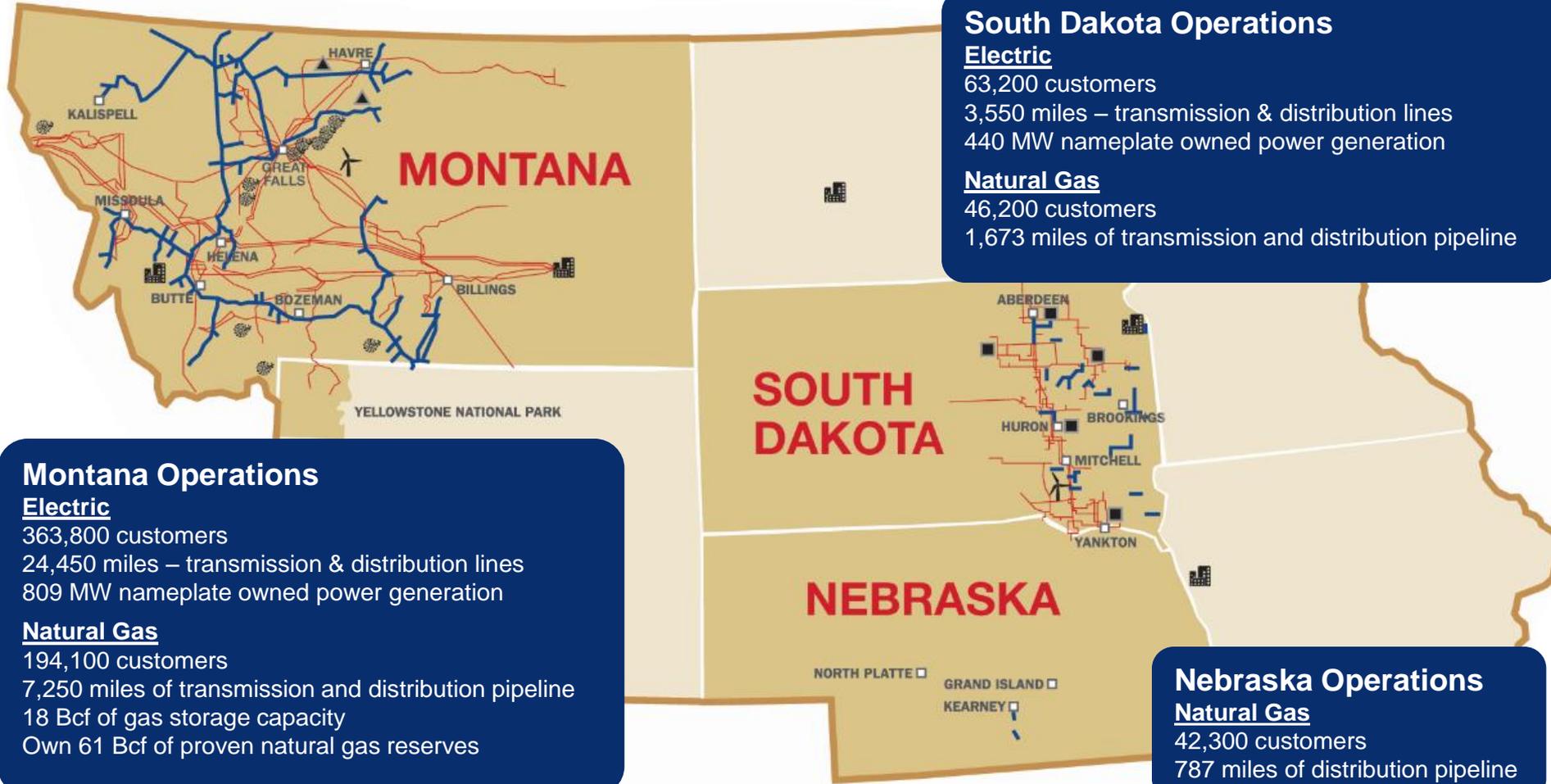




Renewable Energy and Transmission in Montana

December 8, 2017

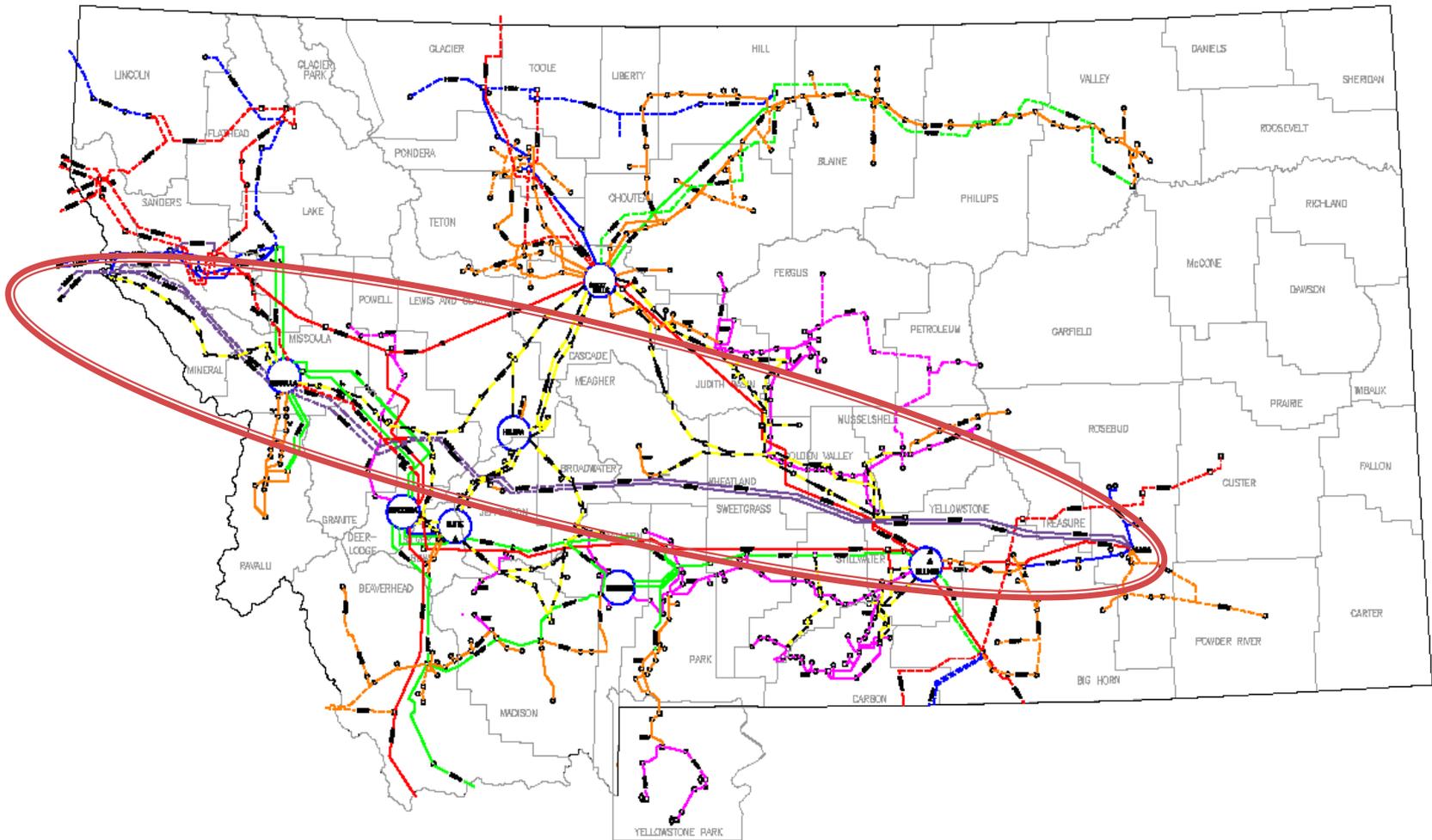
About NorthWestern



- Electric
- Natural Gas
- Wind Farm
- Hydro Facilities
- Thermal Generating Plants
- Natural Gas Reserves
- Peaking Plants

