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Electric Transmission in Transportation Rights-of-Way: Gaps Analysis

2025

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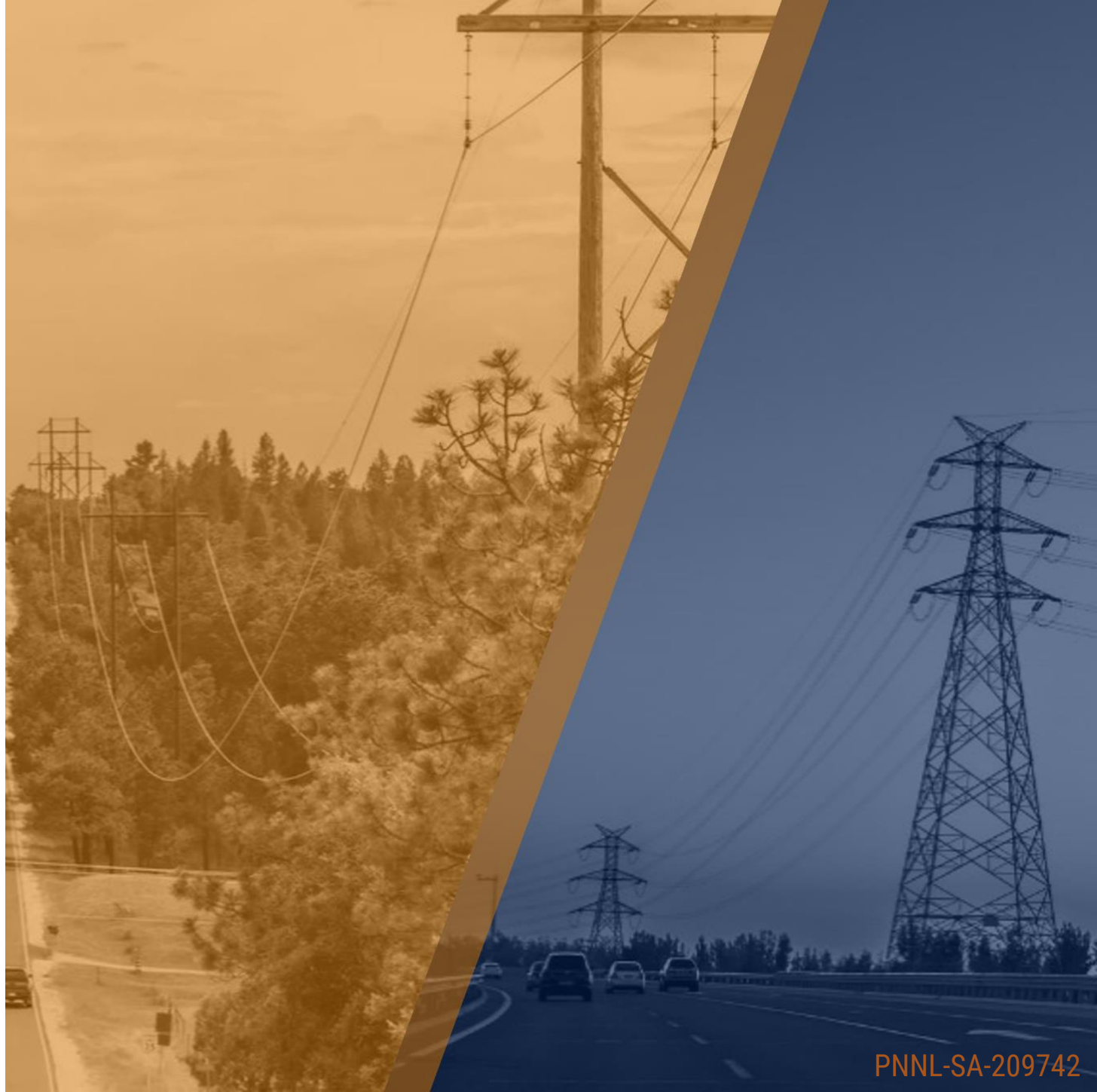

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Gaps organized into 7 topical areas relevant to transmission and transportation

