

SAMPLE DELIVERABLE — TIER 2 SITE PRE-QUALIFICATION ASSESSMENT

Originally prepared November 2025 for a confidential data center developer by Xenco Labs' advisory practice. Client identity and site naming have been generalized at the client's request; every element of the analysis is actual work product. Shared as a representative example of scope, structure, and depth.

Network Connectivity Assessment

Benton County, Missouri (Osage River Corridor) — Site Pre-Qualification for AI Data Center Development

Prepared for: Confidential Data Center Developer **Prepared by:** Xenco Labs, Inc.

RECOMMENDATION: CONDITIONAL GO

The Benton County site is viable for AI data center development contingent on a \$12–\$22M network capital commitment and a 16–18 month dual-path construction program. The site's connectivity gap is fully solvable; the decision rests on whether power availability and site economics justify carrying that network investment. If the power case is strong, proceed to detailed engineering and carrier negotiations. If power is marginal, this site should not advance — the network premium only pays for itself alongside a superior power position.

Assessment at a Glance

Site profile	Greenfield connectivity; no enterprise carrier presence; 25% local fiber coverage (Co-Mo Connect cooperative)
Recommended architecture	Dual-path diversity: northbound 105 mi to Kansas City (1102 Grand Blvd), southbound 84 mi to Springfield (City Utilities network)
New construction required	170–190 total route miles across two geographically opposed paths
Network capital	\$9.0–\$15.0M construction (hybrid methodology); \$12–\$22M all-in with soft costs
Timeline to dual-path operational	16–18 months from contract execution, assuming favorable permitting
Primary carrier recommendations	Zayo (dark fiber), Lumen (lit/wavelength), Crown Castle (diversity), Bluebird Fiber (Springfield segment)
Construction partners	MasTec (primary), Dycom Industries (competitive bid / parallel build), regional subcontractors for local segments

Geographic & Strategic Positioning

The site sits in Benton County, west-central Missouri, on the Osage River corridor, at the intersection of regional transportation corridors that place it within construction distance of three major interconnection markets. That geography is the foundation of the site's network case: it enables the geographically opposite dual-path routing that AI workloads demand.

Primary Hub — Kansas City (88–105 miles northwest)

Kansas City is the Central Midwest's premier telecommunications market, anchored by the 1102 Grand Boulevard carrier hotel (Netrality Properties). The facility is the most network-rich environment in the region: 120+ on-net network providers, five peering exchanges, and direct on-ramps to AWS Direct Connect and Google Cloud Interconnect across 156,000 square feet of carrier-neutral space. For an AI facility whose tenants require low-latency access to hyperscaler infrastructure, this is the interconnection destination that matters most.

Secondary Hub — Springfield (84 miles south)

Springfield has emerged as a significant fiber market on the strength of a municipally owned 1,000+ mile network built by City Utilities and completed ahead of schedule in 2022, with Lumen as anchor tenant. Its position due south of the site creates near-perfect geographic opposition to the Kansas City path — the property that makes true route diversity possible rather than nominal.

Tertiary Option — St. Louis (150–160 miles east)

St. Louis offers additional diversity through the Globe Building (550,000 SF, 12+ fiber providers, power scalable to 35 MW) and Netrality's 210 North Tucker facility (61+ on-net providers). Distance makes it a third-path or future-expansion option rather than a primary route; it is priced in this assessment only as an alternative.

Intermediate Infrastructure — Sedalia (35 miles north)

Sedalia carries existing fiber from Bluebird Fiber (POP at 220 E 5th Street), Fastwyre, and Spectrum. It is strategically useful as a regeneration point and as a segment where existing infrastructure may reduce new-construction requirements on the northern path.

The Corridor: Current Infrastructure

The corridor's telecommunications profile reflects its rural character. Roughly 25% of the area has fiber coverage, delivered by Co-Mo Connect, a local electric cooperative offering symmetric gigabit service. The remainder of the market relies on DSL, fixed wireless, cellular, and satellite — none of which approach data center grade.