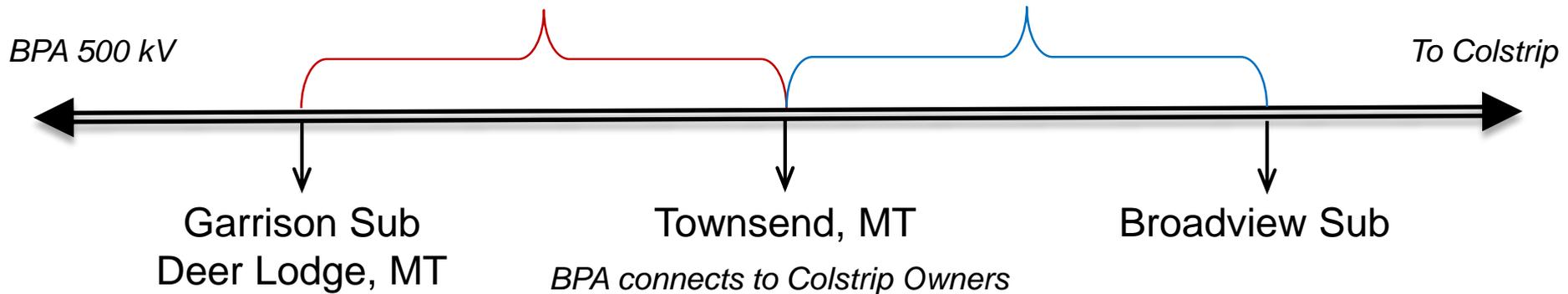


Montana Transmission





The Montana Intertie is a 500-kV transmission line in NorthWestern's Balancing Authority Area that runs from the Broadview Substation in the east to the Garrison Substation in the west. The Montana Intertie is physically and contractually divided into two sections, with Townsend, Montana, as the dividing point.



Bonneville owns and operates the section from Townsend to the Garrison Substation. This section is also referred to as the Eastern Intertie.

The Colstrip Transmission Owners own the section from the Broadview Substation to Townsend. This section is operated by NorthWestern Energy.

The Colstrip Transmission Owners are NorthWestern Energy, PacifiCorp, Avista Corporation, Portland General Electric Company, and Puget Sound Energy.



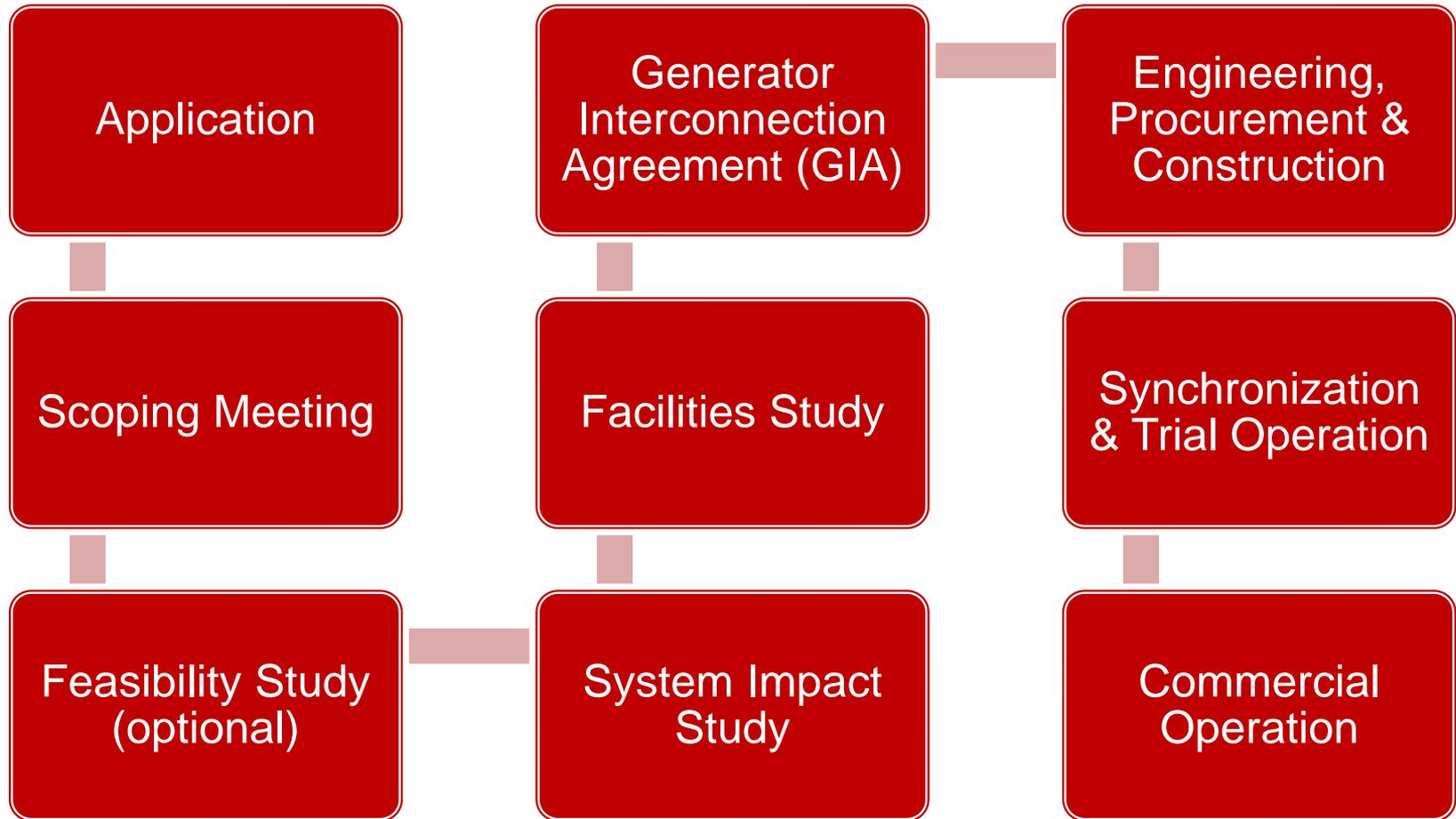
Ownership Rights and Capacity Allocations

