Montana Transmission Connectivity Study

Strategic Roadmap to Enhance Montana's Connection with the West

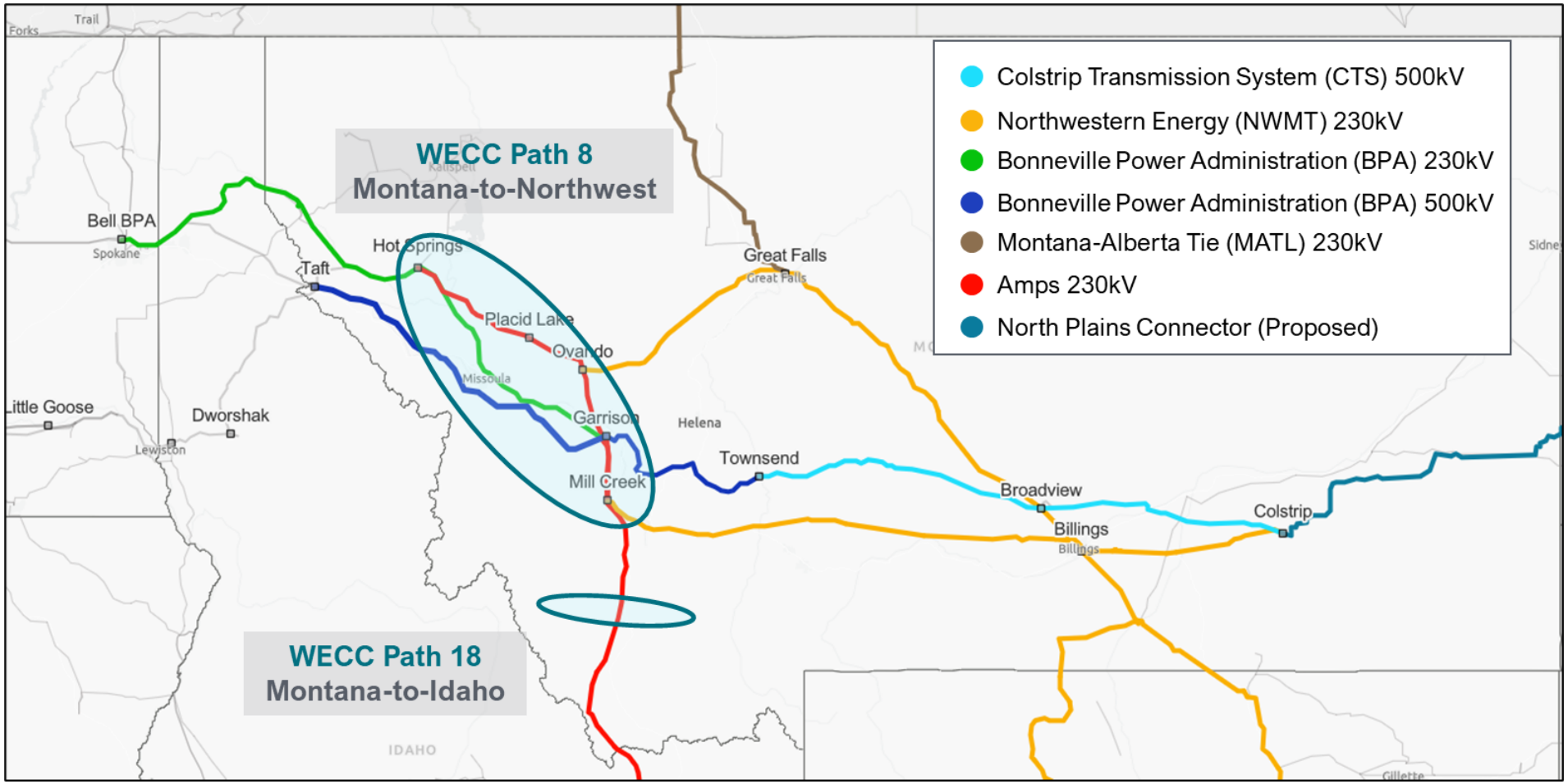
November 2025

Summary Presentation of *Draft* Study for Montana State Legislature ETIC

NW Energy Coalition
for a clean and affordable energy future

ENERGY STRATEGIES

Overview of Montana's High-voltage Grid and Key Interfaces

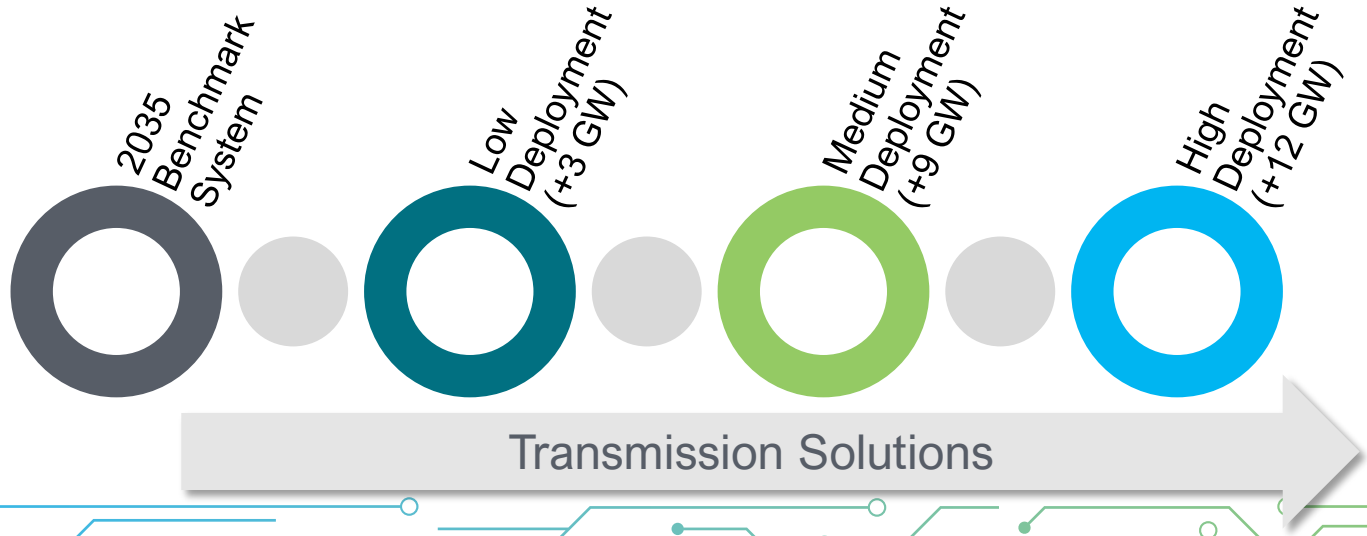


Study Overview

Methodology, Case Development, and Key Assumptions

Study Overview

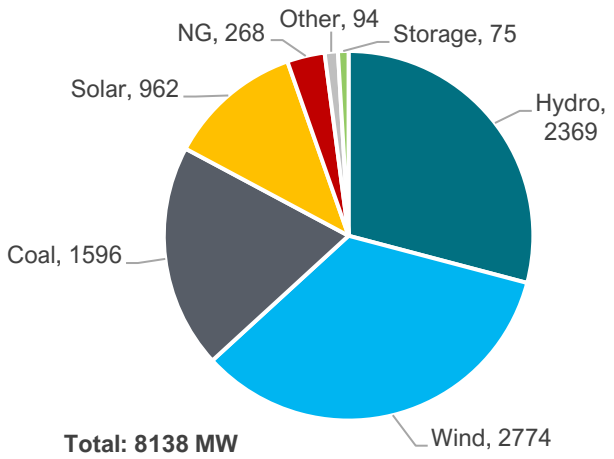
- **The Northwest Energy Coalition engaged Energy Strategies to perform a study exploring transmission upgrades that would increase Montana's connectivity to the Pacific Northwest and other Western energy markets**
  - Montana has high potential for quality resource expansion which can be exported to the Pacific Northwest to meet load growth
  - Greater transmission connections between Montana and rest of the grid would improve grid reliability, resiliency, and provide Montana opportunities to import and export power with enhance reliability and resiliency
  - **Study is draft and will be finalized and published in the coming weeks**
- **The study explored three scenarios representing a range of possible future resource deployments in Montana**