01 Policy
Analysis of policies governing transmission and transportation ROWs

02 Institutional
Organizations involved have separate missions and cultures

03 Planning
Potential relationships between transportation and transmission planning

04 Financial
Financial structures and motivations are different for transportation and transmission

05 Siting & Permitting
Authorizations and jurisdictions for project development in ROWs

06 Engineering
Complex design, construction, and operation, in compliance with codes and regulations

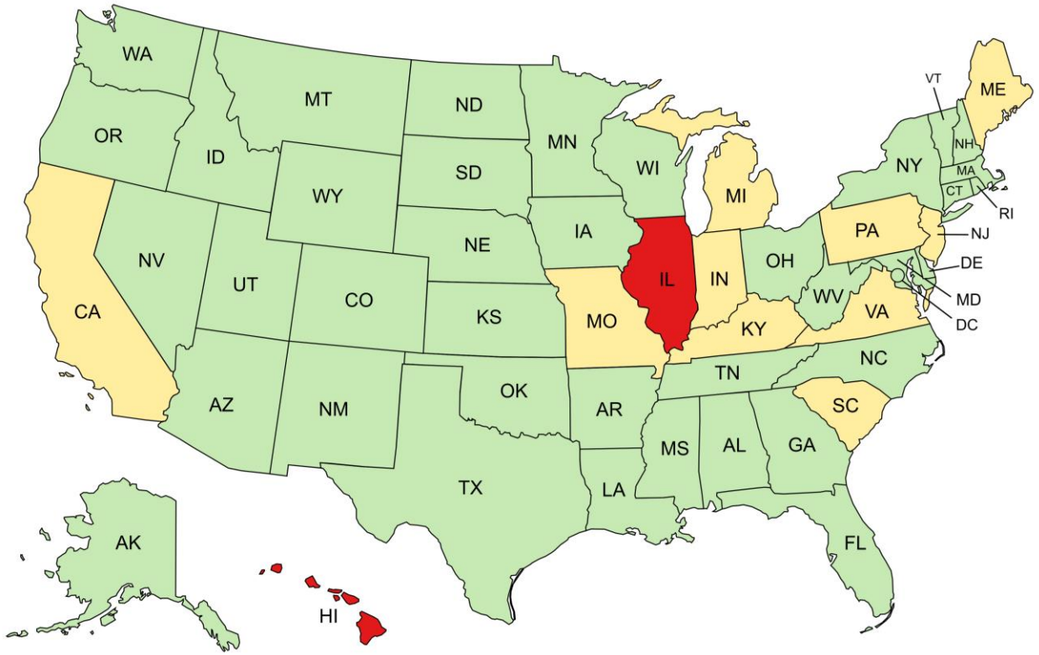
07 Rail
Each rail owner requires license agreements and has independent policies and procedures

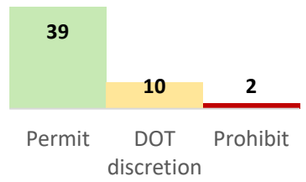
01 Policy

Analysis of policies governing transmission and transportation ROWs

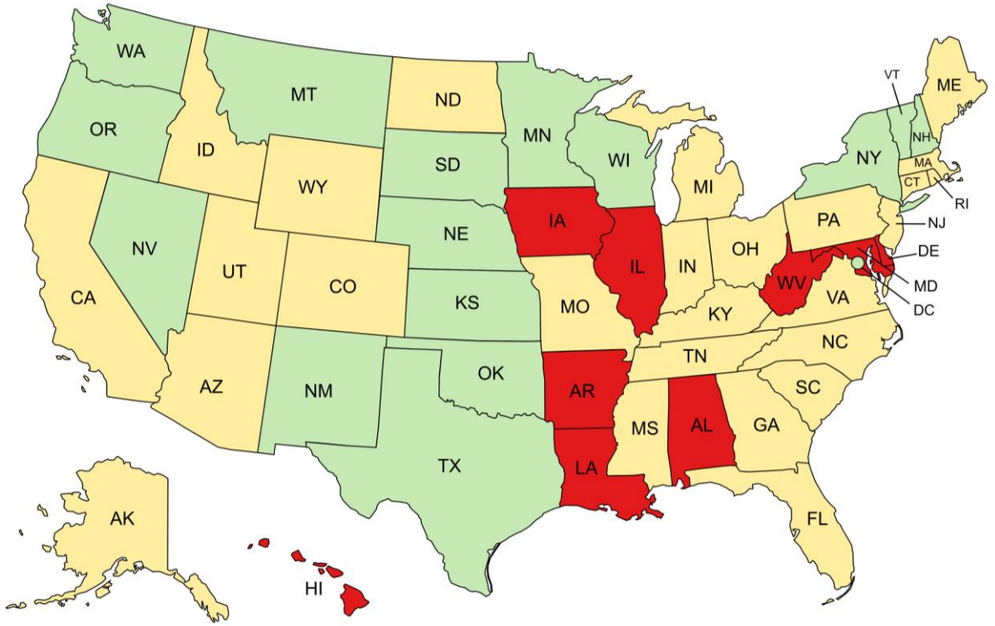
Many states restrict or prohibit the installation of transmission lines, especially in freeways

