MITIGATING DATA CENTER DEVELOPMENT'S IMPACTS

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EXECUTIVE SUMMARY

Virginia is home to the largest concentration of data centers in the world, widely cited as hosting 70% of global internet traffic.[1] This massive industry is continuing to grow very fast, requiring huge amounts of energy, land, and water to operate, resulting in widespread community impacts. Yet, the Commonwealth does not currently have any regulatory oversight of data center development and localities continue to approve more facilities without considering the cumulative impacts. This explosive growth of data centers threatens to derail state efforts to meet climate goals, improve air and water quality, advance land conservation, and protect national and state parks.

CHALLENGE

Data center development in Virginia has been accelerating for years with the hub in Northern Virginia known as the largest in the world. Recently that demand has exploded throughout the state, with buildings larger than big box stores and as tall as 90 feet on sprawling campuses. Developments are now being proposed in environmentally sensitive areas next to our national, state, and local parks,[2] in close proximity to our rivers and streams,[3] and in rural areas requiring costly new electrical infrastructure.[4] Others are adjacent to residential neighborhoods, schools, medical facilities, and nursing homes.

The footprint of this industry is gigantic and threatens regional power supply, water quality, land conservation, and air quality beyond individual localities reviewing the application. A single data center building now uses between 60-90MW of power at peak demand which is more than 15,000 households[5 6]. Data centers now make up 21% of Dominion Energy Virginia's power load[7] (see SURGING ENERGY DEMAND FROM DATA CENTERS). A data center can also consume 3-5 million gallons of water a day for cooling – the equivalent of a small city's overall annual consumption.[8] They consume massive amounts of land as well. Digital Gateway, a proposal in Prince William County, would allow 27 million square feet of data center development which is the equivalent of about 150 Wal-Mart Supercenters. All of this impervious surface results in increased stormwater runoff and pollution.

To ensure uninterrupted 24/7 service, data center facilities have commercial-sized backup power generators and large fuel tanks on site in the case of a grid outage. According to DEQ, data centers in Loudoun County have air permits for more than 4,000 backup diesel generators[9] with a total rated capacity of over 11 gigawatts of power! For context, the North Anna nuclear power facility has a rated capacity of 1.8 gigawatts. If the rapid pace of data center construction continues, further straining power, these backup generators could increasingly be put to use, putting air quality and public health at risk.[10]

SOLUTION

Despite Virginia having the highest number of data centers in the world, the state lacks critical information about their impacts on our environment and energy grid. Currently, approvals are made unilaterally by localities, which have a strong tax incentive to approve proposals without considering the broader statewide impacts. A comprehensive study of the impacts on the Commonwealth's electrical grid, environment, historic and recreational resources, environmental justice concerns, and ability to meet climate goals is critically needed to protect our communities especially those residents most vulnerable to utility rate hikes, air pollution, and climate impacts.

The National Academies of Science is an independent academic institution with the ability to lead this study and provide objective advice to inform policy as they have done on past issues such as gold mining and uranium mining. Using data from utilities, localities, and state agencies, the study would include a buildout analysis of what is in operation, approved, and planned and an evaluation of impacts on the electrical grid and ratepayers, climate goals, water consumption, water quality, air quality, land conservation, recreation, and historic preservation.

The General Assembly must also establish a process for state review, including a grid impact statement submitted to Virginia Energy for all new data center power demand requests and a regional review of impacts from new data center proposals by federal and state agencies and regional utilities. Virginia Energy review would provide oversight to ensure continued grid reliability and prevent excessively high costs falling to the ratepayers. The regional review would provide an opportunity for these entities to comment on regional impacts and for the public to weigh in on this additional information through a formal comment process.

Collectively, the study and the grid impact and regional review process will help the state determine where we are and create a sustainable path forward on data center development.

POLICY RECOMMENDATIONS

Study the impacts of data center development on the Commonwealth's electrical grid, environment, historic and recreational resources, and ability to meet climate goals through The National Academies of Science.

Require a grid impact statement be submitted to and approved by the State Corporation Commission for all new data center power demand requests.

Create a framework for a regional review board that evaluates large data center projects.