Loudoun County
VIRGINIA

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To the Chair and Members of the House Committee on Small Business

Thank you for the opportunity to submit testimony regarding the impact of data center development on rural communities.

I am the Ashburn District Supervisor serving on the Loudoun County, VA Board of Supervisors, and I have also been recently elected by my peers to serve a second term as the Vice Chair of the Board. We are a nine-person, bipartisan Board, each elected for four-year terms, and we are the senior governing body of the county. I am also the Chair of the Environment, Energy and Land Use Committee for both the National Association of Counties (NACo) and the Virginia Association of Counties (VACo).

My testimony today is my own and does not represent the views or positions of any of the above bodies or their members.

As you probably know, Loudoun County, VA is home to the highest concentration of data centers in the world with about 200 data centers within the 30-square mile area of eastern Loudoun County. There has not been a single day in the past 15 years when a data center was not under construction somewhere in our county. Data centers began coming to Loudoun County around 2000, attracted by our extensive underground fiber optic network laid in the mid-nineties by the Advanced Research Project Agency. This network has given Loudoun County the lowest latency rates in the world (i.e. fastest; latency is the time it takes for data to move between two points).

Recognizing this unique market advantage, in 2008 our Director of Economic Development began actively inviting data centers, a new type of IT entity at the time, to locate within the county. Until about 2020, that growth was largely centered in our eastern industrial park areas, was largely “by right” (construction allowed on a land parcel with only an administrative construction permitting process not requiring Board approval), required no more than normal Board land-use oversight, and had little direct impact on residential areas. This growth also occurred during a ten-year period of slight decline in the amount of load on our power grid because of grid technological advancements and greater grid efficiencies.

In 2020, that stable market underwent tectonic, historic change due to three simultaneous phenomenon: 1) the world experienced an exponential increase in demand for data largely as a permanent outcome of the COVID pandemic, 2) the increased demand for data led to an exponential increase in demand for power to process that data, and finally, 3) artificial intelligence (AI), with its tenfold increase in required power within each of thousands of data racks inside a typical data center, burst onto the IT scene.

The result, just five years later, is not just historic; it’s the beginning of a new era representing the world’s second Industrial Revolution, and Loudoun County is at the nexus of that revolution. In 2018, Loudoun County had about 13 million square feet of data centers. We now have about 47 million square feet with another 65 million theoretically in the pipeline. In 2018, Loudoun County power demand was about 1.0 Gw. It is now 5.33 Gw.

As one can imagine, this historic growth in data centers and power demand has presented real, highly complex and often urgent challenges for the Loudoun County Board of Supervisors. In November, 2023, following a briefing I gave to VACo members on the history of data centers in Loudoun County, I recognized that, as an elected official in the county at the forefront of a global technological revolution, I had an obligation to learn all I could about how we got here, who the stakeholders are, what the key factors of growth and change are, and what kinds of decisions will be required of the Loudoun County Board of Supervisors going forward. I have captured the results of my two years of past and ongoing research in a white paper, a slide deck and in a one-page primer for local county officials summarizing the pros and cons of data centers in their community and listing 15 best practices for those bodies to consider when approached by data centers. These can be downloaded at www.Loudoun.gov/Ashburn.

I offer Committee Members this top-line overview of key themes:

**Empower, Don't Encroach on Local Land-Use and Taxing Authority.**

This is perhaps the most critical lesson we've learned, and it's one I share frequently when speaking on panels and with local elected officials from around the nation: every data center development is unique within each community. Only local elected officials understand the complex considerations and impact such development will have on their constituents, their homes, their economy and their quality of life. With the exponential growth of data centers and their demands on local power grids, community resistance to data centers has grown. This, in turn, appears now to be influencing many state and federal officials to consider measures to wrest local land use control and local taxing authority away from local jurisdictions. Let me state plainly such actions would very likely prove a disaster with enormous unforeseen consequences. Rather than wresting land-use and local taxation authority from local jurisdictions, state and federal legislators should, instead, empower local jurisdictions by providing them with proven best practices for data center land use, taxation methods, and electric utility planning. They should support tax incentives encouraging appropriate data center development for the benefit of all. In this fast-moving, historic market environment, a federal- or state-mandated "one size fits all" approach to the problem will almost certainly have dire consequences for local communities. Moreover, such initiatives will ultimately likely stymie responsible data center growth and sustainable power grid development.