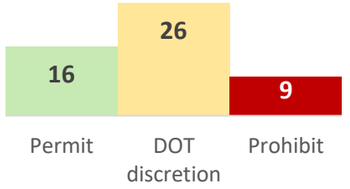
Prohibitions of Longitudinal Tx in Non-Freeways





Prohibitions of Longitudinal Tx in Freeways





Generally permitted

Permitted at discretion of DOT

Prohibited

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

03 Planning

Potential relationships between transmission and transportation planning

Transportation and transmission planning differ in important ways

TRANSPORTATION

01 Long-range Planning
- State DOT- or MPO-wide
- Vision/connection with broader goals; may include specific projects
- 20-25 years

02 Programming
- State DOT- or MPO-wide
- List of projects
- 4-5 years

03 Project Development
- Specific project/location
- Includes NEPA, engineering/design, ROW and utility coordination

04 Construction & Maintenance
- Specific project/location
- Includes utility coordination and relocation

TRANSMISSION

Planning 01
- Multi-state region (ISO/RTO)
- Paths/connecting zones
- Utility resource planning for load/ build forecasts
- 5-30 years

Siting 02
- Project proponent (utility, federal PMA, merchant)
- Specific route – may be multiple states
- NEPA, permitting

Engineering Design 03
- FERC & NERC regulatory requirements
- NESC & ASCE standards
- Accessibility and safety
- Public comments

Construction & Maintenance 04
- Specific route – may be in multiple states

Variation in type of entities that conduct and benefit from planning stages

TRANSPORTATION

01 Long-range Planning
- State DOT- or MPO-wide
- Vision/connection with broader goals; may include specific projects
- 20-25 years

02 Programming
- [illegible]-wide
- 5-15 years

03 Project Development
- Specific project/location
- [illegible]n, ROW and utility coordination

04 Construction & Maintenance
- Specific project/location
- Includes utility coordination and relocation

Transportation agencies (state DOT, MPO) involved throughout process

Designed for public and societal beneficiaries

TRANSMISSION

01 Planning
- Multi-state region (ISO/RTO)
- Paths/connecting zones
- 5-30 years

02 Siting
- Project [illegible] mer[illegible]
- Specific route – may be multiple states
- NEPA, permitting

03 Engineering & Design
- FERC & NERC regulatory requirements
- [illegible]
- Accessibility and safety
- Public comments

04 Construction
- Specific route – m[illegible] states

Constellation of authorities, public and private sector

Designed to benefit system performance, industry coordination, markets and competition

Variation in financing and capital that influence planning structures

TRANSPORTATION

01

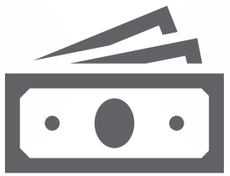
02

03

04

Funding from federal, state, and local government

Public investment is patient and pre-determined



TRANSMISSION

01

02

03

04

Funding sources vary, but typically private capital and/or rate based

Private capital is market- and time-sensitive

Geographic and jurisdictional boundaries are different

TRANSPORTATION

01 Long-range Planning
- State DOT- or MPO-wide
- Vision/connection with broader goals; may include specific projects
- 20-25 years

02 Planning occurs within state DOT and Metropolitan Planning Organization (MPO) boundaries

03

04 Established and recognizable governance and spatial jurisdictions

TRANSMISSION

01 Planning
- Multi-state region (ISO/RTO)
- Paths/connecting zones
- Utility resource planning for load / build forecasts
- 5-30 years

02 Planning occurs within system operator or utility footprints

03

04 Unique boundaries that can change over time, utility drivers include access to generating resources and markets

Specific project design decisions are not well aligned on planning timelines

TRANSPORTATION

01 Long-range Planning
- State DOT- or MPO-wide
- Vision/connection with broader goals; may include specific projects
- 20-25 years

02 Programming
- State DOT- or MPO-wide
- Set of projects
- 4-5 years

03 Project Development
- Specific project/location
- Includes NEPA, engineering/design, ROW and utility coordination

04 Construction & Maintenance
- Specific project/location
- Includes utility coordination and relocation

Key inputs about Tx in ROW would be <u>needed</u> 20 years before construction

TRANSMISSION

01 Planning
- Multi-state region (ISO/RTO)
- Paths/connecting zones
- 5-30 years

02 Siting
- Project proponent (utility, federal PMA, merchant)
- Specific route – may be multiple states
- NEPA, permitting

