Presented to Wind & Transmission Working Group
September 22, 2016

# NWE Transmission Overview, GIA/TSR

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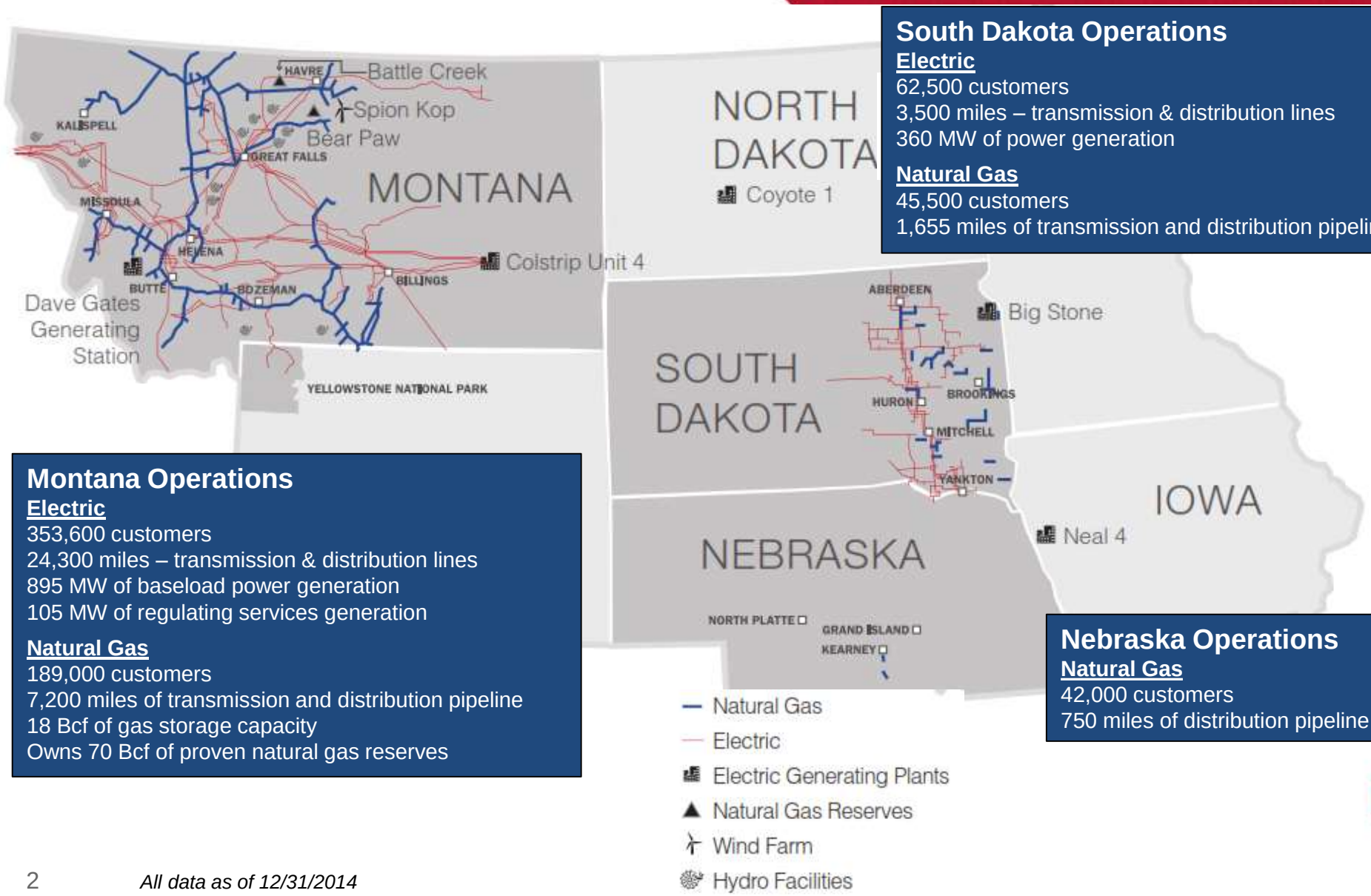
# About NorthWestern




