# REPORT OF THE FREDERICK COUNTY DATA CENTERS WORKGROUP

In fulfillment of the request of
Frederick County Executive Jessica Fitzwater

**MARCH 1, 2024**

March 1, 2024

The Hon. Jessica Fitzwater
Frederick County Executive
Winchester Hall
12 E. Church Street
Frederick, MD 21701

Dear County Executive Fitzwater:

**It is with great pleasure that we submit to you the final report of the Frederick County Data Centers Workgroup, formed by you in June 2023. Since our first meeting, the Workgroup has undertaken its task diligently and collaboratively, befitting the importance of our charge – to ensure that growth in data center development in Frederick County occurs responsibly, with benefits to the community maximized and external costs minimized.**

We commend you for appointing a Workgroup that reflects the diversity of interests in Frederick County, and ensures that all voices have been heard. The workgroup conducted its review in the daylight, with all full workgroup meetings open to the public, recorded and preserved for future review.

The recommendations contained in this report represent a beginning, not an end. While the Frederick County Critical Data Infrastructure ordinance can and must be amended to reflect the demands and impact of the data center industry, and while noise, water use, power consumption and more can be monitored, incentivized and restricted, when necessary, it is clear that this industry will continue to evolve. Ongoing attention will be needed to ensure that the residents and businesses of Frederick County are neither overly burdened by digital infrastructure growth, nor that we heedlessly restrict a modern industry.

Our workgroup remains ready to answer additional questions you and others may have. Thank you again for this opportunity.

Sincerely,

Frederick County Councilmember Renee Knapp, co-chair
Karen Cannon, co-chair

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# Introduction

## Background on Data Centers Workgroup formation

The Frederick County Data Centers Workgroup was created in June 2023 by County Executive Jessica Fitzwater to examine existing laws and to provide thoughtful guidance on shaping growth of a relatively new and rapidly changing technology industry poised for expansion in Frederick County.

The County Executive and the County Council are seeking to develop a model for critical data infrastructure that leverages benefits of data center construction and operation while protecting environmental resources and Frederick County's quality of life and economic prosperity.

County Executive Fitzwater announced the formation of the Data Centers Workgroup (DCW) while, via executive order, calling for a pause in individual zoning map amendments that could allow for new data center construction in Frederick County, so that growth and expansion would not take place in a piecemeal fashion.

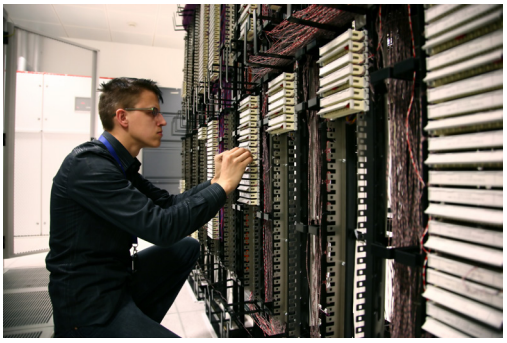
The recommendations of the DCW are intended to guide policy and regulatory updates so that data infrastructure growth and expansion occurs in a manner that is in the best interests of Frederick County residents.

## Mission and goals of workgroup

The DCW has been tasked with examining and making recommendations in the following areas:

- Appropriate locations in Frederick County for data centers;
- Taxation issues related to data centers;
- Water, power, and other infrastructure needs of data centers;
- Community benefits that could be derived from the data center industry; and
- Potential amendments to the county's Critical Digital Infrastructure law.

In particular, the DCW was asked to examine the experiences of communities in Northern Virginia, notably Loudoun County, where data centers have been constructed rapidly and are raising concerns among many residents. As County Executive Fitzwater noted when she announced the creation of the workgroup: "The data center industry brought economic and tax benefits to Northern Virginia, and it also brought concerns about environmental sustainability, energy and water usage, noise, vibration, and impacts on the quality of life."



## Background on data centers and the Frederick County experience

A data center is a physical location that stores computing machines and related hardware equipment. Data centers contain data storage devices, as well as networking devices, such as cables, switches, routers, and firewalls. Data centers

also contain power subsystems, uninterruptible power supplies, backup generators, ventilation and cooling equipment and fire suppression systems.

Data centers generate significant heat and humidity that must be mitigated to keep equipment functioning and prevent fire hazards and other safety issues. Most data centers rely on evaporative cooling rather than air conditioners to address heat and humidity, although technology is shifting toward liquid cooling. While cost effective, evaporative cooling uses a significant amount of water. The average data center uses 1 million to 5 million gallons of water per day, equivalent to the daily water use of a town with a population of 10,000 to 50,000 residents.

Data centers account for approximately 2% of the total electricity used in the United States. They use hundreds of megawatts of energy (Rowan's approved site will use between 230-250 megawatts at buildout) and consume 10 to 50 times the energy per floor space of a typical commercial office building. This high energy use has prompted concerns that data centers could add more stress to the electric grid, increase greenhouse gas emissions if the energy used to power a data center is from carbon-intensive resources, and potentially increase electricity rates due to increased demand as well as infrastructure expansion to meet that demand.