03 Engineering Design
- NESC & ASCE standards
- Accessibility and
- Public comments

Key inputs about Tx in ROW are <u>available</u> 1-5 years before construction

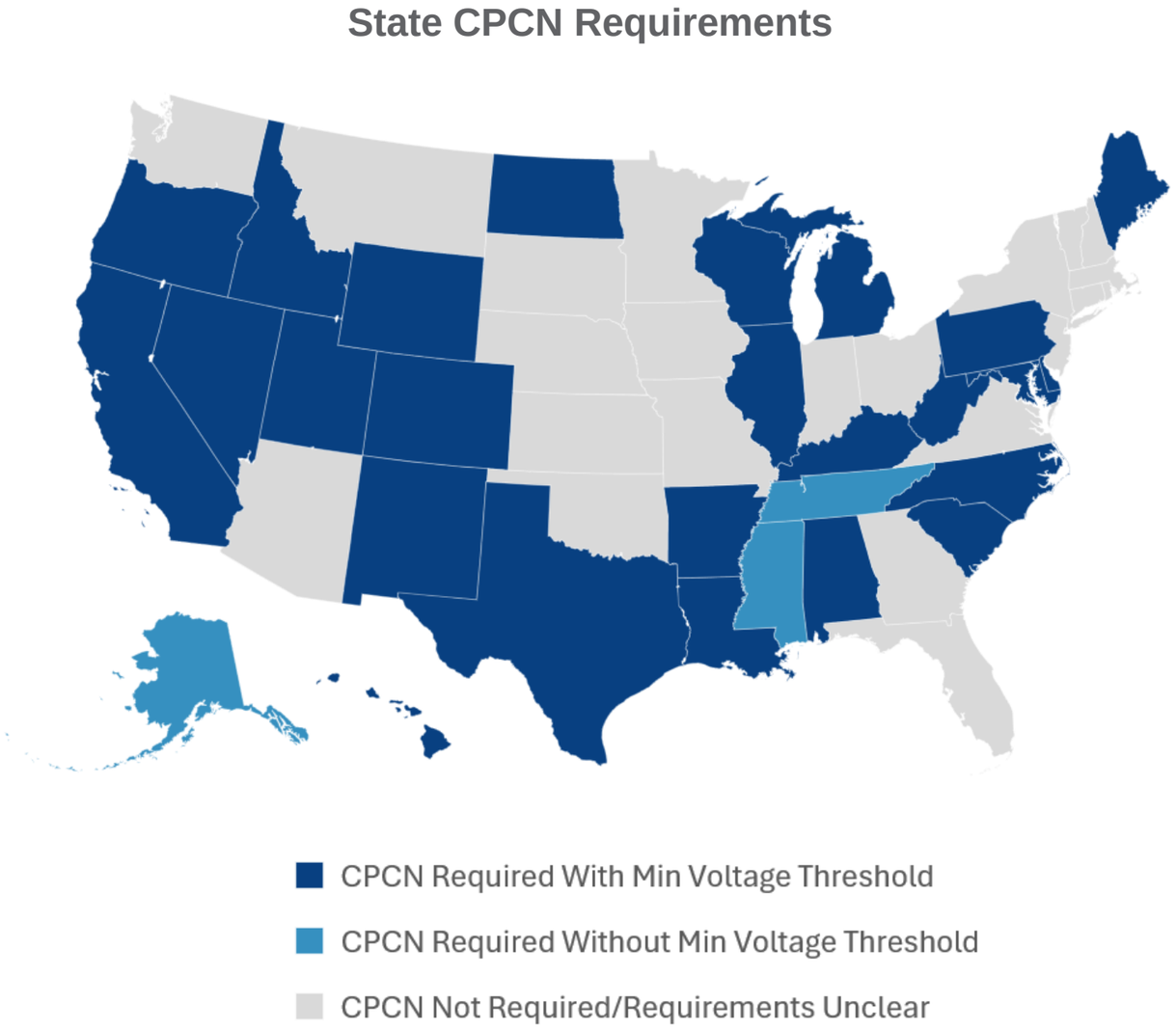
04 Construction & Maintenance
- Specific route – may be in multiple states

05 Siting & Permitting

Authorizations and jurisdictions for project development in ROWs

Transmission siting authorities are state-specific and highly variable

- A Certificate of Public Convenience and Necessity (CPCN) is a type of regulatory compliance certificate intended to demonstrate public need and authorize infrastructure projects.
- Siting authority varies by state. Some distribute authority over multiple agencies, while others are more centralized and coordinated.
- If centralized, government authorities primarily responsible for siting may include:
  - Public Utility Commissions (PUCs)
  - State Energy Offices
  - State Natural Resources Agencies
  - Independent State Siting Councils
  - State Siting Boards organized under an existing agency



