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National Association of State Energy Officials

NEXTGEN HIGHWAYS

Reimagining Highway Rights-of-Way as Transmission Corridors

Opportunities and Considerations for State Energy Offices

Photo Credit: NexGen Highways

Introduction

State Energy Offices are facing monumental economic growth and innovation as new and pressing electricity demands surge across the nation due to the expansion of data centers, electrification of buildings and transportation, and onshoring of manufacturing

and industrial processes.[1] Many State Energy Offices are working alongside their utilities, economic development agencies, governors, and legislatures to identify innovative ways to get more power on the grid. At the same time, the reliability of the electric grid is impacted by aging infrastructure and increasingly frequent and severe weather events. To meet new demand growth and address reliability and resilience concerns, transmission expansion is essential. New proposed transmission lines seek to address these concerns and integrate new forms of generated energy as the nation's supply mix diversifies. Along with meeting new energy goals, expanding transmission infrastructure can support economic development and realize cost savings benefits across the country. However, the siting and permitting of transmission projects is both difficult and time-consuming, requiring extensive federal, state, and local permitting processes, land acquisition from private landowners or engaging federal agencies on public lands, and navigating competing land-use interests.[2]

To facilitate the efficient siting of needed transmission lines and to minimize impacts on lands and in communities, colocation of transmission lines in highway rights-of-way could be a potential solution. Considering new electric transmission infrastructure along existing state and interstate highways may overcome the barriers to transmission expansion, meet growing demand, and positively contribute to the expansion of utility and telecommunication infrastructure as well.

NASEO represents the State Energy Offices from each of the 56 states, territories, and District of Columbia. State and Territory Energy Offices (henceforth State Energy Offices) are important agents of change – advancing practical energy policies at the direction of governors and legislatures, informing regulatory processes, enhancing physical and cyber energy security, and supporting economic development. This paper outlines opportunities and considerations for State Energy Offices to support colocation of transmission lines, benefits of transmission colocation, and case studies from states.

Opportunities for State Energy Offices

State Energy Offices can play at least three key roles in enabling transmission colocation in their states: 1) they can incorporate transmission planning into existing, comprehensive state energy planning, 2) they can convene the state's energy stakeholders for education and discussion, and 3) they can support policy reform.

1. State Energy Offices develop states' comprehensive energy plans, state energy security and resilience plans, state climate action plans, and support electric transmission and distribution planning. In each of these plans, State Energy Offices can incorporate considerations of transmission colocation, especially in comprehensive state energy plans, which provide an assessment of current and future energy supply and demand in a state, examine existing energy policies, and

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[1] B. Tsuchida, L. Lam, and P. Fox-Penner, "Electricity Demand Growth and Forecasting in a Time of Change," The Brattle Group (May 2024), https://www.brattle.com/wp-content/uploads/2024/05/Two-Pager__Electricity-Demand-Growth-and-Forecasting-in-a-Time-of-Change__May-2024.pdf.

[2] W. H. Smith, "Mini Guide on Transmission Siting: State Agency Decision Making," National Council on Electricity Policy (December 2021), https://pubs.naruc.org/pub/C1FA4F15-1866-DAAC-99FB-F832DD7ECFF0.

identify emerging energy challenges and opportunities. These plans can provide an overview of transmission colocation as a potential solution going forward. The planning process for State Energy Plans overall can help to guide and build consensus among stakeholders in moving toward a shared goal of meeting future energy needs and provide more information on colocation benefits.

2. State Energy Offices can convene and inform other state decision makers about transmission colocation through engagement with stakeholders. State Energy Offices can also provide stakeholders with the tools to navigate the complexities of the topic. Such tools can include factsheets, outlining the benefits of colocation and considerations for successful colocation (as discussed in the next section), or examples from other states' efforts. Additionally, State Energy Offices can help bring the relevant stakeholders to the table, such as policy makers, political leaders, and the private sector, and drive a productive conversation. Key audiences may include:
    - Investor- and consumer-owned utilities
    - Transmission developers
    - Governor's policy staff
    - Public Utility Commission
    - State Department of Transportation
    - State Department of Commerce or Economic Development
    - Local governments
    - Environmental organizations
    - Organized labor
    - Community organizations
    - Business/economic development organizations
    - Agriculture organizations

   Coordination between State Energy Offices and State Transportation Offices is a particularly important component of working toward transmission colocation in highway rights-of-way. In the case of long-term planning, for example, State Energy Offices can engage their State Transportation Office and share their priorities and needs. By collaborating on this issue closely, State Energy Offices and State Transportation Offices have the opportunity to foster state agency-level coordination on the state's energy priorities.

