An Open Letter to Communities Opposing Data Center Construction and to Data Center Operators

A Path Forward Through Alternative Power and Water Generation

To the residents, town councils, and advocacy groups raising concerns about proposed data center projects, and to the developers and operators bringing these projects forward:

The debate over new data centers has, in many communities, hardened into a standoff. Residents see rising power bills, drained aquifers, humming diesel generators, and a loss of the rural or suburban character they moved for. Operators see multi-year interconnection queues, utilities unable to build generation and transmission fast enough, and a project timeline that a hostile permitting environment can derail entirely. Both sides have legitimate points. This letter lays out those points honestly, and then proposes a path that addresses the core objections on both sides: on-site, scalable power generation paired with atmospheric water generation, deployed in a way designed for minimal community impact.

The Power Debate

Community concerns:

- New data center load can strain regional grids, and utilities often pass the cost of new generation and transmission infrastructure on to all ratepayers, not just the data center operator.
- Grid interconnection queues in many regions now run three to five years, during which communities worry about brownouts, rate increases, and the utility prioritizing a single large customer's needs over the neighborhood's.
- Diesel backup generators, required for uninterruptible operation, are loud, emit particulate matter and NOx, and are frequently tested at unpredictable hours.

Operator concerns:

- Utility-scale interconnection timelines (often 3-5 years) can delay a facility's revenue-generating start date well beyond what investors and customers will tolerate.
- Utilities may be unwilling or financially unable to build the generation capacity a large campus requires, especially in regions with aging infrastructure.
- Diesel backup, while unpopular, has historically been the only proven way to guarantee uptime during grid outages.

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A proposed resolution: PTE Turbofan Generation

The core technology is more familiar than it may first appear. Anyone who has flown on a commercial airplane has already trusted their life to a jet turbofan engine — this approach uses that same proven technology, repurposed rather than reinvented. The units are jet engines retired from commercial flight service, paired with customized electronics and control systems purpose-built to manage stationary power generation rather than propulsion. Each engine is mounted inside a standard 20-foot container, and each container-mounted unit produces 20 megawatts, with additional units added in parallel to scale output from tens of megawatts up to gigawatt-class campuses. In this application the engines run at idle rather than at flight power, which is a far less demanding duty cycle than what the same engines were originally certified to handle in the air.

Small-footprint turbofan-based generation units can be deployed as both primary and backup power, scaled from single-digit megawatts up to gigawatt-class campuses, without waiting on utility-built infrastructure. Key characteristics of this approach:

- **Speed to power:** Installation and commissioning in 12-15 months, versus the 3-5 years typical of new utility generation and transmission builds — directly addressing operators' timeline risk.
- **Modular, containerized scale:** Each 20-foot container unit produces 20 MW; units are added in parallel with no single point of failure so capacity scales from a single container to gigawatt-class campuses without redesigning the underlying system.
- **Grid independence:** Operating off-grid removes the data center's load from the community's shared electric infrastructure, addressing the “who pays for new poles and wires” objection at its root.
- **No diesel backup:** The same turbofan installation can serve as primary and backup generation, eliminating the need for diesel generators banks and their associated noise and emissions profile.
- **Noise mitigation:** Housing the turbofan units in underground vaults substantially reduces the acoustic footprint compared to surface-mounted diesel generators or open turbine installations.
- **Emissions and heat management:** Heat and emissions recovery systems are paired with the installation, aimed at minimizing the environmental footprint relative to conventional peaker or diesel generation.

The Water Debate

Community concerns:

- Data centers' cooling systems can draw heavily on municipal or groundwater supplies, competing with agricultural and residential use, particularly in drought-prone regions.
- Communities worry about the cumulative effect of multiple large facilities on local aquifers already under stress.

Operator concerns:

- Reliable, high-volume water access is often a prerequisite for evaporative or hybrid cooling systems and permitting for new water rights or municipal supply agreements can be as slow and contentious as power interconnection.

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A proposed resolution: Atmospheric Water Generation (AWG)

Atmospheric water generators extract water directly from ambient humidity, independent of groundwater or municipal supply:

- **Zero groundwater draw:** Because AWG systems pull moisture from the air rather than an aquifer or reservoir, they remove the facility from competition with agricultural and residential water users entirely.
- **No exposure to groundwater contaminants:** Water sourced from the atmosphere sidesteps concerns about wells and aquifers that may carry naturally occurring or industrial contaminants.
- **Closed-loop recirculation:** Water vapor recovered from HVAC condensate and ice-brick cooling systems can be recirculated within the facility, further reducing the volume of new water the facility needs to generate or source.

