StrataLogic

WHITE PAPER

Land Rights at Grid Scale

The transmission build-out is, underneath the steel and copper, a parcel-by-parcel land-rights problem -- and the software built to manage it was shaped for a different era. Here is the gap, the math, and what the mid-market actually needs.

Who this is for: Right-of-way project managers, survey and engineering firms delivering land services on transmission corridors, utility land departments, and transmission developers sizing up the tooling for a regional project.

The build-out is here; the land rights are the bottleneck

US data-center electricity demand is on track to move from about **4 percent of national generation in 2023 to roughly 9 percent by 2030**, driven by AI hyperscale. The grid response is the largest committed transmission expansion in over a decade: the five major regional grid operators have announced more than **$54 billion** in new transmission.

But $54 billion does not buy transmission. It buys a plan to attempt to build transmission. The step that actually paces these projects -- the work that decides whether a line energizes in 2028 or 2032 -- is land rights: title research, owner notification, easement negotiation, execution and recording, construction-phase damage claims, and a closeout record that has to survive the line's 50-year operational life. That workload is about to arrive at historic scale: thousands of miles of new corridor imply **tens of thousands of parcels**, each needing every step of that workflow.

The incumbent ROW platforms are good at what they do, but they were shaped by twenty years of serving thousand-mile pipeline majors. They are Esri-embedded (the customer pays the ArcGIS tax), sold as six-figure enterprise implementations, and optimized for national portfolios -- not for the project that dominates the new build-out: a single 20-to-50-mile regional line with 100 to 300 parcels and an 18-to-36-month clock.

LandLedger is the platform built for that project shape. Open-GIS stack (no Esri tax), survey-firm native, multi-tenant with schema-per-tenant isolation so it stands up in days, priced for the mid-market, and available customer-hosted (Server) or StrataLogic-hosted single-tenant (Managed). This paper lays out the market forces, the workflow, the gap in the incumbent tooling, and how LandLedger closes it.

Data centers are rewriting the demand curve

When AWS announced its expanded Indiana data-center campus -- 23 buildings, 6.9 million square feet -- the headline number was **2.2 gigawatts** of power demand. That single campus needs roughly half as much electricity as every household in Indiana combined. It is not small, and it is not unique. It is one node in a national infrastructure problem.

US data-center electricity consumption was about 4 percent of national generation in 2023. By 2030, depending on the forecast:

- **S&P Global** has data-center grid-power demand rising 22 percent in 2025 alone, then nearly tripling by the end of the decade.
- **The IEA** expects global data-center energy consumption to roughly double by 2030, hitting 945 TWh.
- **Grid Strategies and other US-specific forecasts** put 2030 US data-center demand at 134 GW, with consumption up to 240 TWh higher -- roughly +130 percent versus 2024.
- **Pew Research's** read of recent academic and government estimates puts data centers at 9 percent of US electricity generation by 2030, more than double the 2023 share.

The driver is AI hyperscale specifically: training and inference workloads run at much higher density per rack and much harder-to-flex demand curves than traditional cloud. That is the wave; everything else is residual.

The growth is concentrated

A handful of states are absorbing most of it, and the strain is already visible:

- **Virginia:** data centers already consume more than 1 in 4 kilowatt-hours of state electricity (32 of 128 TWh in 2023); by 2030 that share could reach 41 to 59 percent. Northern Virginia alone has roughly 4,900 MW operating with another 1,000 MW under construction.
- **Ohio:** AEP Ohio paused new data-center interconnections entirely; a 2025 tariff now requires developers to make financial commitments before grid connection is approved.
- **Indiana, Arizona, Iowa, Nebraska, Nevada, Oregon, Wyoming:** each projected to exceed 20 percent of state electricity consumption from data centers by 2030.

Northern Virginia's four-to-seven-year wait times for new high-capacity grid connections are the leading edge of a national problem -- and, as we will see, they are not primarily an engineering problem.

$54 billion of committed transmission

Transmission investment had been relatively dormant since 2013. That is no longer the case. The five major US regional transmission organizations (RTOs) have collectively announced more than $54 billion in expansion:

RTO	Region	Announced expansion
MISO	Midwest	$21.8B Long Range Transmission Planning
ERCOT	Texas	$13B+
SPP	Southwest Power Pool	$7B
PJM	Mid-Atlantic / parts of Midwest	$6.7B
CAISO	California	$6B

This is real money, not a wish list -- specific projects are already moving. The Southwest Intertie Project North (SWIP-North), 285 miles and ~2,000 MW from Twin Falls, Idaho to Ely, Nevada, broke ground in 2025. The Southline Transmission Project, 175 miles and 748 MW from Hidalgo County, New Mexico to Pima County, Arizona, began construction in early 2025. Dozens more are in planning, permitting, and right-of-way acquisition.

