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The Loudoun County Preservation and Conservation Coalition
Data Center Working Group

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March 15, 2023

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Michelle Frank, Chair
Loudoun County Planning Commission
Loudoun County Government Building
1 Harrison St., Leesburg VA, 20175

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<u>Subject: Data Center Industry Use-Specific Standards</u>

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Dear Chair Frank and members of the Planning Commission,

The purpose of this letter is to support and strengthen measures now under consideration on the above-mentioned subject to help ensure a mutually productive and ongoing relationship between the Loudoun's data center industry and its residents. Specifically, it:

1. Supports the 2022 Board decisions and public comment regarding use-specific standards applicable to Loudoun's data center industry;

2. Supports the new ZOR provisions described in items 11c (i) and (ii) of the Staff Memorandum of March 10, 2023 to the Planning Commission on this subject;

3. Proposes amendments to the draft text of Section 4.02.06 regarding data center residential proximity and noise; and

4. Proposes additional measures that we hope can be incorporated in ZOR aimed to (a) increase the transparency of the industry's environmental impact, and (2) promote the adoption of voluntary sustainability goals by the industry in Loudoun.

Our views and proposals are founded on considerable research and consultation, some of which is enumerated in *Attachment 1* to this letter for your further use.

<u>1, Support for the Board decisions in September 2022 and recent public comment</u>

We have very much appreciated the efforts over the past year by Staff, TLUC, the Planning Commission and the Board to help ensure a strong ongoing partnership with Loudoun's data center industry that is also compatible with the interests and concerns of Loudoun residents. We were actively engaged in the 2022 TLUC Data Center Discussion Series and continue to be so in the current ZOR process.

We fully support the decision of the Board on September 20, 2022 to adopt use-specific standards for data centers in ZOR that address high-quality building design, proximity to residential uses and environmental sustainability applicable to all zoning districts. Further, we echo the recent public comment thematic calling more specifically for enhancements in data center façades, reduced proximity to residential areas, and reduced environmental impacts.

2. Support for Staff recommendations of March 10, 2023 on energy-efficient designs

We have reviewed the Memorandum of March 10, 2023 of Planning and Zoning addressed to the Uses Subcommittee which contains staff recommendations for changes to the text of January 5, 2023 in Chapter 4 Section 4.06.02 (use-specific standards for data centers).

We consider the new provisions in Items 11c (i) and (ii) for permeable parking spaces, green roofs, EV charging stations, wind or solar powered exterior lighting, and rainwater harvesting systems to be constructive additions to this Section.

However, we do not consider these modest additions to be substitutes for the more extensive treatment of the residential proximity and sustainability pillars of the Board directive that we believe were called for – which we find substantially lacking.

3. Proposed changes in draft ZOR for data center residential proximity and noise

Our County's partnership with the data center industry brings considerable benefits – in particular via its substantial financial contributions that support County government services and moderate homeowner tax bills. At the same time, the unprecedented dimensions of the industry in Loudoun come with substantial costs:

- huge electricity requirements that demand substantial and intrusive power transmission and substation infrastructure;

- proximity that disrupts residential communities and noise from cooling and back-up generators that is a constant irritant to nearby residences and other businesses; and

- negative impacts on our water supply and heavy carbon emissions in our environment.

These costs are already generating considerable resistance from Loudoun residents which – unless more fully addressed now - is very likely to become an even more serious obstacle to the continued operation and future growth of the industry in Loudoun.

Consequently, we believe that the proposed use-specific performance standards for data center proximity to residential areas and noise need to be substantially strengthened to fully address these concerns of our citizens and the intent of the Board in its September 20, 2023 decision:

- **Residential proximity.** We consider that the provision in draft Section 4.06.02.B7 that structures must be setback at least 100 feet from a residential property line to be substantially inadequate. The distance suggested by the literature is that the *nearest residence or school should be <u>at least one-half mile from any data center</u>*. While recent efforts in the Virginia Legislature failed to establish state-wide required distances between data centers and parks or historic area, we understand that this was premised on enabling local communities to establish their own appropriate standards.

- **Noise**. Data centers, especially those using electric powered cooling, produce prodigious amounts of constant noise from giant fans and from the testing of standby diesel generators. The noise provision in draft Section 4.06.02.C3 that requires generator testing be limited to weekdays between 8am and 5pm is *far too narrow in scope and does not meet residential concerns. Better models exist to help redraft this provision.* For example, two US communities have recently enacted detailed data center noise ordinances which establish a specific noise threshold and procedures to monitor compliance (please see items 2,3,4 and 6 in Attachment 1 for more):

  o Wallingford, Connecticut's new ordinance has a careful procedure for measuring ambient noise levels in nearby communities before construction and for regular measurements annually thereafter. It requires a data center to ensure that the ambient noise level at no time is more that 5 db over the pre-data center level.

  o Chandler, Arizona's new ordinance has detailed procedures for establishing a baseline and regular monitoring, and it requires ambient sound levels within the residential community to be no higher than they were before construction and operation of the data center.

We *strongly request the Planning Commission and Board to amend Section 4.06.02 and adopt proximity and noise standards <u>that truly protect residents and property values</u>*.

