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Reinventing the Right of Way: Siting Transmission Lines Along Transportation Corridors

Proceedings [Release Webinar](#)

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AUGUST 2025

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Workshop Purpose and Participants

Purpose:

Engage transportation and electric sector professionals to identify opportunities, explore challenges, and develop solutions for co-location of electricity transmission infrastructure along road and rail rights of way to support national transportation and energy needs

Participants:

Over a hundred in-person participants from state Departments of Transportation (DOTs), state and regional energy system offices and organizations, rail industry, federal entities, utilities and transmission developers, environmental and community groups, and academic and research organizations

Workshop Agenda

- **Day 1:** Current and future needs of the transportation and electric transmission sectors through panel discussions.
- **Day 2:** Breakout sessions and demonstrations to identify the challenges, solutions, and actions needed for the co-location of electric transmission within transportation rights of way.
- **Day 3:** Identified and summarized the key takeaways of the panel discussions and breakout sessions.



Co-Location Rationale and Challenges

- Why do we need transmission?
 - Demand for clean, reliable, and resilient energy is greater than ever before, and a robust electric grid is essential for daily life, the U.S. economy, and national security.
- What is the opportunity for transportation co-location?
 - The build-out of the U.S. road and rail system offers both an example of the country's capacity to successfully deploy large-scale infrastructure projects, and a literal groundwork for future grid expansion, with linear infrastructure that connects major population and economic centers.
- What are the challenges the workshop hopes to address?
 - Technical, regulatory, economic, and organization cultural barriers need to be overcome to enhance collaboration and develop mutually beneficial partnerships between electricity and transportation sectors

Electric System Needs

- Demand for electricity is increasing rapidly, and buildout of new transmission to meet that need has slowed.
- Several recent nationwide studies found a need for twice the transmission capacity we have today.
- Barriers to transmission buildout include
 - Planning: lack of proactive, long-term, multipurpose planning;
 - Permitting: complex local, state, and federal permits and approvals; and
 - Paying: gaps in the incentives to build transmission lines across states.

Five-Year Load Growth Up Five-Fold to 116 Gigawatts

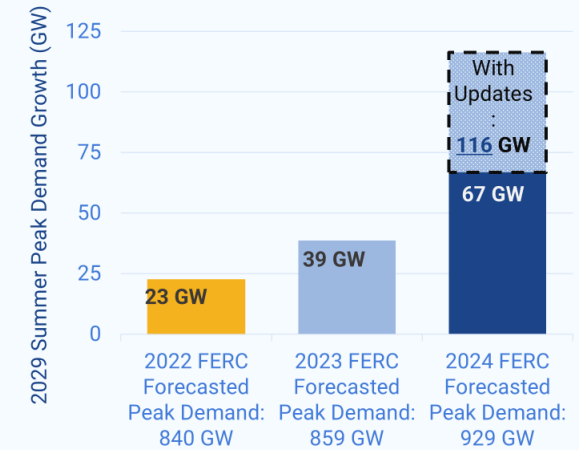
THE ERA OF FLAT POWER DEMAND IS BEHIND US ...

5-year load growth forecast increased by almost a factor of five, from 23 GW to 128 GW

- Nationwide electric demand forecast to increase by 15.8% by 2029.
- Key drivers are data centers and manufacturing.**
 - Data center growth forecasts 65 GW (tech industry) to over 90 GW (sum of utility forecasts).
 - Manufacturing demand forecasts ~20 GW growth, while electrification forecasts ~20 GW.

GridStrategies

5-year Nationwide Growth Forecast



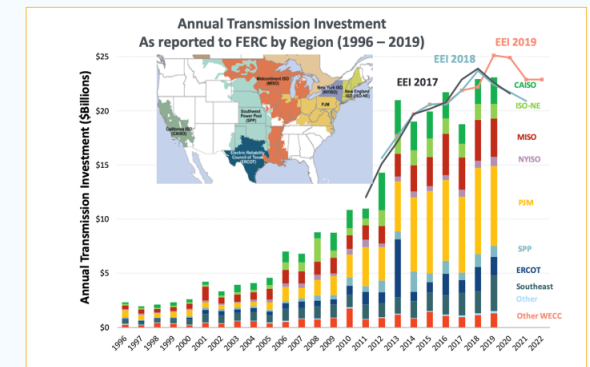
Very little long-distance transmission has been built recently

Many miles of new transmission in 2013, then dropped to a trickle...