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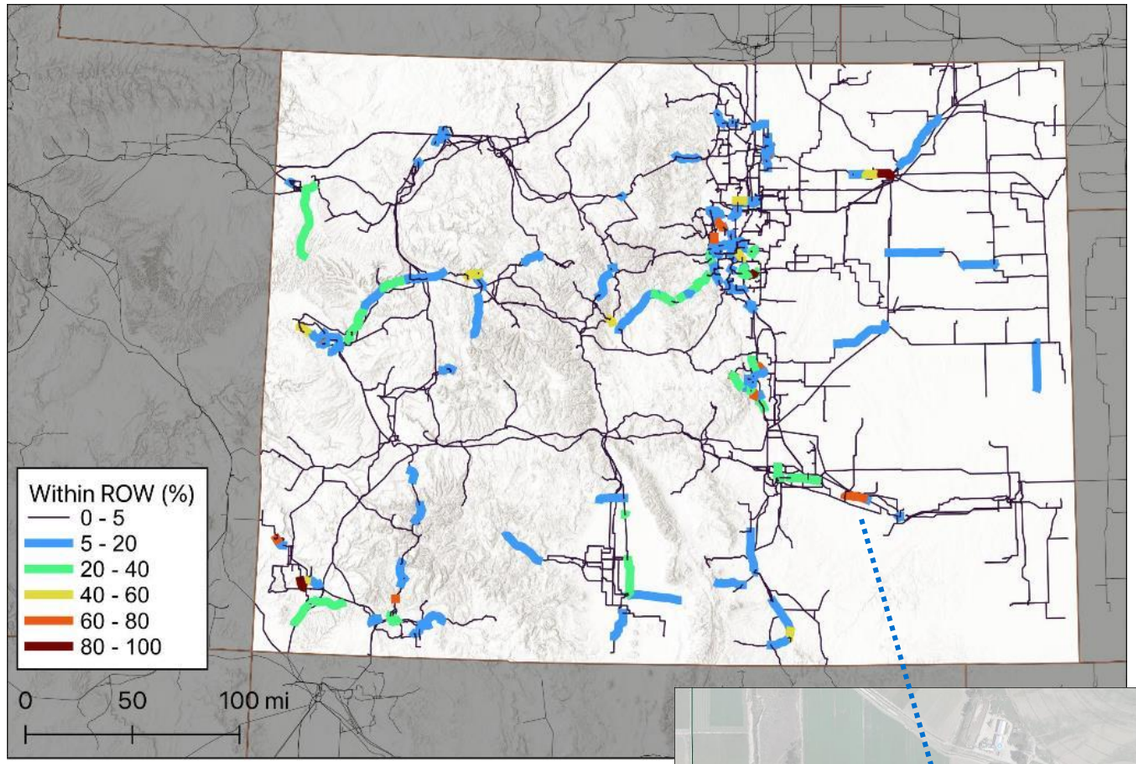
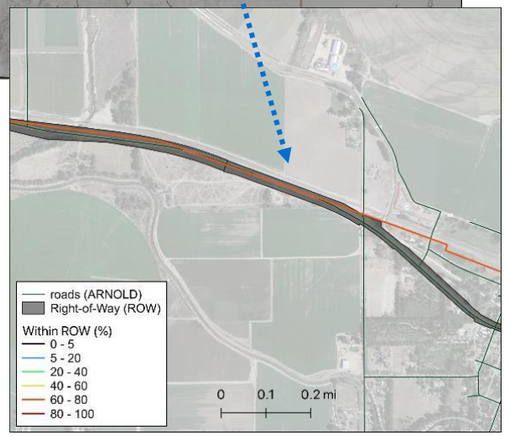
ROW data is inconsistent across states and unavailable for energy infrastructure planning

- Transportation ROW data is managed independently by state DOTs.
- Transmission is already present within highway ROW – but exactly how many structures and miles is unknown.
- Colorado DOT publishes high-quality, publicly accessible ROW data, making analysis possible.
- Colorado has 23,000 miles of transmission; 234 miles (1%) are located in Colorado DOT ROW.



