Preparing for and Protecting Infrastructure Investments

Empower Your Right-of-Way with GIS

Introduction

Organizations are rethinking their use and management of right-of-way (ROW) as they prepare for the next generation of infrastructure.

Whether it be for broadband, renewable energy, utilities, or transportation, managing ROW is a spatial business. Geographic information system (GIS) technology reveals the status of your ROW, allowing you to maximize infrastructure investment opportunities and provide resilient services to your community. By embracing a geographic approach, you can make data-driven decisions around all aspects of right-of-way. Ensure that your community is ready for capital investments by using GIS to protect, enforce, and maintain the right-of-way.

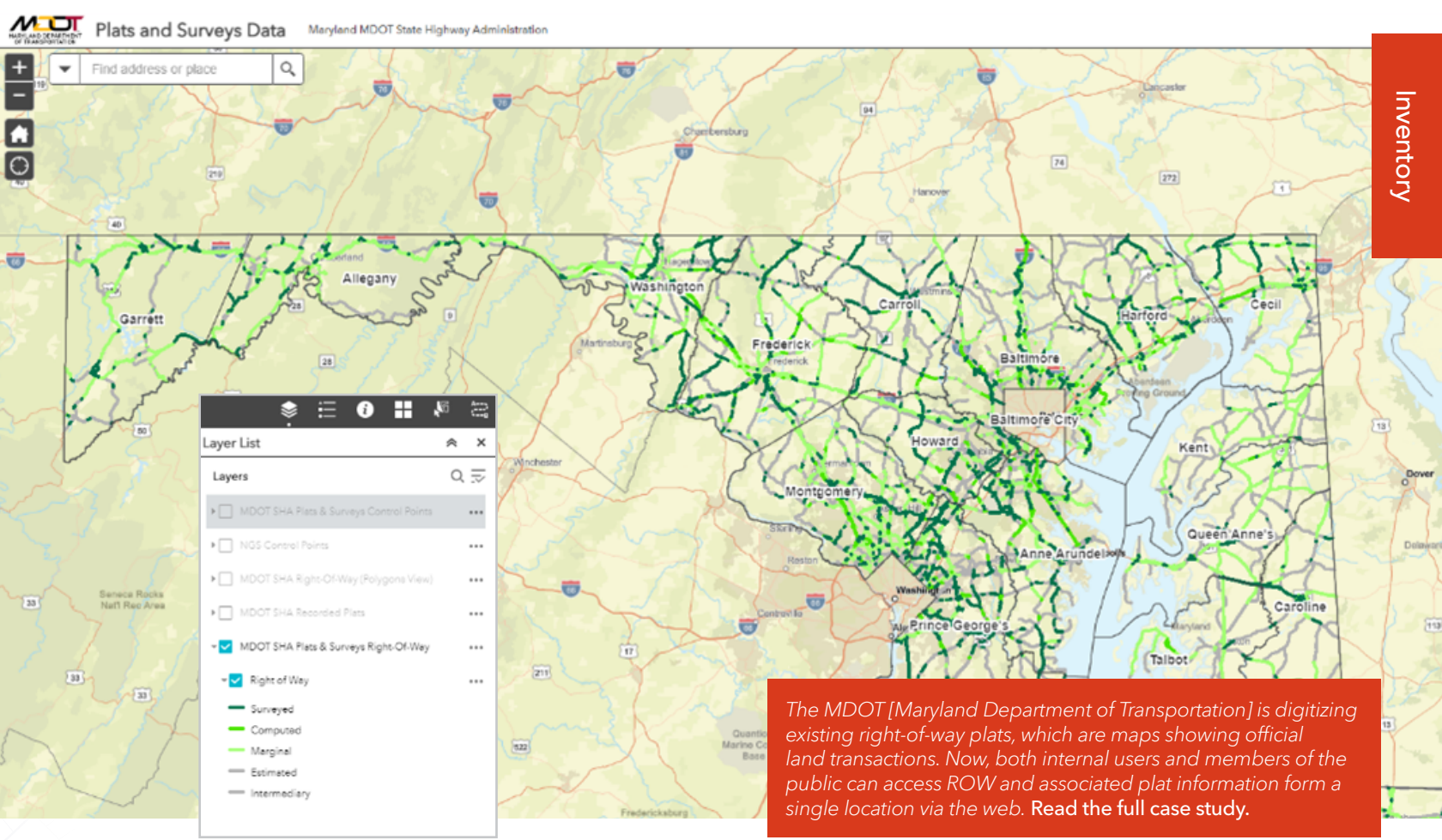
4 Ways to Empower Your Right-of-Way with GIS

- Inventory and map the land and associated rights of the corridor.
- Plan for land and rights needed for future infrastructure projects.
- Manage the acquisition and disposal of land and rights.
- Improve safety, operational efficiency, and regulatory compliance.