The crux: $54 billion in transmission spend does not buy you transmission. It buys you a plan to attempt to build it. The actual rate-limiting step -- whether a new line is in service in 2028 or 2032 -- is the land rights work that has to happen along every mile of corridor.

A line is not finished when the money is approved

A transmission line is finished when every parcel along the corridor has an executed easement, a recorded right-of-way, and a clean path through construction. That is land rights work, and it runs in six stages -- parcel by parcel, for every parcel:

1. **Title research.** Who owns the parcel, and who else holds an interest -- mineral rights, mortgage holders, easement holders, lien claimants? This means pulling title commitments, reading recorded documents, and sometimes resolving ambiguities against county records.
2. **Owner notification.** Formal notice that a public-need transmission project will require an easement crossing the property.
3. **Negotiation.** Easement compensation, route adjustments to avoid structures, timing around agricultural operations, restoration commitments. This is where a project moves or stalls. Easy parcels close in weeks; hard parcels take a year or more.
4. **Execution and recording.** Signatures, payment, a recorded easement document, updated title.
5. **Construction-phase damage claims.** Crops damaged by access roads, soil disturbance, drainage changes -- filed and adjudicated parcel by parcel during the build.
6. **Closeout.** A complete project record that survives the line's 50-year operational life, so the owner can answer inspection requests, refinancing audits, neighboring-project inquiries, and litigation for decades.

As the energy practice Womble Bond Dickinson put it in their 2025 analysis, "siting can be very complicated and lead to litigation and eminent domain claims that take years to resolve." Northern Virginia's grid-connection wait times are not a transmission-engineering problem. They are a land-rights problem at scale.

The math is unforgiving

A 138 kV regional transmission line runs roughly five parcels per mile through typical rural corridor -- more in suburban areas, fewer through large agricultural belts. Apply that to the build-out:

> $54 billion in committed transmission implies thousands of miles of new corridor. Thousands of miles, at ~5 parcels per mile, implies **tens of thousands of parcels** -- each needing title research, notification, negotiation, execution, damage adjudication, and a closeout record that outlives most of the people working on it today.

The project shape that dominates the build-out

Critically, most of this work does not arrive as one giant national program. It arrives as a steady stream of regional projects that look alike:

Dimension	Typical mid-market transmission project
Length	20 to 50 miles
Parcels	100 to 300
Capital	$10 to $50 million
Timeline	18 to 36 months

This is the shape that has nothing built for it. It is too small for the enterprise ROW platforms to serve profitably, and too complex to run on a spreadsheet and a shared drive. And it is exactly the shape that the data-center-driven build-out is producing by the hundreds.

Why existing ROW software was not built for this

The incumbent enterprise ROW platforms -- Quorum, Pandell, Irth (which absorbed geoAMPS), Trimble's right-of-way module, and a handful of smaller players -- were shaped by two decades of serving large pipeline operators and integrated utilities. They are good at what they do. They were simply not designed for this moment. Four structural issues stand out:

They are built on ArcGIS

Most are Esri-embedded by design, which means the customer pays for ArcGIS too -- named-user licenses, server licenses, the whole stack. For a pipeline major that already runs an Esri shop, fine. For a survey firm asked to deliver ROW services on a single regional line, the Esri bill is a non-starter before the project even begins.

They are sold as enterprise platforms

Six-figure deal sizes, months of implementation, custom configuration. That math works for a five-year contract with a pipeline major. It does not work when a firm needs to stand up a system for a single 27-mile, 150-parcel project that delivers to the utility in 18 months.

They are optimized for thousand-mile portfolios

Their data models, workflows, and reporting assume many projects in parallel across a national footprint. On a single regional project, that complexity is friction, not value.

The mid-market is structurally underserved

The project shape driving the new build-out -- 20 to 50 miles, 100 to 300 parcels, $10 to $50M, 18 to 36 months -- is precisely the shape the incumbents are too expensive to serve profitably. It is the shape with nothing else.

