

Environmental Due Diligence Associated with Data Center Development

**Identifying Risk, Supporting Site
Selection, and Accelerating Project
Delivery**

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Executive Summary

The rapid expansion of cloud computing, artificial intelligence, and digital infrastructure has created unprecedented demand for data center development throughout the United States. Global data center capacity is projected to nearly double between 2025 and 2030, adding approximately 97 gigawatts of new capacity — a growth trajectory that is reshaping site selection priorities, utility planning, and environmental review processes across the country. U.S. spending on data center development was projected to exceed \$425 billion in 2025 alone, and demand for data center capacity is expected to nearly triple by 2030.

Modern data centers require substantial capital investment, extensive utility infrastructure, and aggressive development schedules. As a result, environmental due diligence has become an increasingly important — and frequently underestimated — component of site selection and project planning. Unlike traditional commercial developments, data centers are highly sensitive to environmental conditions that affect permitting timelines, construction feasibility, utility availability, and long-term operational resilience.

Environmental liabilities, natural resource constraints, air quality regulatory requirements, and water resource limitations can each independently determine whether a site is capable of supporting development objectives on the timeline investors and operators require. Developers, investors, and operators who engage comprehensive environmental due diligence early in the process gain a meaningful advantage in schedule certainty, capital protection, and community positioning.

ESE Partners has provided environmental due diligence services to developers, investors, lenders, and infrastructure operators across the United States. Our work spans traditional commercial and industrial transactions as well as large-scale utility and transmission infrastructure projects — experience that is directly relevant to the unique environmental demands of data center development.



Environmental Due Diligence in Data Center Site Selection

Site selection for data center development is most often initiated around factors such as power availability, fiber connectivity, land cost, and proximity to major population centers. These are necessary considerations. They are not, however, sufficient ones. Many planned projects remain delayed due to ongoing permitting and environmental challenges — a reality that underscores how quickly site-specific conditions can become the decisive factor between a feasible project and one that stalls indefinitely.

Environmental due diligence provides a structured evaluation of a property's historical use, existing environmental conditions, and regulatory obligations. The process seeks to identify environmental liabilities that may require remediation, assess development constraints that could influence site layout or permitting requirements, and evaluate conditions that may affect long-term facility operations. Because data centers often involve large land assemblages and compressed development schedules, early identification of environmental risks is essential to maintaining project certainty.

The cost of delayed discovery is significant. A Phase I ESA that surfaces a Recognized Environmental Condition after a purchase agreement is executed — rather than before — can alter transaction economics, trigger renegotiation, or create remediation obligations that were never priced into the deal. An air quality threshold analysis overlooked during site screening can add a year or more to a permitting timeline. A water availability constraint identified after a lease is signed can affect long-term operational planning in ways that are difficult and expensive to reverse.

ESE Partners routinely supports clients through pre-LOI environmental screening, Phase I assessments, air quality threshold evaluations, and rapid-turnaround desktop reviews designed specifically for the pace of data center acquisition activity. The goal is consistent: give development teams the information they need before commitments are made, not after.



Phase I and Phase II ESAs: Identifying Hidden Liabilities Before You Break Ground

The environmental due diligence process generally begins with a Phase I Environmental Site Assessment performed in accordance with ASTM E1527-21. The purpose of the assessment is to identify Recognized Environmental Conditions (RECs) — conditions that indicate the presence, or potential presence, of hazardous substances or petroleum products at or near the subject property.

For data center developments, historical environmental liabilities may include former industrial operations, petroleum storage and distribution facilities, historical agricultural chemical use, solid waste disposal areas, rail corridors, or oil and gas production areas. The identification of these conditions does not necessarily preclude development; however, it often requires additional investigation to determine whether contamination is present and whether remediation obligations could affect project feasibility or timeline.

Where potential environmental concerns are identified, Phase II investigations involving soil, groundwater, or soil vapor sampling may be necessary. The findings of these investigations can influence excavation requirements, foundation design, worker protection measures, and long-term liability management strategies. Because data centers depend upon schedule certainty and represent hundreds of millions of dollars in capital expenditure, subsurface environmental conditions must be characterized early enough to support informed development decisions — not discovered during construction.

ESE Partners maintains experienced Phase I and Phase II teams across our service region with the capacity and technical depth to support accelerated due diligence programs for portfolio-scale acquisitions and multi-site screenings.



Natural Resource and Permitting Constraints: The Schedule Risk Most Developers Underestimate

Large-scale data center projects require significant site grading, utility installation, stormwater management infrastructure, and access improvements. Consequently, natural resource constraints represent one of the most consequential — and most frequently underestimated — components of environmental due diligence.

