

SURGING ENERGY DEMAND FROM DATA CENTERS

Will Cleveland // Southern Environmental Law Center // wcleaveland@selcva.org

Dan Holmes // Clean Virginia // dan@cleanvirginia.org

EXECUTIVE SUMMARY

Data centers are large industrial buildings filled with computers that store, process, and distribute large amounts of digital information. Northern Virginia leads the world in data center development, housing nearly 50% of all US facilities.¹ While data centers generate significant tax revenue for the localities in which they reside, they are also the primary driver behind a massive spike in peak electricity demand in Virginia, which through some estimates is projected to more than double by 2038. Virginia needs to chart a responsible path forward, balancing the growth of our digital world with the need to power that growth with affordable carbon-free energy.

CHALLENGE

Data storage needs have grown exponentially with the rise of the internet and new trends like Artificial Intelligence (AI), cryptocurrency, and the expansion of rural broadband have dramatically accelerated this pace. For a variety of reasons, including industry tax breaks, low costs, and an existing fiber network, Northern Virginia is expected to continue to serve as a favorable location for new data centers. As a result, the industry's planned growth in the region is projected to more than double the state's peak electricity demand through 2038, according to PJM and Dominion Energy, the state's largest electricity provider (see graph below). This increase is by no means certain; Dominion Energy has a long track record of predicting far more growth than actually occurs, and uncertainty is even greater about data centers since the projections involve only one industry. While we should not accept these forecasts as guaranteed, we should take seriously the problems that such growth could cause and plan accordingly.

In their latest long-term Integrated Resource Plan (IRP) filed in April, Dominion Energy has suggested meeting demand growth by building a substantial amount of renewable energy and storage. But this plan also proposes preserving existing coal and natural gas generation as well as building new fossil fuel generation and costly Small Modular Nuclear Reactors (SMNRs). This plan ignores Virginia's clean energy requirements and places a significant burden on families and other businesses to subsidize the construction and operation of the significant infrastructure necessary to meet the increase in electricity demand.

In addition to a massive increase in needed electric generation, data center growth will also require significant new transmission infrastructure. Just this past General Assembly session, legislation was passed recognizing a \$627 million emergency transmission project in response to the Northern Virginia data center cluster. Strain on the grid has also brought an increased use of diesel generators which serve as the backup power source for data centers, raising concerns about local air quality.

Currently, data centers are approved at the town/city/county level. The local process does not address cumulative state and regional level impacts on Virginia's energy grid, natural resources and land use (see MITIGATING DATA CENTER DEVELOPMENT). Without significant state

oversight and planning, Virginia could face unsustainable energy demand, potentially leading our utilities to pursue unnecessary generation projects, including fossil fuel generation in direct opposition to clean energy policies.

SOLUTION

This level of data center expansion is a new and global trend of which Virginia is at the forefront. If Virginia is to continue recruiting this industry, numerous questions must be answered to determine a sustainable path forward.

While data centers are an important part of Virginia's economic development plan, that plan must align with our ability to protect the environment and provide for a clean, affordable energy transition for all. Virginia is facing an unprecedented energy challenge with explosive growth in this sector. Proper planning can offset some of the anticipated impacts, and we can take steps now to provide appropriate cost allocation, ensuring responsible parties are paying for the necessary upgrades to our electric system. But in order to develop a holistic and sustainable solution, we need to establish a proper accounting of the externalities of the industry.

A comprehensive study is necessary to illustrate the opportunities and challenges related to different scenarios for buildout of the data industry in Virginia. This study should address energy demand and gauge our ability to meet our goal of a clean energy transition while avoiding unnecessary impacts on communities and natural resources.

POLICY RECOMMENDATIONS

Contract with an independent body like the National Academy of Sciences to study all costs and benefits of the data center industry. Specifically related to energy demand it should evaluate impacts to the grid and our ability to reliably meet demand with carbon-free energy resources. It should integrate efforts of the industry to improve efficiency and procure clean energy so as to avoid duplication of efforts by our utilities and highlight impacts to ratepayers.

Implement a state review process for new proposals. A review of individual projects that fails to account for the aggregate impacts of all projects invariably means that no one fully appreciates the total picture. The Department of Energy, in coordination with the Department of Environmental Quality, should provide assistance to local governments, including siting criteria information related to the necessary energy infrastructure to power the project.

The rules governing approval and allocation of costs for new transmission and generation approval should be examined and – if necessary – changed to ensure that parties causing investments bear the costs of those investments, preventing residential energy customers from shouldering this burden.