

Download Vice Chair Mike Turner, Loudoun County, VA Board of Supervisors White Paper, **“Loudoun County, Virginia: Data Center Capital of the World, ‘A Strategy for a Changing Paradigm,’** at [www.Loudoun.gov/Ashburn](http://www.Loudoun.gov/Ashburn).

#### **Data Center Pros:**

1. Very high tax revenue (depending upon your tax structure).
2. Strong support for community initiatives.
3. Very low impact on infrastructure (no kids in schools; no cars on roads).
4. Good construction jobs when building.

#### **Data Center Cons:**

1. Visually unappealing (60-100' high; concrete walls). This can be somewhat mitigated by setback, berms, greenery, fenestration (faux windows).
2. Noise, both class A and low frequency vibration.
3. Power consumption enormous and growing (rule of thumb: 150 Mw per every 1 mill. Sq. ft.).
4. Water consumption (if not a closed loop, recapture system).
5. Light pollution.

#### **Recommended Best Practices for Communities:**

1. Make sure your Comprehensive Plan addresses data center performance standards such as the ones listed below, and make sure your Zoning Ordinance aligns with the Comprehensive Plan. Make sure both are current.
2. NEVER allow data centers to build “by right” without governing body specific approval.
3. Require Tier IV diesel backup generators.
4. Limit noise to a maximum of 55 Db perceived noise at the sending property line.
5. Conduct a pre-construction and a post-construction operational noise study.
6. Check for and measure low frequency noise (not db(A) noise; consult noise expert). This can be caused by certain cooling fan installations.
7. If natural gas turbines are used, ensure Selective Catalytic Reduction (SCR) units are attached and use ammonia, not urea, as the catalyst. The SCR eliminates about 95% of NOX and over 85% of CO. Be aware, however, the SCR can increase PM2.5 emissions, and it also doesn't capture CO<sub>2</sub>. Unburned hydrocarbons can be otherwise filtered. Ensure the gas turbines meet state and federal emission standards.
8. For energy storage, use Electrostatic Long-Duration Energy Storage (ELDES) systems. These are like batteries but much better and more efficient using graphene, not lithium. Emtel Energy USA is a major producer of these units.
9. If near residential now or in the future, require a 500' setback; 1,000' is ideal.
10. Explore waste heat recapture if near other buildings or homes (called District Heat).
11. Encourage microgrid design within the data center campus for future use (Microgrid: baseload power source, backup power source, long-duration storage, grid connection, automated site load management to allow load balancing and grid demand response).
12. Have utilities use advanced conductors for transmission lines (Aluminum Conductor, Steel Supported (ACSS), at least).
13. If possible, have your utility run underground HVDC lines to power your data centers on a separate power grid from traditional HVAC residential customers (this is brand new and has never been done in the U.S. but raise the issue; your utility may push back).
14. Incorporate Green Building Initiative ([www.TheGBI.org](http://www.TheGBI.org)) “Three Green Globes” ratings into new data center performance standards in addition to LEEDS standards.
15. Require the utilities to specify, in writing, how much power is requested by the data center and how the utility plans to deliver power (routing, overhead, substations, etc.)