Reinventing the Right of Way: Policy, Technical, and Economic Implications of Siting Transmission Lines Along Transportation Corridors: A Workshop

Sponsors: Arthur M. Blank Foundation, Joint Office of Energy & Transportation, and the Grid Deployment Office

April 7-9, 2025

National Academy of Sciences Building

In the context of siting electric transmission lines along transportation corridors, this workshop will identify policy, technical, and economic challenges along with potential solutions to these challenges, seeking to maximize benefits to the general public, transportation agencies, and electric utilities, among other considerations. This three-day event will bring together key stakeholders in the planning, operations, ownership, use, and regulation of both electric transmission projects and transportation rights-of-way, including environmental and community groups, state departments of transportation (DOTs), railroads, and federal regulators, as well as private industry, and non-profit and academic experts engaged in the issue.

MONDAY, APRIL 7, 2025

8:30-9:00 am *East Court*	**Registration, Coffee & Light Breakfast**
9:00-9:30 am *Lecture Room*	**Workshop Welcome** Workshop Co-Chairs: **Jacob Lucas**, *VP of Transmission System Planning, Eversource* & **Roy Sturgill**, *Assistant Professor, Iowa State University* Sponsors: **Michael Berube**, *Deputy Assistant Secretary for Sustainable Transportation and Fuels*, *Energy Efficiency and Renewable Energy, U.S. Department of Energy* *Laying the Groundwork* The ability to move freight, people and energy quickly and easily across our country is vital to the economic health and growth of our nation. Because our nation has placed a high value on individual property rights, the long linear corridors needed for highway, rail, and electricity transmission are often time-consuming and costly to secure. Our nation's growing energy demand requires the quick and efficient construction of transmission infrastructure to meet these demands. The ability to co-locate transmission lines within existing transportation corridors could reduce the time typically required to develop the transmission infrastructure. ***Objectives for Day 1:*** *Day 1 of the workshop will present an overview of the current state and future needs of the transportation and electric transmission sectors. It will also start exploring the complex (policy, regulatory, technical, and economic) challenges associated with siting electric transmission facilities within transportation (highway and railway) rights of way, while also presenting the public needs to have an updated and robust electric grid supporting renewable energy and transportation electrification.*

9:30-10:15 am *Lecture Room*	**Keynote Speaker – Randy Satterfield, *Executive Director, NextGen Highways*** *Casting the Vision & Need* The United States is making significant investments in infrastructure systems to support transportation, data connectivity, water resources, and more. However, the holistic planning among and between these systems could maximize these investments for optimal public benefit. In this session, NextGen Highways will elaborate on their stance that "*Planning needs to reimagine highways, railways and other existing rights-of-way as infrastructure corridors where electric and communications infrastructure are strategically and safely co-located in the right-of-way (ROW).*" This session will discuss the growing demand for electricity, grid strategies, the advantages of utilizing transportation corridors for electric transmission, and the benefits that are possible for transportation operators (i.e., electrification of roadways and railways, possible income streams, possible environmental credits for large transportation projects that provide co-location).
10:15-11:15 am *Lecture Room*	**Setting the Stage: Regulatory Environment & the "Why"** The current regulatory landscape governing rail, highways, and electricity transmission is complex and fragmented. This complexity presents significant challenges to efficiently co-locate electric transmission lines within these corridors. Jurisdictional overlaps, differing regulatory environments and standards, and potential conflicts between transportation and energy interests create hurdles that must be navigated to realize the full potential of this approach. This panel discussion will address these regulatory challenges from the perspective of highways, rail and electric transmission. **Moderator: James Kirk,** *Senior Counsel, Texas Department of Transportation (DOT)* **Speakers:** (30 min total) **Rob Gramlich**, *President, Grid Strategies LLC* **Julie Johnston,** *Utility and Value Engineering Program Manager, Federal Highway Administration* **Stephen Boyle,** *Vice President, Federal and State Government Affairs - energyRe (Elia Group)* (25 min Q&A)
11:15-11:45 am *East Court*	**Break**

