



Harnessing the Hyperscale Wave! (Image: AI generated)

Harnessing the Hyperscale Wave: The Data Center Evaluation Checklist

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1. Site Selection & Industrial Upcycling

- **Evaluation Question:** Does this project revitalize a previously developed industrial or power plant site rather than paving over undeveloped natural land or farmland?
- **Guidelines:**
 - **Strategic Redevelopment:** Locate the project at, and repurpose, aging or decommissioned coal/gas power plant sites and heavy industrial sites.
 - **Leverage Infrastructure:** Capitalize on existing electrical substations, high-capacity transmission lines, long-haul fiber, and industrial water access to save costs and bypass grid interconnection delays.
 - **Fund Remediation:** Mandate the cleanup of legacy pollutants (e.g., coal ash, contaminated soil) to transform hazardous brownfields into safe community assets.

2. Water Stewardship

- **Evaluation Question:** Is the facility utilizing water-free cooling technologies or strictly non-potable water sources to protect local drinking supplies, and are strict safeguards in place to prevent water pollution?
- **Guidelines:**
 - **Advanced Technology:** Require closed-loop or liquid immersion cooling systems to drastically minimize overall water use.
 - **Alternative Sources:** Eliminate reliance on municipal drinking water by exclusively utilizing recycled or industrial wastewater for cooling and other non-potable facility needs.
 - **Pollution Abatement:** Implement rigorous containment and on-site treatment protocols for chemical additives or dielectric fluids used in closed-loop systems. This guarantees zero harmful discharge into local water systems.

3. Energy Responsibility & Grid Integration

- **Evaluation Question:** Has the developer committed to 100% 24/7 zero-carbon energy and included on-site renewables to stabilize the grid?
- **Guidelines:**
 - **Renewable Commitments:** Ensure the facility is powered by verifiable, 24/7 zero-carbon energy agreements.
 - **On-Site Power & Storage:** Integrate on-site solar generation and battery storage so the facility acts as a stabilizing force for the regional grid rather than a drain.

4. Grid Protection & Peak Demand Management

- **Evaluation Question:** Is there a formal, legally binding demand-response plan to lower power usage during peak community hours?
- **Guidelines:**
 - **Peak Demand Agreements:** Include legally binding commitments requiring the facility to reduce power consumption or switch entirely to battery backup during peak community hours to prevent local blackouts.

5. Clean Backup Power

- **Evaluation Question:** Is the facility using a "battery-first" architecture and fossil-free backup generators to protect local air quality?
- **Guidelines:**
 - **"Battery-First" Backup:** Incorporate on-site batteries for all short-term outages (e.g., to 4 hours) to prevent generators from firing up every time the grid blinks.
 - **Fossil-Free Generators:** Employ backup generators that run on renewable fuels, such as hydrotreated vegetable oil (HVO), rather than relying on fossil diesel.

6. Climate-Responsive Architecture & Site Ecology

- **Evaluation Question:** Does the design utilize passive strategies, structural reuse, and ecological restoration to cool the structure and safely manage environmental impact?
- **Guidelines:**
 - **Structural Reuse & Thermal Recycling:** Retrofit existing industrial buildings (like turbine halls) to save embodied carbon. Where possible, capture excess server heat for district heating or nearby commercial greenhouses.
 - **Passive Building Strategies:** Optimize building orientation along an east-west axis to minimize solar heat gain while maximizing natural daylighting in employee spaces. Reduce energy demand by utilizing green or reflective roofing and strategically planting trees and shrubs to shade exterior walls, walkways, and parking areas.
 - **Ecological Restoration:** Replace excessive concrete, asphalt, and toxic legacy sites with native tree canopies, bioswales, and permeable paving to actively cool the area and safely absorb heavy rainfall.

7. Community Reinvestment

- **Evaluation Question:** Are the financial savings generated by upcycling existing infrastructure being shared directly with the host community?
- **Guidelines:**
 - **Local Reinvestment:** Direct a designated portion of the developer's site savings (gained from bypassing new utility corridors and utilizing existing infrastructure) into local residential energy efficiency programs, community solar initiatives, or infrastructure upgrades.

8. Economic Impact & Workforce Development

- **Evaluation Question:** Does the proposal include binding commitments for local hiring, prevailing wages, and direct funding for local workforce training?
- **Guidelines:**
 - **Equitable Job Creation:** Ensure the project delivers tangible economic benefits by mandating prevailing wages and prioritizing local hiring for both construction and long-term operations.
 - **Future-Proofing the Workforce:** Require direct funding or partnerships for local workforce training programs to prepare community members for high-tech, data center-related careers.