

IMPACT OF DATA CENTERS ON AIR QUALITY IN THE UNITED STATES

Nearly 3,000 new data centers are under construction or planned in the U.S., with data center capacity projected to triple by 2030. Data centers consumed about 4% of U.S. power in 2023. This could rise to 8-14% by 2030. Air quality impacts are no longer marginal; they are economically and geographically significant. Data centers impact air quality and public health through air pollution released from on and offsite activities, such as primary and back-up energy generators. Pollution levels and health impacts vary based on data centers' proximity to people, whether they are burning fossil fuels onsite (and if so, how much and how frequently), and the power plants that serve them.[i] A recent study of 550 data centers currently operating in the U.S. found that **communities within one mile of data centers had elevated levels of particulate matter, nitrogen dioxide, and diesel particulate matter** compared to the national median.[ii]

These impacts will grow as data centers continue to expand, especially if they are powered by fossil fuels. Researchers estimate that by 2030, air pollution associated with U.S. data centers could contribute to nearly 1,300 deaths annually and result in a public health burden of more than \$20 billion.[iii] These burdens would be unequally distributed, with some counties facing an estimated per-household health burden about seven times the national average.[iv] **Cities can set clear expectations around air quality, particularly in communities already facing environmental burdens.** Before approving a project, cities should seek the following outcomes:

NO ADDITIONAL HEALTH BURDEN:

Data centers should not materially worsen local air quality, especially in communities already facing cumulative pollution and health risks.

CUMULATIVE IMPACTS EXPLICITLY ADDRESSED:

Air quality impacts should be evaluated in the context of existing industrial activity and clustered data center development, not assessed project-by-project in isolation.

PREDICTABLE, TRANSPARENT, ENFORCEABLE PERFORMANCE STANDARDS:

Air quality limits should be clearly defined, measurable, and enforceable over the life of the facility, not just at the time of approval. Monitoring data on air quality should be regularly collected and made publicly available, with clear consequences for non-compliance.

DATA CENTER

CASE STUDIES



AIR QUALITY

To achieve these outcomes, **cities may need to coordinate beyond city borders, with other municipal, county, or state officials.** Data center developers commonly pursue parallel siting discussions across municipalities within the same region, comparing sites, approval timelines, and requirements. Without coordination, this dynamic can trigger a race to the bottom, shifting costs and negative externalities across jurisdictions. Even if data centers are not proposed in your city, negative air quality impacts can be experienced regionally. **Cities also have the greatest influence over data center projects before key approvals are granted.** Once these milestones are secured, cities may retain enforcement authority but have far less ability to shape core project outcomes

KEY CITY ACTIONS

Conduct an independent environmental screen of existing sources and levels of air pollution for all applications, including the cumulative impact of data centers.

Limit as-of-right development and shape where data centers can be constructed

- Create districts/zoning overlays to explicitly allow or prohibit data centers to prevent land use conflicts and health impacts
 - Require conditional- or special-use permits for data centers that incorporate performance-based requirements and other mitigation measures
-

Require clean fuels

- Power data centers with renewable sources and replace diesel generators with battery storage or fuel cells
 - Prohibit on-site fossil fuel generation for primary or routine operations. Allow fossil fuel-based systems only for true emergency backup where no feasible alternative exists
-

Minimize back-up generators, including operations and testing

- Restrict the use of diesel generators for backup power, and mandate alternative backup energy sources like battery storage, hydrogen fuel cells, or natural gas. If diesel generators are used, require Tier IV models
 - Explicitly prohibit non-emergency economic dispatch or routine grid-support operation of on-site generators and create caps on annual run hours
-

Mandate public reporting on pollution

- Require data centers to submit annual generator testing, operations, and emissions reports and publish this information online