In June 2021, Quantum Loophole, Inc. acquired over 2,100 acres in Frederick County, a site formerly known as the Alcoa property and identified as a growth area in the Livable Frederick Master Plan (LFMP).

Quantum Loophole has proposed a master planned data center community, Quantum Frederick. APFO approval has been provided for 17.4 million square feet of data center space, along with 821,881 square feet of office space and 7,500 square feet of commercial usage.

Quantum's construction would return a long-vacant brownfield property to the Frederick County tax rolls. Work at the site began in early spring 2023 but was suspended amid a Maryland Department of Environment review. Site work later resumed with additional environmental oversight and protections.

In May 2022, Aligned Data Centers (ADC) signed an agreement to purchase land at Quantum Frederick and proposed installing 168 diesel generators as a backup power source. ADC sought an exemption from the Public Service Commission (PSC), arguing that each generator should be treated as a standalone unit instead of a single electric generating station. The PSC denied the exemption request, and in October 2023, ADC announced it would not proceed with its project due to the decision.

In January 2024, the Frederick County Planning Commission voted unanimously to approve the site

application of Rowan Digital Infrastructure, which seeks to build on 151 acres of the Quantum Loophole campus, also known as the Frederick Clean Cloud Community. Construction is expected to begin in Spring 2024, generating a projected 300 construction jobs. Rowan builds facilities and then secures an end user to bring the project online. According to the company, an end user is typically identified closer to when site development is scheduled. Rowan estimates 100 operational jobs upon project completion.

## Future landscape and trends

Demand for data centers is on the rise, according to analysts, and policy makers in Maryland are taking steps to encourage growth. As the industry prefers to locate facilities in proximity to each other, Frederick County could quickly become a desired destination.

Industry demand is being driven by processing requirements related to the growth of Artificial Intelligence (AI) and other factors. Additionally, the consulting firm McKinsey projected in a January 2023 report ("Investing in the rising data center economy") that U.S. data center power demand will more than double between 2022 and 2030.

Quantum computing, the expected next wave in technological advancement that will impact data processing, will grow significantly over the next decade, and may require less space but more power than current data center operations.

In Maryland, state policy makers are encouraging industry growth. Gov. Wes Moore is supporting legislation that would exempt data center backup power supplies from needing Public Service Commission approval as electricity generating stations, in response to the ADC decision by the PSC. Maryland has also incentivized construction of data centers by exempting sales and use tax on the purchase of data center personal property. The state exemption  applies to data centers that create at least five qualified positions and invest at least at least $5 million in qualified personal property.

## Workgroup membership

The DCW is composed of a diverse group of community leaders representing industry, agriculture, technology, environment, labor and more. It is led by co-chairs Frederick County Councilmember Renee Knapp; and Karen Cannon, Executive Director of Mobilize Frederick.

Other members include:

- Daryl Boffman, business and technology consultant and civic leader
- Harry George, retired telecommunications executive and environmental advocate

- Faith Klareich, Chair of the Frederick County Sustainability Commission
- Mike McHale, International Brotherhood of Electrical Workers (IBEW) Local 24
- Kelly Schulz, Executive Director, Maryland Tech Council
- Brian Sweeney, representative, Frederick County Farm Bureau
- Chris Vigliotti, Brunswick City Councilmember
- Paul Walker, retired client solutions executive and environmental advocate
- Kraig Walsleben, Rodgers Consulting

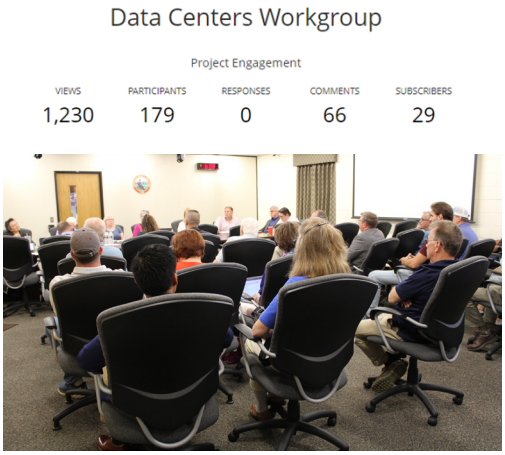
## Description of process

The DCW held its first public meeting on August 2, 2023, and the full committee met eight times between then and February 2024.

The DCW collected public input at every juncture, and conducted fact-finding via presentations from a variety of groups, which can be found in Appendix 1.

Much of the DCW work was performed by subgroups focusing on siting, sustainability and community benefits.

- Siting Subgroup: Recommendations on where data centers should be allowed and requirements on landscaping, screening, and buffering [Members: H. George, B. Sweeney, K. Walsleben]
- Sustainability Subgroup: Recommendations on performance standards and issues related to light, sound, vibration, water, waste and energy. [Members: F. Klareich, M. McHale, P. Walker]
- Community Benefits Subgroup: Recommendations on taxation, workforce development programs, economic development opportunities, and other benefits which could be provided by the data century industry [Members: D. Boffman, K. Schulz, C. Vigliotti]



The data collected by these subgroups can be found on the Frederick County Data Centers Workgroup web page located here.