What this moment actually needs

The right ROW platform for the transmission build-out has a specific shape. Five requirements define it:

1. **An open-GIS stack.** PostGIS, MapLibre, QGIS, GeoJSON. No Esri tax. The customer's GIS bill is not a function of how many surveyors are on the project team.
2. **Survey-firm native.** Built to fit the survey workflow, because survey and engineering firms deliver most ROW services on transmission. Boundary survey deliverables flow in cleanly; executed easements flow out cleanly; the firm's historical survey archive is one API call away.
3. **Days to stand up.** Multi-tenant with schema-per-tenant isolation and one-command provisioning. Sign in, get a tenant, import the parcel layer the same day -- not a months-long implementation.
4. **Priced for the mid-market.** A 27-mile, 150-parcel project should not require a six-figure software deal to manage end to end. The software economics have to match the project economics.
5. **Server or Managed.** The same image runs both ways -- customer-hosted on-premises when data sovereignty is the constraint, StrataLogic-hosted single-tenant when hosting convenience is. Both fully featured.

None of these is exotic. Together they describe a platform the incumbents are structurally unable to offer without cannibalizing their enterprise model.

How LandLedger works

LandLedger is the system of record for a right-of-way project from kickoff to closeout. Every transmission, pipeline, and telecom project means months of parcels, owners, agreements, payments, and permits; LandLedger keeps them in one place so you always know where every parcel stands.

One record, the full lifecycle

Parcels and ownership, agreements and easement terms, compensation and payments, permits and notifications, construction-phase damage claims, and the closeout package -- all linked, all auditable, all queryable. The status of any parcel, and of the project as a whole, is one view away rather than scattered across a shared drive, an inbox, and three spreadsheets.

Heath, the project's AI assistant

LandLedger ships with Heath, an AI assistant scoped to the project record. Ask which parcels are still open, which easements are unsigned past their target date, what was agreed with a given owner, or what the closeout package is missing -- and get an answer grounded in the actual data, not a hunt through documents.

Native to the StrataLogic stack

LandLedger is integrated with the rest of the StrataLogic platform across 64 API endpoints. Boundary survey deliverables flow in from **PointScout**; historical archive context -- prior surveys, prior easements, prior dealings on the same ground -- flows in through **FieldIntel's** Theo assistant. For a firm that already runs StrataLogic for its survey practice, ROW delivery is an extension of the same system, not a separate silo.

Status: LandLedger is built, tested, and production-ready -- 64 API endpoints, tenant-isolated multi-tenancy via schema-per-tenant. We are in early conversations with our first design-partner projects now.

Server or Managed -- your data, your call

ROW data is sensitive: ownership, compensation figures, negotiation history, and legal documents that have to hold up for decades. LandLedger is built so the hosting decision is yours, and the isolation model is the same either way.

LandLedger Server

The platform, deployed on the customer's own infrastructure, on-premises or in their own cloud account. Use this when data sovereignty is the binding constraint -- the records never leave hardware the customer controls.

LandLedger Managed

The same platform, hosted by StrataLogic on single-tenant infrastructure. Use this when hosting convenience is the constraint and the customer would rather not run the stack themselves. **Single-tenant** means exactly that: a dedicated database, never a multi-tenant pool where customer records co-mingle.

Schema-per-tenant isolation

Within a deployment, every tenant project lives in its own database schema -- a hard boundary, not a row-level filter. One project's parcels, agreements, and payments are structurally separated from another's. This is what lets a new project stand up in days while keeping each project's record cleanly its own.

Onboarding -- route ingest, parcel import, template configuration, and training -- is quoted per project and scales with parcel count and migration scope, starting at $15,000. The platform subscription is priced for the mid-market project, not the national portfolio.

About StrataLogic

StrataLogic LLC builds practice-management and field-services tooling for surveying and land-services firms. Our products run on customer hardware (PointScout Desktop, FieldIntel Server, LandLedger Server) or on cloud-hosted single-tenant infrastructure (FieldIntel Managed, LandLedger Managed) -- never multi-tenant SaaS where customer archives co-mingle. We were founded by surveyors and built for surveyors, and we built LandLedger as the platform we would want if we were the firm being asked to deliver land services on a regional transmission corridor in 2027.

Working on a transmission, pipeline, or telecom ROW project?

Walk through your specific project -- parcel count, geography, timeline, existing tooling -- in a 30-minute call. We will show you exactly how LandLedger lines up against your alternatives.

Schedule: **cal.stratalogic.io/sales/schedule-demo**

Or email **sales@stratalogic.io** · **stratalogic.io**

StrataLogic LLC -- Bloomington, IN. Market figures in this paper are industry-derived (S&P Global, IEA, Grid Strategies, Pew Research, RTO planning announcements, and Womble Bond Dickinson's 2025 energy analysis) and may differ for individual projects. This whitepaper is for informational purposes. We welcome feedback and corrections at sales@stratalogic.io.