11:45 am-12:45 pm *Lecture Room*	**Transmission Panel -** *The State of Electric Transmission: Engineering, Planning, Logistics, & Policy* The United States is seeing a dramatic resurgence in electric transmission system needs – often driven by new clean energy sources, large-scale data centers, economic load growth, or increasing vehicle or space heating electrification efforts. While these electric system expansions are critical to meeting societal needs, planning processes and project development should also consider commitments to environmental justice and community engagement. This panel will discuss electric system needs, specific transmission project examples (i.e., some that do and some that do not utilize transportation corridors), and deployment of grid enhancing technologies, which are all key to operating a reliable and resilient electric system for customers and local economies. **Moderator:** **Granger Morgan**, *Hamerschlag University Professor of Engineering, Carnegie Mellon University* **Speakers:** (30 minutes) **Jeff Dagle**, *Chief Electrical Engineer, Pacific Northwest National Laboratory* **Eric Johnson,** *External Affairs, ISO New England* **Greg Mathe**, *Director, Electric Transmission Engagement; Permitting & Land, Dominion Energy* (25 min moderated Q&A)
12:45-1:00 pm *Lecture Room*	**Electric Transmission in Transportation Rights-of-Way: Gaps Analysis – Rebecca O'Neil**, *Advisor, Electricity Infrastructure, Pacific Northwest National Laboratory* Through the sponsorship of the U.S. Department of Energy's Joint Office on Energy and Transportation, PNNL and Volpe are partnered to deliver a gaps analysis on the development of transmission in transportation rights-of-way, including rail. Through the gaps analysis, the DOE and DOT laboratories developed a technical analysis to discuss these relationships, spanning policy documents, planning paradigms, siting requirements, and codes and standards. This presentation will share initial technical findings and near-term plans for stakeholder feedback
1:00-1:45 pm *East Court*	**Working Lunch** *Lunch served in the East Court.* *Extra seating available in NAS 250 and NAS 280 on the second floor and in the NAS Members' Room on the first floor.*

1:45-2:45 pm *Lecture Room*	**Highway ROW Panel** *-The Highway ROW Regulatory Environment: Engineering, Logistics, & Policy* State Departments of Transportation, typically being among the top landowners in a state, are charged with maintaining these lands for public transportation needs. The accommodation of any utility is administered by state accommodation policies adopted under the regulatory authority of 23 CFR 645 Subpart B, where it noted that accommodating utilities is in the general interest of the public. Accommodating electric transmission facilities along roadway and highway rights of way must consider issues involving engineering, logistics, policy, real estate, and more. This panel discussion will include examples of accommodating electric transmission or other facilities along state highway rights of way, and the approach taken to achieve those accommodations and their associated policies. **Moderator:** **Drew Gilmore**, *Administrator, Office of Real Estate*, *Ohio DOT* **Speakers:** (30 minutes) **Leonel Tovar**, *Utility Specialist, Texas DOT* **Brian Christensen,** *Principal Engineer, Horrocks* **Jessica Oh***, Strategic Partnership Director, Minnesota DOT* (25 min moderated Q&A)
2:45-3:00 pm *Lecture Room*	**Highway Case Study** – **Bob Fasick**, *Statewide Right-of-Way Permits Engineer, Wisconsin DOT* *The Value of Accommodating Longitudinal Electric Transmission in Wisconsin ROWs* The Wisconsin Department of Transportation (DOT) has a long-standing policy that allows for the accommodation of electric transmission facilities within their right of way (ROW), and, in some instances, the Wisconsin DOT charges the transmission companies for these accommodations. This session will present the background and decision-making that made Wisconsin DOT one of the first state transportation agencies to place a value on their ROW and allow accommodation of transmission facilities within their interstate and other fully controlled access ROW. This session will present a case of collaboration and relationship building between a highway agency, the utility industry, and other state utility regulators.
3:00-3:30 pm *East Court*	**Break**