Colstrip Project Transmission Owners		
Ownership Rights		
	Colstrip to Broadview	Broadview to Townsend
NorthWestern Energy (NWMT)	822.8	468.5
Puget Sound Energy (PSE)	746.0	758.6
Portland General Electric (PGE)	307.2	312.4
Avista Corp (AVAT)	230.4	234.3
PacifiCorp (PAC)	153.6	156.2
Totals	2260	1930

2200 MW Path 8 Rating



Interconnection Process

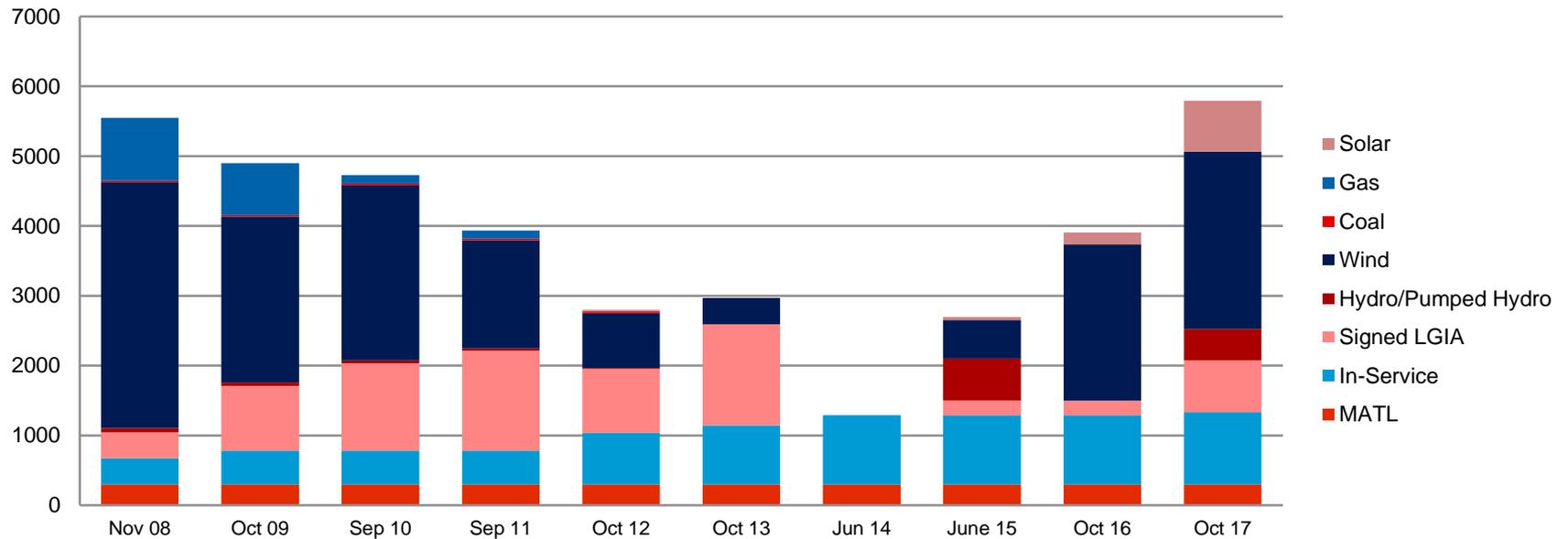


Standard generator interconnection procedures and agreements are outlined in Attachments M (large generators) and N (small generators) of NorthWestern's OATT.



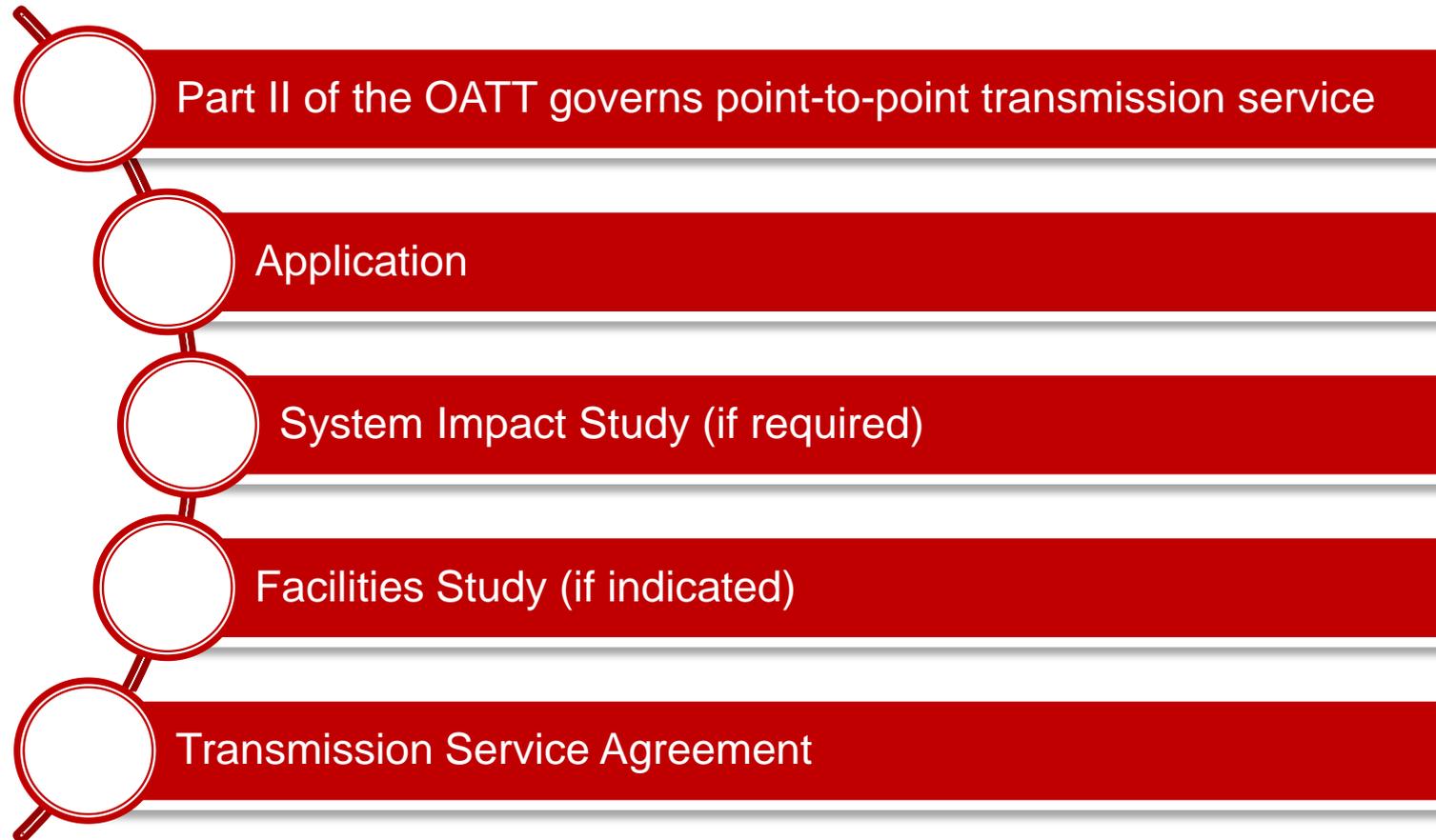
NorthWestern Transmission Capacity on Path 8