## South Dakota Operations

**Electric**

62,500 customers
3,500 miles – transmission & distribution lines
360 MW of power generation

**Natural Gas**

45,500 customers
1,655 miles of transmission and distribution pipeline

## Montana Operations

**Electric**

353,600 customers
24,300 miles – transmission & distribution lines
895 MW of baseload power generation
105 MW of regulating services generation

**Natural Gas**

189,000 customers
7,200 miles of transmission and distribution pipeline
18 Bcf of gas storage capacity
Owns 70 Bcf of proven natural gas reserves

## Nebraska Operations

**Natural Gas**

42,000 customers
750 miles of distribution pipeline

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*All data as of 12/31/2014*

# Montana Electric Service Territory


NorthWestern Energy serves 354,000 Montana electric customers in 187 communities, and provides essential infrastructure for electric cooperatives and other transmission customers.

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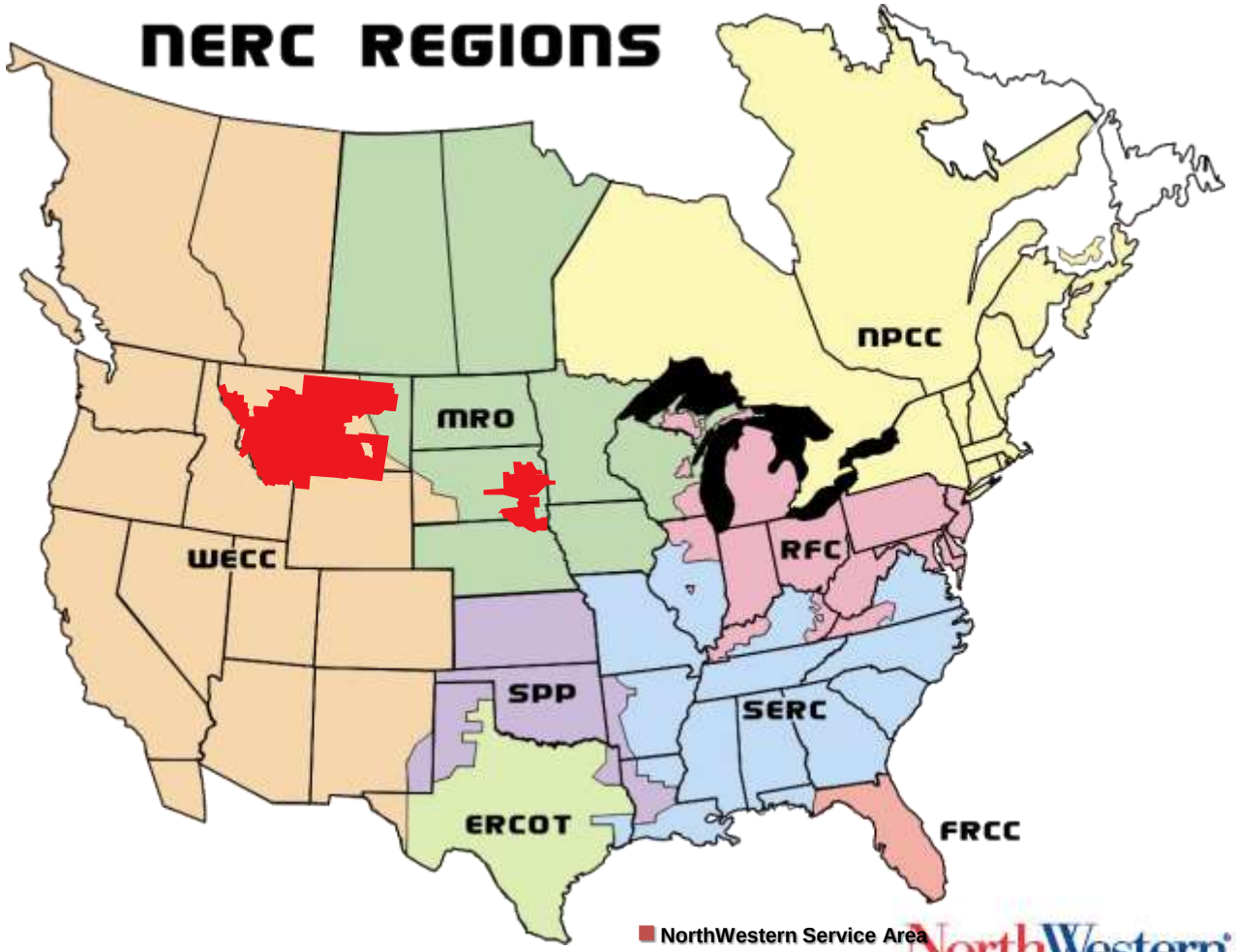
# Electric Transmission