4. Promoting environmental impact transparency and voluntary sustainability goals

As regards Item 11 c (iii) - "Alternative energy or water sustainability methods" in the staff recommendations of March 10, we appreciate the aim to encourage creativity and innovation by the industry toward sustainability goals. However, we believe that this provision - and indeed Section 4.06.02 overall - *need decisive amplification*. As it stands, this current draft*:*

- Does *not* rise to the sustainability standards trends already in practice in the global data center industry and among leading host governmental bodies elsewhere that oversee it;

- Is *not* commensurate with the level of concern of Loudoun residents, nor does it meet our understanding of the intentions of the Board in its decision of September 20, 2022; and

- Falls *far short* of the full potential for collaboration between the County and the industry that is needed to meaningfully advance sustainability goals and actions in Loudoun.

We believe that Loudoun's strong position as a data center industry host provides ample room to build at this juncture an enhanced *Public-Private Partnership for Sustainability*. To this end, we propose the following two steps:

First - increase environmental impact transparency. Simply clarifying the industry's environmental impact in Loudoun is an indispensable element needed to produce a baseline for setting reasonable sustainability goals. This step is not a novelty, but can be found for example in the European Union's "Energy Efficiency Directive (see Attachment 1, item 16).

We propose that regular and verifiable reporting by each data center be adopted by Loudoun County as from January 2024 on a semi-annual basis for the following five metrics (a short explanation of each and examples of their use in setting sustainability goals is in Attachment 2):

- Energy Consumption.
- Power Utilization Efficiency (PUE).
- Waste Heat Utilization.
- Water Use Efficiency (WUE).
- Renewable Power Utilization.

Adoption of these metrics is integral to Loudoun's County Energy Strategy that is founded on Virginia's goals of net-zero GHG emissions by 2045 and a carbon free grid by 2050. In particular, Goal 3 of the Strategy calls for cooperation to include partnerships for energy efficiency with data centers and other members of the business community.

Second - promote voluntary industry sustainability goals. Building a fuller Public-Private Partnership for Sustainability should also include collaboration rather than government mandates that clarifies industry sustainability goals against the above-mentioned metrics and tracks progress toward their achievement. The EU Green Plan, agreed to by over 100 major industry participants is a good model for such a process (it can be accessed in Attachment 1).

To this end, we propose that County staff convene a "Sustainability Working Group" that also includes industry representatives, community groups and utility leaders in order to:

- review information, standards and incentives elsewhere pertaining to environmental impact, energy use and community impacts of the data center industry; and

- define a set of voluntary industry goals in Loudoun for these key metrics and offer suggestions for local incentives and other policies to encourage adhesion to them.

We believe that these two initiatives will reap strong benefits to our Loudoun community and its data industry partnership – *and, as the world's leader in this industry,* will set a great example for the rest of Virginia, our Nation and the world.

We stand ready to meet with you to discuss any and all of the above four points at your early convenience.

With best regards,

The Data Center Working Group of the
<u>Loudoun County Preservation and Conservation Coalition</u>

Chair - Jim Hanna
Members – Al Van Huyck, Gem Bingol, Mitch Diamond and Robert Pollard

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The Loudoun County Preservation and Conservation Coalition
Data Center Working Group

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Proposed Metrics to Increase Environmental Impact Transparency

1. **Energy Consumption**. A single large data center may require as much as 100 megawatts of power and needs dedicated high voltage transmission lines and substations to deliver it. Such power is enough to supply 25,000 homes and represents about 10% of the total output of a full-scale nuclear plant. Dominion Energy had connected about 70 data centers in Northern Virginia by August 2022, which created a demand for 2600 megawatts of power capacity or the amount needed to supply 650,000 homes. This number is likely to double by 2027. It is essential to understanding the power needs of existing and planned data centers, their implications for new infrastructure across the County and how they impact sustainability and environmental goals.

2. **Power Utilization Efficiency (PUE)**. This metric compares total power used to the power used for operating data handling equipment. The balance is for cooling and other support functions. Typical new high efficiency data centers can achieve PUEs of about 1.4, though the current average PUE for data centers is about 1.58 and 2.0 or worse for older or poorly designed data centers. This average has been steady for several years even as computing output increases due to improvements in operating efficiencies. It is essential to understand where individual centers stand in PUE in order to appreciate sustainability goals. For example, the European Union Green Plan goals for PUE have been established at 1.3-1.4 for new data centers by Jan 1, 2025 and 2030 for all centers.

3. **Waste Heat Utilization**. Waste heat recovery from data centers is an emerging trend and being encouraged by governments. The recovery and reuse of heat from data centres creates a circular energy system that leverages heat from a facility as a sustainable heat source for homes and buildings. As a result, recoveries can also reduce emissions by displacing other energy sources used for heating.

4. **Water Use Efficiency (WUE).** Usually defined as cubic meters of water used per megawatt-hour of total electric energy consumed. A typical electric cooled data center may be 1 to 2 cubic meters per mwh - the EU has an onsite target of 0.4 cubic meters/mwh has been set for 2025 for new data centers and 2040 for all data centers in water stressed areas.

5. **Renewable Power Utilization.** This metric tracks the amount of energy provided each month from renewable sources. For example, the EU Green Plan has set a target for data centers of 75% renewables, as measured by hourly energy use, by 2025. This metric directly supports Loudoun's County Energy Strategy that is founded on Virginia's goals of net-zero GHG emissions by 2045 and a carbon free grid by 2050. Goal 3 of the Strategy calls specifically for cooperation to include partnerships for energy efficiency with data centers and other members of the business community.