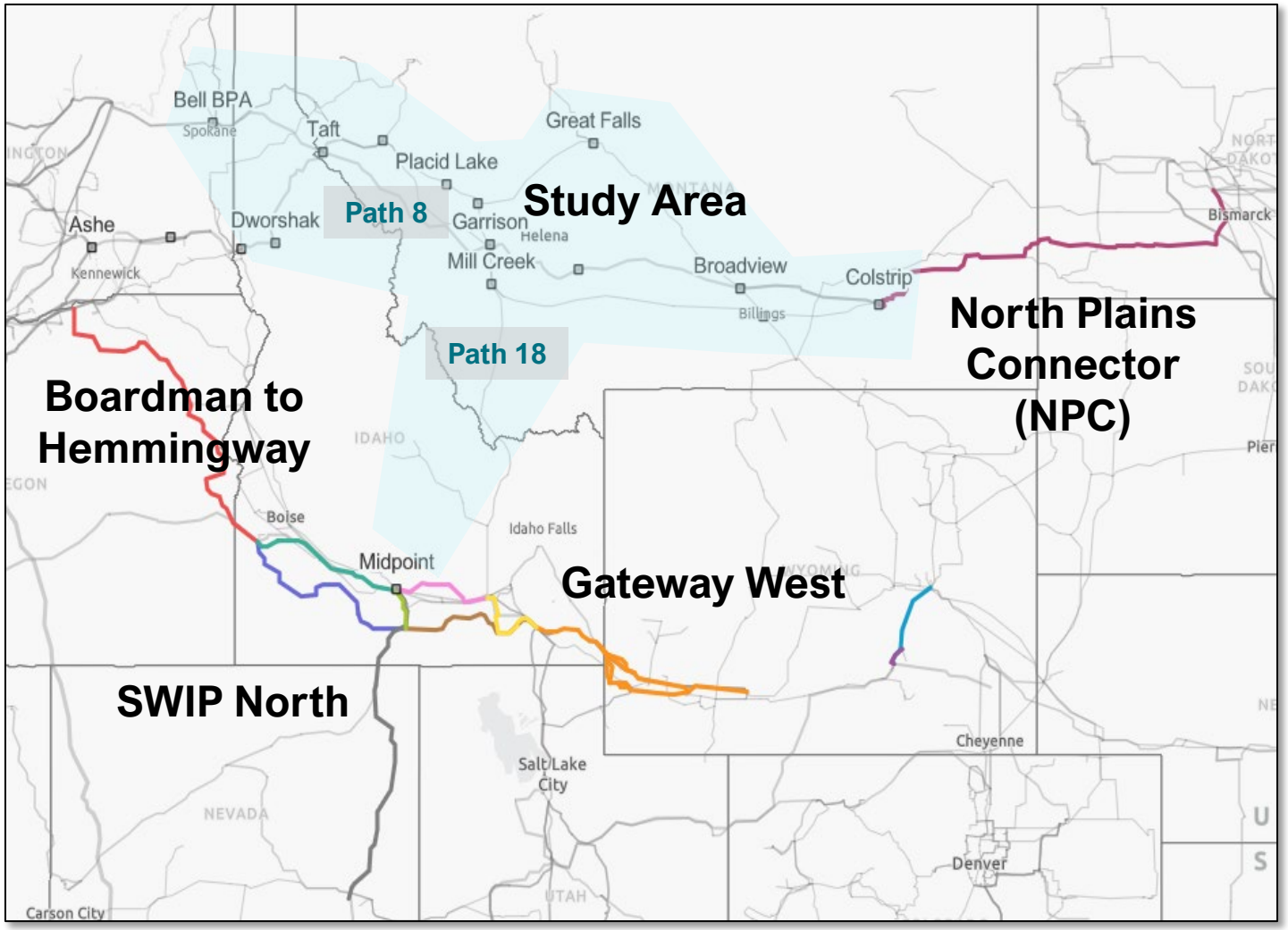
Forward-Looking View of Montana and the Regional Grid

- **By 2035, our study anticipates that:**
  - Several planned regional transmission projects are constructed as currently planned
  - Generation resources planned & under-construction in Montana are completed

Montana Resources in 2035 Benchmark
(MW in-service; Western Interconnection Only)



