Data Center Workgroup

Draft Recommendations and next steps
1/25/24

Next steps

Date	Topic
February 7th or 8th	Final review and a full workgroup agreement on recommendations
March 1	Final workgroup report completed and submitted

General Recommendations

During the course of the committee and full workgroup meetings, several issues and considerations were raised that were beyond the purview of the workgroup and, in some cases, the County to be able to address without state or regional input and support.

- **"Define the Opportunity"** the County should consider putting an overall top limit on data center growth, whether based on square footage, total acreage, or another metric in order to reduce resource impacts reduce the risk to the county of becoming too financially dependent on a single industry.
- Power consumption and climate goals: data center power consumption and corresponding emissions will impact the ability of the state and county to meet climate and renewable energy goals.
- Power generation: the county is required by the state to meet 14.5% of power generation through renewable energy. The significant increase in power consumption from data centers will require the development of significantly more renewable energy in the county
- Power transmission: costs to expand transmission infrastructure are borne by all ratepayers.

General Recommendations, cont.

- Water consumption: data centers that use water for cooling may use hundreds of thousands of gallons per day. Current APFO for Quantum Loophole allows 1.1 MGD. If additional water is needed, state and regional approval is needed to draw additional water from the Potomac River. Use of treated effluent or “gray water” should be prioritized and use of potable water minimized as much as possible.
- Require that the CDI ordinance be reviewed on a regular basis (possibly biannually) in order to apply lessons learned and adjust to technological changes and advancements.
- Include periodic and reliable monitoring of all performance metrics (sound, air quality, water use, stormwater management, etc.) and consider requiring 3rd party monitoring and impactful enforcement.
- Provide appropriate training, equipment, and personnel for emergency responders
- Require that data center owners repurpose or demolish buildings at the end of their useful end of life

Siting

Siting Committee Members:

- Harry George
- Brian Sweeney
- Kraig Walsleben

Siting Committee Recommendations

Siting recommendations fall into 3 categories:

1. Where data centers should be sited, based on infrastructure, zoning, and the Livable Frederick Master Plan (LFMP)
2. Where they should not go, based on the goals expressed in the LFMP, the Climate Response and Resilience Report, and the County Executive's Transition plan
3. How they should be sited in the areas where they can be sited

Siting Parameters - Acceptable Use

In considering where data centers should be an acceptable use, the siting committee identified the following parameters:

1. Close proximity to existing or currently planned electrical transmission infrastructure (high-voltage lines)
2. Access to current or planned municipal water and sewer
3. Access to treated effluent from a water treatment facility (“gray water”)
4. Within access to current or planned fiber infrastructure
5. Within a designated growth area as delineated in the LFMP
6. Within an area zoned for general- or limited-industrial use (GI or LI)

Siting Parameters - Unacceptable Use

Data centers should not be an acceptable use in the following areas and cannot be overridden by a floating zone application in these areas

1. Rural legacy
2. Priority preservation
3. Agricultural preservation
4. Those portions of properties designated Green Infrastructure
5. Those portions of properties designated Natural Resource Lands
6. Treasured landscape management

Siting Committee Zoning Recommendation

In order to effectively manage data center siting, this group recommends the creation of a CDI Floating Zone, only applicable to land zoned GI or LI and meeting all of the parameters described in the previous slides

Justification: Floating zones are applicant driven, and must meet the criteria and standards for siting as established by the County through the existing CDI ordinance, an amended CDI ordinance, or a replacement CDI ordinance. Further, requires public notice, public hearings at the Planning Commission level, and public hearings and approval by the County Council for each applicant

Siting Committee Recommendations, Cont.

Recommended changes to current CDI ordinance:

1. Increase setback requirements to be 100 feet, or double building height, whichever is greater
2. Amend vegetative screening requirements to replace any plantings that fail within 90 days of failure or notification of failure
3. Amend exterior lighting to adhere to the Five Principles for Responsible Outdoor Lighting published by the Dark Sky and the Illuminating Engineering Society

Siting Committee Recommendations, Cont.

Other considerations to include in planning and siting of data centers:

1. Protection of land that has a high percentage of Prime soil classes I - III
2. Impact to the viewshed
3. Impact to recreational areas, including municipal, County, State, and National parks
4. Impact to nearby fragile ecosystems/watersheds
5. Proximity to schools, daycare centers, health care facilities, and residential developments
6. Environmental justice (consideration of housing that has been previously impacted by industrial or other environmental issues, and avoid compounding of these issues.