## North Star Principles

The Workgroup kept the following foundational principles at the forefront of discussions and deliberations:

- Frederick County is and should remain a **welcoming destination** for residents and businesses, including for the builders and operators of digital infrastructure such as data centers.
- Data centers and other digital enterprises locating in Frederick County should set and achieve best-in-class standards for **corporate stewardship**, **environmental sustainability**, and **overall community benefit**.
- The data center industry is an **intensive user** of power, water and land, as well as a **generator of jobs and tax revenues**. Both the industry and policy makers in Frederick County should seek to **maximize benefits** and **mitigate costs** associated with data centers.

## Topline findings, challenges, and recommendations

The DCW presents the following major issues that may require significant local, state and regional support to address. These issues will require further examination and input from the Frederick County executive branch, the Frederick County Council, and the state legislative delegation.

**Overall limit:** The Frederick County Council should consider establishing an overall upper limit on data center development in Frederick County, as measured by metrics that may include total facility square footage, total land acreage, energy usage or another metric to be determined by policy makers. The DCW reviewed and recognizes the advantage such a limit would confer, reducing the effect of data centers on resources such as water and energy, and limiting the risk of Frederick County becoming overly financially reliant on a single industry. The DCW does not recommend a specific limit at this time.

**Power consumption and climate goals:** Data center power consumption and corresponding emissions will impact the ability of the state of Maryland and Frederick County to meet certain climate and renewable energy goals, and the DCW acknowledges that data center power consumption and corresponding emissions may negatively impact goal attainment.

**Power generation:** Frederick County is required by state law to meet 14.5% of power generation through renewable energy sources. The significant increase in power consumption from data centers will require the development of significantly more renewable energy in the county.

**Power transmission expansion:** Costs to expand transmission infrastructure, if and when necessary, would be borne by all ratepayers connected to the regional power grid. These additional costs should be monitored so that their effects on residential and existing commercial power consumers could be ameliorated.

**Water consumption:** Data centers that rely on water for cooling may use hundreds of thousands of gallons per day. If additional Frederick County supply is needed, state and regional approval would be

required before water could be drawn from the Potomac River. Non-potable water use should be prioritized for data centers, potable water use should be minimized for data center cooling needs.

**Frederick County Critical Digital Infrastructure Ordinance:** The Frederick County Critical Data Infrastructure ordinance (CDI) is the primary local regulatory framework for data center construction. The DCW recommends that the CDI ordinance be revised to include workgroup recommendations and reviewed on a regular basis (e.g. biannually) to apply lessons learned and to incorporate technological changes and advancements.

**Monitoring and enforcement of key metrics:** To ensure that potential negative environmental impacts of data center development and operation are measured and mitigated, Frederick County should require periodic and reliable monitoring of all performance metrics (e.g. noise, air quality, water usage, stormwater management, etc.) and should consider enlisting independent third-party monitoring coupled with impactful enforcement.

**Emergency responder training:** Given the unique features of data center operations, including large battery storage areas, and significant on-site fuel storage for backup power supply, Frederick County emergency responders must receive appropriate training and resources to fully protect nearby communities.

# In-depth Issue 1: Siting

Prescribing areas where data center development should be permitted – and should be prohibited - is a primary concern of local government and an area of major focus of the DCW. The Siting Subgroup examined existing zoning, infrastructure, regulations and industry needs to develop a series of recommendations designed to minimize friction between data centers and residential and non-residential neighbors and promote the best quality of life for all. Siting recommendations fall into three categories:

- Locations where data centers should be sited, based on infrastructure, zoning, and the adopted Livable Frederick Master Plan (LFMP)
- Locations where data centers should be expressly prohibited, based on the objectives contained in the LFMP
- How data centers should be situated within the areas where they can be located.

**Acceptable use areas:** Data centers should be allowed in certain areas based on infrastructure, zoning, and the guidelines of the LFMP. Criteria for establishing those areas should be:

- Proximity to existing or planned electrical transmission infrastructure (high voltage lines)
- Access to current or planned county or municipal water and sewer services
- Access to non-potable water (such as treated effluent from a water treatment facility or alternative sources of non-potable water including collected rainwater that may be used for equipment cooling)
- Access to current or planned fiber infrastructure
- Within a designated growth area delineated by the Livable Frederick Master Plan, as well as

area plans

- Within an area zoned for General Industrial (GI) use or Limited Industrial (LI) use