DATA CENTER

CASE STUDIES



AIR QUALITY

LITTLE ROCK, AK: USING EVERY LOCAL TOOL AVAILABLE

In June, Little Rock, AK's City Council unanimously adopted changes to their zoning code to shape the development of data centers in response to community concerns over environmental impacts, utility costs, and transparency. Among other provisions, the ordinance **limits new data centers to specified zoning districts in the city**, with hyperscale data centers limited to heavy industrial areas and required to have at least a 1,000-foot buffer from non-industrial or residential properties.[i] It also **mandates that all diesel backup generators used at data centers meet EPA Tier 4 or Tier 4-equivalent emission standards**. The ordinance also **limits routine non-emergency generator testing** to Monday through Friday, 10:00 a.m. to 4:00 p.m. to minimize the impacts of air and noise pollution. When scheduled generator testing occurs, hyperscale data centers are required to provide property owners within 1,000 feet 24-hours' notice and post this information online. Little Rock Mayor Frank Scott, Jr. said that the changes are part of the City's efforts to "use every local tool available to establish clear regulations, require accountability, and protect the quality of life of our residents." [ii] The City is prohibited by State law from prohibiting data centers.



Little Rock, Arkansas

SUSQUEHANNA COUNTY, PA: SHAPING DATA CENTER DEVELOPMENT BEFORE IT HAPPENS

Even though a data center has not been constructed or proposed in Susquehanna County, PA, County Commissioners wanted to take action to shape their development, should they come. In December 2025, the County **amended its land ordinance to define data centers and adopt design and performance requirements** for their construction and operation. County Commission Chairman Alan Hall noted, "our biggest interest is the public health of the people and our environment here, so it's trying to stay one step in front of everything, and without getting something on the books today, that would have gave anybody an open door to do whatever they wanted." [I] To address air quality impacts from data centers and recent attempts to install electric generators to provide dedicated, baseline power for data centers onsite (a practice known a generating power "behind the meter"), Susquehanna **defined generators used for temporary power when the main source is interrupted as "accessory uses", but energy generation systems used or intended to supply data centers during normal operations as "separate uses" that require additional reviews**.

DATA CENTER CASE STUDIES



AIR QUALITY



DATA CENTERS AND THE CLIMATE LANDSCAPE: AN ACTIONABLE RESOURCE FOR US MAYORS



Data Centers and the Climate Landscape: An Actionable Resource for US Mayors (2026) was created by Climate Mayors, with support from Bloomberg Associates, to help mayors and cities shape data center development outcomes, even when authority is limited or shared with states, utilities, or regional bodies.

Download your copy at climatemayors.org/data-centers

ENDNOTES

- [i] Some data centers house gas power on-site for day-to-day operations, creating continuous air pollution and greenhouse gas emissions. One of the most visible examples is unfolding in Memphis, Tennessee, where more than 30 natural gas turbines intended for daily use are being installed at xAI's new Colossus data center.
- [ii] <https://envirodatagov.org/communities-close-to-epa-regulated-data-centers-face-heightened-air-pollution/>
- [ii] Yu Tao, Peng Gao, Global data center expansion and human health: A call for empirical research, *Eco-Environment & Health*, Volume 4, Issue 3, 2025, 100157, ISSN 2772-9850
- [iv] <chrome-extension://efaidnbmninnibpcapjcgclcfindmkaj/https://arxiv.org/pdf/2412.06288>
- [v] <https://katv.com/news/local/little-rock-mayor-proposes-ordinance-to-regulate-hyper-scale-data-centers-frank-scott-jr-google-port-of-little-rock-billion-dollar-avaio-ai-artificial-intelligence-ordinance-act-851-lance-hines-noise-entergy-grid-water-cooling-system>
- [vi] <https://www.thv11.com/article/news/local/little-rock-approves-data-center-ordinance/91-cebdc637-89c4-421f-a57a-67205038c61a>
- [vii] <https://www.wvia.org/news/local/2025-12-30/susquehanna-county-approves-ordinance-to-prepare-for-possible-data-centers>

ACKNOWLEDGEMENTS

Developed by Climate Mayors in partnership with **Bloomberg Associates**, a philanthropic consultancy which works with cities around the world and is part of Bloomberg Philanthropies.