# Electric Transmission

- 97,540 + sq. mi. service territory
- Electric transmission operations (50-500 kilovolt)
  - Montana
    - 6,900 circuit miles
    - 53 substations
    - 326,000 customers
- Operate in two reliability councils – WECC and MRO
- Operates in both organized and vertically integrated SD (SPP) and unbundled (changing) markets in MT
- System Dispatch operations for gas and electric for all three states
- Montana balancing authority area (BAA) serves more than 3,600 MW of generation

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# NWE Transmission System - Unique Aspects

- Colstrip 500-kV transmission system
- AMPS line
- Retail choice & non-NWE generation
- Generation > load within NWMT Balancing Authority Area; generally an exporting Balancing Authority (at least for now…)
- Large volume of transmission service requests:  1500 to 2000+ per week
- Open Access Transmission Tariff (OATT) differences from other Western utilities resulting from deregulation, IPPs, choice loads

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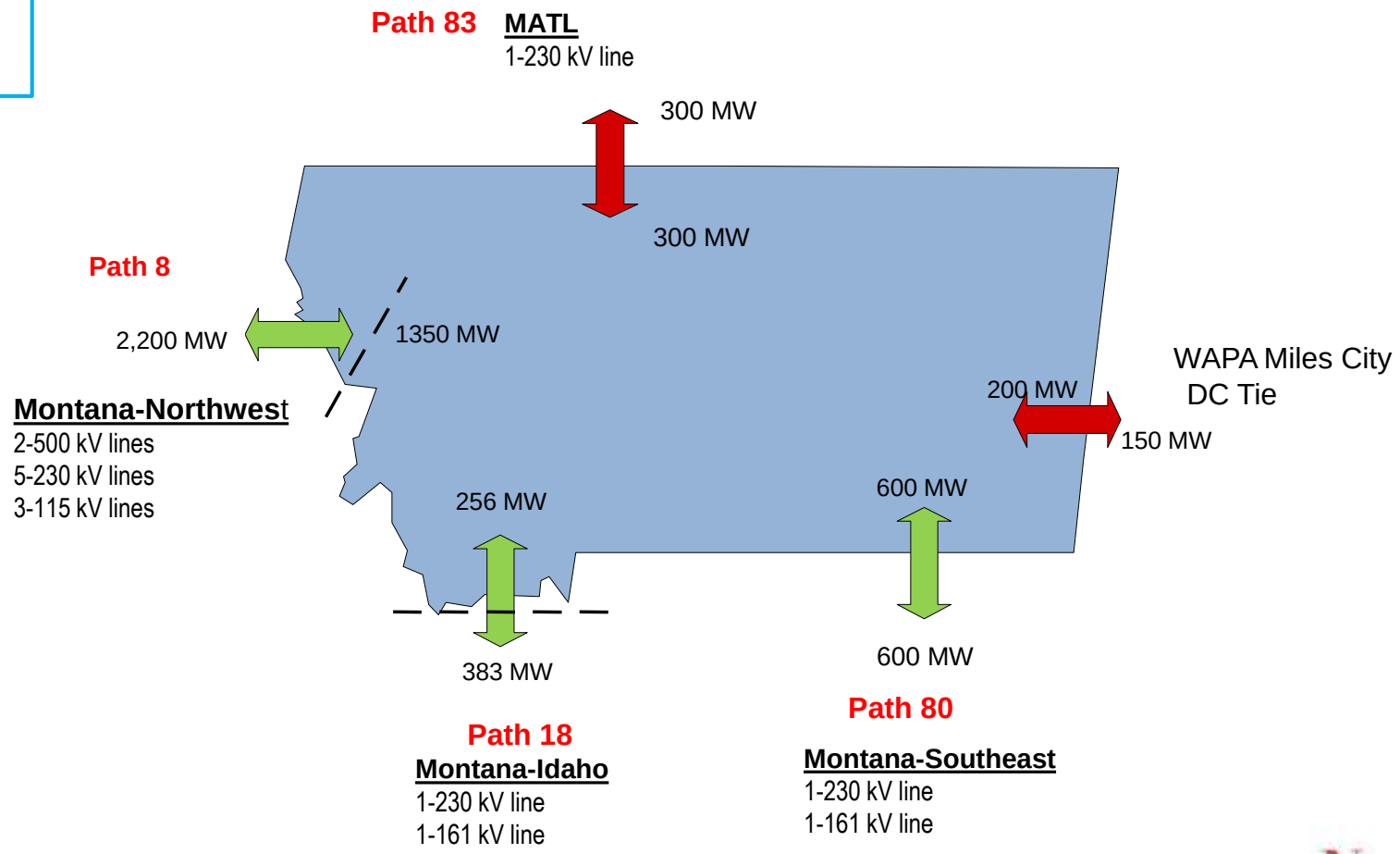
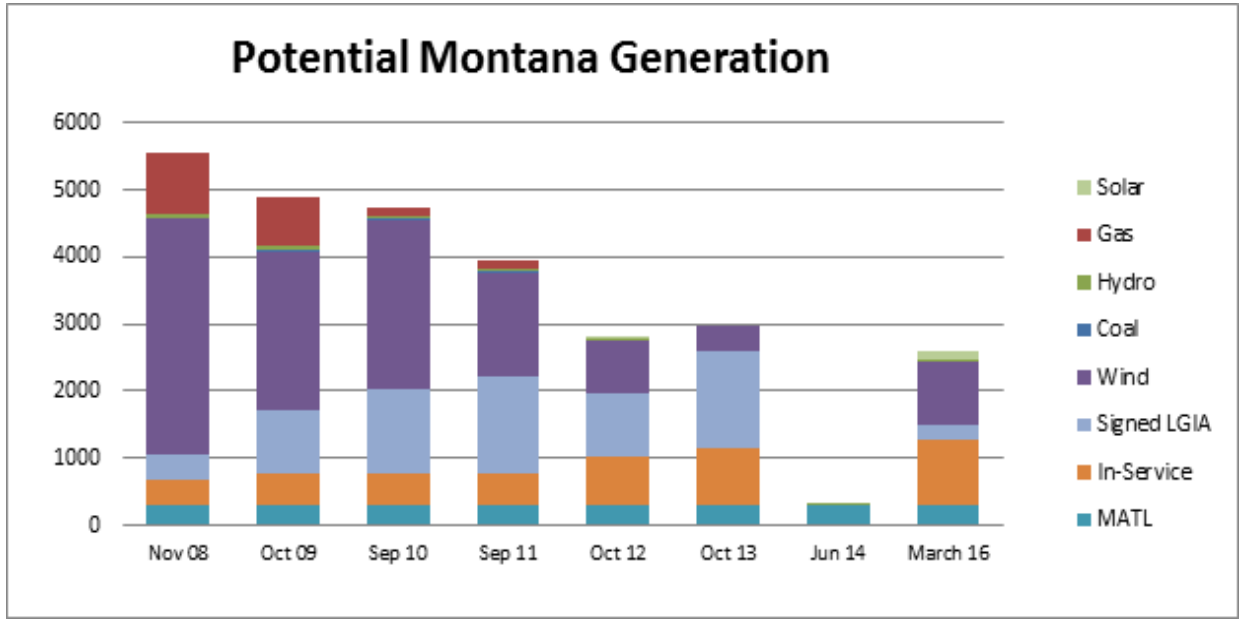
# WECC-Rated Paths