3:30-4:30 pm *Lecture Room*	**Rail ROW Panel** - *Achievements in Rail ROW and Utilities: Case Studies* Effective management of Rail ROW and utility operations is critical for ensuring seamless infrastructure development, operational efficiency, and stakeholder collaboration. Success stories in this session highlight innovative approaches, strategic partnerships, and advanced technological applications that have resulted in measurable improvements across various projects. By leveraging modern technologies, fostering stakeholder partnerships, and prioritizing safety & sustainability, organizations have demonstrated that it is possible to overcome traditional challenges and deliver impactful outcomes. The successes from these case studies can serve as a blueprint for future endeavors in this critical infrastructure sector. **Moderator:** **Karin Stamy**, *General Counsel, North Carolina Railroad Company* **Speakers:** (30 minutes) **Alex Saar**, *Director of Corridor Services, CSX* **Theresa Romanosky,** *Assistant General Counsel, Association of American Railroads* **Moises Young,** *Real Estate Development Manager – Utility Occupancies, Amtrak* (25 min moderated Q&A)
4:30-4:45 pm *Lecture Room*	**Rail ROW Case Study – James J. Hoecker**, *Senior Counsel & Energy Strategist, Husch Blackwell; Principal, Rail-Grid Collaborative* Jim will discuss two case studies that illustrate the benefits and feasibility of siting HVDC along railroad rights of way are (1) the Champlain Hudson Power Express in New York (utilizing 100+ miles of rail ROW) as part of importing 1250 MW of Canadian hydropower to the New York metro area; and (2) the proposed SOO Green HVDC Link in Iowa and Illinois, which will move 2100 MW of wind power across two states in MISO to the PJM Interconnection (a 13 state market). Long ignored, the aggressive use of existing linear rail ROWs can be a boon to railroad finances and to shortening transmission development timelines by diminishing siting and permitting burdens and impacts on individual private property owners. The new Rail-Grid Collaborative will carry on the conversation inaugurated by the Academy during this conference.
4:45-5:00 pm *Lecture Room*	**Day 1 Closing Commentary from Committee Reps:** **James Kirk**, *Senior Counsel, Texas DOT* **Karin Stamy**, *General Counsel, North Carolina Railroad Company*
5:00-7:00 pm *NAS Great Hall*	**Networking Reception in the NAS Great Hall**

TUESDAY, APRIL 8, 2025

8:30-9:00 am *East Court*	**Registration, Coffee & Light Breakfast**
9:00-9:15 am *Lecture Room*	**Day 2 Orientation** Workshop Co-Chairs: **Jacob Lucas**, *VP of Transmission System Planning, Eversource* & **Roy Sturgill**, *Assistant Professor, Iowa State University* *Transmission along the Right of Way: Highlighting the Challenges and Laying the Groundwork for Solutions* To meet our nation's electric transmission demands, there is a need to co-locate electric transmission infrastructure within highway and rail rights of way. To achieve this collaboration, challenges to these co-locations must be identified and navigated to support our nation's vitality and growth with strong infrastructure in energy and transportation. Challenges to co-locating electric transmission in highway and rail ROW involve engineering, regulation, policy, logistics, economics, and more. However, these challenges may find resolution though collaborative multi-disciplinary discussions began within this workshop. ***Objectives for Day 2:*** *Day 2 of the workshop will host discussions to identify the challenges and discuss solutions and actions needed for the co-location of electric transmission facilities within highway and rail rights of way. These discussions are intended to be constructive identification of the challenges and actions need to meet the public need of having an updated and robust electric grid supporting renewable energy and transportation electrification.*
9:15-10:00 am *Lecture Room*	**Keynote Speaker** – **Chris Fletcher**, Program Director, Energy, National Governors Association Chris will explore ROW specific actions that some Governors are taking and expand with a broader discussion of Governors' interest and role in transmission siting.
10:00-11:30 am *Lecture Room* *NAS 250* *NAS 280* *Members' Room*	**Implementation Challenges: Breakout Sessions** This session will include three facilitated breakout tracks focused on highway, railway, and electric transmission infrastructure. Within each track, there will be individual table discussions of implementation challenges along categories of engineering, policy, and logistics for co-locating electric transmission in highway or railway ROW. Facilitators and table moderators will assist in guiding these discussions and collect the insights of participants regarding the issues.

