



Innovative Transmission Solutions: Use of Highway Right-of-Way and Grid Enhancing Technologies to Create a More Resilient and Cleaner Grid

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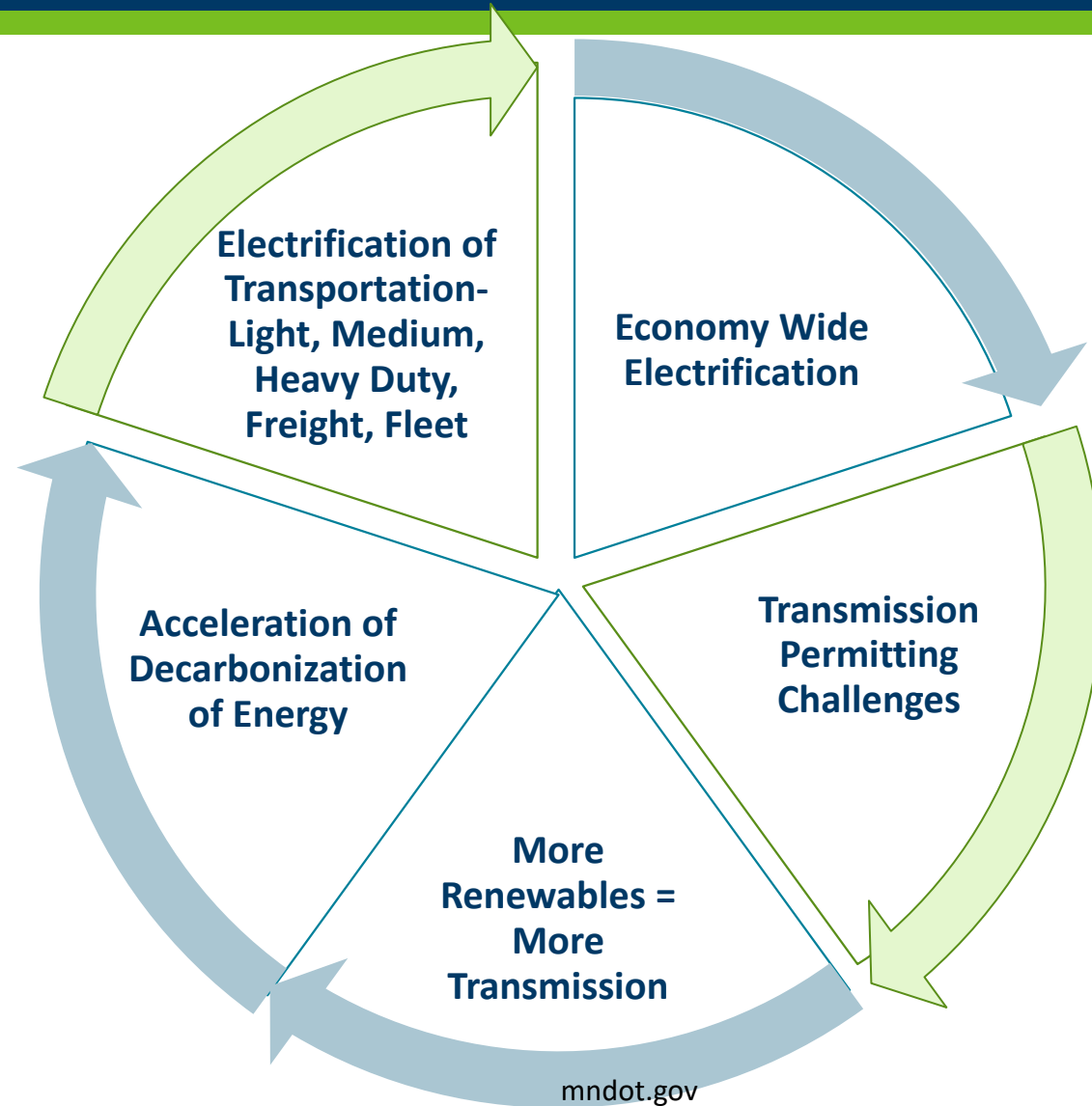
Sustainability, Planning and Program Management Division (SPPM)

Minnesota Dept. of Transportation



mndot.gov

Energy + Transportation: What's Driving the Need to Analyze Highway Rights of Way?



MnDOT is considering policy shifts around expanded transmission in highway rights of way

- **Context:** DOT's are being called upon to understand our nation's pressing energy needs, the benefits of the use of existing highway ROW and the connections to the electrification of transportation.
- **Relationships:** MN PUC Commissioners asked MnDOT to analyze expanded transmission in highway ROW

(We (Energy+Transportation) need a shared understanding of the Benefits to Use of Highway Rights of Way)

Our understanding of the benefits of use of highway rights of way for transmission projects (what's missing from this list?)