Potential Montana Generation





Transmission Service



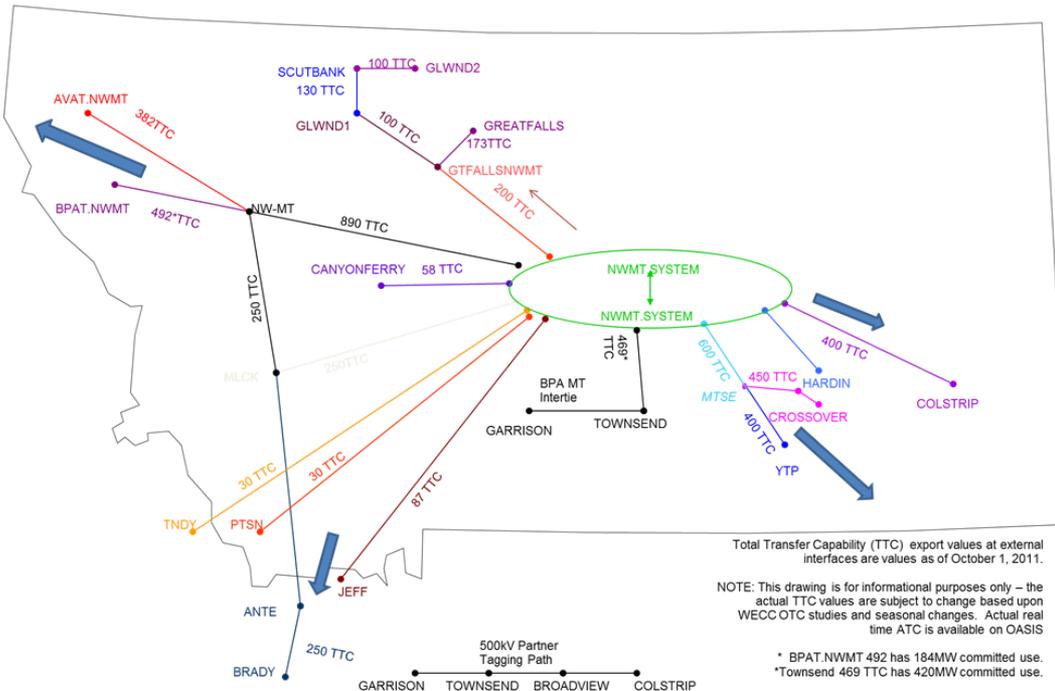
A generator would also need to enter into a Power Purchase Agreement with a buyer.



Export Capability

NORTHWESTERN ENERGY – MONTANA (NWMt)
Maximum TTC Export Capability
With internal constraints

Posted 9-30-2011



Available Now:	146 MW
Available 1/1/2019:	246 MW
Available 1/1/2022:	271 MW
<i>Based on commitments and postings on OASIS.</i>	

2200/2000 MW BPA– NWE capacity mismatch

308 MW NorthWestern’s Transmission Capacity on Path 8

- 162 MW Firm Commitments

146 MW Capacity Available Today

0 MW Pending Requests in Transmission Queue (on OASIS)

NorthWestern's Efforts to Facilitate Wind Exports

Mountain States Transmission Intertie Project (MSTI)

- 430-mile, 500-kV AC line from southwest Montana to southeast Idaho
- \$24 million write-off in 2012

Collector Project

- MOU with WAPA in 2010
- Proposed series of up to five 230-kV generator lead lines into new substation in Townsend, Montana