SOURCE | Grid Strategies LLC, *Fewer New Miles* (July 2024)

...with investment rising but capacity not increasing—mostly replacing aging assets



SOURCE | The Brattle Group, *Annual US Transmission Investments 1996-2023* (June 2024)

Highway System Considerations

- Transportation ROWs primarily serve transportation needs, but also provide other services in the public interest, including utility accommodation.
- Legal requirements vary by state (more on that later!)
- Highway system priorities include safety, operations and maintenance, scenic and environmental impacts, future uses, and costs
- Success has come from addressing these issues collaboratively to serve the public

What We Learned: Categories of Pressure Points for Added Transmission Infrastructure in Highway Rights of Way



Limit Future Right of Way Use



Safety/Safety/Safety



Operations & Maintenance Impacts



Added Costs for DOT



Relocation if ROW is Needed



Impact to Scenic Viewsheds



Environmental Impacts



Vegetation Removal Impacts

8/14/2025

mndot.gov

Presentation by: Jessica Oh, MnDOT ⁷

Electric transmission in WisDOT CAH ROW

- 27 projects
 - 7 using Interstate ROW – 200+ miles
- Longitudinal fees charged; vegetation fees charged for clearing
 - Utility pays to relocate facilities on any STH ROW
 - 0 poles needing structure relocation (so far)
- Using Interstate or other freeway corridors saves clearing a new corridor
 - May expose other homes
- Facility access during and after the project must be addressed
- Leery at first, but were able to overcome problems and issues

Presentation by: Bob Fasick, WisDOT

Experiences from Texas, Utah, Wisconsin and Minnesota

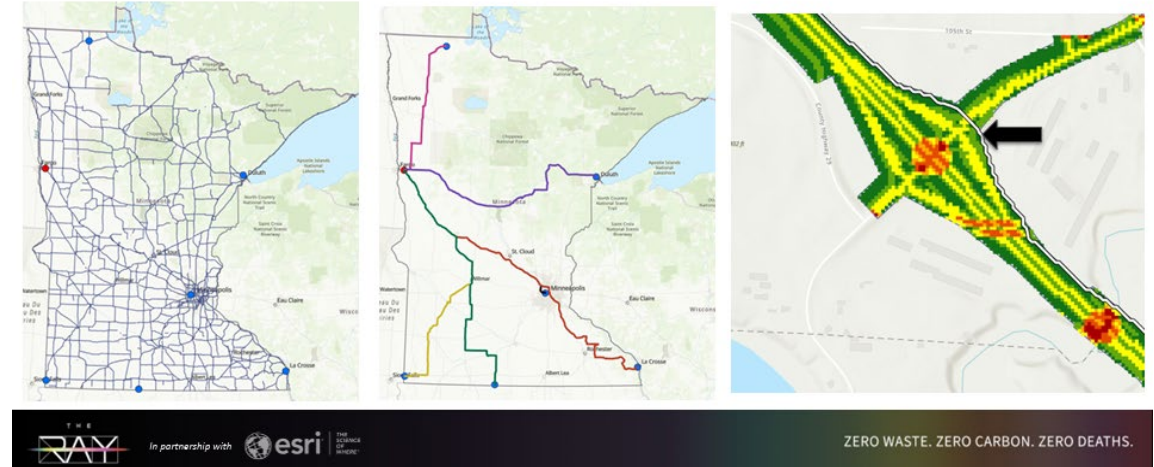
- Many states set a priority to co-locate transmission with transportation ROWs
- Detailed considerations include vertical and horizontal clearances, pole size, underground line depth and encasement, dig once preferences, and cost compensation
- Impacts to consider - access and safety, driver distraction, induced voltage, line grounding, and more
- Understanding the mission of state DOTs in providing safe transportation facilities is key to collaboration with electric transmission developers
- Aligning missions and cultures makes projects possible

Tools to Assist Siting Consideration...

- The RAY and ESRI partnered to provide free tools for the consideration of various siting criteria:
 - Cost
 - Geology
 - Natural & Human-made Features
 - Suitable Zones for Construction
 - More!