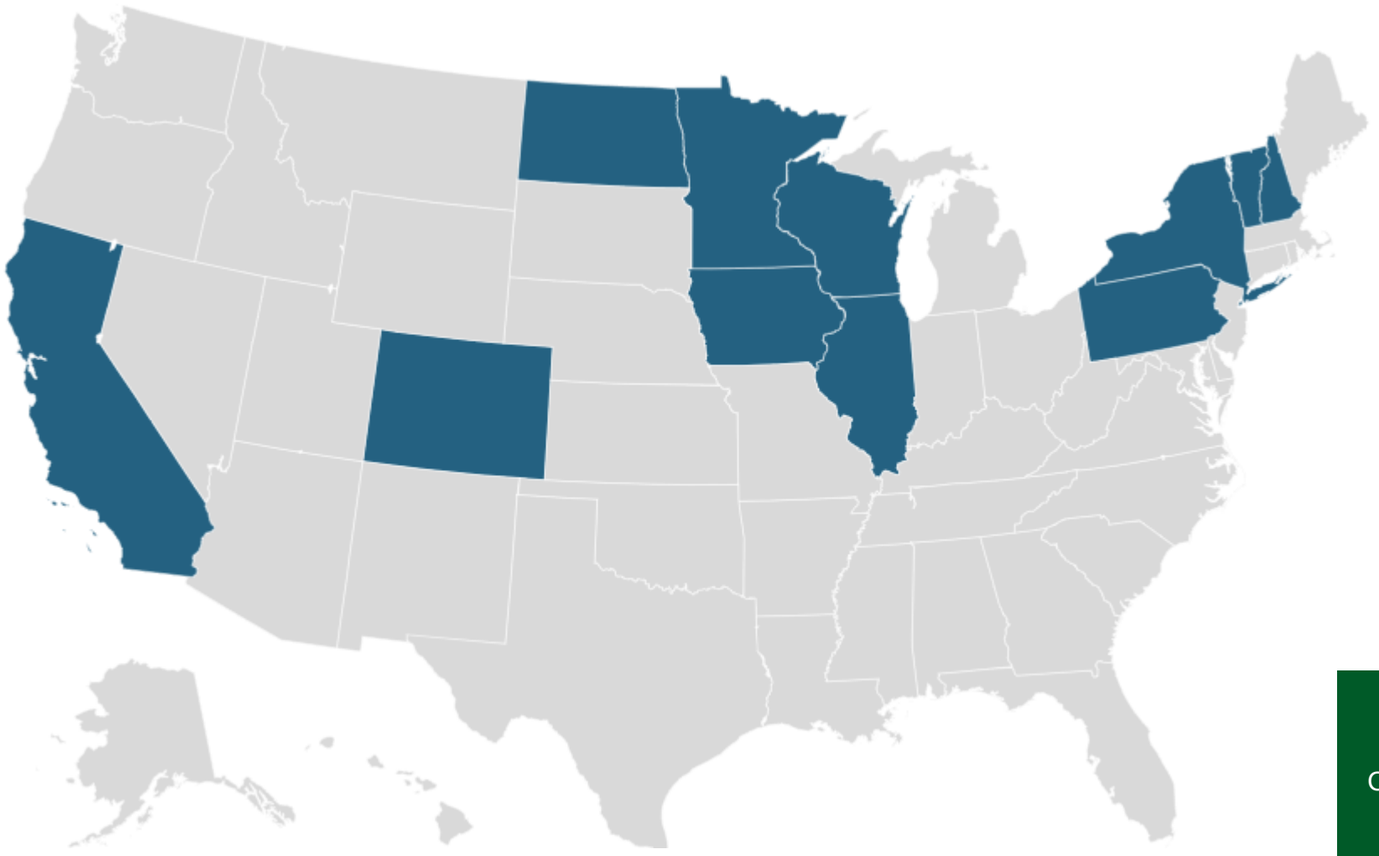
Highway type	Miles of co-located transmission	Number of co-located segments
Interstates & other freeways	49	61
Other principal and minor arterials	67	91



This transmission line has 68% of its length within a highway ROW

Identifying recent longitudinal projects within the transportation ROW (2000-2025)

States with One or More Identified Project



Key Insights from 15 Projects Identified

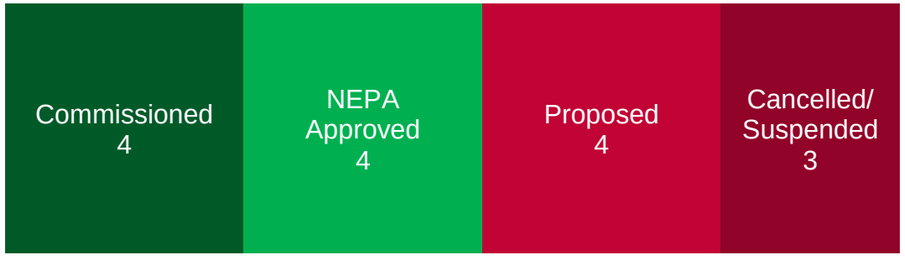
Voltage Level
All projects are 115 kV or greater.

HVDC
5 projects are high-voltage direct current (HVDC).

Orientation
8 projects are underground and 7 are overhead in the transportation ROW.

Project Financing
6 projects are merchant and 9 are non-merchant.