The controlling fact for site economics: there is no enterprise carrier presence in the corridor. Zayo, Crown Castle, Lumen, and AT&T maintain extensive Missouri networks, but none reach this site today. Connectivity must be constructed, not procured. This is not a dealbreaker — it is a quantifiable capital line item, and the balance of this report quantifies it. Co-Mo Connect's successful build-out is itself a useful signal: the community has already demonstrated receptiveness to fiber infrastructure investment, which matters for permitting and right-of-way posture.

Dual-Path Routing Design

AI workloads run continuously; network availability requirements exceed 99.99%. The architecture therefore applies four diversity principles simultaneously:

- **Geographic diversity** — the two paths follow opposing vectors (north to Kansas City, south to Springfield) so no regional event — weather, construction strike, corridor fiber cut — can affect both.
- **Entrance diversity** — fiber enters the building at two physically separated entrance facilities, each terminating in its own meet-me room, eliminating the single-conduit failure point common in retrofit facilities.
- **Hub diversity** — each path terminates at a different carrier hotel in a different city, so a hub-level failure cannot isolate the site.
- **Provider diversity** — different carriers on each path once hub connectivity is established, protecting against carrier-specific outages and preserving negotiating leverage.

Path A — Northbound to Kansas City (~105 route miles)

Primary route following the I-49 / US-71 corridor to 1102 Grand Boulevard. Terminating here opens the full carrier ecosystem — Zayo, Lumen, AT&T, Cogent, and 100+ additional providers — plus direct cloud interconnection. Following the established highway corridor simplifies permitting and right-of-way acquisition, with MoDOT coordination required for state-corridor segments. Clinton (~45 miles out) and other I-49 communities offer developing infrastructure that may be leveraged for regeneration.

Path B — Southbound to Springfield (~84 route miles)

Diverse route via Missouri state highways to Springfield's municipal network, where Lumen anchor tenancy provides immediate lit-service options. Bluebird Fiber's Sedalia POP and its underground data center in Springfield create potential to leverage existing segments and reduce net new construction on this path. Directional opposition to Path A is the critical property: the two routes share no corridor, no weather system, and no failure mode.

Route Summary

Segment	Route Miles
Path A — Site to Kansas City	88–105
Path B — Site to Springfield	84
Total dual-path construction	172–189 (plan +10–20% for routing deviations)

Carrier Landscape — Dark Fiber

Once hub connectivity exists, the dark fiber market is deep. Ranked by fit for this site:

Provider	Capabilities	Fit for This Site
Zayo	19M+ fiber miles, 400G wavelengths, long-haul and metro dark fiber; active Missouri expansion (St. Louis–Memphis,	Primary recommendation. Strongest KC presence including 1102 Grand; proven

Provider	Capabilities	Fit for This Site
	St. Louis–Indianapolis routes, 2023)	data center connectivity track record.
Crown Castle	~90,000 route miles; dark fiber with flexible lease and 10–20 year IRU structures; carrier-neutral model	Secondary provider for path diversity. Note: announced sale of fiber business to Zayo — monitor for consolidation impact on provider-diversity strategy.
Bluebird Fiber	10,600+ Midwest route miles, 400G capacity, Sedalia POP, underground Springfield data center	Best regional fit for the Springfield path; existing segments may reduce Path B construction.
Light Source Communications	35-mile KC metro dark fiber ring completed 2025; hyperscaler anchor tenant; underground high-count builds	KC-side interconnection option; growth trajectory (Las Vegas, Phoenix, Tulsa builds) signals stability.
Everstream / Segra / Lightpath	Dark fiber with OPEX lease and IRU structures; route planning and construction support; expanding Midwest footprints	Qualified alternates for competitive tension in carrier negotiations.