3. State Energy Offices can support policy reform to unlock the potential benefits of colocation. By working with state legislators, assisting in the preparation of Executive Orders from governors, and collaborating with investor- and consumer-owned utilities to add colocation considerations to their transmission planning, they can push the consideration of transmission colocation forward. State Energy Offices interested in collaborating with these entities can consider promoting the following:
    - Removing any legal prohibition on colocation in the state.
    - Working with State Transportation Offices to allow and facilitate transmission colocation in all highway rights-of-way.
    - Creating transmission siting priorities.
        - Prioritize placement of new transmission in existing infrastructure corridors including existing transmission, railways, and highways.

- Promote support for impacted communities.
  - Provide direct financial or other benefits to counties and municipalities impacted by transmission construction and operation.

Benefits of Transmission Colocation

Siting transmission infrastructure along highway rights-of-way could simplify complex siting and permitting processes and allow states to more rapidly address electricity demand growth, reliability, and resilience concerns. The following overview outlines how transmission colocation could reduce burdens associated with transmission siting and could lead to positive outcomes:

- *Working with fewer land authorities.*[3]
  By working primarily with the State Transportation Office, projects may encounter fewer potential conflicts or even lawsuits that often arise with landowners and battling competing land-use interests. It is important to note that large transmission right-of-way projects may still require the purchase of private land, and thus engagement with private landholders, but the broader private landowner impact can be reduced by utilizing highway rights-of-way.
- *Reducing the permitting timeline for new transmission lines.*
  Transmission colocation along highway rights-of-way is subject to a state's relevant siting authority and National Environmental Policy Act (NEPA) review, including any applicable public engagement processes. But by working along the rights-of-way of interstate highways and reducing the number of direct stakeholders impacted, transmission projects can limit extensive siting and permitting processes. As mentioned previously, working with a reduced number of land authorities as opposed to potentially hundreds of landowners can accelerate the process. Additionally, by reducing the number of private property landowners involved, the number of potential legal challenges can be reduced.
- *Minimizing environmental and private landowner impact.*
  Colocating transmission lines along highway rights-of-way offers the potential to avoid new construction on environmentally-sensitive lands and avoid impacting or disturbing private lands.
- *Creating opportunities for broadband deployment and other community benefits.*
  As another form of "linear infrastructure," broadband infrastructure can be built out alongside transmission projects, expanding connectivity to areas in need.[4] Just as siting transmission lines along highway rights-of-way could lead to greater reliability for consumers and a reduction in the permitting timeline necessary to do so, the siting of broadband infrastructure alongside transmission projects may lead to increased communication infrastructure, enabling economic growth and the deployment of smart infrastructure.

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[3] "Interstate Frequently Asked Questions," U.S. Department of Transportation, https://highways.dot.gov/highway-history/interstate-system/50th-anniversary/interstate-frequently-asked-questions#:~:text=The%20Federal%20Government%20made%20Interstate,agencies%2C%20which%20built%20the%20Interstates.&text=To%20Top-,Who%20owns%20it%3F,and%20operate%20the%20Interstate%20highways.

[4] R. Allen, "Accelerate the US high-capacity transmission build-out with voluntary, strategic co-location," Utility Dive (June 2023), https://www.utilitydive.com/news/accelerate-us-high-capacity-transmission-build-out-voluntary-strategic-co-location-rural-broadband/652661/

- *Supporting wildfire risk mitigation.*
  As opposed to building out transmission projects through forested areas, siting new transmission along corridors already developed for highways reduces the risk of wildfire due to the lack of forests as fuel.
- *Supporting transportation electrification.*
  Electrifying fleet requires accessibility to electricity. Integrating transportation infrastructure with transmission infrastructure allows clean energy for transportation to reach more remote locations.[5] Transmission colocation could support transportation electrification by:
  - Enabling "direct high-voltage electric vehicle charging at distribution direct current substations."[6]
  - Enabling "power inverters and direct current converters to connect the transportation corridors with new renewable sources."[7]

Considerations for Successful Colocation[8]

Though transmission colocation could vastly change the way states engage with intraregional and interregional transmission projects, the following considerations need to be addressed. These considerations are followed by potential mitigation approaches.

- *Vehicle traffic safety.*
  Both transmission towers and downed transmission lines can pose potential collision hazards.
  - Potential approach: Transmission towers should always be placed outside of a "clear zone," away from the roadway, to prevent collisions.
- *Long-term highway expansion and planning needs.*
  Transmission projects can interfere with long-term highway maintenance and expansion.
  - Potential approach: Future highway expansion plans can be considered and discussed with transmission developers to ensure minimal effect.
- *Electrical safety and grounding.*
  "Overhead Alternating Current (AC) transmission can inductively couple to nearby metallic infrastructure," potentially resulting in electrical shocks from metallic infrastructure that has not been properly grounded.[9]
  - Potential approach: Transmission towers can be placed away from bridges and other metal structures, along with electrically grounding metallic structures, to mitigate electrical shock risk.

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[5] "Electricity Planning for Fleet Electrification," NextGen Highways (November 2022), https://nextgenhighways.org/wp-content/uploads/2023/01/NGH_Fleet-Electrification.pdf

[6] Ibid.