10:00-11:30 am *Members' Room*	***Breakout 1, in NAS Members' Room*** In-Person Participation Only **Highway Challenges of Accommodating Electric Transmission in the ROW** With an aging infrastructure that must be maintained while managing old and allowing new utilities in the highway right of way, accommodating utility space demands is becoming more challenging each day. This discussion will involve highlighting the challenges faced by highway agencies in considering and planning the accommodation of electric transmission needs within the highway ROW. This breakout session will address the following topics: 1. Engineering Challenges – transmission infrastructure designs conducive to co-locating in highway ROW, especially regarding access control; easement obstacles; roadside and traffic safety. 2. Policy & Regulation Challenges – existing ROW restrictions for utilities; economic concerns of reimbursement policies; state-level policies needed to assist in and incentivize the deployment of transmission along the ROW. 3. Logistics Challenges – ROW management concerns and space limitations; schedule constraints and meeting project timelines; access and maintenance considerations. **Facilitator:** **Kenny Franklin**, *Senior Project Manager, Parsons Corporation* **Table Moderators:** **Deanne Popp,** *Utility Program Director, Iowa DOT* **Deborah L. Kukulich,** *Utility Coordinator, Delaware DOT* **Cesar Quiroga**, *Senior Research Engineer, Texas A&M Transportation Institute*
10:00-11:30 am *NAS 280*	***Breakout 2, in NAS 280*** In-Person Participation Only **Transmission Barriers in attempting to co-locate in Highway or Rail ROW** This breakout session will explore the challenges and obstacles faced when attempting to locate transmission in existing highway and rail rights-of-way. These challenges include regulatory and policy barriers, safety concerns, maintenance and expansion needs, and cost allocation. 1. Engineering Challenges 2. Policy & Regulation Challenges 3. Logistics Challenges **Facilitator:** **Donna Brutkoski,** *Communications Specialist, NextGen Highways* **Table Moderators:** **Houtan Moaveni**, *Vice President, Grid Strategies LLC* **Jennifer Yoshimura**, *CEM, LEED AP, Pacific Northwest National Laboratory*

10:00-11:30 am *Lecture Room*	***Breakout 3, in Lecture Room*** Virtual and In-Person **Considerations for a Geospatial and Regulatory Suitability Review & Toolkit** This session will explore how to evaluate the suitability of highway Right-of-Way (ROW) as potential corridors for transmission infrastructure. We will discuss key geospatial and regulatory considerations that could inform decision-making processes. Successful utilization requires a thorough understanding of both the technical feasibility and regulatory framework governing highway corridors for potential transmission pathways. This includes securing a digital representation of the actual right-of-way boundaries, suitability analysis within those boundaries for a variety of technology scenarios, constraints and impacts on existing operations and future roadway network growth and expansion. We will discuss the development of a national dataset of right-of-way boundaries, consider possible approaches for evaluating suitability of highway ROW, and the gather input on toolkit structure and format towards advancing discussions about utilizing ROW for transmission infrastructure. This session will address the following topics: 1. Geospatial Considerations – the collection, utilization and dissemination of geospatial data that informs and potentially enables use of a ROW for transmission purposes. 2. Policy & Regulatory Conditions– collecting and characterizing each state's unique regulatory condition may enable decisions and evaluations. 3. Toolkit of Information – considerations around what information is useful to enable productive advancement of conversations. **Speakers:** **Joe Simon**, *Group Manager, Research Innovation and Partnerships, National Renewable Energy Laboratory* **Stanley Young**, *Mobility Innovations and Equity Team Lead, Center for Integrated Mobility Sciences, National Renewable Energy Laboratory* **Allie Kelly**, *Executive Director, The Ray*