Carrier Landscape — Lit Services & WDM

Lit and wavelength services become available at both hubs. The providers that matter for this site:

- **Lumen** — strongest Missouri position via Springfield anchor tenancy; \$8.5B in recently signed AI-driven networking contracts demonstrates hyperscaler relationships; expanding to 47M intercity fiber miles by 2028. Note the May 2025 AT&T acquisition of Lumen's mass-market fiber business — enterprise infrastructure and customers are retained by Lumen. Primary recommendation for wavelength and internet services.
- **Zayo** — 400G-enabled wavelengths (224 400G PoPs nationally, KC–Indianapolis among deployed 400G routes), Waves-on-Demand rapid provisioning, 99.999% managed wavelength SLA. Primary lit-service pairing with its dark fiber position.
- **AT&T** — aggressive fiber expansion (60M locations by 2030 post-Lumen acquisition); converged fiber-wireless bundling. Diversity option for internet connectivity.
- **Cogent** — Tier 1 backbone, St. Louis presence, cost-effective IP transit at up to 6.0 Tbps intercity link capacity. Recommended as the economical third internet provider alongside Lumen and Zayo.
- **Regional depth** — Windstream/Kinetic, Spectrum Enterprise, and Uniti Fiber (217,000+ route miles) round out the market and keep pricing honest.

WDM strategy: with dark fiber IRUs on both paths, customer-owned 400G-capable DWDM terminals (PacketLight-class or carrier-integrated Ciena/Cisco platforms) deliver wavelength flexibility and bandwidth scaling without per-circuit carrier dependency. Everstream's dedicated DWDM product is the managed alternative if owned optronics are out of scope. Missouri precedent exists: the state's MOREnet network runs DWDM across 3,500 km and was among the first U.S. networks at 100G optical paths.

Construction Program

Delivery structures

- **Carrier-led build** — Zayo or Crown Castle designs, permits, and constructs; the developer anchors on a long-term dark fiber IRU. Lowest execution risk, highest recurring cost.
- **Third-party construction** — MasTec or Dycom builds under contract; the developer owns the plant. Highest control and best long-run economics; carries construction management burden.
- **Collaborative build** — consortium with other anchor tenants (carriers, enterprises, additional data centers) sharing route capital. Proven model in rural deployments; adds coordination time.

Methodology and unit costs

Method	Cost / Mile	Application
Aerial (overlash)	\$40K–\$60K	Rural segments with existing pole lines; 1–2 mi/day production; requires pole attachment agreements and structural surveys; weather-exposed
Underground trench	\$60K–\$120K	Superior protection and lifespan; 0.5–1.0 mi/day; surface restoration drives cost in paved sections
Directional boring	\$105K–\$125K+	Highway, rail, and environmentally sensitive crossings; supplements rather than replaces primary methods
Hybrid (recommended)	Blended	~65% aerial / 35% underground: aerial where pole infrastructure exists, underground for crossings, sensitive areas, and carrier-hotel approaches

Construction partners

MasTec (primary recommendation) brings ~22,000 professionals, full wireline capability from FTTP to long-haul OSP, 24/7 restoration crews, and demonstrated ability to balance municipal stakeholder interests. **Dycom Industries** (competitive bid or parallel-build partner) offers fiber-specific expertise, all-weather national execution, and real-time in-house work documentation. Regional Missouri contractors — including crews with Co-Mo Connect build experience — should be engaged as subcontractors for local knowledge on permitting and right-of-way.

Cost Projections

Route	Aerial	Underground	Hybrid (65/35)
Path A — to Kansas City (105 mi)	\$4.2–\$6.3M	\$6.3–\$12.6M	\$5.0–\$8.5M
Path B — to Springfield (84 mi)	\$3.4–\$5.0M	\$5.0–\$10.1M	\$4.0–\$6.5M
Dual-path construction subtotal	\$7.6–\$11.3M	\$11.3–\$22.7M	\$9.0–\$15.0M

Soft costs and completion items

- Design and engineering (10–15%): \$0.9–\$2.3M
- Permitting and environmental compliance: \$0.5–\$1.0M
- Contingency (10–20%): \$1.0–\$3.0M
- Terminal equipment and data center cross-connects: \$0.5–\$1.0M

All-in project estimate: \$12–\$22M for complete dual-path connectivity, hybrid methodology, before any offsets from carrier-led structures or existing-segment leverage (Sedalia/Bluebird).