Sustainability

Committee members:

- Faith Klareich
- Mike McHale
- Paul Walker

Sustainability Committee Mission & Vision

Mission

Develop recommendations to be considered for inclusion in the CDI Ordinance to ensure that all data center developments in Frederick County adhere to sustainability best practices and seek to continuously improve sustainability metrics over time.

Vision

- Frederick County is a business friendly location for owners/operators of digital infrastructure and like enterprises, including data centers
- All such business located in the county set and achieve the highest possible standards for all categories of environmental sustainability in their operations
- Existing natural resources, which are critical to ecosystems and a high quality of life for all residents, are not adversely affected by the presence of digital infrastructure

Sustainability Concerns

Major Sustainability Concerns

Data centers use massive amounts of water and energy, creating greenhouse gas (GHG) emissions and e-waste as significant byproducts. Continuous focus and commitment to enhanced operational sustainability will be required to avoid adverse impacts to the community and local resources.

- **Water**: Rowan's 156 acre site is allocated 440k gallons of cooling water daily; Quantum Loophole's APFO letter of understanding allows for use of 1.1 Million gallons of water per day.
- **Power**: Data center electricity demand in VA requires >20% of the state's electricity supply.
- **Emissions:** Power generation from non-renewable sources creates GHG emissions and threatens attainment of emission reduction goals.
- **Backup Power**: standard backup power is supplied by diesel generators, which are loud and produce GHG and other air pollutants.
- **Noise**: Cooling equipment, backup generators and other mechanical equipment used in data centers operate 24/7 and can cause excessive noise pollution without sound abatement measures.
- **Embodied Carbon**: Data Center equipment, construction materials, and e-waste have significant use significant resources.

Drivers of Data Center Sustainability

A great deal of work has been done by policy makers as well as the data center industry to develop sustainability standards for the industry. Some relevant examples that may be leveraged by Frederick County in developing its own standards include:

- Public policy in place and under development calling for publication of Climate Threats & Impacts from operations and metrics for data center operators as part of ESG reporting (US SEC, EU).
- Buildings-based energy efficiency standards (i.e., BEPS) and regulatory rules at component level (ENERGY STAR and EU Ecodesign Regulations for servers and data storage products)
- Industry sustainability goals for carbon neutral operations and publicly reported metrics on progress announced by major members (GOOG, MSFT, AWS).
- Open CDI industry groups (The Green Grid, iMason's) and corporate leaders (Iron Mountain, Schneider Electric) "create tools, provide technical expertise, and advocate….optimization of energy and resource efficiency of Data Center ecosystems which enable a low carbon economy."
- **Quantum Loophole is a member of iMason's Climate Accord (250 companies, 130 countries, $6T market cap).**

Recommendations

To ensure that Data Centers and similar facilities operate in a sustainable manner, the County should update the existing CDI ordinance to include:

1. A requirement for data center development applicants to submit the following at initiation of site plan review and approval process:
    a. An operational sustainability plan, which names a program office charged with its administration
    b. Commitment that the sustainability program adheres to at least one industry-accepted sustainability framework with published goals and performance metrics aimed toward continuous improvement in sustainability metrics. At a minimum, the program should include energy & water use, local ecology, zero waste, and Climate Solutions Now Act zero emissions attainment goals.
2. Economic levers (incentives) should be defined and included in the CDI ordinance
3. In developing amendments to the CDI ordinance, staff and legislators should review and incorporate elements from these sources for data center environmental sustainability practices:
    a. IEA Tracking Data Centres and Data Transmission Network, updated July, 2023 (https://www.iea.org/energy-system/buildings/data-centres-and-data-transmission-networks#overview_
    b. Guide to Environmental Sustainability Metrics for Data Centers (https://download.schneider-electric.com/files?p_Doc_Ref=WP67_SPD_EN)

Recommendations - Noise

Noise is one of the most frequently cited community concerns regarding data center developments. As such, a more detailed recommendation on noise has been prepared and will be submitted. Key points have been summarized here:

1. A robust framework for testing, monitoring, and reporting on sound from data center sites should be developed and implemented. This frameworks should include:
    a. Baseline testing to determine ambient sound levels prior to construction
    b. Specified reporting intervals
    c. Process & procedures for the County to require additional testing and reporting if complaints are reported
2. Consideration should be given to a penalty for ongoing neglect to address cited violation of the ordinance. Those proceeds should be placed in a noise abatement fund
3. Noise levels at property boundaries should not exceed 55 to 65 dBA
4. Data centers should not be located within a 2.5 mile radius of sensitive facilities such as schools, healthcare facilities, etc. to minimize likelihood of sound traveling to those facilities
5. An overall approach to noise abatement should be required as part of planning applications
6. County should plan for staff training and/or expansion to conduct separate monitoring efforts, especially for complaint investigations.