Optimal Path

Presentation by: Allie Kelly, The RAY



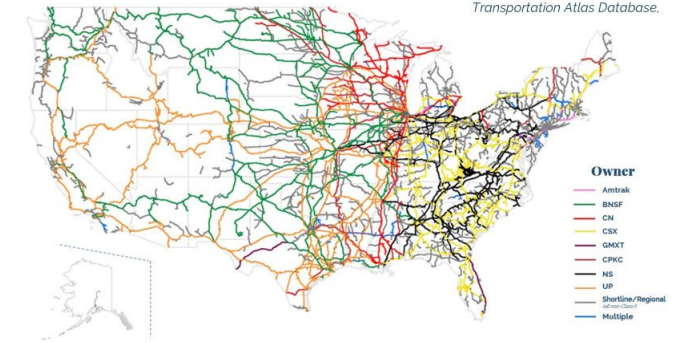
Suitable Areas



Rail System Perspectives

- Railroads are private or publicly-traded companies with extensive ROWs
- They share a goal of safe movement of goods and people.
- Co-location proposals follow a well-established processes of contracts and fees established by each railroad
- If a mutually acceptable arrangement can be developed, then working with a railroad company may be smoother and faster than with (potentially several) DOTs

North American
freight railroads
are the best in
the world.

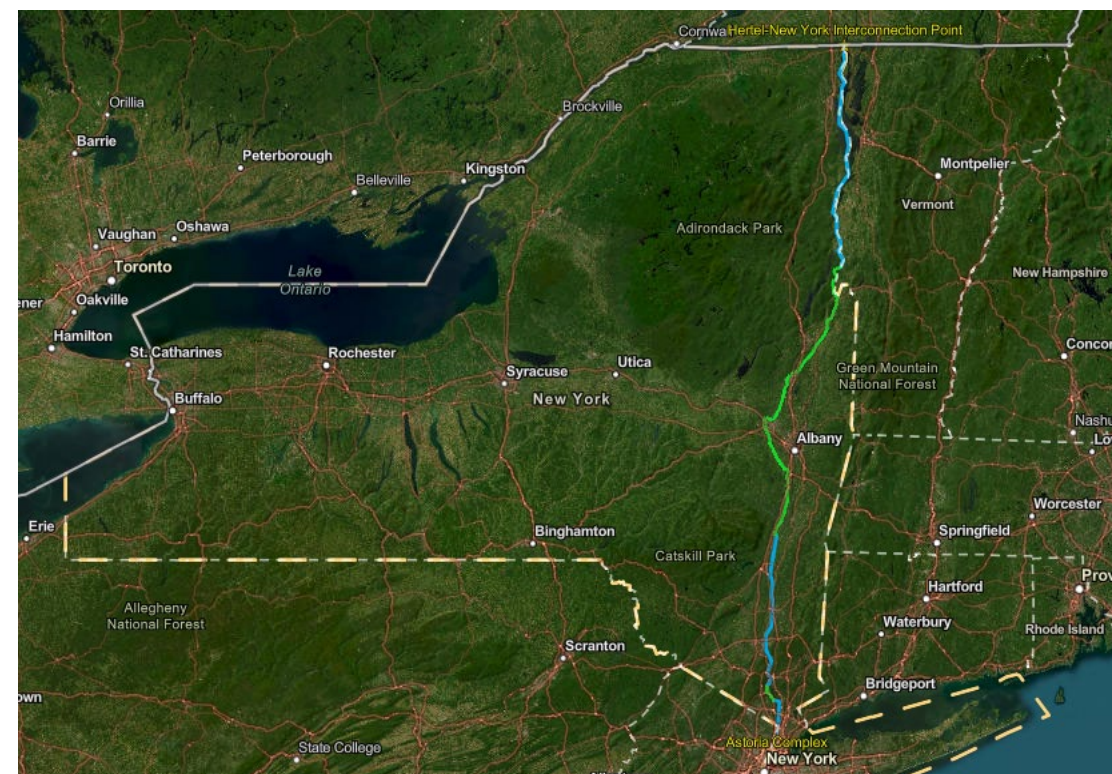
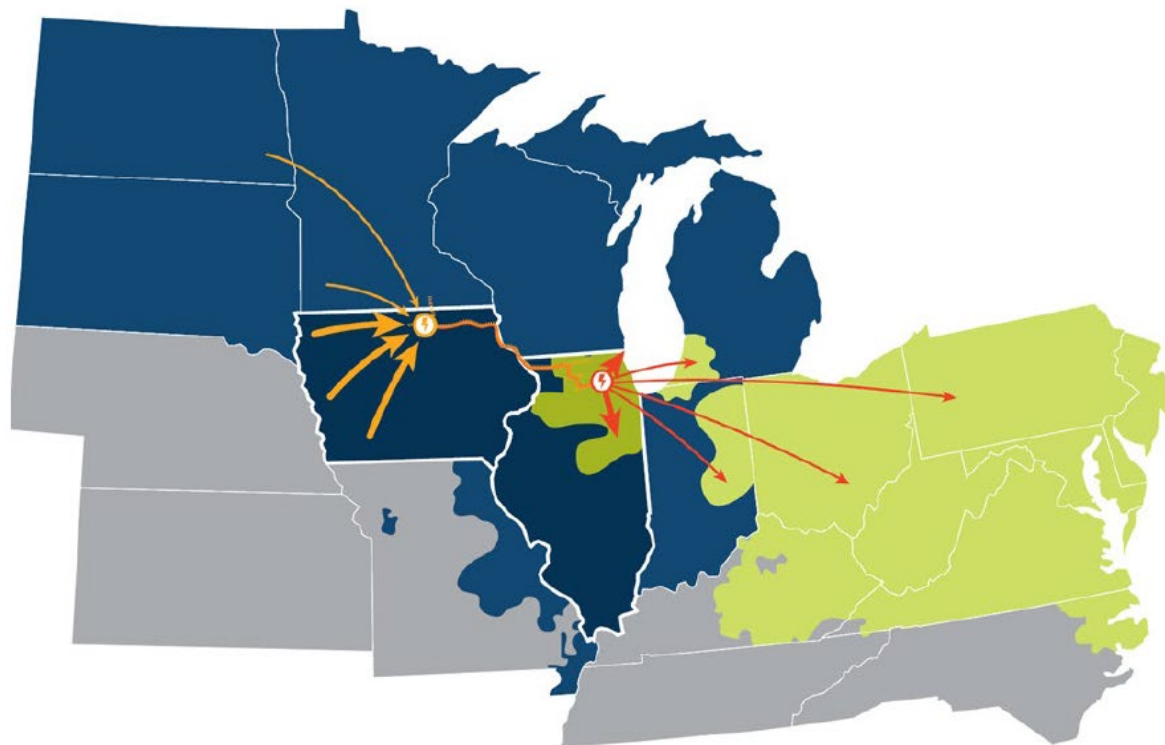