- Preserve greenfield land uses, including productive agricultural acreage
- Limit some impacts of new transmission in environmentally and culturally sensitive areas
- Potentially reduce public opposition for transmission by use of previously disturbed lands**
- Reduce visual impact of energy infrastructure by utilizing right of way
- Reduction in land acquisition and permitting time will reduce transmission project costs and save rate payers money. Speeding the in-service date of needed transmission will provide economic benefits to rater payers sooner.

MnDOT's NextGen Highways Work Group Activated June 2021

1. Sustainability & Public Health Office
2. Office of Environmental Stewardship
3. Regional Transportation Management Center (ITS/TSMO)
4. Minnesota IT Services (MNIT)
5. Minnesota Connected and Autonomous Vehicles (CAV-X) Office
6. Construction & Innovative Contracting Office
7. District Perspectives: MnDOT District 2: Maintenance
8. Office of Maintenance
9. Office of Land Management: Utilities Section
10. Metro District: Right of Way
11. Office of Transportation System Management- Statewide Plans
12. Office of Chief Counsel
13. Office of Transit and Active Transportation
14. Construction Managers Group (CMG), Pre-Construction Manager's Group (PCMG)
15. Office of Government Affairs
16. FHWA Minnesota Division Office
17. MN Dept. of Commerce
18. MN Public Utilities Commission

Goals of the NextGen Feasibility Study (Phase I)

- ▶ Identify technical, regulatory, and economic barriers for (buried) transmission lines in MnDOT Right of Way.
 - ▶ Longitudinal utilities are currently prohibited in controlled access environments/Interstates. Controlled Access Minn. Stat. 160.08, Mn Administrative Rule: 8801.3300 PERMITS
 - ▶ Interstate/Controlled Access Freeways vs. Other Highway Types: US/State Highways

Current state of practice in Minnesota intersecting with NextGen Highways

- Prohibition of longitudinal utilities on Interstates, but some limited segments of transmission projects have been sited in State/US highways in Minnesota.
- Current Utility Permitting Landscape: No fee permitting of utilities. Under consideration for Transmission-Occupancy Fees/Tree Removal Fees
- Added DOT operational expenses for oversight and management of additional Transmission/Broadband infrastructure in right of way

Released in April 2022: HVDC Feasibility Study Results



NextGen Highways Feasibility Study for the Minnesota Department of Transportation

Buried High-Voltage
Direct Current Transmission

Buried HVDC transmission can be **cost effective**, and it can **potentially be sited** in Interstate and highway ROW after making **appropriate consideration** of existing and future transportation system needs.

[Feasibility Study Report](#)