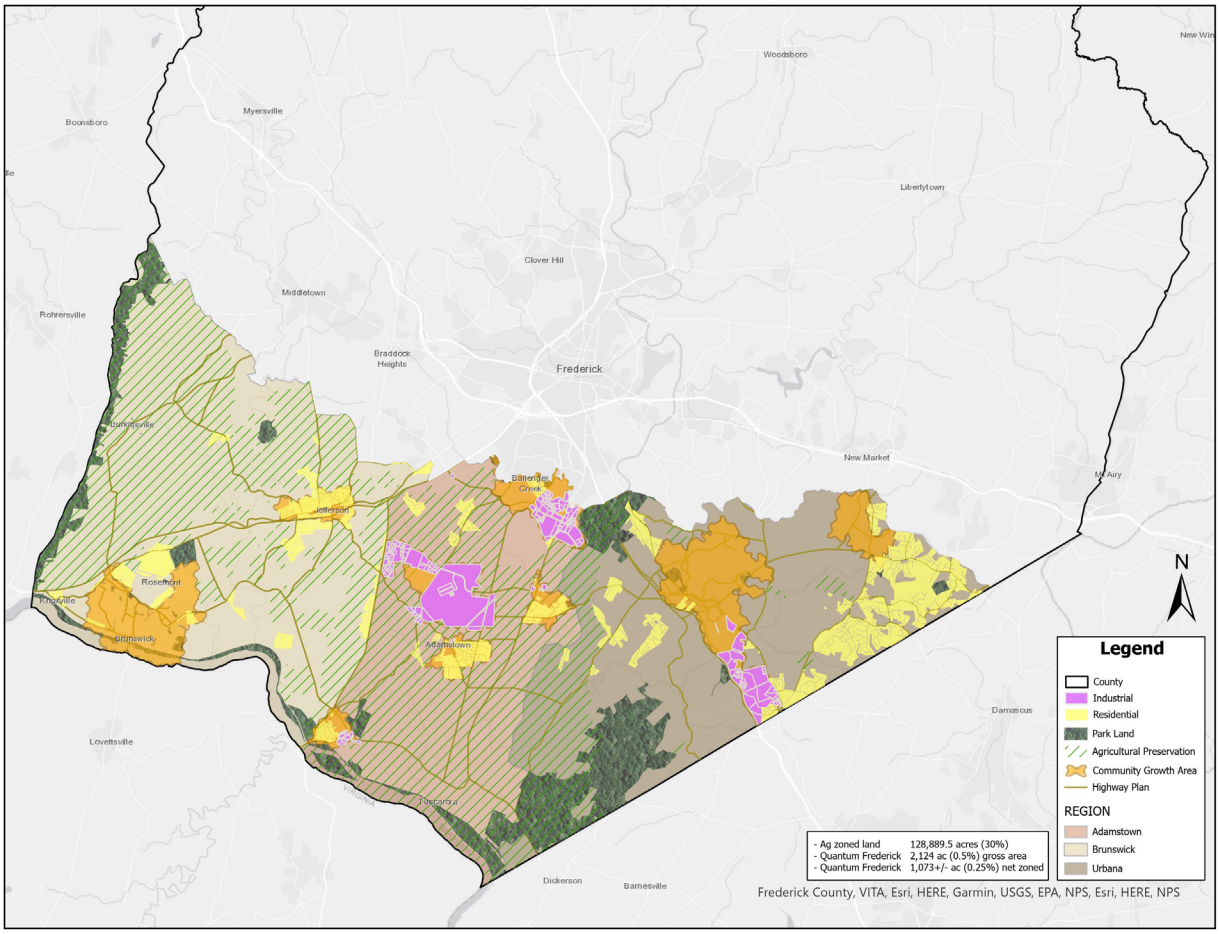
**Unacceptable Use Areas:** Data centers should NOT be allowed in the following areas:

- Rural Legacy areas
- Priority Preservation areas
- Agricultural Preservation areas
- Portions of properties designated as Green Infrastructure
- Portions of properties designated as Natural Resource Lands
- Treasured Landscape designated area (such as Sugarloaf Mountain)

## Recommendation - Critical Digital Infrastructure (CDI) Floating Zone

To effectively manage data center siting, the DCW recommends the creation of a CDI Floating Zone, which may be applied only within land zoned General Industrial or Limited Industrial, and meeting all other criteria described above.

Floating zones are districts that are not initially implemented on zoning maps, but describe conditions that must be met before they can be applied. When applied, floating zones replace the base zone. According to the American Planning Association Planning and Law Division, "floating zones are helpful



for communities... that wish to achieve specific goals outlined in a comprehensive plan or other public documents."

The Workgroup has concluded that the features of a CDI floating zone within GI and LI zones would provide significant benefits. Such floating zones would be applicant driven and would meet the criteria and standards for siting as established by the County through the existing CDI ordinance, or an amended or replacement ordinance.

The application for floating zone designation would entail significant public notice and input. After an application is submitted, public notice would be given; public hearings would be conducted by the Frederick County Planning Commission; and public hearings and approval by the County Council would be required.

**Applying the above standards:** The Siting Subgroup reviewed Frederick County maps that identified planning regions, power transmission lines, fiber long haul networks, latency coverage, zoning, agricultural preservation areas and other data. By applying the above standards, the Siting Subgroup identified three growth areas in the southern tier of Frederick County – Adamstown, Brunswick and Urbana – that meet DCW workgroup criteria. This identification of these three clusters is neither exhaustive nor exclusionary but is intended to show that thoughtful data center development could be accommodated by adhering to standards proposed by the DCW as well as the LFMP.