- Nearly 140,000-mile network in Canada, Mexico and U.S.
- 6 Class I railroads operate over 2/3 of the nation's right-of-way and 95% of railroad freight revenue.
- Freight rail accounts for 40% of long-distance ton-miles, more than any other mode of transportation.
- More than \$23 billion privately invested annually, on average, into CapEx and maintenance.
- Safest and most fuel-efficient way to move freight over land.

2

Presentation by: Theresa Romanosky, American Association of Railroads

- Planning, design and engineering considerations are key for co-locating in the highly-engineered rail ROW
- Co-located projects must ensure that they do not interfere with the track structure, communications infrastructure, anti-collision technology, or railroad crossing warning devices.



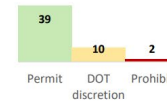
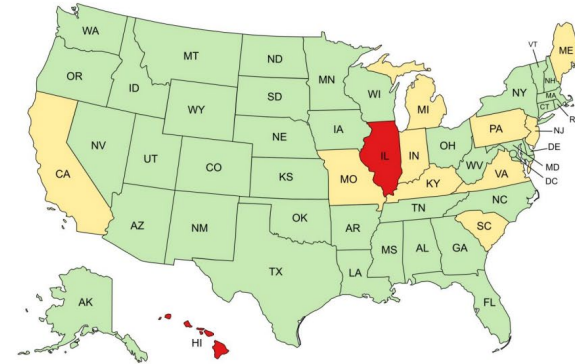
Presentation by: Jim Hoecker, Rail-Grid Collaborative

Many states restrict or prohibit the installation of transmission lines, especially in freeways



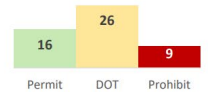
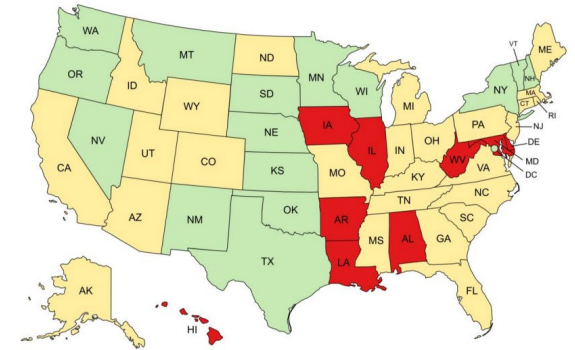
Policy Status and Opportunities