**Data Center Pros and Cons.**

**Pros:**

1. **Tax Revenue.** Depending on each local jurisdiction's taxing authority, data centers can potentially offer local jurisdictions a major source of revenue. Loudoun County real property taxes are about 25% lower than all but one of the D.C. Metro area jurisdictions, and that one also has a large data center presence. We have lowered our real property tax rate every year for the past six years. Data center tax revenue represents about 38% of our operating budget. Our county enjoys a AAA bond rating from all three credit agencies, one of only about 50 of the 3,069 counties in the nation to have achieved that rank.

2. **Infrastructure.** Data centers put very few kids in schools and very few cars on the road. It costs Loudoun County about $.04 in infrastructure costs for every $1.00 of tax revenue received from data centers. That number is $.25/$1.00 of revenue for non-data center commercial taxpayers, and it's about breakeven for residences.

3. **Jobs.** Data centers can be an excellent source of new jobs for a community, particularly in those collateral goods and services businesses serving ongoing data center operations. They have also proven to be strong community partners to Loudoun County's nonprofit community.

**Cons:** The downside of data center development within a community is most often experienced when a community fails to adequately address one or more of the six key data center development considerations we have learned in Loudoun County form the basis of responsible data center growth:

1. Sight
2. Setback
3. Sound
4. Emissions
5. Power
6. Water

**Best Practices.**

Using the key considerations list above, local elected officials can develop sound, community-specific land-use performance standards and responsibly determine when data center development is appropriate within their community. Similarly, state and federal governmental bodies can also use the list to develop a set of best practices to inform and empower local jurisdictions not familiar with data center development to enable them to make better, more appropriate land-use and taxation decisions. Here are the standards we have implemented or are contemplating now in Loudoun County:

**Sight.**

a. 30% fenestration (windows, faux or real) on any principal facade facing a major roadway or residential neighborhood.
b. Berms, tree screening, vegetation facing residential or small business neighbors.
c. Building step back above 45 feet to add elevation variability.
d. Downlighting and other measures to reduce light pollution at night.
e. Height limitations as desired by the community. Data centers range from 45'-100' in height.

**Setback.**

a. 500' minimum setback from any adjacent residence.
b. Consider a building elevation step back above 45' of building elevation.

**Sound.**

a. Require a pre- and post-construction noise study measuring both dBA and dBc noise levels. One is noise within human hearing range, and one is low frequency vibration.
b. For perceivable noise, set a maximum of 55 dB at the sending property line.
c. If the data center is air-cooled by rooftop fans, they are a major source of noise. They must be heavily screened to achieve the 55 dB limit above. If they are water cooled, the noise should not be a problem.

**Emissions.**

a. Require Tier IV EPA emission standards for all backup generators, whether diesel or natural gas.
b. Require Selective Catalytic Reduction (SCR) on all power generation sources, if required to achieve Tier IV standards, whether backup generators or baseload power sources such as natural gas turbines are used.

**Power.**

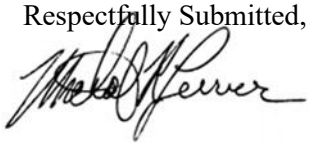
a. Determine where power is coming from, when it will be available, what is the utility power line routing, and how much power will be required. As a rough rule of thumb, every 1 million sq. ft. of data center will require about 150 Mw of power. A 230 Kv transmission line can deliver about 750 Mw of power at 5,000 amps, and a 500 Kv line can deliver about 2.1 Gw of power (temperature/distance dependent).
b. Determine how many substations will be required and where they will be located. They require about 10 acres each.
c. Consider GIS substations. They have fewer outside power structures and less visual impact, though they are more expensive.

**Water.**

a. Determine how much water the data center will require and whether the water-cooling system is a closed loop system that only occasionally requires charging, or an open loop system requiring continuous water usage.
b. Determine if wastewater is contaminated for either open or closed-loop systems.
c. **Note:** Loudoun County has not had major water issues with our data centers over the past 10 years as most of ours switched to air cooling. **However, that is changing. AI uses a large amount of water because the GPU chips use so much power, and water cooling is much more efficient than air cooling.**

Thank you for this opportunity to offer testimony related to such an important topic. I invite committee Members to contact me with follow up questions at Mike.Turner@Loudoun.gov.

Respectfully Submitted,



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