Total: 8138 MW



Takeaways

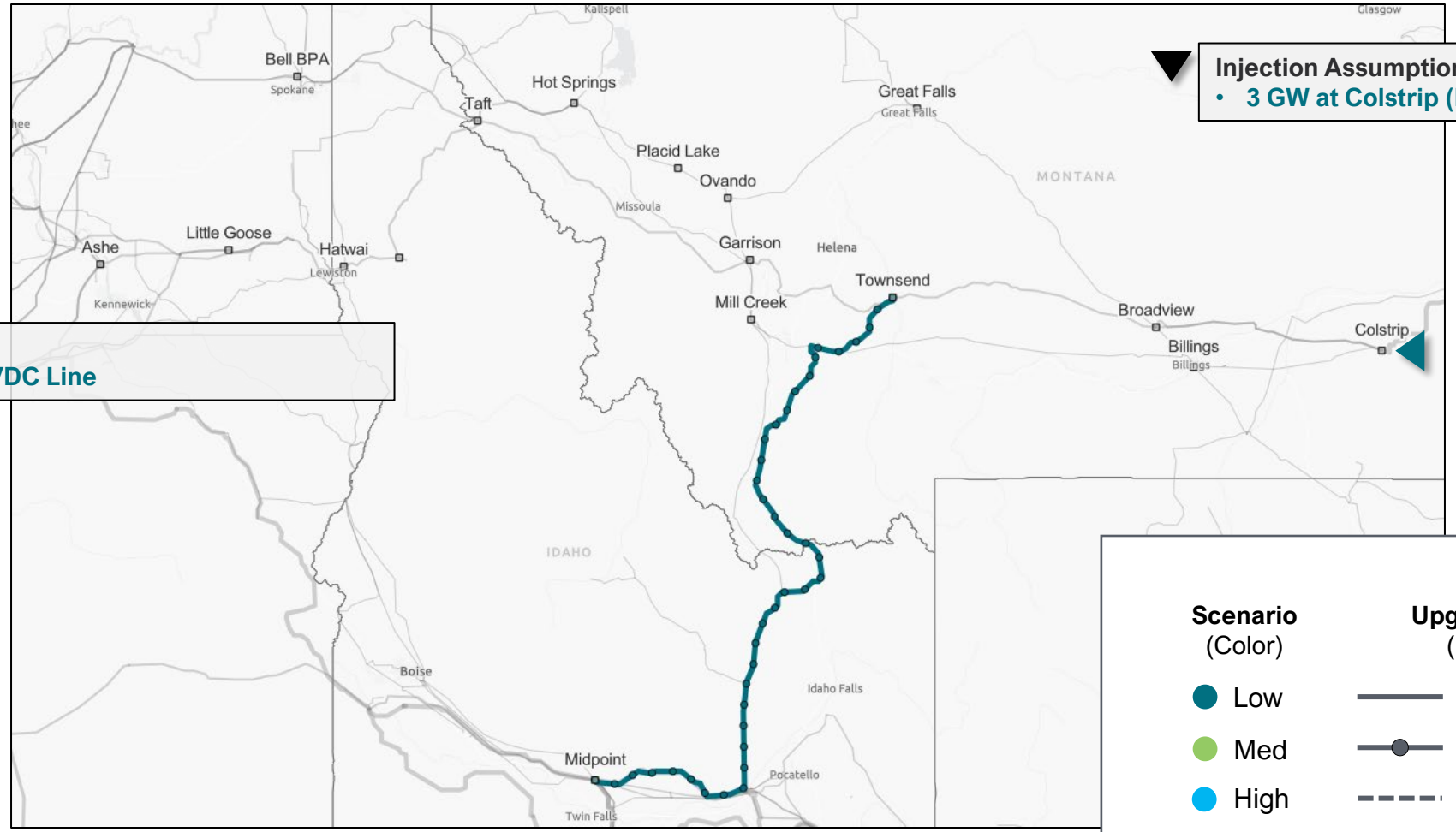
Key Results and Observations

Summary of Study's Key Findings

1. Montana's export capability is **already constrained** under current conditions
2. Phased **transmission investments** allow Montana's grid to scale with resource growth and market demand
3. A **new Montana-Idaho intertie** provides a high-impact starting point
4. Achieving **9 GW of total resource deployment** requires further strategic transmission expansion in Montana
5. A high resource deployment future of **12 GW calls for long-term HVDC and AC backbone upgrades** throughout the state