Prohibitions of Longitudinal Tx in Non-Freeways



Generally permitted Permitted at discretion of DOT Prohibited

Prohibitions of Longitudinal Tx in Freeways



- Comprehensive PNNL analysis of state policies and practices found that 2/3 of states have restrictive policies or bans on transmission in freeway ROW
- Some states promote development, including Minnesota, Wisconsin, Delaware, Florida, Maine, New Hampshire.
- DOTs and transmission developers vary in entities involved, financing and capital, planning, jurisdictional boundaries, and design timelines

A growing number of states promote the use of Highway ROW for transmission



States with Statutory Promotion for Use of Highway ROW for Transmission		
	Delaware	Promotes use of transportation ROW for renewable energy projects over 30MW and connected to PJM transmission grid (2024) 84 Del. Laws, c. 401, § 13
	Florida	Transportation department shall accommodate 69KV or higher lines for baseload power (2021) 2021 FL Statutes Title XXVI Chapter 337 § 401
	Minnesota	Permits longitudinal transmission and requires consideration of ROW during the transmission permit application process (2024) Sec. 161.45 MN Statutes
	Wisconsin	Comprehensive energy policy promoting use of transportation right of way (2003) 2003 Wisconsin Act 89
	Maine New Hampshire	Energy policy promoting transmission siting on specific named interstates and routes (Maine 2010, New Hampshire 2016) Sec. A-2, 35-A MRSA § 122(1-B) (ME) Chapter 162-R Energy Infrastructure Development and Corridors (NH)

States with Pending Legislation

 Colorado

[HB25-1292: Transmission Lines in State Highway Rights-of-Way | CCW](#)

 Illinois

[SB2146 \(2025-2026\)](#)

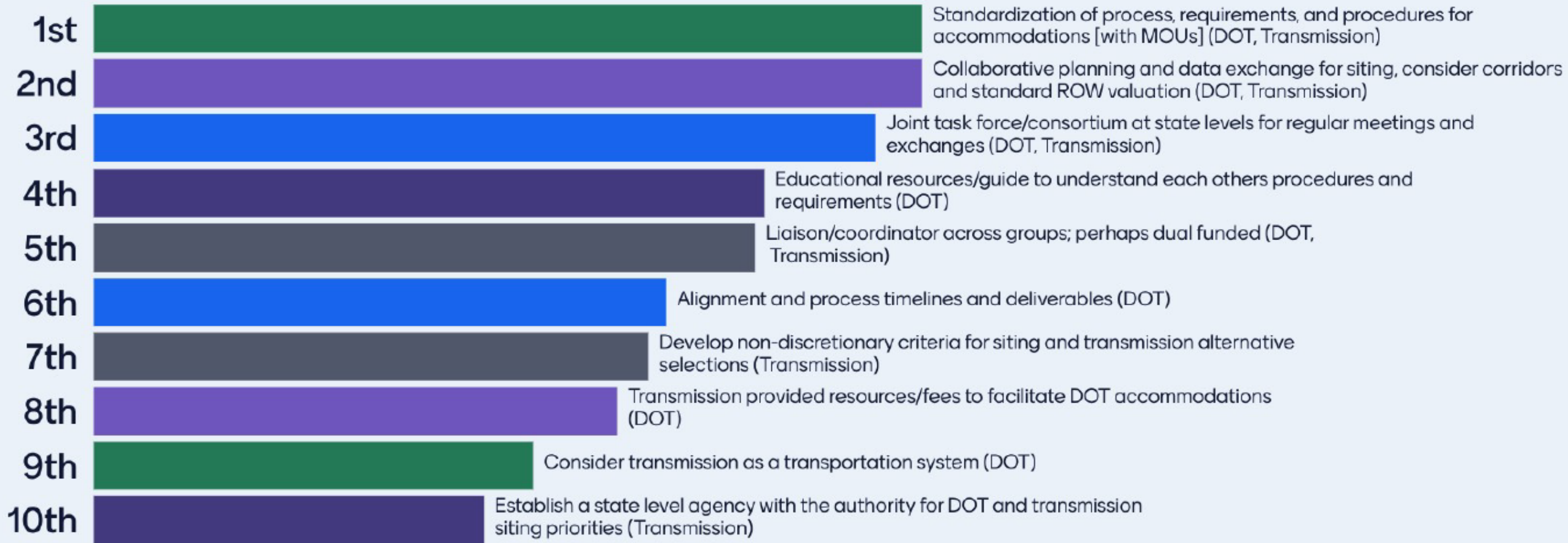
 Maryland

[SB483 \(2025\); HB645](#)