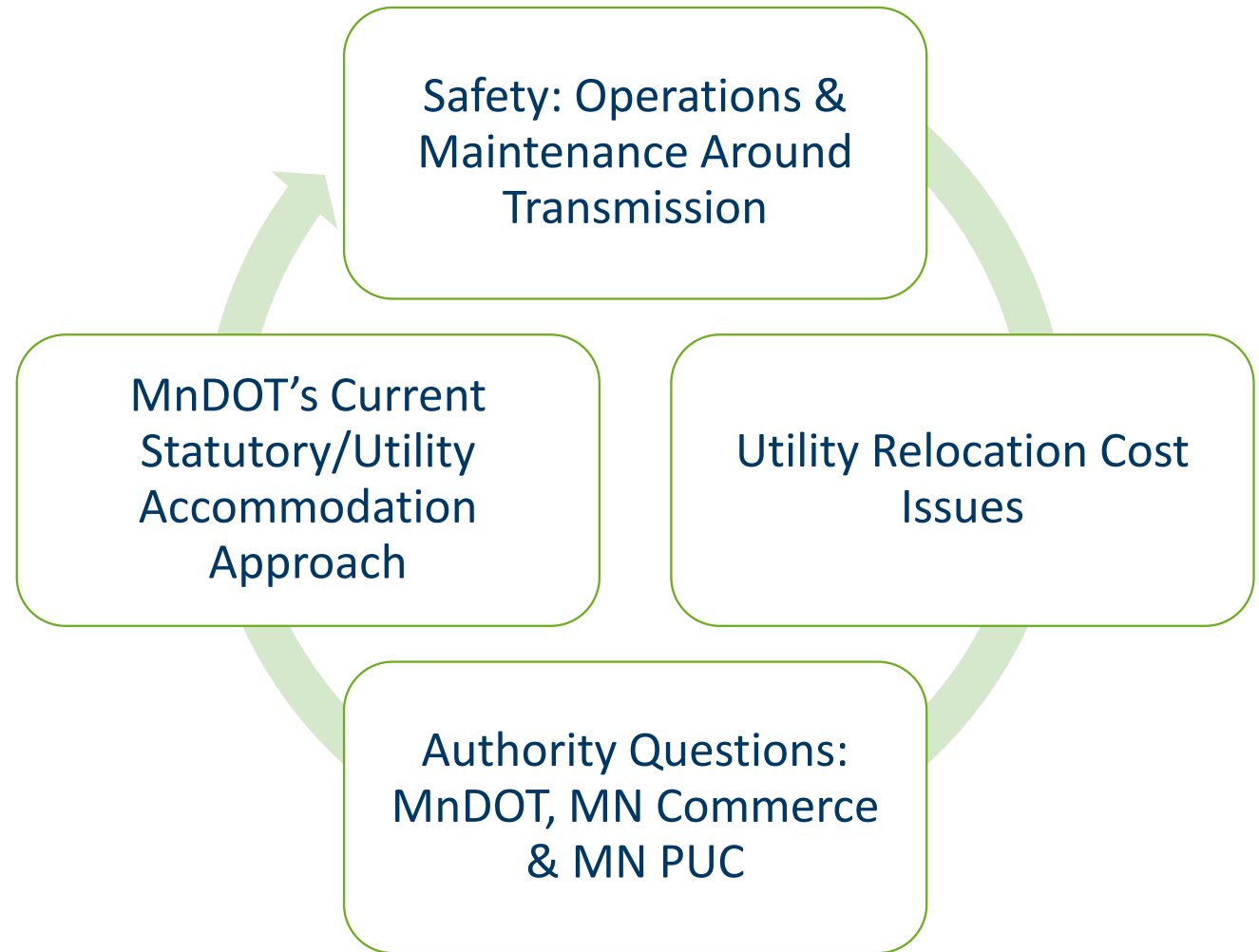
NextGen Feasibility Study: Key Areas of Analysis

Significant Barrier in Minnesota Statute:

161.46 REIMBURSEMENT OF UTILITY.

Subd. 2. Relocation of facilities; reimbursement.

Whenever the commissioner shall determine the relocation of any utility facility is necessitated by the construction of a project on the routes of federally aided state trunk highways, including urban extensions thereof, which routes are included within the National System of Interstate Highways, the owner or operator of such utility facility shall relocate the same in accordance with the order of the commissioner. After the completion of such relocation the cost thereof shall be ascertained and paid by the state out of trunk highway funds; provided, however, the amount to be paid by the state for such reimbursement shall not exceed the amount on which the federal government bases its reimbursement for said interstate system.



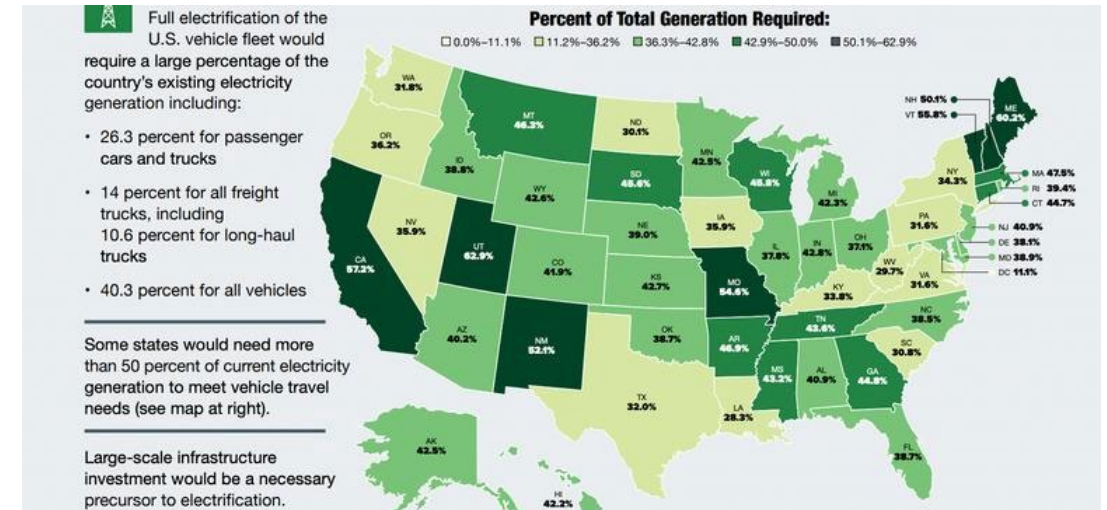
Categories of Pain Points for DOT's for Added Transmission Infrastructure in Highway Rights of Way