As noted above, the County Executive and County Council may wish to consider establishing an overall upper limit on data center development in Frederick County which would be applied to these areas and other sites, with a cap on total facility square footage, total land acreage, energy usage or another metric to be determined.

**Recommendation - CDI amendments:** The DCW recommends the following additional changes to the Frederick County CDI ordinance:

- Setback requirements: Increase setback requirements to 100 feet, or double building height, whichever is greater
- Vegetative screening: Amend vegetative screening requirements so that any plantings be replaced within 90 days of failure or notification of failure
- Exterior lighting: Amend exterior lighting to adhere to the Five Principles for Responsible Outdoor Lighting by the Dark Sky and the Illuminating Engineering Society

**Additional Siting Considerations**: As the Frederick County Department of Planning and Development Review and the Frederick County Planning Commission advise the County Executive and County Council on implementation of the above recommendations, they should consider the below additional considerations:

- Protection of land that has a high percentage of prime soil classes I - III
- Viewshed impact

- Impact to recreational areas, including municipal, County, State, and National parks
- Impact to nearby fragile ecosystems/watersheds
- Proximity to schools, daycare centers, health care facilities, houses of worship, residential developments and other sensitive facilities
- Environmental justice (consideration of housing that has been previously impacted by industrial or other environmental issues, and the avoidance of compounding these issues).

# In-depth Issue 2: Sustainability

In Frederick County, as throughout the nation and the world, the development of data centers raises major sustainability concerns. Data centers use enormous amounts of water and energy and create 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**: Data centers that use water for cooling may use hundreds of thousands of gallons of water per day. As an example, in the site plan for Rowan's 156-acre site 440,000 gallons of cooling water per day is allocated, which is 40% of the 1.1. million gallons of water per day allowed by Quantum Loophole's Adequate Public Facilities Ordinance (APFO) Letter of Understanding (LOU) for the first phase of development.
- **Power**: Data center electricity demand in Virginia consumes more than 20% of the commonwealth's electricity supply.
- **Emissions**: Power generation from non-renewable sources creates GHG emissions and threatens attainment of emission reduction goals established under the state Climate Solutions Now Act and the County's Climate Emergency Resolution, adopted in 2020.
- **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 use significant resources.
- **Resources**: A list of resources that Frederick County officials can consult when developing sustainability guidelines can be found in Appendix 2.

**Recommendation - Critical Digital Infrastructure Ordinance sustainability updates**

To ensure that Data Centers and similar facilities operate in a sustainable manner, the Workgroup recommends that Frederick County update its CDI ordinance to include:

- A requirement for data center development applicants to submit at initiation of site plan review and approval process:
    - An operational sustainability plan, which names a program officer charged with its

administration.

o A 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 and water use, local ecology, zero waste, and Climate Solutions Now Act zero emissions attainment goals.

- Economic incentives should be defined and included in the CDI ordinance to meet key sustainability goals and are discussed further below.

## Noise

Noise is one of the most frequently cited community concerns regarding data center developments. Outside noise factors include the operation of generators, chillers, condensers, compressors, fans and more. Many pieces of data center equipment run 24/7 and generate noise on a constant and consistent basis.

**Recommendation – Updates and revisions to Frederick County Sound Management Regulations**

A framework for testing, monitoring, and reporting on sound from data center sites should be developed and implemented. This framework should include:

- Baseline testing to determine ambient sound levels prior to construction
- Specified reporting intervals
- A process and procedures for Frederick County to require additional testing and reporting based on complaints
- Consideration should be given to the creation of a noise abatement fund which could be funded in part by penalties generated by continued violations of a proposed noise ordinance
- Sound levels at property boundaries should not exceed 55 dBA, although consideration should

be given to the noise volumes of like users operating in proximity to each other (e.g. two adjacent data centers need not be considered independently)

- Sensitive facilities such as schools, healthcare facilities, houses of worship, etc. should be located in such a way as to minimize likelihood of data center sound traveling to those facilities. The above-referenced potential noise abatement fund could be used to mitigate excessive noise in sensitive facilities that predate data center developments
- An overall approach to noise abatement should be required as part of planning applications
- Frederick County should plan for staff training or third-party verification to conduct sound monitoring efforts, especially for complaint investigations.
- Additional information and resources on the Sustainability Subgroup's recommendations regarding noise can be found on the Frederick County Data Centers Workgroup web page.

## Incentives to achieve desired sustainability outcomes

Maryland and many other states and jurisdictions have adopted tax credits and other incentives to encourage data center development. More recently, jurisdictions have begun developing incentive structures to encourage sustainability best practices given that data centers use up to 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).

**Recommendation – Develop an incentive program to drive best practices in environmental sustainability**

An incentive program would offer reductions or abatements in taxes to:

- Incentivize the use of the best in class, currently identified as Tier 4, data center equipment (highest levels of energy efficiency, noise mitigation, water conservation).
- Amplify federal tax credits for energy efficiency and renewable energy/energy storage solutions.