Status of Projects



06

Engineering

Complex design, construction, and operations, in compliance with codes and regulations

Accessibility of transmission corridors includes easements on private property, considerations for sizable equipment, and safety aspects for road crossings

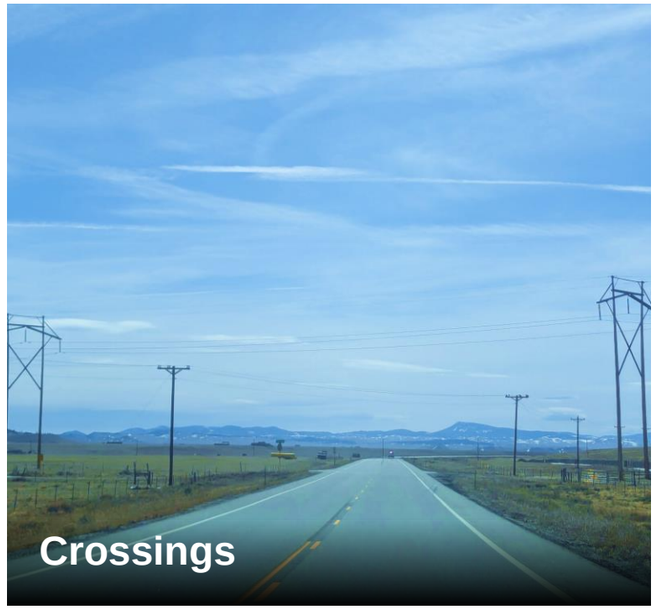


Image Credits:
Transmission with Rail: Scott Gilman, Colorado
Vegetation Clearances: Irena Netik, Washington
Crossings: Scott Gilman, Colorado
Property Easements: Rebecca O'Neil, Kentucky

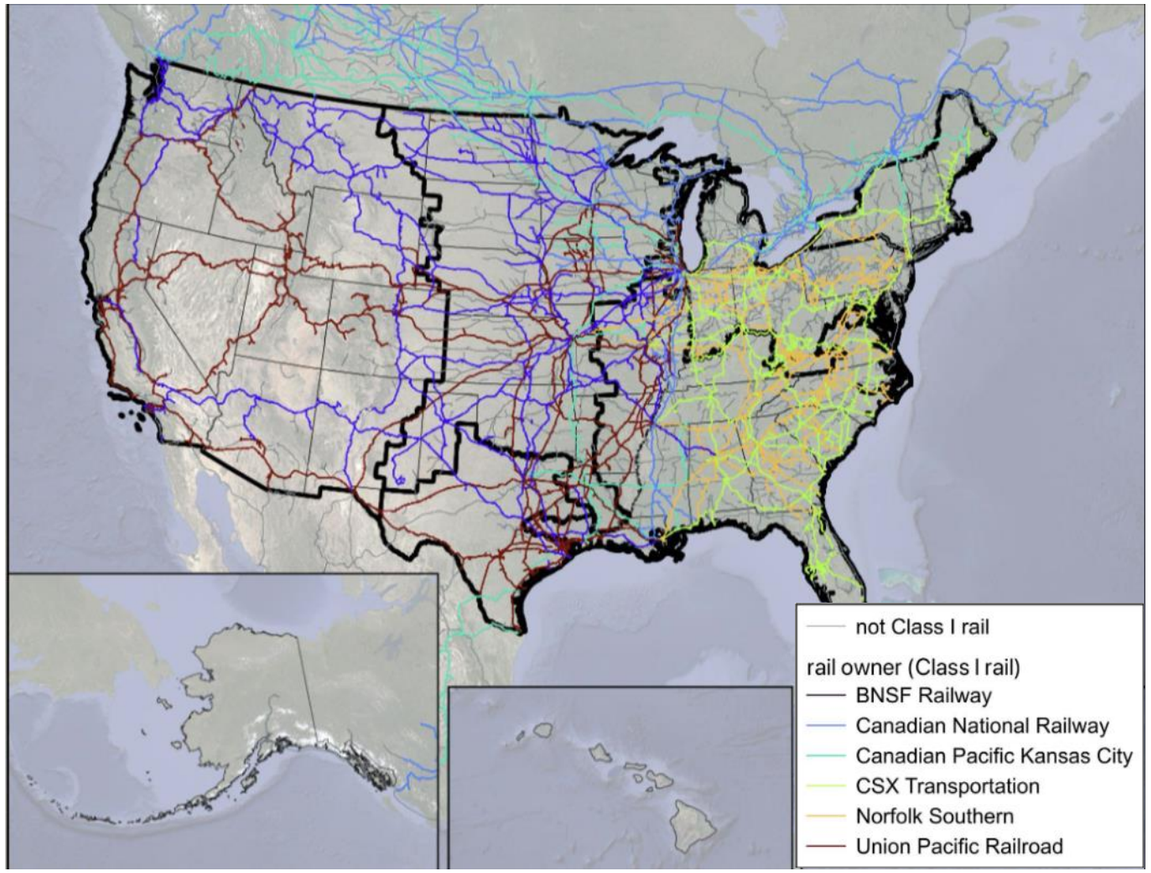
07

Rail

Each rail owner requires license agreements and has independent policies and procedures

Class I railroads have national reach for transmission opportunities

- Freight railroads in the U.S. are designated according to their annual operating revenues as Class I, II, or III.
- Approximately **two-thirds** of the nation's rail network (~92,000 route miles) is **owned by six Class I freight railroad** companies.
- Class II and III make up 600 short line railroads and include private, public, and quasi-public operators and owners.
- Railroad property rights often come from easements, license agreements, and/or adverse possession.