Implementation Issues Identified in Breakouts

- Rail
 - Importance of communication and finding common ground
 - Lack of awareness from other sectors that working with rail is an option, including location and characteristics of rail ROW
- Highway:
 - Engineering, policy, and logistical issues are real concerns for access, safety, and costs
 - Existing challenges in coordinating with utilities creates a barrier
 - Lack of DOT resources makes collaboration challenging
- Transmission
 - Early visioning and preplanning engagement is needed
 - Understanding each entity's goals and requirements for go/no-go decisions
 - Data gaps and misalignment in processes between sectors
 - Lack of clear criteria from transmission approval entities, e.g. cost vs public preference of siting

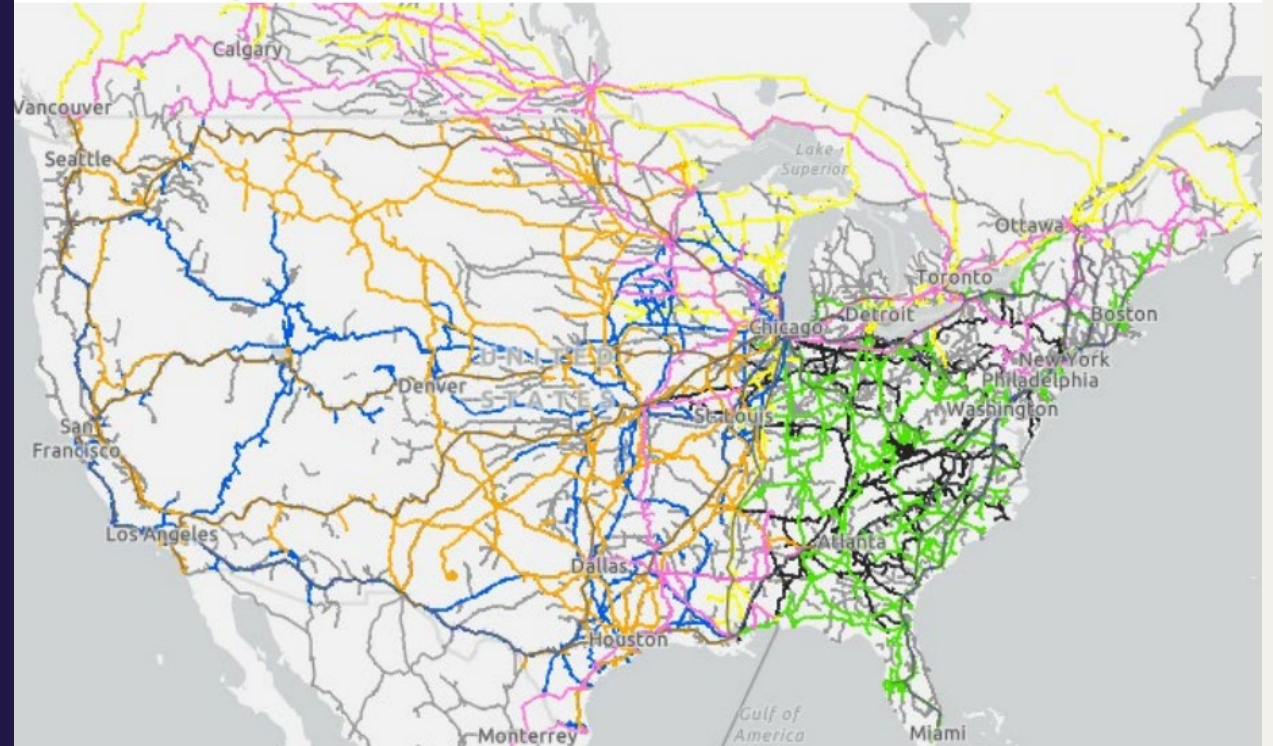
Prioritized Actions for Highway and Transmission