- Impact to Future Transportation Projects/ Limiting Rights of Way for Future Use
- Safety, safety, safety (crash risk, construction risk, employee risk)
- Operational and Maintenance Impacts
- Cost Allocation for Expenses Borne by DOT's: Statutory Authority for Occupancy Fees/Leases/Permit Fees
- Relocation of Energy Infrastructure if Needed: Who Pays? (BIG ISSUE)
- Environmental & Vegetation Issues (challenging record with most utilities)
- Coordination with other State Agencies (mixed authorities, complexity, relationships)

Summary for Minnesota

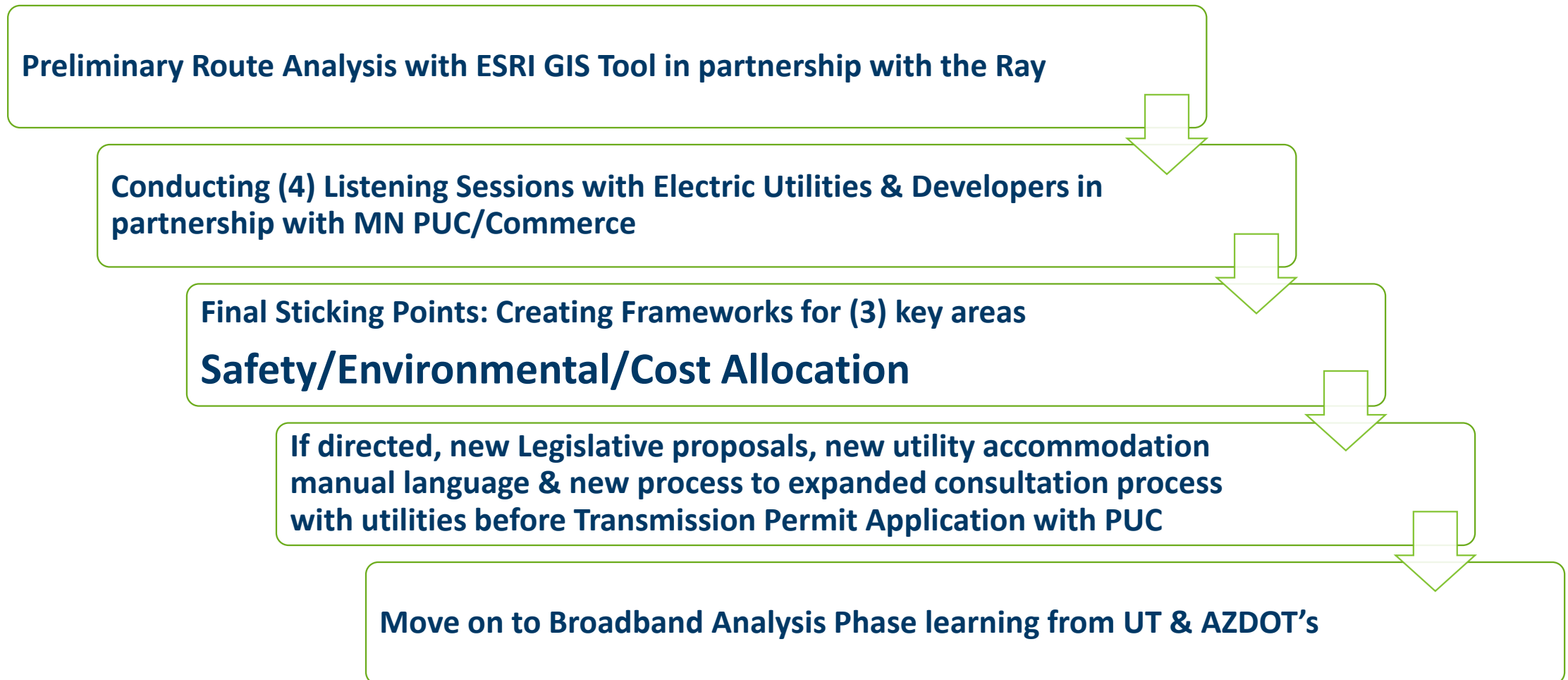
- DOT has come to understand there are strong benefits to the state of MN to expand use of right of way for transmission to support energy decarbonization and the increased generation/transmission needed to support the electrification of transportation.