Above: Class I rail owners related to NERC regions. Note that all bulk electric reliability regions have Class I rail opportunities.

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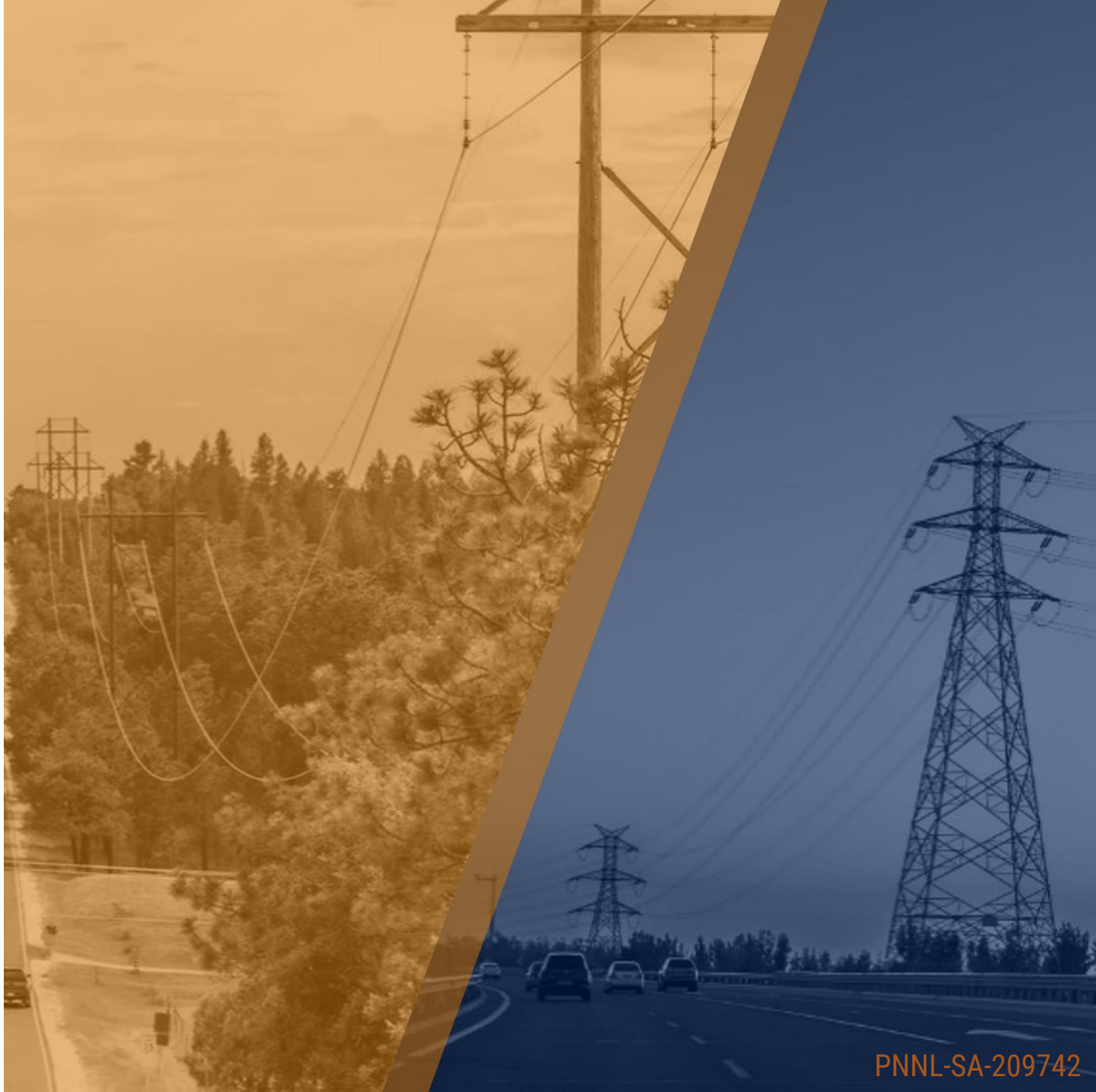

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Thank you