[7] Ibid.

[8] "WisDOT's Solutions for Overcoming Barriers to Siting Transmission in Highway ROW," NextGen Highways (November 2022), https://nextgenhighways.org/wp-content/uploads/2023/01/Fact-Sheet_Overcoming-Barriers-to-Siting-Transmission-in-Highway-ROW.pdf

[9] Ibid.

- *Environmentally-sensitive areas.*
  Colocated transmission construction may cause disruptions to surrounding ecosystems. While many highway rights of way are not located on environmentally sensitive lands, many of them were purchased prior to NEPA becoming law in 1970 and might include unknown elements, such as Native American burial sites, protected species habitats, and remnant prairies, as extensive testing and mapping did not occur prior to 1970.
    - Potential approach: Vegetation fees can be assessed by the State Transportation Office to mitigate potential environmental impacts.[10]

Case Studies

Early Efforts to Utilize Highway Rights-of-Way – Wisconsin

The 2003 Wisconsin Act 89[11] has enabled the use of rights-of-way for electric transmission for over two decades. In 2003, highways and railways became prioritized corridors for transmission development.[12] In preparation for future projects, the Wisconsin Department of Transportation updated their utility accommodation manual and policy to facilitate the longitudinal installation of transmission along highway rights-of-way and established a cooperative agreement with the Public Service Commission of Wisconsin.[13] As of 2023, over 200 miles of overhead transmission across 26 projects have been permitted, safely constructed, and operated across the state. Expansion efforts have been facilitated more efficiently thanks to constructability reports and mile-by-mile studies of highway right-of-way project suitability developed by transmission developers with input from the Wisconsin Department of Transportation.[14] Constructability reports are an evaluation of various transmission routes considered as well as an examination of highway right-of-way impacts for each option.

Transmission Colocation in 2024 – Minnesota

In March of 2024, State Senator McEwin and State Representative Kraft introduced legislation supported by the state's investor-owned utilities. The bill was passed and signed into law in May 2024. The new policy states the following:[15]

- The Minnesota Department of Transportation (MnDOT) to permit longitudinal colocation in all highways across the state. MnDOT retains the authority to deny colocation if a proposed project interferes with the safety or operations of the transportation system, in alignment with typical Utility Accommodation Policy.

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[10] Ibid.

[11] "2003 WISCONSIN ACT 89," State of Wisconsin (December 2003), https://drive.google.com/file/d/1k0oWX0ik-sUo3a9F_uTb4ZKq-UwU6LsT/view.

[12] Ibid.

[13] "Cooperative Agreement between the Wisconsin Department of Transportation and the Public Service Commission of Wisconsin regarding New Electric Transmission Lines," State of Wisconsin (November 2009), https://drive.google.com/file/d/1Xa06DN1Y6sFwAzLA-CS2nrF2-fEAwPMk/view.

[14] "Transmission in Highway ROW: Design Considerations," NextGen Highways (2023), https://nextgenhighways.org/wp-content/uploads/2023/06/1-Transmission-in-Highway-ROW-DesignConsiderations-.pdf.

[15] "161.45 UTILITY ON HIGHWAY RIGHT-OF-WAY; RELOCATION," Minnesota Legislature (2024), https://www.revisor.mn.gov/statutes/2024/cite/161.45?highlight=%5B%7B%22term%22%3A%22transmission%20colocation%22%2C%22type%22%3A%22all%22%7D%5D.

- MnDOT and utilities to use constructability reports to detail colocation construction practices and effects on traffic control and safety.
- MnDOT to report to the legislature, the Minnesota Public Utilities Commission, and the Minnesota Department of Commerce (the State Energy Office) on decisions and rationale for rejecting permit applications for transmission lines.
- MnDOT to notify utilities of pole re-location requests at least 4 years in advance of a transportation project.

Conclusion

Given the cumbersome and time-consuming nature of siting and permitting, states could creatively expedite transmission projects by enabling the colocation of transmission along highway rights-of-way. State Energy Offices can play a crucial role in this process by highlighting this policy choice in comprehensive state energy plans, convening relevant stakeholders to provide education on the policy, and collaborating with other state entities to achieve policy reform. The experiences of Minnesota and Wisconsin highlight state approaches to enable the colocation of transmission along highway rights-of-ways. Additionally, national and regional collaboration efforts with State Transportation Offices and the American Association of State Highway and Transportation Officials (AASHTO) can provide valuable support. The efforts in Minnesota were supported by NextGen Highways through NextGen Highways Minnesota, the initiative's first state coalition launched in early 2024. NextGen Highways is a national coalition advocating for new electric transmission and communications infrastructure to be colocated with one another in existing public rights-of-way (ROWs) to meet the rapidly growing demand for new renewable power, electric vehicles, and building electrification. Through its national coalition, NextGen Highways is able to provide the tools and resources necessary for states and territories to explore the possibility of transmission colocation.

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