Transform Right-of-Way Inventories and Maps with GIS

Professionals who inventory and map their rights-of-way in GIS maximize their infrastructure investments and improve services for residents.

Inventorying and mapping are the essential first steps in ROW management. With an accurate inventory of your rights-of-way mapped in GIS, critical information is unlocked for stakeholders to quickly access on any device. This self-service capability reduces demand on staff's time and improves customer service. By using geographic information systems' advanced analytics, organizations can optimize revenue streams through leases and easements and reduce maintenance costs and liability by identifying properties no longer needed for infrastructure. GIS provides a secure system of record to avoid loss of data, further protecting the public's investment and improving resiliency.



The MDOT [Maryland Department of Transportation] is digitizing existing right-of-way plats, which are maps showing official land transactions. Now, both internal users and members of the public can access ROW and associated plat information form a single location via the web. **Read the full case study.**

With right-of-way inventory and mapping powered by GIS, organizations can

- Inventory and map rights-of-way and related infrastructure assets for data-driven decision-making.
- Provide easy access to data resources, reducing demand on staff's time and improving customer service.
- Reduce costs and liability by identifying property that's no longer needed.
- Protect public investments by minimizing the risk of data loss.

Operationalize Right-of-Way Planning with GIS

ROW professionals plan for future needs by using GIS to forecast demand and prepare for surges in infrastructure investment.

Without the power of GIS, ROW negotiations, utility relocation, and environmental evaluations can pose the greatest risk to project budgets and schedules. But by using GIS, organizations can model existing conditions and proposed routes in 3D, quickly isolating feasible options. Short- and long-term project impacts can be evaluated to minimize risk to the environment, climate, and residents. GIS provides robust visualization and reporting capabilities to engage stakeholders early on and encourage two-way communication, limiting future project delays.

By leveraging a deep learning model from Esri, the team at Platte River Analytics extracted parking lot surfaces from high-resolution imagery. The team then used geoprocessing tools in ArcGIS Pro to conduct more precise measurements and calculations of potential sites.

Read the full case study.

With right-of-way planning powered by GIS, organizations can

- Support 3D modeling for feasibility determination.
- Analyze multiple mapping inputs such as imagery, topography, and existing infrastructure to better understand project impacts.
- Deliver robust visualization and reporting for stakeholder engagement.
- Improve project budgets and schedules by identifying feasible alternatives early.

Reduce Right-of-Way Acquisition Impacts and Accelerate Project Readiness with GIS

ROW professionals using GIS to manage acquisitions save time on negotiations, avoid condemnation, and reduce associated project costs.

By using the robust storytelling capabilities of GIS, ROW professionals can provide early and clear communication about a project's purpose, goals, and impacts, improving landowner engagement. Construction of infrastructure projects cannot begin until all rights-of-way are secured. Therefore, it is essential that stakeholders have access to timely and accurate negotiation data. GIS provides the real-time data needed to efficiently update cost and scheduling projections, and robust reporting capabilities allow for demonstration of compliance with regulatory requirements.

"Due to the various complex procedures involved in ROW acquisition, developing efficient management practices is necessary for transportation agencies to carry out the acquisition process in a timely manner."

—Frederick Chung, Minsoo Baek, Baabak Ashuri. "Improving the Management Practices for Right-of-Way Acquisition Process" ASCE, *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*

With right-of-way acquisition powered by GIS, organizations can

- Engage with landowners by using GIS to tell the project story.
- Provide real-time analytics of the negotiation process through dashboards.
- Improve efficiency of scheduling and cost projections by providing real-time data.
- Ensure compliance with regulatory requirements by housing and reporting key data.

According to the survey respondents, the two largest causes of utility line strikes and near misses are unmarked or mis-marked utility lines (53%) and the failure of utility firms to property mark their lines within the required amount of time after 811 has been contacted (25%).

—Associated General Contractors of America (AGC)

Improve Management of Right-of-Way Safety, Operation, and Compliance with GIS

ROW professionals understand GIS delivers real-time, holistic operational tools to monitor ROW assets, understand their location and condition, and carry out asset management.

By using GIS, better decisions are made about corridor usage, saving time and reducing liability. Operator safety is enhanced by having confidence in what lies beneath the surface. Efficiency is improved by taking the guesswork out of where to dig when performing maintenance. By managing ROW data in GIS and leveraging its ability to integrate with other design and permitting systems, infrastructure projects are completed faster and with less cost by minimizing redesigns and change orders during construction. GIS improves permit management and demonstration of compliance through real-time data capture, analysis, and reporting.

Kinetik's new GIS strategy is playing a pivotal role in transforming the company's operations and fostering efficiency, safety, and collaboration across the organization. It has proved to be a strategic asset that is strengthening Kinetik's competitive edge in the midstream pipeline industry and is serving as a robust foundation for the company's ongoing growth and expansion.

Read the full case study.