Rail Overview

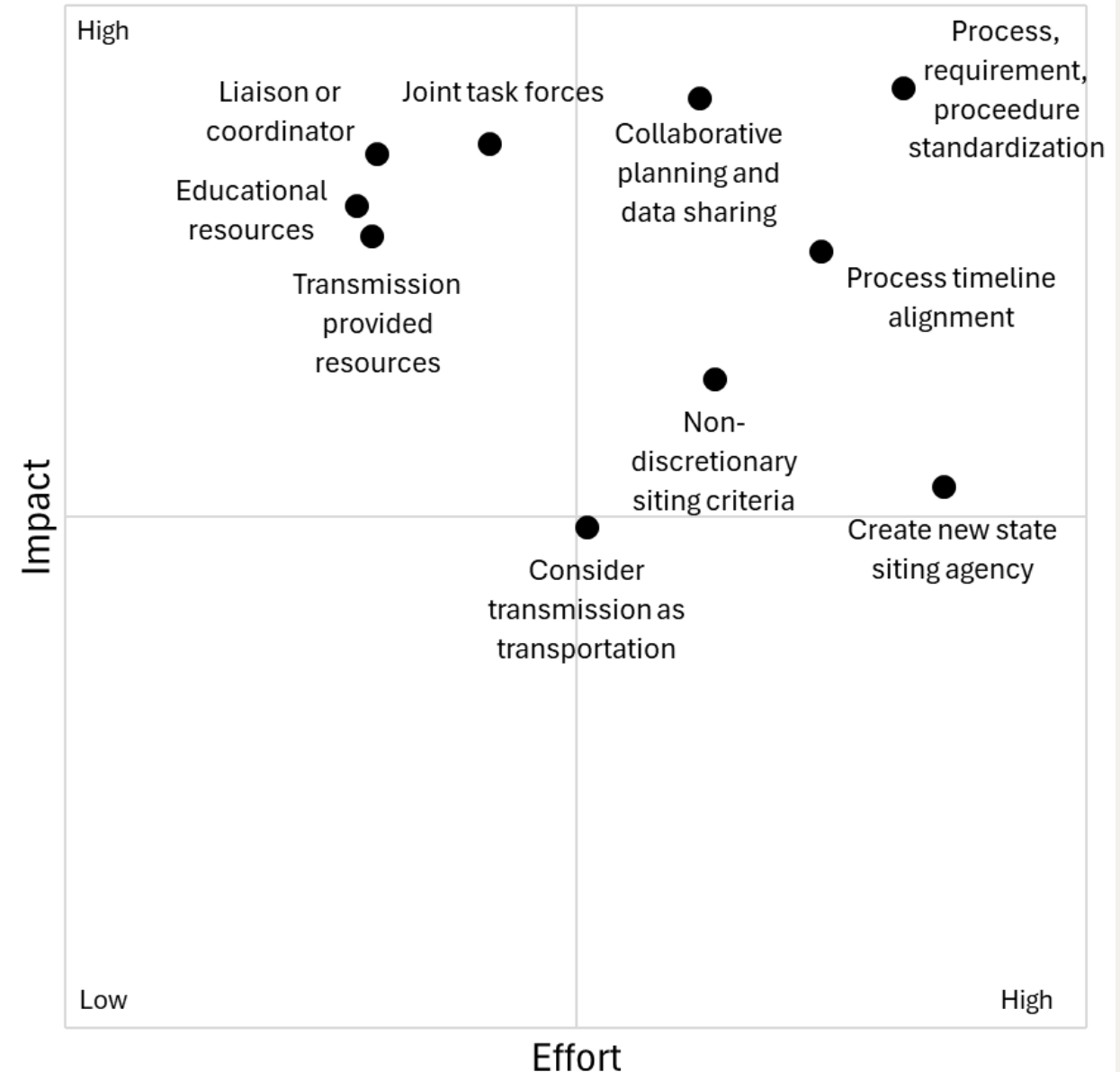
- Communicate with the railroads early and often
- Understand railroad ROWs way and need to protect rail operations, including communications systems
- Ask railroads where the co-location opportunities might be
- Railroads might welcome the commercial opportunity

The US Rail Networks: Operational and Abandoned



Impact-Effort Matrix

- Participants categorized the potential impact and effort required to take on the 10 prioritized actions.
- Impactful but less effortful ideas include use of liaisons, task forces, and educational resources
- Impactful and higher effort ideas include aligning processes, procedures, and timelines.



Partner NGOs

Rail Grid Collaborative



Partner Trade Groups

- National Association of State Energy Officials (NASEO)
- American Association of Railroads (AAR)
- American Shortline and Regional Railroad Association (ASLRRA)
- Edison Electric Institute (EEI)
- American Association of State Highway Transportation Officials (AASHTO)
- National Governor's Association

Institutional Partners

- FHWA
- DOE
- Carnegie Mellon University
- Iowa State University
- Texas A&M
- Pacific Northwest National Laboratory
- National Renewable Energy Laboratory
- ISO New England
- Many state DOTs