Jurisdictional waters and wetlands, floodplains, threatened and endangered species habitat, and cultural resources all have the potential to affect site development and permitting timelines. In many cases, these constraints can alter site layouts, require mitigation measures, or introduce regulatory review periods extending twelve months or more. Sites that appear physically unconstrained on initial review can carry significant natural resource obligations that are only visible through systematic field investigation and regulatory screening.

Environmental permitting requirements for data center development can be extensive. Construction stormwater authorizations, industrial stormwater permits, water supply considerations, and federal permitting associated with aquatic resource impacts all require careful evaluation during project planning. Failure to identify permitting requirements early in the development process creates schedule impacts measured in quarters, not weeks — a particularly costly outcome given the capital intensity of these projects.

ESE Partners provides integrated natural resource assessments and regulatory permitting support designed to give development teams a clear picture of what a site requires before the development schedule is locked in.



Air Quality Permitting: The Hidden Complexity of Backup Power

One of the most frequently overlooked environmental permitting risks in data center development involves air quality — specifically, the emissions associated with natural gas or diesel backup generators that provide redundant power for mission-critical operations. As data centers grow in scale, so does the generating capacity required to sustain them through grid outages or periods of peak demand. That growth is bringing an increasing number of projects into regulatory territory that many development teams do not anticipate until it is too late to avoid schedule consequences.

Under the federal Clean Air Act, stationary sources of air emissions are subject to preconstruction and operating permit requirements based on their potential to emit regulated pollutants. For data center backup generation, this regulatory framework creates meaningful complexity that is not always apparent at the individual generator level.

Individual emergency generators may each qualify as minor sources when evaluated independently. However, when a single campus deploys dozens of generators — as hyperscale facilities routinely do — the aggregate potential emissions can cross major source thresholds that trigger far more demanding regulatory requirements. Under New Source Review (NSR), pollutant-emitting activities are aggregated into a single stationary source when they share the same industrial classification and are under common control. A collection of generators that would each be minor sources individually may collectively constitute a major source subject to full NSR review.

For facilities located in areas that are in attainment with National Ambient Air Quality Standards, Prevention of Significant Deterioration (PSD) review applies at a threshold of 250 tons per year of any regulated pollutant for most source categories. In nonattainment areas — areas that do not meet federal air quality standards — thresholds can be significantly lower, in some cases 100 tons per year or less depending on the severity of the nonattainment designation. Crossing these thresholds subjects a project to major NSR review, which typically requires Best Available Control Technology analysis, air quality modeling, public notice, and comment periods that can extend preconstruction timelines substantially.



Facilities that qualify as major sources are also subject to Title V Operating Permit requirements. Title V permits establish enforceable emission limits, operational conditions, and ongoing monitoring and reporting obligations that govern facility operations throughout its life cycle. The Title V permitting process alone can take twelve months or more from application submission to permit issuance, and the resulting permit terms can meaningfully constrain how and when backup generators may be operated.

Many developers seek to manage this risk through synthetic minor permitting strategies — establishing enforceable permit conditions that cap potential emissions below major source thresholds before construction begins. When properly structured, synthetic minor permits can be an effective tool. However, they require precise emissions quantification, carefully drafted operating limitations, and a compliance program that maintains the facility within permitted conditions on an ongoing basis. The viability of this strategy depends on the specific generating capacity, fuel type, projected operating hours, attainment status of the project location, and the applicable New Source Performance Standards for the engine types involved.

The regulatory landscape governing data center air permitting is also actively evolving. The EPA has established a dedicated Clean Air Act resource hub specifically for data center developers, consolidating guidance on NSR, Title V, synthetic minor permitting, and New Source Performance Standards in a single location — reflecting the level of regulatory attention the sector is now receiving. Recent rulemaking has addressed combustion turbine performance standards, the treatment of mobile versus stationary generating equipment, and proposals to streamline minor source permitting processes at the state level. These developments are material to project-specific permitting strategy and must be evaluated against current state and federal requirements in the applicable jurisdiction.

Air quality permitting is not an afterthought in data center development. For large-scale projects, it is a preconstruction requirement with the potential to control the entire development schedule. Understanding applicable thresholds, evaluating permit pathway options, and developing a compliant permitting strategy must begin during site selection — not after a construction timeline has already been established.

ESE Partners provides air quality permitting assessment and support services to help development teams understand their regulatory obligations, evaluate threshold applicability across attainment and nonattainment areas, assess synthetic minor and major source permit pathways, and develop permitting strategies that are aligned with project schedules and long-term operational objectives.