Identified Portfolio

Low Deployment Scenario adding 3 GW of Capacity



Injection Assumption:
- **3 GW at Colstrip (NPC)**

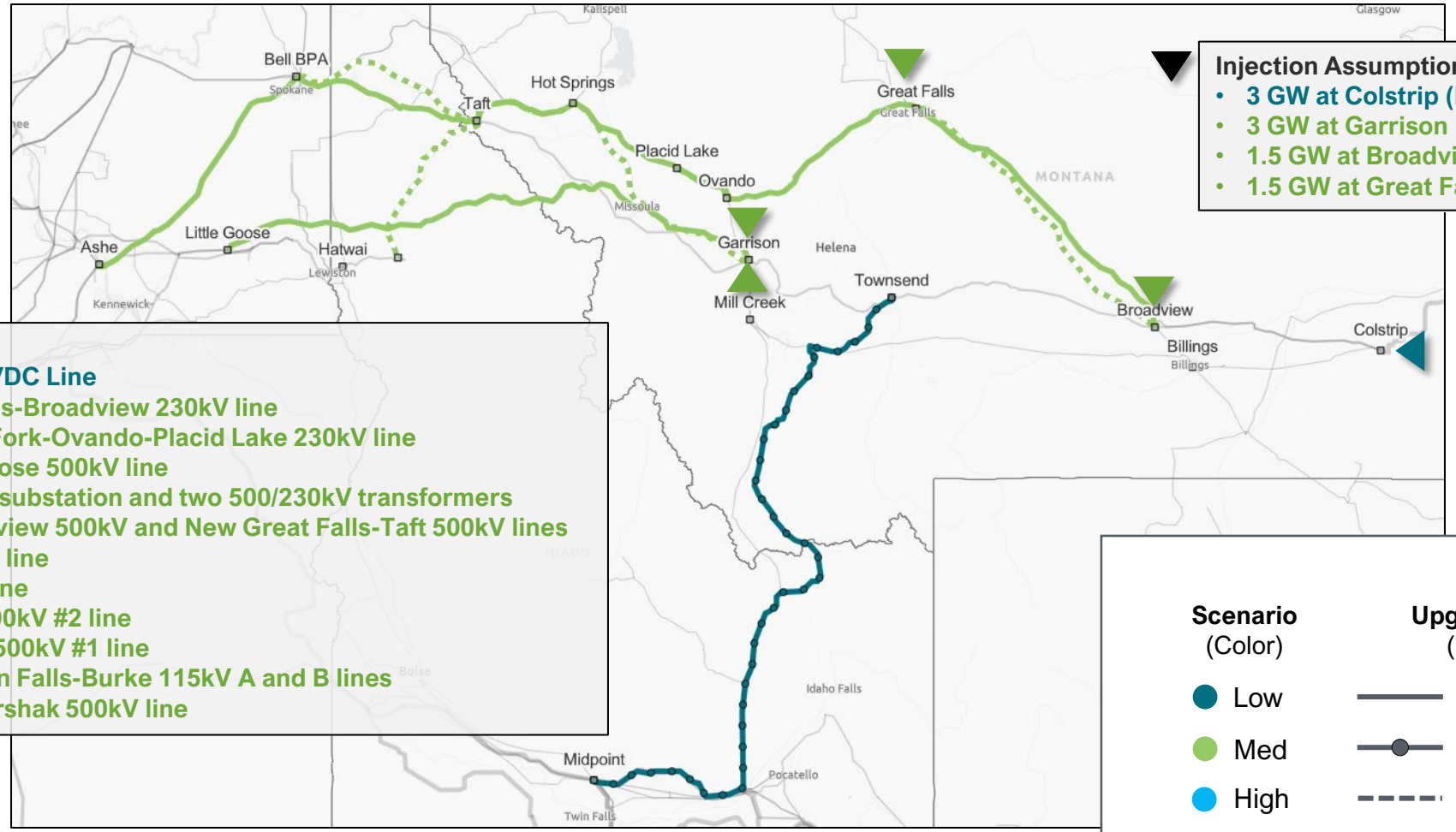
Transmission Solution:
- **Townsend-Midpoint HVDC Line**

Scenario (Color)	**Upgrade Type** (Pattern)
Low	New AC Line
Med	New DC Line
High	Reconductor

Upgrades identified to address reactive support needs and other minor infrastructure enhancements are not shown here

Identified Portfolio

Medium Deployment Scenario adding 9 GW of Capacity



Injection Assumption:
- 3 GW at Colstrip (NPC)
- 3 GW at Garrison
- 1.5 GW at Broadview
- 1.5 GW at Great Falls