In addition, Frederick County should:

- Recognize and plan for engaging with at least four distinct industry roles in data center management (Infrastructure Manager, Owner/Builder, Operator, Customer), with reporting and compliance responsibilities for each of these roles clearly defined.
- Consider implementation of environmental escrow accounts.
- Consider incentives for data center operations that exceed state Building Energy Performance Standards (BEPS) requirements.

Additional information and resources on the Sustainability Subgroup's recommendations regarding incentives can be found on the Frederick County Data Centers Workgroup web page.

**NOTE**: *These incentives have been developed and proposed in the context of anticipated additional revenues from the implementation of a business personal property tax in Frederick County or another revenue source designed to offset costs associated with data center development, and discussed in more detail below. Such incentives may not be practical in the absence of additional revenues that*

*could be offset.*

**Additional Sustainability Considerations:** As the Frederick County Department of Planning and Development Review and the Frederick County Planning Commission advise the County Executive and County Council on implementation of the above recommendations, they should consider the below additional considerations:

- **Water**
    - Maximize pervious surfaces within data center development
    - Prohibit use of groundwater/well water on site of development
    - Consider retention of stormwater runoff for onsite usage
    - Diffuse rain or stored water runoff prior to entering streams or tributaries
    - Ensure storm drains are not in proximity to fuel storage
    - Utilize submerged ground wetlands for cooling runoff to reduce thermal load on groundwater recharge
- **Backup Power**
    - Require use of Tier 4 or best-in-class generators
    - Prioritize use of alternative fuels such as HVO or Green Hydrogen when possible
    - Minimize backup power testing and duration. Restrict to business hours
    - Prohibit connection of backup power source to grid for possible “peaker” or “peak shaving” use
    - Require above-ground storage of fuel used for backup generators
- **Noise**
    - Require noise attenuation on mechanical equipment (generators, chillers, air handlers, etc.)
    - Install mechanical equipment at ground level rather than on rooftops to reduce noise impacts
- **Power**
    - Require disclosure of power purchase agreements
    - Require purchase of renewable energy to the extent possible
    - Install solar where feasible (rooftops, parking canopies, etc.)
- **Management of buildings at end of life**
    - Consider requirements that buildings be repurposed or demolished at end of useful life.

# In-depth Issue 3: Community benefits

## Overall benefits

The incorporation of data centers into the Frederick County economy can provide a variety of financial and other benefits. Neighboring jurisdictions in Northern Virginia have realized significant tax revenues and other in-kind contributions from data center development.

The Community Benefits subgroup has identified the following benefits that will likely accrue from such development:

- **Site Improvement**: As with the Quantum Loophole proposal repurposing the former Alcoa site, data center development can bring new uses and modern development to brownfields, General Industrial and Light Industrial zones.
- **Low Impact on County and Municipal Services**: As contrasted with residential development and other commercial development, data center development will provide an expanded tax base with a relatively low burden on many municipal services such as education and transportation.
- **Potential Infrastructure Enhancements**: To undertake development, data center developers may improve or be required to improve nearby roads, water and sewer lines, fiber optic networks and electrical infrastructure.
- **Real Property Taxes**: An analysis produced by Sage Consulting, commissioned by the Maryland Tech Council, estimated that Frederick County would realize approximately $41 million annually when the Quantum Loophole site is fully developed – a process that could take more than a decade. The revenue would be realized based on a real property rate of $2.00 per $100 in assessed property value, with no additional taxes or fees imposed. The full Sage Consulting report can be found on the Frederick County Data Centers Workgroup web page.

## Main Recommendations

**Community Benefit Agreements** - The County should require Community Benefit Agreements (CBAs) to be included in the Site Plan approval process. More information on such agreements is provided below.

**High Energy Use Surcharge** – The county should consider imposing a high energy use surcharge to encourage energy efficient building standards and cooling technologies. No revenue projections have been provided to the Community Benefits Subgroup. This concept is in place in Montgomery County.

## Potential additional revenues: A discussion

Maryland allows local governments to impose and collect a tax on personal property owned by businesses. Personal property generally includes furniture, fixtures, office and industrial equipment, machinery, tools, supplies, inventory and any other property not classified as real property. Frederick County does not currently impose such a tax, while other regional jurisdictions that have accommodated data centers do.

A main charge to the DCW was the recommendation of a competitive rate to be set for the first-ever Frederick County personal property tax related to data centers, based on a review of other similar taxes throughout the region. The DCW reviewed data provided by MuniCap, a consulting firm hired by the county to undertake a tax sensitivity analysis and provide information on various scenarios. MuniCap showed that:

- **Montgomery County** imposes a rate of $1.735 per $100 in assessed personal property value
- **Washington County** imposes a rate of $2.1715 per $100 in assessed personal property value
- **Loudoun County, VA**, has set a rate of $4.200 per $100 in value.