Ongoing operating costs

- Fiber lease / IRU payments (if carrier-built): \$50K–\$200K annually depending on structure
- Lit services (internet, wavelength): \$5K–\$50K monthly per circuit by bandwidth
- Plant maintenance and monitoring: \$25K–\$75K annually

Timeline

Phase	Months	Scope
1 — Planning & design	1–4	Route surveys, engineering, carrier negotiation and contract execution, permitting applications, right-of-way and easement acquisition
2 — Path A construction	5–12	Site–Kansas City build at 15–20 mi/month; terminal equipment installation and testing
3 — Path B construction	8–16 (overlapping)	Site–Springfield build; terminal equipment installation and testing
4 — Service activation	16–18	Carrier circuit provisioning, network integration, failover testing and optimization

Assumes favorable permitting and normal weather. Adverse permitting outcomes, right-of-way disputes, or Missouri winter construction seasons could extend the program 3–6 months — which is why Phase 1 permitting risk should be retired before construction capital is committed.

What AI Workloads Demand of This Network

The architecture above is shaped by AI-specific requirements that exceed traditional data center specifications, and they are worth stating because they drive the capital case:

- **Bandwidth** — GPU cluster scale-out requires 100/200/400GbE fabrics internally and equally capable external capacity for data ingestion, model distribution, and inference serving; hence 400G-capable transport on day one.
- **Latency** — training and inference are latency-sensitive; sub-10ms round-trip to cloud on-ramps is the working target, which is what makes the Kansas City direct-interconnect path strategically necessary rather than optional.

- **Availability** — continuous 24/7 operation pushes availability requirements past 99.99% (under 53 minutes of downtime annually), which is what justifies dual paths, dual entrances, dual meet-me rooms, active-active BGP with automatic failover, and N+1 on all critical network equipment.
- **Power context** — AI facilities run 40–85 kW per rack today with 200+ kW trajectories; cooling consumes 25–40% of facility energy and its control systems themselves require redundant network connectivity. Network design and power/cooling design are coupled, not sequential.

Alternatives & Risk Mitigations

- **Interim fixed wireless** — licensed microwave/mmWave can deliver multi-gigabit capacity over 10–30 mile line-of-sight paths, enabling early operations while fiber construction proceeds. Unsuitable as permanent AI-grade connectivity (latency, capacity, weather); acceptable only as a bridge.
- **Co-Mo Connect partnership** — the cooperative's existing plant in the corridor and central-Missouri construction experience make it a candidate for collaborative build-out with economic development alignment.
- **Phased deployment** — single-path launch with the diverse second path in operating year 1–2 reduces initial capital but accepts single-path outage exposure during the interim. Only advisable if tenant SLAs permit.
- **Multi-tenant consortium** — sharing route capital with other anchor demand (carriers, enterprises, additional facilities) has proven out in comparable rural builds and should be tested during carrier negotiations.

Viability Summary

Working in the site's favor	Working against
Dual-hub geography enabling true geographic opposition between paths · manageable construction distances (84–105 mi per path) · 120+ carrier ecosystem at destination hubs · demonstrated community receptiveness to fiber investment · Sedalia regeneration point · deep qualified carrier and contractor bench	172–189 route miles of greenfield construction (\$12–\$22M all-in) · zero incumbent enterprise carrier presence · rural permitting and right-of-way variability · 16–18 month program with 3–6 month weather/permitting risk · small local market limits cost amortization across other customers

Compared to sites with incumbent carrier hotels or metro-adjacent fiber, the site carries a substantial network premium. But sites meeting a power-first selection standard (20–100 MW of available substation capacity) rarely coincide with premium network locations — the power/network tradeoff is the fundamental site-selection tension, and it is a financial modeling question, not an engineering one. Network infrastructure here must be treated as core facility capital, not an ancillary service purchase.