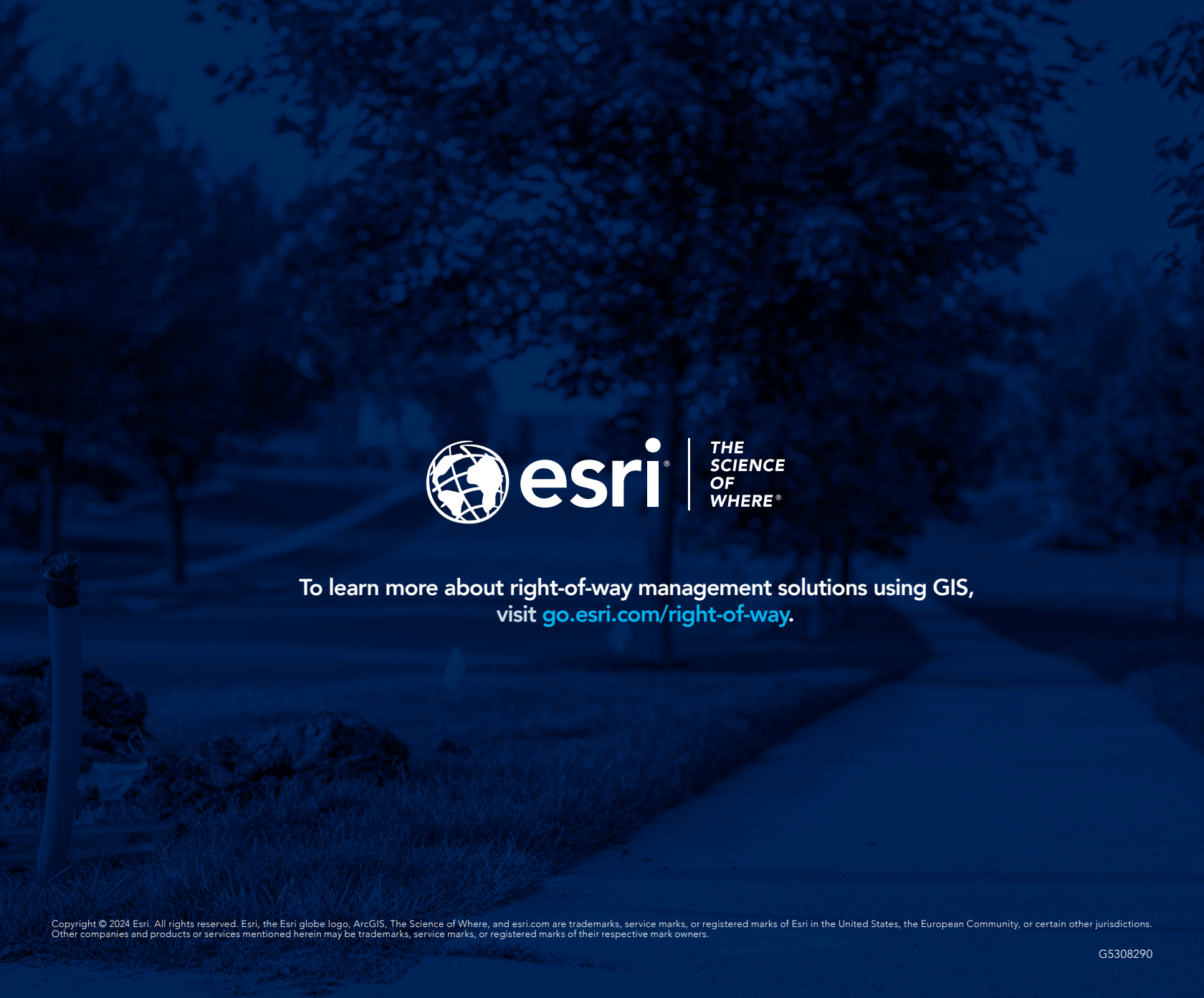
With right-of-way safety, operation, and compliance powered by GIS, organizations can

- Understand the location and condition of assets and encroachments for better decision-making.
- Improve operator safety and efficiency by having reliable subsurface asset data.
- Make better design decisions by integrating with other design and permitting systems.
- Ensure compliance with regulatory requirements by capturing, analyzing, and reporting key data.

Empower Your Right-of-Way

All the challenges you just read about (or may have thought of) are problems that ArcGIS® can solve.

GIS leverages the *where* component in your data. GIS is not only a desktop application or a server, a cloud offering, or a group of apps. GIS is not solely an advanced analysis tool. GIS is not only about data. GIS is not just a visualization tool. GIS is **all** of these and a whole lot more. It's your platform for unlocking the value of your right-of-way. And it's not just for the GIS professional anymore. GIS is for everyone, including right-of-way professionals. Are you ready to empower your right-of-way?



To learn more about right-of-way management solutions using GIS, visit go.esri.com/right-of-way.

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