phase?
- What is the maximum total build-out allowed under current zoning or development agreements?
- Are future expansions subject to new public hearings, or can they proceed administratively?
- Are approvals tied to this specific operator, or can the facility be sold, leased or transferred without public review?
- Can building density, computing density or infrastructure capacity increase without reopening approvals?

Expansion safeguards and limits

- Can water use, electricity demand or land use increase without additional community approval?
- Are there enforceable caps on:
    - Total water use
    - Total electricity demand
    - Total building square footage
    - Number of backup generators
- Do these caps apply per phase, or to the entire project lifespan?
- What automatic actions occur if a cap is exceeded?

- Are penalties automatic or discretionary?
- What happens if penalties are discretionary? And, who is responsible for taking action?

Cumulative and regional impacts

- Has anyone evaluated the combined impact of this facility?
    - Other nearby data centers
    - Existing industrial or high-demand users
- If there is an impact report, can it be made available to the public?
    - If not, why can't the report be made public?
- Has future growth in the same watershed and/or electric grid region been considered?
- What factors have been identified to consider the future growth of impacts of the watershed and/or electric grid?
- If water or energy demand doubles or triples over time, how and when will the impact be reassessed?
- Who has the authority to pause expansion if cumulative impacts exceed projections?

Water use, drought and long-term security

Baseline and future water demand

- How much water will be used:
    - At opening
    - At full build-out
    - After potential expansion
- If a closed-loop system is used, how frequently will new water be withdrawn into the closed-loop system?
- Is water use expected to increase over time as computing density increases?
- If so, at what rate is water use expected to increase as computing density increases?
- What is the expected Water Use Effectiveness (WUE)?
    - Water Use Effectiveness (WUE): a term created by *The Green Grid* to measure the water efficiency of data centers, specifically as it relates to cooling and operational needs.
    - Formula:

      WUE = Annual water usage (liters) / IT equipment energy (kWh)
- How will seasonal variability in water availability be managed?

Water sources

- What specific water sources will be used?
    - Aquifer
    - Reservoir
    - River/stream
    - Municipal system

Drought planning

- Is there a written drought management plan tied to permits or contracts?

- During drought conditions:
    - Can water deliveries be reduced or paused?
    - Who has priority – residents, critical institutions or the data center?
- Will future expansions be automatically halted if water availability declines?
- How much water is reserved for fire suppression, and does it draw from the same source(s)?

Cooling systems and wastewater

- What cooling technology is proposed initially?
- Will there be any chemical treatment, such as dielectric cooling?
    - If so, what specific chemicals will be used in that process?
- What source water quality parameters are monitored for cooling systems?
    - Source water can include, but is not limited to groundwater, surface water (rivers, lakes, reservoirs), municipal water, reclaimed water, rainwater harvesting systems and desalinated water.
    - Common parameters include, but are not limited to pH, hardness, total dissolved solids (TDS), conductivity, alkalinity, chlorides, sulfates, silica, nitrates, phosphates, temperature and PFAS.
- Are there plans to use alternative water sources (reclaimed water, brackish water, rainwater, etc.)?
    - If so, what treatments would be required?
- Could future expansions switch to a more water-intensive cooling system?
- How much water will be:
    - Lost to evaporation
    - Reused or recycled in a closed loop
- Will heated or treated water be discharged?
- If discharged:
    - Where will the water go (stream, river, pond, groundwater, wastewater treatment plant, etc.)?
    - Could expanded operations increase discharge volume or temperature?
    - Who will be responsible for monitoring discharged water?
- How will cooling performance be maintained during extreme heat events?
- Will chemicals or treatment processes be used in cooling systems?
    - If so, what chemicals or processes will be used?
- Will aerosol drift occur from cooling systems?
    - If so, what chemicals will the aerosol contain?

Electrical demand and grid reliability

Electrical load

- How much electricity (MWh or GWh) will the data center use at opening?
- What is the estimated power usage effectiveness (PUE)?
    - Power usage effectiveness (PUE): a term created by *The Green Grid*; a measurement of the relationship between the amount of energy IT equipment uses and the total amount of energy a facility uses.
    - Formula:

      PUE = total facility energy / IT equipment energy

- How does that compare to the current electricity use of the town or county?
- What is the expected load factor (average vs. peak demand)?
- Will the facility operate continuously at a near-constant load, or will it fluctuate significantly?
- What is the maximum power demand allowed under current approvals?
- Can power demand increase without revisiting permits or rate structures?