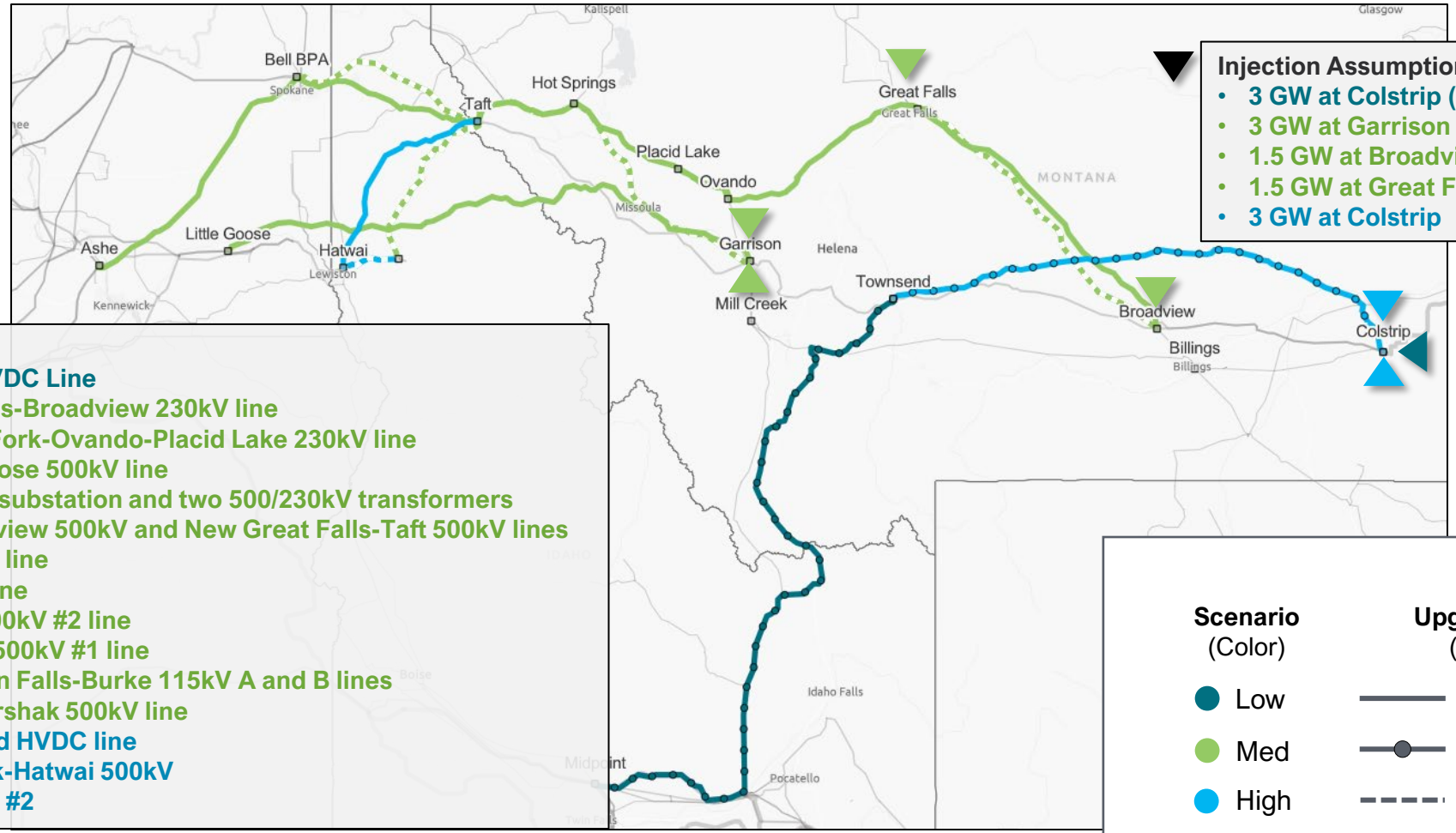
Transmission Solutions:
- Townsend-Midpoint HVDC Line
- Reconductor Great Falls-Broadview 230kV line
- Reconductor Landers Fork-Ovando-Placid Lake 230kV line
- New Garrison-Little Goose 500kV line
- New Great Falls 500kV substation and two 500/230kV transformers
- New Great Falls-Broadview 500kV and New Great Falls-Taft 500kV lines
- New Taft-Bell 500kV #2 line
- New Bell-Ashe 500kV line
- New Great Falls-Taft 500kV #2 line
- Reconductor Taft-Bell 500kV #1 line
- Reconductor Thompson Falls-Burke 115kV A and B lines
- Reconductor Taft-Dworshak 500kV line

