Frederick County Sustainability Commission

Critical Digital Infrastructure

Points for Consideration

For the County Executive's Administration

Based on a presentation given before the Commission by the Planning Department in March 2023, the Commission has prepared these points for consideration by the County Executive's Administration. We appreciated the time and effort taken by the Department to provide the Commission with an overview of actions taken to date regarding critical digital infrastructure (CDI). The points below have been compiled by the Commission's Ad Hoc Working Group on CDI and reviewed by the full Commission. At minimum, we are submitting these points for consideration in the policy formulation activities anticipated in the coming months. Our hope is to work with the Administration on specific recommendations in these areas and develop methodologies based on validated information on these topics. We appreciate the opportunity to provide this information for your assessment and review. We stand ready to provide further support to advance solutions to this immediate and pressing requirement before the county.

Position Background

In the past several weeks there has been a great deal of information published concerning the localized environmental and societal impacts (such as noise disturbances and potential electricity shortages during high-usage periods). These issues have occurred due to the concentration of large datacenters installed in neighboring Northern Virginia and other communities across the country.

Frederick County's stated policy of implementing actions that seek to: a) prepare the County for extreme weather events caused by climate change, and b) reduce the County's carbon footprint need to be the framework from which CDI policies are evaluated. The recent announcements by PJM and FERC[1] state that a significant number of large power plant retirements and power load increases in the past few years have created the strong possibility of electricity shortages during high-demand periods in portions of the region PJM serves.

It is important to underscore that we are not opposed to CDI installations being placed in southern Frederick County between U.S.-15 and New Design Road, and north of Adamstown. However, based on our current knowledge concerning potential constraints on electric grid capacity and the time required to build new large generating plants and major transmission lines, we believe the county will need to limit the number of large CDI facilities that can be built and will need to prioritize electric power users while satisfying the growing need for more electric power in Frederick County from other competing sources. We note that the county is already prioritizing the electrification of transportation and new and existing buildings.

[1] PJM is the organization responsible for managing the supply of almost all the electricity used in Maryland, DC, and 12 other states, and for operating the high-voltage transmission grid that transports that electricity from the generating plants to the large number of local distribution utilities (e.g., Potomac Edison) that transport power via lower-voltage lines the rest of the way to each individual electricity user in their defined service territories. FERC is the Federal Energy Regulatory Commission.

The First Priority: Withdraw the Current CDI Ordinance, Revise Requirements and Re-Issue

Based on the existing terms of the current CDI Ordinance, the Planning Commission approved the site plan submitted by Aligned Data Centers in early May. The property was purchased at the Quantum Loophole data center development (formerly the Eastalco site). This approved site plan only shows one of several data centers intended to be built at the site by Aligned. The current terms of the CDI Ordinance place no stipulations on site owners to limit their reliance on the regional grid or to restrain use of specific technologies such as diesel generators in favor of cleaner options. The lack of these stipulations leaves Frederick County vulnerable to future power constraints and worse prolonged outages in areas of the county. Furthermore, there are environmental implications in the use of certain conventional technologies that could potentially place Frederick County in jeopardy of missing the State of Maryland's climate mitigation goals for jurisdictions in the future. For these reasons, it is recommended that seeking site plan approval should include submission of a preliminary overall understanding of neighboring data centers in a development area by the same owner/developer so the County may assess the combined effects of those future data centers. Looking at the individual sites out of context of the larger development area precludes offering options for economies of scale that could be attained by deploying clean technologies for multiple buildings. Other opportunities can also be pursued for site improvement by seeing a preview of the intended development area by the owner. The Commission supports a moratorium period for further processing of plans until a revised ordinance and surrounding policies can be proposed and passed.

Design Features to Address Emerging CDI Concerns:

- To reduce the volume of additional greenhouse gas (GHG) emissions resulting from high electricity usage at the site (both that are supplied from the power grid and that are supplied by onsite fuel-burning back-up generators), require that: 1) at least 25% of this annual usage be supplied from solar collectors (both on-and off-site) and 2) that emergency backup generation consider on-site battery storage and/or other clean resources such as hydrogen fuel cell systems for at least 25% of that backup power[2]
- Specify a percentage of Energy Star-labelled data center equipment to be part of the planned design in each building directly involved in performing digital functions and ensure that buildings will meet the State Building Energy Performance Standards program annual requirements for datacenters.
- Provide an explanation on measures taken to compensate for how energy savings that might otherwise be achieved through vertical construction and stacking will be made up in a horizontal, wide footprint construct.
- Require that development is compliant with the strictest Frederick County Forest Resource Ordinance stipulations
- Provide documentation demonstrating that consideration was given to using the LEED BD+C v.4.1 rating system for data centers or a comparable rating system. Should an environmental escrow fund or other surcharge be considered use a discounting system for LEED design and certified buildings and configurations
- Ensure that all onsite fuel and non-aqueous coolant storage containers and associated transfer piping have design features that prevent leakage into the soil in the event of possible earthquakes or impact from debris projectiles created by tornadoes or the high winds produced by hurricanes and other

[2] Electricity supplied from backup fuel-powered generators results in very high level of GHG release per MW, but grid-supplied electricity produces a significantly smaller release. Use of batteries charged from on-site solar collectors and the power grid therefore means less GHG enters the atmosphere. The percentage values cited are believed to be feasible, but this needs to be verified.

intense storms, because such hazardous events are likely to occur in Frederick County in the coming years.[3]

- Ensure that water usage by, and discharges from, a proposed CDI facility cannot adversely affect County residents and other off-site parties, including during future periods when river flows may be extremely low. The drilling of any wells at the site should either be prohibited or else be tightly regulated and routinely monitored by the County to ensure that the output from nearby existing wells will not be adversely affected.[4]
- Prohibit the long-term storage or burial of any used equipment or waste materials at the site.
- Stormwater controls should be in compliance with the most recent state regulations and inspected regularly to ensure they are functioning as designed.
- Consider prohibiting use of CDI installations for mining cryptocurrency which has extreme power and cooling requirements. Resulting GHG emissions based on current PJM power generation should be avoided because they conflict with the County's clean energy objectives.
- Ensure that site lighting design minimizes light pollution (use of downlighting, etc.). Also, a heat-island analysis should be performed and submitted for review with solutions to mitigate its effects if necessary.
- Any new or additional transmission lines crossing through the Sugarloaf viewshed should be installed underground.

[3] Require a plan for dealing with any leakage from or rupture of a fuel storage container or fuel-transfer piping, should prevention fail.

[4] Should water supplies from wells on adjacent private properties no longer provide water at historic flowrate following CDI construction in adjoining properties or become contaminated by suspected effluents released from the CDI's site, the County should immediately investigate and if the source is found to be the CDI facility, the County should order the facility operator to cease the release and use a licensed contractor to collect and dispose of the effluent at a registered facility.