MuniCap estimates showed that if Frederick County imposed a business personal property tax at a rate competitive with Montgomery County, at $1.80 per $100 in assessed value or $2.00 in assessed value, the County could collect between $66.9 million and $74.4 million in revenues yearly.

The DCW undertook extensive discussions about a personal property tax, reviewing the benefits of additional revenue against the costs of deterring business expansion. The DCW did not reach consensus on a recommendation for a tax rate or on the implementation of a personal property tax. This is an issue that remains in the policy and political realm of the County Executive and the County Council.

## Taxation: A dissenting view
## [Faith Klareich, Chair of the Frederick County Sustainability Commission]

Without some form of taxation, Frederick County has limited leverage to guide the data center industry toward the cleanest and most energy efficient and water conserving technologies.

Frederick County could follow the practice of other jurisdictions that provide exemptions for property under a specific threshold. Taxes can be focused on business property and on relevant categories such as computers, power supplies and cooling equipment. Uses of these taxes range from infrastructure projects to the provision of services. Jurisdictions can also provide tax abatements to personal property taxes to incentivize business actions that are considered important to the "public good." Sustainability increasingly is the target of tax abatement strategies for jurisdictions.

Recognizing these options, Frederick County could:

- Exempt farms of a certain size from a personal property tax
- Exempt small- to medium-sized businesses from personal property taxes by setting the value threshold high enough
- Incentivize purchase of highly efficient energy and water consuming technology by providing personal property tax reductions and abatements for the most efficient technology.

Prescriptive regulations on technologies usually fail over time, because the rate of technological change outpaces the ability to pass legislation, write regulation and move to implementation.

Therefore, it may be preferable to adopt performance-based requirements that can adjust automatically (such as the state Building Energy Performance Standard program will be doing with the updated inputs into the benchmarking tool for compliance) over time as technology evolves. Such a taxation system would allow "best in class" players in the industry to figure out how to deploy/ configure emerging technologies since they are more expert and understand the business case.

If Frederick County moves forward on a business property tax, it should set a threshold high enough to avoid taxing small or generational farms as well as other small and emerging businesses.

Instead, the tax could focus on larger resource consuming industries, incentivizing sustainability standards through reductions or abatements. If companies choose to avoid incentivized technology deployments, the county would have the opportunity to use those funds toward clean and renewable energy projects or other expenditures that would advance the trajectory of reducing greenhouse gas emissions to meet future goals.

## Cost-benefit analyses: A discussion

In its discussions on taxation issues, the DCW recognized the need to weigh the benefits provided by data centers against costs – environmental and other.

The DCW received information on financial benefits that could be received through property tax revenues, job growth and the economic impact of operating data centers, (Sage Policy Group report) as well as revenues that could be raised through a new business personal property tax (MuniCap), but no analysis of potential costs was provided.

To estimate some potential costs to the County, the Sustainability Subgroup provided an estimate of costs related to greenhouse gas (GHG) release that would result from the power usage forecast for data center development proposed for the Quantum Loophole site. These estimates are based on the "social cost of carbon," a calculation used by federal and state agencies, the Intergovernmental Panel on Climate Change and others to estimate the true impact of GHG emissions.

Depending on assumptions used for the social cost of carbon (ranging between $51 per metric ton and $190 per metric ton), the social cost of carbon from producing the 2.4 gigawatts of power that Quantum estimates will be used at buildout ranges from approximately $315 million over a ten-year period to $1.1 billion - about the same as more than 400,000 homes. The figure would be multiplied if additional data centers come on line.

Additionally, some portion of power grid enhancements made necessary by the data center industry will be passed on to all Frederick County ratepayers, which could total hundreds of millions of dollars.

The DCW recommends that, going forward, additional efforts be made to monitor and quantify such costs, and that policy makers reach consensus about whether they should be offset – which would inform future decisions regarding taxation.

## More on Community Benefits Agreements

Community Benefit Agreements (CBAs) are legal agreements between the community and developers, stipulating the benefits a developer agrees to fund or furnish, in exchange for community support of a project. Many jurisdictions have negotiated and deployed CBAs with data center developers, and the DCW recommends that Frederick County formalize agreements of mutual benefit with data centers, refining them for individual opportunity.

**Categories of opportunities**:

- Education and workforce development and training
- Scholarship programs and internships
- Job creation commitments
- Local hiring commitments
- Job Fairs
- Non-Profit contributions
- Financial and in-kind contributions to support community priorities

## Community Benefit Agreements: A dissenting view [Faith Klareich, Chair of the Frederick County Sustainability Commission]

An effective mechanism to ensure equitable outcomes in CBAs is via a public-private partnership organization to provide a vision and mechanism to offer recommendations or guidelines on such agreements.

The County Executive and the County Council should consider the formation of a Community Advisory Group that would make recommendations on data center community benefits. Funding for the effort could come from local or state funds, but it is anticipated that much work would be done on a volunteer basis and costs could be shared by industry. Such a group would facilitate the collection of data, recommend procedures for different types of giving and address other needs identified by the community, local governments, and industry.