10:00-11:30 am *NAS 250*	***Breakout 4, in NAS 250*** In-Person Participation Only **Rail Barriers with Transmission in ROW** Rail Barriers with Transmission in ROW Optimizing the reasonable, practical, and feasible use of any existing linear corridors (e.g., existing transmission or distribution line rights-of-way, highways, railroad rights-of ways, etc.) will introduce unique design requirements and considerations. Some of the challenges for siting electric transmission lines along rail corridors in particular may include safety risks, regulatory and legal issues, infrastructure interference, maintenance access and coordination, space constraints, environmental and aesthetic concerns, design review and approvals, future expansion limitations, preserving existing structural integrity, ROW conflicts, weather-related disruptions, etc. This Breakout #2 will elucidate the most prominent issues from the perspective of the Rail sector. Reflecting on past projects will also help tee up ways to overcome these issues for later workshop sessions. **Moderator**: **Karin Stamy**, *General Counsel, North Carolina Railroad Company*
11:30 am- **12:30 pm** *Lecture Room*	**Virtual and In Person** **Issues Plenary Report Out on Actions & Needs** The facilitators and table moderators will provide a debrief presentation regarding the needs and actions identified in each breakout. The workshop participants will participate in the session with discussion and Q&A. **Moderator**: **Roy Sturgill**, *Assistant Professor, Iowa State University* **Speakers:** **Kenny Franklin**, *Senior Project Manager, Parsons Corporation* **Donna Brutkoski,** *Communications Specialist, NextGen Highways*
12:30-1:30 pm *East Court*	**Working Lunch** *Lunch served in the East Court.* *Extra seating available in NAS 250 and NAS 280 on the second floor and in the NAS Members' Room on the first floor.*

1:30-2:00 pm *Lecture Room*	**Collaboration & Partnership to Rise to the Challenge** While the morning session breakout groups will have noted distinct challenges to siting electric transmission within highway and railway rights of way, there are many notable instances of the public benefits of such co-location. This session will focus on calling out the need for overcoming these challenges and highlighting instances of successfully meeting transmission needs through collaboration and partnership of highway, railway, and electric transmission agencies. **Moderators:** **Jacob Lucas**, *VP of Transmission System Planning, Eversource* & **Roy Sturgill,** *Assistant Professor, Iowa State University* **Speakers:** **Allie Kelly**, *Executive Director, The Ray*
2:00-3:30 pm *Lecture Room* *NAS 250* *Members' Room*	***Implementation Actions: Breakout Sessions*** This session will include three facilitated breakout tracks focused on highway, railway, and electric transmission infrastructure. Within each track, there will be individual table discussions of implementation actions to resolve noted challenges along categories of engineering, policy, and logistics for co-locating electric transmission in highway or railway ROW. Facilitators and table moderators will assist in guiding these discussions and collect the insights of participants regarding the actionable future steps.