Scenario (Color)	Upgrade Type (Pattern)
Low	New AC Line
Med	New DC Line
High	Reconductor

Upgrades identified to address reactive support needs and other minor infrastructure enhancements are not shown here

Identified Portfolio

High Deployment Scenario adding 12 GW of Capacity



Injection Assumption:

- 3 GW at Colstrip (NPC)
- 3 GW at Garrison
- 1.5 GW at Broadview
- 1.5 GW at Great Falls
- 3 GW at Colstrip

Transmission Solutions:

- Townsend-Midpoint HVDC Line
- Reconductor Great Falls-Broadview 230kV line
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- New Garrison-Little Goose 500kV line
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- Reconductor Taft-Bell 500kV #1 line
- Reconductor Thompson Falls-Burke 115kV A and B lines
- Reconductor Taft-Dworshak 500kV line
- New Colstrip-Townsend HVDC line
- Reconductor Dworshak-Hatwai 500kV
- New Taft-Hatwai 500kV #2

Scenario (Color)	**Upgrade Type** (Pattern)
Low	New AC Line
Med	New DC Line
High	Reconductor

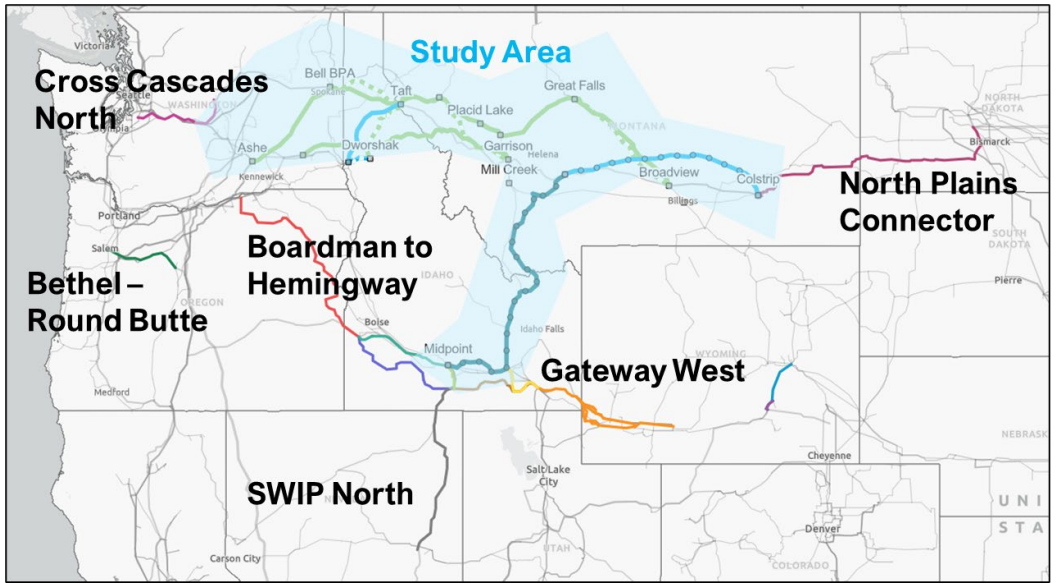
Upgrades identified to address reactive support needs and other minor infrastructure enhancements are not shown here

Summary of Study's Key Findings (cont.)

6. Building **HVDC early** may reduce future upgrade costs
7. Montana transmission expansion **can integrate with other major regional transmission projects**
8. A **mix of transmission technologies** maximizes system performance and limits land impacts
9. Route **optimization reduces—but cannot eliminate—impacts** to sensitive lands and difficult terrain
10. Tribal **collaboration is essential** for future corridor planning

Transmission Portfolios: Regional Context, Costs, and Miles

Portfolio supports a stronger, more resilient, regional grid



Portfolio aligns with major planned transmission projects across the West—such as Gateway West, Boardman-to-Hemingway, SWIP North, and the North Plains Connector (NPC)

Coordinated upgrades enable incremental capacity over time

Deployment Scenario	Transmission Portfolio Summary			
	New Montana Resources Integrated (MW)	Required Transmission Investment ($B)	New Lines (mi)	Reconductor or Rebuild Lines (mi)
Low	3,000	$3.1	432	-
Medium	9,000	$10.7	1,647	437
High	12,000	$13.9	2,021	467

Phased approach avoids overbuilding, aligns infrastructure with evolving generation and market dynamics, and preserves flexibility under future uncertainty.

Thank You

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