The Noise and Environmental Debate

Community concerns:

- Constant HVAC and generator hum, punctuated by louder diesel testing, can affect quality of life for nearby residents, especially in previously quiet rural or exurban areas.
- Land clearing, emissions, and the sheer visual and acoustic footprint of an industrial-scale facility can feel at odds with a community's character.

Operator concerns:

- Meeting local noise ordinances while running critical infrastructure 24/7 is a real engineering constraint, not just a public-relations problem.
- Environmental review and mitigation requirements add time and cost, and operators often feel that no amount of mitigation satisfies opponents who object to the facility's existence in principle.

A proposed resolution: Underground Siting and Closed-Loop Systems

- Placing turbofan generation in underground vaults addresses noise at the source rather than relying on sound walls or setback distances alone.
- Heat and emissions recovery, combined with closed-loop water recirculation, is designed to reduce the facility's net environmental exchange with its surroundings — less waste heat vented, less water drawn, less noise transmitted.
- Together, these measures are intended to let a data center operate as a quieter, less visible neighbor than conventional grid-tied, diesel-backed, groundwater-cooled facilities.

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On-Site Wastewater Management

Community concerns:

- Discharge from cooling towers, blowdown, and facility wastewater can carry concentrated minerals, biocides, and corrosion-inhibiting chemicals that pose a risk to groundwater if not properly contained or treated.
- Septic systems and on-site treatment for a facility of this scale can fail or be under-designed, and residents are often unable to independently verify that a system is performing as permitted.
- Even permitted discharge can raise concerns about cumulative loading on a watershed already serving multiple industrial users.

Operator concerns:

- Connecting to municipal sewer capacity can be as constrained and slow to expand as the electric grid, particularly in rural or exurban sites chosen for their power and land availability.
- Wastewater permitting and monitoring requirements add regulatory complexity and schedule risk on top of power and water supply approvals.

A proposed resolution: Closed-Loop Treatment and Zero-Discharge Design

Pairing on-site power and atmospheric water generation with a closed-loop wastewater strategy removes another point of dependency on, and risk to, local infrastructure and groundwater:

- **On-site treatment and reuse:** Facility wastewater, including cooling system blowdown, is treated on site and returned to the closed-loop water system rather than discharged to a septic field, sewer, or surface water body.
- **Zero-discharge design target:** Combining wastewater recovery with the atmospheric water and vapor recovery systems described above is intended to minimize or eliminate the volume of water leaving the site as effluent.
- **Contaminant isolation:** Keeping treatment on site and self-contained avoids introducing cooling-chemical or mineral-concentrate discharge into local groundwater, septic fields, or municipal treatment systems not sized for industrial-scale flow.
- **Independent monitoring:** On-site treatment systems can be instrumented and reported to host communities directly, giving residents a way to verify performance rather than relying solely on a permit filed with a regulator.

Toward Good Neighborliness

Neither community opposition nor operator urgency is going away — the demand for data center capacity is real, and so are the concerns of the people who live near where that capacity gets built. The technologies described here — scalable off-grid PTE turbofan generation, atmospheric water generation, and closed-loop wastewater treatment — are proposed as a practical middle path: one that lets operators hit their construction and go-live timelines without waiting years for utility infrastructure, while giving communities a facility that draws no groundwater, discharges no wastewater to local

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systems, requires no new transmission lines, and runs quieter and cleaner than the diesel-backed, grid-tied alternative.

We invite both community stakeholders and data center developers to evaluate this approach on its merits, ask hard questions of the engineering, and use it as a starting point for a more constructive conversation than the current standoff allows.

Further Reading and Technical Documentation

For readers who want to review the underlying engineering rather than take these claims on faith, Green Technology Global has made its technical materials publicly available:

- PTE Data Center Deck — power architecture and turbine concept for data center applications
- Data Center Water Vapor Recovery — water vapor recovery concept for data center environments
- Case Study: Source of Your Water — background on data center water sourcing alternatives
- Natural Gas: Reservoir to Electricity — natural gas supply and power generation pathway

Project-specific questions — MW requirements, water demand, utility status, and target energization dates — can be directed through GTG's infrastructure assessment process.

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