Thank you to our speakers

- **Michael Berube**, *Energy Efficiency and Renewable Energy - DOE*
- **Randy Satterfield**, *NextGen Highways*
- **Rob Gramlich**, *Grid Strategies LLC*
- **Julie Johnston**, *Federal Highway Association*
- **Stephen Boyle**, *energyRe*
- **Jeff Dagle**, *Pacific Northwest National Laboratory*
- **Eric Johnson**, *ISO New England*
- **Greg Mathe**, *Dominion Energy*
- **Rebecca O'Neil**, *Pacific Northwest National Laboratory*
- **Drew Gilmore**, *Ohio DOT*
- **Leonel Tovar**, *Texas DOT*
- **Brian Christensen**, *Horrocks*
- **Jessica Oh**, *Minnesota DOT*
- **Bob Fasick**, *Wisconsin DOT*
- **Alex Saar**, *CSX*
- **Theresa Romanosky**, *Association of American Railroads*
- **Moises Young**, *Amtrak*
- **Jim Hoecker**, *Rail-Grid Collaborative*
- **Chris Fletcher**, *National Governors Association*
- **Kenny Franklin**, *Parsons Corporation*
- **Deanne Popp**, *Iowa DOT*
- **Deborah Kukulich**, *Delaware DOT*
- **Cesar Quiroga**, *Texas A&M Transportation Institute*
- **Donna Brutkoski**, *NextGen Highways*
- **Houtan Moaveni**, *Grid Strategies LLC*
- **Jennifer Yoshimura**, *Pacific Northwest National Laboratory*
- **Joe Simon**, *National Renewable Energy Laboratory*
- **Stanley Young**, *National Renewable Energy Laboratory*
- **Allie Kelly**, *The Ray*
- **Edgar Kraus**, *Texas A&M Transportation Institute*
- **Genevieve Haller**, *Delaware DOT*
- **Patrick Overton**, *Florida DOT*
- **James Olschewski**, *Kimley-Horn*
- **Casey Soneira**, *American Association of State Highway and Transportation Officials*
- **John Kaliski**, *Cambridge Systematics*
- **Maury Galbraith**, *Colorado Electric Transmission Authority*
- **Ted Thomas**, *Energize Strategies*

What's Next? Upcoming Convenings

- Rail Grid Collaborative (rail-grid.org):
 - Fall webinar and workshop being planned

National Academies

Transportation Research Board Annual Meeting

- Workshop (in planning)

Thank you!
Any questions?

Access the Proceedings:



nap.nationalacademies.org/catalog/29178

Convened April 7–9, 2025

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

Proceedings of a Workshop—in Brief

Meeting the United States' growing demand for reliable, resilient, and affordable energy will require expanded electric transmission capacity across the nation. As grid planners identify paths to accomplishing this expansion, the co-location of transmission lines along highway and rail rights of way (ROWs) may be one option for siting future transmission infrastructure. While this approach can potentially offer benefits for feasibility, cost-effectiveness, and public acceptance, there are few successful examples of this approach to date and many policy, logistical, design, and construction challenges to consider.

To provide a forum for discussing opportunities for the use of transportation ROWs for electrical transmission, the challenges involved, and potential solutions to overcome barriers, the National Academies of Sciences, Engineering, and Medicine (the National Academies) hosted the workshop on Reinventing the Right of Way: Policy, Technical, and Economic Implications of Siting Transmission Lines Along Transportation Corridors on April 7–9, 2025. The workshop convened stakeholders in the planning, operations, ownership, use, and regulation of transmission projects and transportation ROWs to establish a shared understanding of the issues and elicit constructive suggestions for action. The three-day event included more than 100 participants from

state Departments of Transportation (DOTs), state and regional energy system offices and organizations, rail industry, federal entities, utilities and transmission developers, environmental and community groups, and research organizations. Attendees identified key barriers to locating transmission infrastructure within transportation ROWs; policies, supports, and business models that might advance such projects; and possible approaches or next steps for better coordination for co-location.

Workshop co-chairs **Jacob Lucas** (Eversource) and **Roy Sturgill** (Iowa State University) framed the current moment as a critical juncture for the nation. The demand for clean, reliable, and resilient energy is greater than ever before, and a robust electric grid is essential for daily life, the U.S. economy, and national security. Meeting these needs will require a significant buildout of electric grid infrastructure in many parts of the country. Sturgill drew a parallel between today's challenges and the establishment of the interstate highway system in the mid-20th century, noting that, in addition to offering a conceptual example of the country's capacity to successfully deploy large-scale infrastructure projects, the nation's highways lay the groundwork for future grid expansion in a physical sense, as well. Exchanges amongst stakeholders in the workshop built connections