- **Big news for Minnesota last week: PASSED: SF 4** requires all of Minnesota's utilities to produce 100% carbon-free electricity by 2040. The road map to carbon-free electricity before 2040 is as follows: 80% for public utilities and 60% for other utilities by 2030; 90% for all utilities by 2035.



For all vehicles to battery electric vehicles- this would demand more than 40% of the country's electricity production, the American Transportation Research Institute cited in a [report](#) in December 2022.

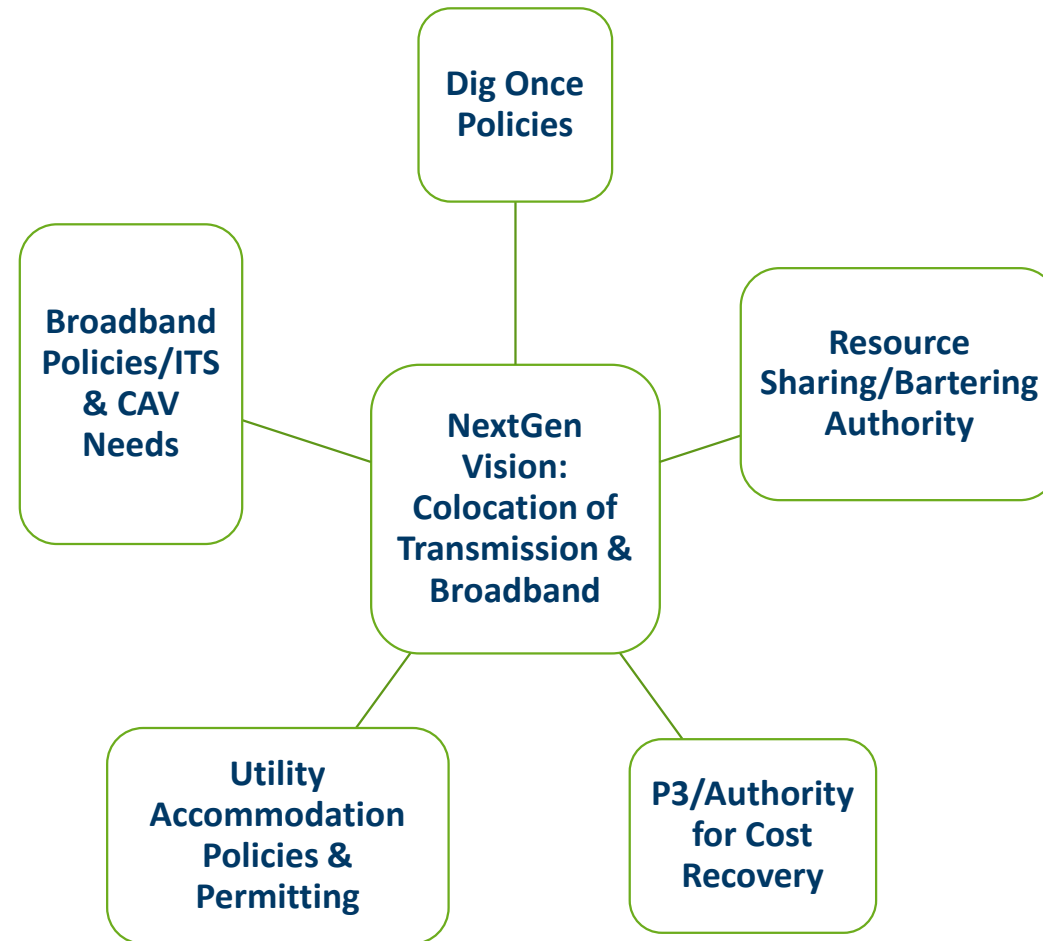
Snapshot of MnDOT's NextGen Phase II



A few recommendations as you consider engaging your DOT partners:

- DOT's need to understand pressing grid needs and the siting issues for new transmission in your state.
- Start with DOT Sustainability/Right of Way/Utility Accommodation Offices
- Invest in your relationship with your DOT.
- Start with a statutory analysis of barriers to transmission & broadband expansion in the right of way
- The Biggest barriers are *Cultural*:
 - Federal Law/Culture of Preservation of Rights of Way (free of encroachments)
 - Culture of Safety (safety, safety, safety)
 - Lack of knowledge about Grid needs
 - Fundamentally, we speak different languages
 - Future of electrification feels fuzzy to some due to current low adoption rates

Recommended List of DOT Policies/Statutes to Evaluate for Enabling Energy & Communications Infrastructure in Highway ROW



Thank You

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