Power, Transmission, and the Environmental Intersection

Power availability is the single most critical driver of data center site selection. Goldman Sachs Research expects data center power demand to grow approximately 50% to 92 gigawatts by 2027, representing a 17% annual growth rate between 2025 and 2028. That level of demand is placing unprecedented pressure on regional electrical grids and transmission networks — and it is creating a category of environmental due diligence need that most environmental consulting firms are not positioned to address.

Data center development increasingly requires coordination with transmission-level utility infrastructure — dedicated substations, new transmission line extensions, high-voltage interconnection agreements, and easement acquisitions that carry their own environmental review obligations under federal and state law. Sites that appear to offer adequate power on paper may face significant delays if the environmental clearance of the associated transmission infrastructure has not been evaluated. In some cases, the environmental permitting burden for the transmission infrastructure is equal to or greater than that of the data center site itself.

ESE Partners has direct experience supporting environmental due diligence for electrical transmission and utility infrastructure projects, including work on behalf of major transmission operators in Texas. That experience gives our clients a meaningful advantage: we understand both the environmental requirements that govern data center sites and the utility-side infrastructure that must serve them. When those two workstreams require alignment — and they frequently do — ESE Partners is positioned to support both under a single, integrated program.



Water Availability and Operational Sustainability: A Risk That Grows Over Time

Water availability has emerged as one of the most significant environmental considerations in modern data center development. Large data centers can consume up to 5 million gallons of water per day for cooling purposes — equivalent to the daily water consumption of a community of 10,000 to 50,000 people. By 2028, AI-related data centers in the United States could collectively require up to 32 billion gallons of water annually. These numbers are reshaping how communities, regulators, and investors think about large-scale digital infrastructure.

Communities and regulators across the country are increasingly scrutinizing water consumption associated with data center development. In multiple jurisdictions, proposed facilities have faced permitting delays, public opposition, and water use restrictions that were not anticipated during site selection. As water scarcity concerns intensify in many regions of the country, the regulatory environment governing large-scale water use is becoming more restrictive, not less.

Environmental due diligence should evaluate existing water infrastructure, regional water supply conditions, groundwater sustainability frameworks, and potential future restrictions that could affect long-term operations. Water resource planning has become an important consideration not only for operational reliability but for community acceptance, permitting strategy, and environmental stewardship — each of which carries real consequences for project timelines and investor returns.

ESE Partners helps clients evaluate water availability and regulatory risk as part of a comprehensive site due diligence program, ensuring that water-related constraints are identified and addressed before they become project-defining obstacles.



Climate Resilience and Long-Term Operational Risk

Because data centers provide mission-critical digital infrastructure with expected operational lives measured in decades, environmental due diligence must extend beyond near-term construction and permitting considerations. Flood hazards, severe weather exposure, extreme heat events, wildfire risk, and utility infrastructure vulnerabilities all have the potential to affect facility reliability and insurability over the life of the asset.

As climate-related risks become an increasingly significant factor in investment, lending, and development decisions, environmental due diligence is evolving beyond traditional compliance considerations. Site resilience — the long-term ability of a facility to operate within acceptable risk parameters across a range of environmental conditions — is now a meaningful component of site evaluation for sophisticated investors and operators.

ESE Partners incorporates resilience screening into our due diligence programs, helping clients evaluate long-term site risk alongside near-term development feasibility. The objective is a complete picture of what a site requires, what it exposes, and what it sustains over time.



Conclusion

Environmental due diligence has become a strategic function within data center development — not a checkbox exercise, and not an obstacle to project execution. Properly executed, it is one of the most valuable investments a development team can make before capital is committed.

The regulatory requirements governing data center sites are broad and, in some cases, highly consequential. Subsurface environmental liabilities can affect construction costs and timelines. Natural resource constraints can alter site layouts or introduce federal review processes. Air quality permitting for backup generation can trigger major source thresholds that add a year or more to the preconstruction schedule. Water availability limitations can affect long-term operational planning. Each of these risks is identifiable early — and each is far less expensive to manage when identified before a purchase agreement is signed or a construction schedule is fixed.

The firms that move fastest in this market are not those that compress or defer environmental review. They are the ones that execute it efficiently, early, and comprehensively — and use it to make better decisions about site selection, capital allocation, and project structure. By integrating environmental site assessments, natural resource evaluations, air quality permitting analysis, utility infrastructure considerations, water resource planning, and resilience screening into the front end of the development process, developers and investors reduce uncertainty, protect schedule, and preserve capital.

ESE Partners is built for this work. Our teams combine deep environmental consulting experience with direct expertise in utility and transmission infrastructure due diligence — a combination that reflects precisely what data center development demands and that few environmental consulting firms can offer.