2:00-3:30 pm *Members' Room*	***Breakout 1, in NAS Members' Room*** In-Person Participation Only **Highway Actions for Accommodating Electric Transmission in the ROW** To support the public need of robust and secure electric transmission infrastructure, highway agencies should be looking to partner and collaborate with electric utility providers. This will require changes by highway agencies in considering and planning the accommodation of electric transmission needs within the highway ROW. This breakout session will address the following topics: 1. Engineering Actions – Planning for transmission infrastructure designs conducive to co-locating in highway ROW, especially regarding access control; tools to overcome easement obstacles; guidance approaches to roadside and traffic safety. 2. Policy & Regulation Challenges – Examples of ROW accommodation allowances for utilities; economic considerations of compensation for accommodations; state-level policy examples to assist in and incentivize the deployment of transmission along the ROW. 3. Logistics Challenges – ROW approaches to manage space; coordinated efforts to overcome schedule concerns; effective practices access and maintenance considerations. **Facilitator:** **Edgar Kraus**, *Research Engineer, Texas A&M Transportation Institute* **Table Moderators:** **Genevieve Haller**, *State ROW Engineering Resource Manager, Delaware DOT* **Patrick Overton**, *State Construction Engineer, Florida DOT* **James Olschewski**, *Program Manager, Kimley-Horn*
2:00-3:30 pm *NAS 280*	***Breakout 2, in NAS 280*** In-Person Participation Only **Transmission Actions to Address Noted Issues** This breakout session will delve into possible solutions to the challenges and obstacles faced when attempting locating transmission in existing highway and rail rights-of-way. Solutions will be explored regarding regulatory and policy barriers, safety concerns, maintenance and expansion needs, and cost allocation. **Facilitator:** **Donna Brutkoski,** Communications Specialist, NextGen Highways **Table Moderators:** **Houtan Moaveni**, *Vice President, Grid Strategies LLC* **Jennifer Yoshimura**, *CEM, LEED AP, Pacific Northwest National Laboratory*

2:00-3:30 pm *Lecture Room*	***Breakout 3, in Lecture Room*** Virtual and In-Person **The Ray Tool Demonstration** **Speakers:** **Allie Kelly**, *Executive Director, The Ray*
3:30-4:00 pm *East Court*	**Break**
4:00-4:45 pm *Lecture Room*	**Report Out on Actions & Needs** The facilitators and table moderators will provide a debrief presentation regarding the needs and actions identified in each breakout. The workshop participants will participate in the session with discussion and Q&A. **Moderator:** **Jacob Lucas**, *VP of Transmission System Planning, Eversource* **Speakers:** **Edgar Kraus**, *Research Engineer, Texas A&M Transportation Institute* **Jennifer Yoshimura**, *Electricity Infrastructure Advisor, Pacific Northwest National Laboratory*
4:45-5:00 pm *Lecture Room*	**Day 2 Closing Commentary from Committee Reps:** **Catherine Reed,** *Senior Project Director, National Association of State Energy Officials* **Aisha Moultrie,** *Program Lead of Subsurface Utilities Engineering, Georgia DOT*

Wednesday, April 9, 2025

8:30-9:00 am *Lecture Room*	**Registration & Coffee**
9:00-10:00 am *Lecture Room*	**Day 3 Orientation, Prioritization, and Evaluation** From the actions and needs highlighted in the previous day's session, the Workshop Planning Committee will conduct an audience polling session to facilitate the prioritization of the needs and actions that can assist in supporting the accommodation of electric transmission in railway and highway rights of way.
10:00-11:30 am *Lecture Room*	**Policy Panel** It is widely accepted that the enhancement and expansion of transmission is essential for the United States to meet ever-increasing electricity demand growth along with reliability and resilience concerns. To facilitate the efficient siting of needed transmission lines and to minimize impacts on lands and in communities, the co-location of transmission lines in highway and railway rights-of-way is a potential solution. This session will explore the role of state and federal government and policy leaders and discuss what tangible actions can be taken to advance the consideration of transmission co-location. **Moderator:** **Casey Soneira**, *Program Manager, American Association of State Highway and Transportation Officials* **Speakers:** (30 minutes) **John Kaliski,** *Vice President, Cambridge Systematics* **Maury Galbraith**, *Executive Director, Colorado Electric Transmission Authority* **Ted Thomas**, *Founder, Energize Strategies* (45 min moderated Q&A)
11:30 am-12:30 pm *Lecture Room*	**Committee Panel Conclusion** This session will review the takeaways across the sessions of the workshop. The aim for the conclusion of this workshop is to find possible next steps to addressing barriers for utilizing the right of way of transportation corridors for energy transmission lines. This session will reflect on the discussions that have taken place over the previous days and provide an avenue for possible continuing efforts.
12:30-1:30 pm *East Court*	**Working Lunch and Workshop Conclusion** *Lunch served in the East Court.*