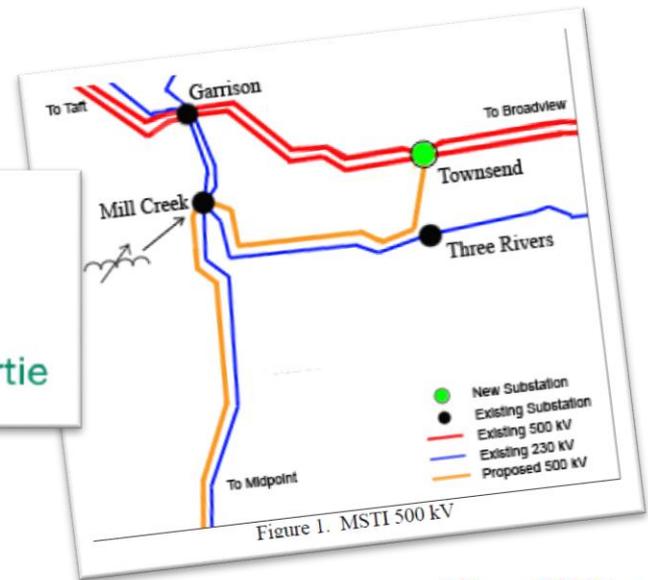
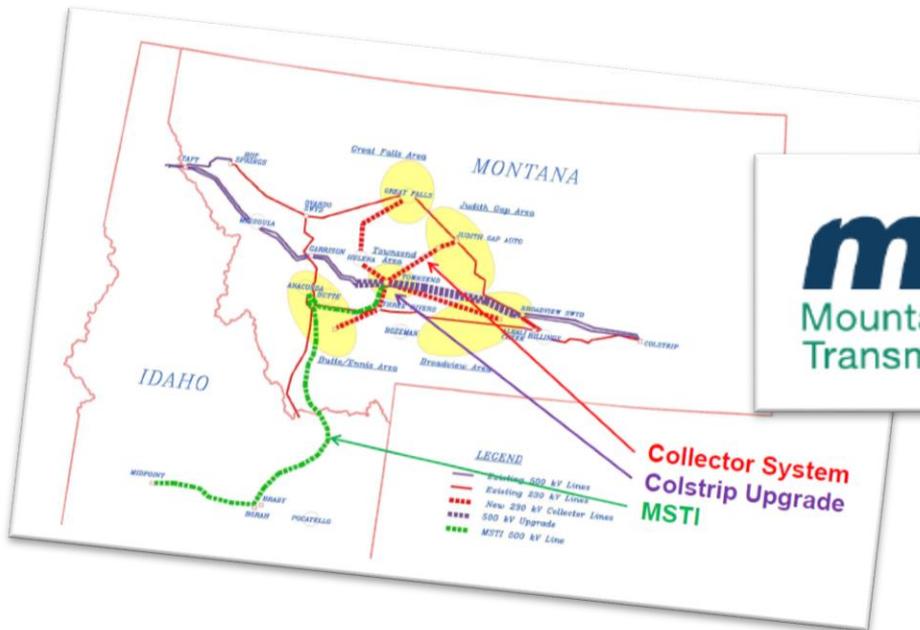


Figure 1. MSTI 500 kV



NaturEner | Rim Rock Wind Farm

- Illustration of cost and difficulty integrating large amounts of wind

Gaelectric | Jawbone Wind

- NorthWestern's most recent large wind exporter
- Failed business model despite transmission availability

Mapping the Stakeholder Landscape

Our Challenge:
Being the center of our stakeholder group without being the target.

Stakeholder:
A person, group, or organization that has direct or indirect stake in an organization because it can affect or be affected by the organization's actions, objectives, and policies.

As an investor-owned, state and federally regulated, public utility, NorthWestern Energy has numerous stakeholders and lots of accountability





The needs of NorthWestern's customers and shareholders will drive future investments.

NorthWestern is very interested in partnering with viable wind projects wishing to export Montana wind.

Significant ATC currently available on NorthWestern's system.

There are other, real issues that need to be addressed regarding Montana wind development. Supply and Demand is key.



Delivering a bright future

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