Recommendations - Incentivizing Outcomes

In many areas of the country, including the State of Maryland, governments have introduced tax and other incentives to encourage data center development. More recently, other jurisdictions have begun developing incentives structures to encourage sustainability best practices given that data centers consume 10-50 times the energy per unit of floor space of a typical commercial office building and account for 2% of U.S. energy use (DOE). Key points from the detailed recommendation are shared here:

1. Incentivize Tier 4 data center equipment (highest levels of energy efficiency, noise mitigation, water conservation).
2. The County should consider amplifying federal tax credits for energy efficiency and renewable energy/energy storage solutions
3. The County should recognize and plan for engaging with at least 4 distinct industry roles in a data center management (Infrastructure Manager, Owner/Builder, Operator, Customer)
4. Reporting and compliance responsibilities for each of these 4 roles should be clearly defined
5. Consider implementation of environmental escrow accounts
6. Consider incentives for Data Center operations that exceed state BEPS requirements

Other Sustainability Issues Identified

Additional Sustainability considerations have been identified by the Siting committee and others during the course of workgroup deliberations. These are captured here for consideration for final recommendations

1. Water
    a. Maximize pervious surfaces
    b. Prohibit use of groundwater/well water on site
    c. Consider retention of water runoff for onsite usage
    d. Diffuse rain or stored water runoff prior to entering streams or tributaries
    e. Ensure storm drains are not in proximity to fuel storage
    f. Utilize submerged ground wetlands for cooling runoff to reduce thermal load on groundwater recharge
2. Backup Power
    a. Require use of Tier IV generators
    b. Prioritize use of alternative fuels such as HVO or Green Hydrogen when possible
    c. Minimize backup power testing and duration. Restrict to business hours
    d. Prohibit connection of backup power source to grid for possible “peaker” or “peak shaving” use
    e. Prohibit use of load banks for testing
    f. Require above-ground storage of backup fuel
3. Noise
    a. Require noise attenuation on mechanical equipment (generators, chillers, air handlers, etc.)
    b. Install mechanical equipment at ground level rather than on rooftops to reduce noise impacts

Other Sustainability Issues Identified, cont.

Additional Sustainability considerations have been identified by the Siting committee and others during the course of workgroup deliberations. These are captured here for consideration for final recommendations

1. Power
    a. Require disclosure of power purchase agreements
    b. Require purchase of renewable energy to the extent possible
    c. Install solar where feasible (rooftops, parking canopies, etc.)
2. Management of buildings at end of life
    a. Require that buildings be repurposed or demolished at end of useful life

Community Benefits

- Daryl Boffman
- Kelly Schulz
- Chris Vigliotti

General Local Benefits

1. **Site Improvement**- repurposing and revitalizing GI (General Industrial) and LI (Light Industrial) zoning areas, brownfields
2. **Low Impact on County Services**- expanding commercial tax base with less burden than other types of development
3. **Potential Infrastructure Enhancements**- roads, water, sewer, network fiber, electrical infrastructure

Revenue From Taxes and/or Fees

1. **Real Property Taxes**- Maryland Tech Council Report estimated Frederick County realizing approximately $41 million annually when the operating phase is reached, assuming a rate of $2.00 per $100 of Assessed Value (AV). This revenue can be realized with no additional taxes or fees imposed.
2. **Potential Personal Property Tax**- Municap studies presented 4 scenarios with personal property tax rates of $1.80 per $100 of AV and $2.00 per $100 of AV with sample facility sizes of 300,00 square feet and 800,00 square feet. Revenue projections can be found in the Municap Report. This revenue would require a new personal property tax.
3. **High Energy Use Surcharge**- This could be imposed to encourage the employment of energy efficient building standards and cooling technologies. No revenue projections were given to the subgroup. This concept is in place in Montgomery County.

Community Benefit Agreements (CBA)

1. Utilized by other jurisdictions with other industries to delineate and formalize agreements of mutual benefit.
2. These agreements could be developed and refined for each company, not just Quantum Loophole.

Potential CBA Opportunities

1. Education and Workforce Development
2. Scholarship Programs
3. Internship Opportunities
4. Workforce Training Programs
5. Job Creation
6. Local Hiring Initiatives
7. Job Fairs
8. Non-Profit Contributions
9. Financial Contributions
10. In-Kind Support