Infrastructure and reliability

- Will new substations, transmission lines or power plants be required now or later?
- Who pays for that infrastructure – the company or local ratepayers?
- How will load growth affect grid reliability during:
    - Extreme heat
    - Winter storms
    - Peak demand events
- What happens if the facility's energy demand suddenly increases or drops offline?
    - Is there a plan for an uninterruptible power supply (UPS)?
- During grid emergencies, does the facility have priority service?
    - If so:
        - Can its load be curtailed?
        - What might the impact be on residential services?

Backup generation and air quality

- How many backup generators will be installed initially?
- Can additional generators be added later without public review?
- What fuels will generators use, and how often will they operate?
- Are there any expected emissions from testing and emergency use?
- What emissions controls or after-treatment technologies will be used?
- What enforceable noise and air quality limits apply at the property boundaries?

Utility rates and cost allocation

- Will residential or small business utility bills increase because of this project?
- Are protections in place to prevent cost shifting to local customers?
- If the facility expands, who pays for:
    - Added grid capacity
    - Water system upgrades
    - Wastewater infrastructure

Stormwater, flooding and heat impacts

- How many acres will become impervious at initial buildout?
- What rainfall intensity return intervals were used in runoff modeling (e.g., 10-year, 100-year)?
- How many additional acres could be paved under full buildout?

- How will increased runoff affect nearby streams and drainage systems?
- Has long-term stormwater modeling considered future expansion scenarios?
- Is the site located in a flood prone area?
    - If so, will the data center work with the Oklahoma Floodplain Management Association to account for any land alterations?
- Will the facility increase local temperatures or urban heat impacts?
    - If so, is there a remediation plan?
- Will expansion amplify the impacts of heat on nearby neighborhoods or ecosystems?
- What modeling has been done on localized temperature changes from heat release?

Wildlife, habitat, noise and light

- How much of the local habitat will be lost initially and at full buildout?
- Will cooling systems or generators produce continuous noise?
- Could expansion increase noise levels or duration?
- Have impacts on birds, bats, aquatic species and pollinators been studied?
- Has light pollution to the surrounding ecosystem been considered?

Climate and emissions

- What are the indirect greenhouse gas emissions from powering the facility?
    - What is the expected carbon usage effectiveness (CUE)?
    - Carbon usage effectiveness (CUE): a term created by *The Green Grid*—a measure of the CO_2 emissions produced in relation to the amount of IT energy consumed.
    - CUE = total CO_2 emissions/IT equipment energy
- Are "clean energy" claims based on:
    - New generation
    - Renewable energy credits from elsewhere
- Will future expansion require new energy sources not currently planned?

Economic benefits and long-term costs

- How many community-based permanent jobs will exist:
    - Once established
    - After expansion
- What wages and benefits will those jobs provide?
- What tax incentives are being offered?
- Do incentives increase with expansion?
- Has a full cost benefit analysis been completed?
    - Did that analysis include:
        - Water
        - Energy
        - Infrastructure

- Emergency services
- Property Value Impact
- Environmental Impact

Local workforce and labor standards

- What is an estimated percentage of permanent jobs filled by local residents?
- Will fly-in/fly-out or rotational labor models be used?
- Will there be prevailing wage or wage floor commitments?
- Will there be limits on contractor substitution for permanent roles?
- Will subcontractors meet the same labor standards?
- Will there be workforce training or investment in education?
- Will there be expected use of temporary work visas, and if so, what is the expected number and duration?

Emergency services, safety and security

- How will the facility cooperate with fire, EMS and law enforcement?
- Will all data center employees be required to receive training on the use and safety precautions for lithium-ion batteries and high-voltage systems?
- If there are required emergency service upgrades, who will pay for those upgrades?
- Will there be public access upon request to the facility?

Decommissioning, abandonment and liability

- What is the expected operational lifespan of the data center?
- Is there an explicit decommissioning plan if the facility becomes obsolete?
    - If so, will that plan be made available to the public?
- Who pays for demolition and site cleanup?
- Is there a bond or financial guarantee for decommissioning?
- Does that financial guarantee include an increase if the facility expands?
- Can the land be restored or reused for other purposes?
- Who bears responsibility for stranded infrastructure?

Transparency, oversight and community role

- Will water, energy and emissions usage from the data center be publicly reported?
    - If so, in what format will it be shared (e.g., annual report, regulatory filings, etc.)?
- How often will monitoring data be updated?
- What happens if the company exceeds approved limits?
- Who enforces compliance with water, energy and emissions limits?
- How can residents participate in oversight after approval?
- Who should residents contact as concerns arise or if impacts worsen over time?

References

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