Bottom line: conditional go. The site's connectivity problem is entirely solvable with known partners at quantified cost. Advance to detailed engineering, carrier negotiations, and permitting investigation if — and only if — the power position justifies carrying a \$12–\$22M network premium.

Our Methodology

Xenco Labs delivers network viability assessments through a structured four-phase engagement. Every assessment ends in a ranked, actionable recommendation and a go/no-go with supporting rationale — a decision document, not a dataset.

- **Phase 1: Site Intelligence** — fiber presence, carrier footprints, infrastructure gaps, distances to carrier hotels
- **Phase 2: Carrier Analysis** — dark fiber providers, lit services, WDM capabilities, provider stability and SLAs
- **Phase 3: Route Engineering** — dual-path design, construction partners, build-out cost and timeline estimates
- **Phase 4: Viability Report** — actionable recommendations, cost projections, ranked providers, go/no-go decision

Brownfield Application

This engagement was a greenfield connectivity problem: no enterprise carriers on site, so the analysis centered on what it costs to construct carrier-grade dual-path infrastructure. For brownfield acquisitions — existing buildings with incumbent fiber providers — the same four-phase methodology inverts its center of gravity: validating what the existing carrier presence actually supports, confirming true physical diversity (separate routes, separate entrances, separate conduit), pricing interconnection to the nearest carrier hotels, and quantifying the capital delta between the building as it stands and neocloud-grade connectivity. The deliverable structure, timeline, and decision framework are identical.

Engagement Terms

Current service tiers, retainer structure, and pricing are provided in the accompanying Xenco Labs Services & Pricing sheet. This sample reflects the scope and depth of a Tier 2 Site Pre-Qualification Assessment.

About Xenco Labs Infrastructure Advisory

Xenco Labs' infrastructure advisory practice was founded by two veterans of the fiber optic and data center industry who together bring over 40 years of experience constructing, selling, and operating network infrastructure at scale. We've built networks, lit data centers, and negotiated carrier agreements across the United States. Our principals worked together at AboveNet Communications — one of the premier fiber infrastructure companies of its era, later acquired by Zayo Group. This shared foundation in carrier-class network operations informs our approach to every engagement.

Xenophon Giannis — Co-Founder & CEO

Xenophon brings over two decades of experience in network infrastructure sales and operations. As Executive Director of Sales for AboveNet's Pacific Region, he directed a team of 25+ professionals and built a \$22M+ regional business selling metro Ethernet, MPLS long-haul circuits, IP transit, WDM wavelengths, and data center colocation to enterprise clients including ILM, TellMe Networks, and Wells Fargo. His direct experience includes partnerships with major data center operators — Equinix, Digital Realty Trust, CoreSite, DuPont Fabros, Switch & Data, and Vantage — as well as optical equipment vendors Ciena, Cisco, Tellabs, and Juniper.

Laurie Shahin — Co-Founder & Chief Partnerships Officer

Laurie is a recognized leader in data center channel sales with over 15 years of executive experience spanning AboveNet, Telx Datacenters, INAP, Evoque Data Center Solutions, QuadraNet, and ValorC3 Data Centers, where she serves as Vice President of Channel and Alliances. Her tenure includes direct responsibility for AI infrastructure requirements, multi-cloud environments, and enterprise-grade colocation solutions, with industry recognitions including the Summit Award (100% quota achievement), Elevate Award (largest MRC deal), and Excellence Award for data center sales leadership.

Next Steps

This assessment demonstrates that this corridor's network connectivity challenges are solvable and quantifies what solving them costs. We welcome the opportunity to walk through the methodology in detail and discuss how Xenco Labs can support your team across your full portfolio of prospective locations.

Contact: sales@xencolabs.com · xencolabs.com/advisory