# Next steps

- Amendments to the Frederick County Critical Digital Infrastructure ordinance should be drafted to reflect the main recommendations of the DCW, including:
    - Creation of a CDI Floating Zone that can be applied within GI and LI zoning areas
    - Alterations of setback, lighting and vegetative replacement requirements
    - Inclusion of sustainability goals and plans.
- Amendments to or the creation of a new Frederick County noise ordinance should take place.
- A high energy use surcharge should be reviewed in detail.

- Frederick County planning staff should review the information contained in and linked to this report to advise on additional recommendations regarding viewsheds, soil and more.
- Discussions must continue to take place regarding personal business property tax and related incentives that would ensure compliance with sustainability goals.
- Policy makers must continually monitor industry trends so that regulations can be adjusted when needed.

## Conclusion

The members of the Data Center Workgroup conducted a wide-ranging assessment of a growing and fast-developing industry, and quickly recognized that many challenges remain for local governments seeking to protect and enhance the quality of life for residents while remaining welcoming to new digital businesses.

Lessons learned from neighboring jurisdictions and a variety of stakeholders have been valuable. The Workgroup thanks all individuals and businesses who provided data and input, including Tom Lynch and Pat Murray, who participated with the workgroup for several months.

The recommendations contained in this report reflect next steps needed to insure thoughtful planning and a commitment to sustainability for Frederick County's digital infrastructure. But the work is not done and all analyses are not completed. Leaders in Frederick County must continue to stay abreast of industry trends and community needs as the digital world evolves.

# Appendix 1

**Presentations and testimony**

The following groups provided presentations and background information, and relevant materials can be found on the Frederick County Data Centers Workgroup web site:

| GROUP | DATE OF PRESENTATION |
|---|---|
| Buddy Rizer, Executive Director of Loudoun Co. Division of Economic Development | 11/15/23 |
| Fellowship of Scientists and Engineers | 8/2/23 |
| Frederick County Division of Economic Opportunity | 8/2/23 |
| Frederick County Division of Energy and Environment | 8/2/23 |
| Frederick County Division of Water and Sewer Utilities | 1/10/24 |
| Mobilize Frederick | 8/2/23 |
| MuniCap | 12/13/23 |
| Piedmont Environmental Council | 1/10/24 |
| Potomac Edison | 12/13/23 |
| Quantum Loophole | 1/10/24 |
| Rajan Battish, RSP Architects | 12/13/23 |
| Subgroup Draft Recommendations | 2/8/24 |
| Sugarloaf Alliance | 8/2/23 |
| Sustainability Commission | 8/2/23 |

# Appendix 2

**Data Center Sustainability – Drivers and Public Policy Resources**

Much work has been done by policy makers as well as the data center industry to develop sustainability standards. Some relevant examples that may be leveraged by Frederick County for implementing 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).

In developing amendments to the CDI ordinance, staff and legislators should review and incorporate elements from these sources for data center environmental sustainability practices:

- IEA Tracking Data Centres and Data Transmission Network updated July 2023
- Guide to Environmental Sustainability Metrics for Data Centers, white paper, Schneider Electric, updated June 2023.

Increased requirements for transparency may focus attention on reduced energy use and associated GHG emissions from data centers:

- Regulatory and voluntary schemes to improve energy efficiency at the component level (e.g. servers, data storage, heating, ventilation and air conditioning [HVAC]) such as ENERGY STAR and EU Ecodesign Regulations for servers and data storage products.
- Buildings-based data centre energy efficiency guidance standards: the EU Code of Conduct on Data Centre Energy Efficiency, CLC/TS 50600-5-1, BREEAM SD 5068 (United Kingdom) and IGBC Green Data Center Rating System (India).
- The Corporate Sustainability Reporting Directive (CSRD) effective in the EC from 2024 onwards requires large organisations ... to report sustainability indicators, energy, and carbon emissions.
- In the US , similar reporting mandates are underway at the state level in Oregon and Virginia.
- The US SEC has proposed guidelines for public companies to disclose climate-related risks in data centers including Scope 1, 2, 3 GHG emissions; Metrics and targets for GHG reductions, & Governance for managing climate-related risks.
- The Energy Efficiency Directive (EED), will introduce energy and sustainability reporting requirements for data centres in the EU from May 2024. Data centres with installed capacity > 500 kW will report total energy consumption – including the renewables share – water usage, and waste heat utilisation.

- In China, the government has called for average power use effectiveness (PUE) of 1.25 in the east and 1.2 in the west of the country as part of its Eastern Data and Western Computing project. Major cities have minimum PUE requirements for new data centers.
- In January 2021 data centre operators and industry associations in Europe launched the Climate Neutral Data Centre Pact, pledging to make data centres climate-neutral by 2030 with intermediate (2025) targets for power usage effectiveness and carbon-free energy.
- The Open Compute Project is a collaborative community focused on redesigning hardware technology to efficiently support the growing demands on computing infrastructure.
- The 24/7 Carbon-free Energy Compact, coordinated by Sustainable Energy for All and the United Nations, includes three data center operators: Google, Microsoft and Iron Mountain.