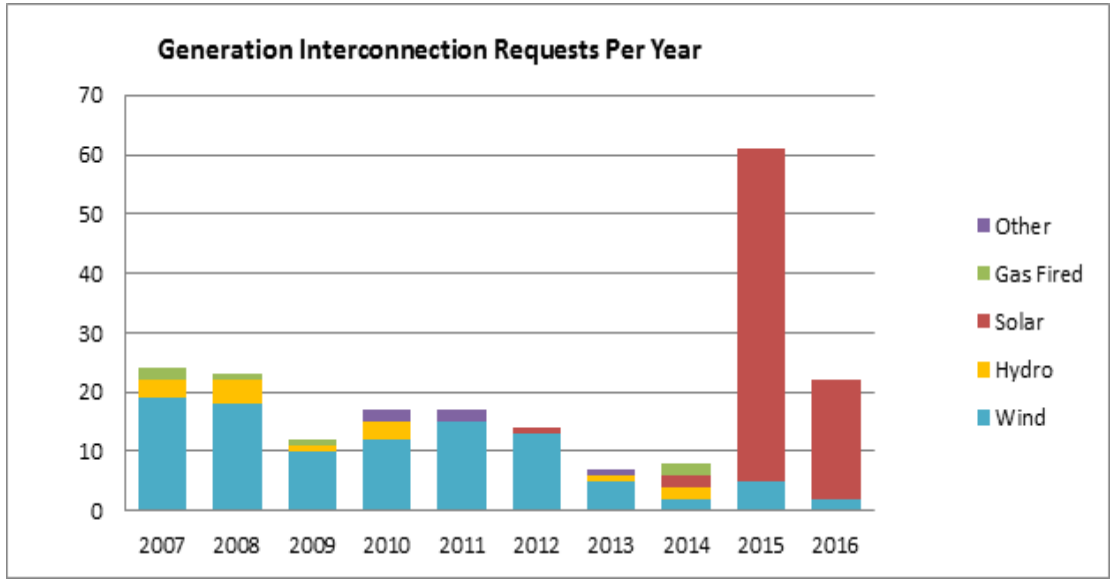
Reliability and Commercial Operations



# FERC Open Access Transmission Tariff (OATT) Generation Interconnection




FERC Order 2003 and Order 2006 - Large and Small Generator Interconnection Procedures (LGIP/SGIP)
Boom and Bust…




Latest trend - Solar applications for interconnection to Distribution system as Qualifying Facilities



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# Generation Interconnection, General Steps

- Application received along with deposit
  - This step is what establishes Queue position
- Scoping meeting held
- Study Work
  - Feasibility (may be bypassed)
  - System Impact
  - Facilities
- Generator Interconnection Agreement

# Generator Interconnection Overview, Fees and timelines

| | Small, Up to 20 MW | Large, Greater than 20 MW |
|---|---|---|
| **Feasibility** | $1,000 | $10,000 |
| | 30 Business days | 45 Calendar days |
| **System Impact** | $5,000 | $50,000 |
| | 45 Business days | 90 Calendar days |
| **Facilities** | $10,000 | $100,000 |
| | 45 Business days | 90 to 180 Calendar days |

Customer pays actual study costs and will be either reimbursed or invoiced, accordingly

# Large Generator Interconnection Timeline

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Within 30 Calendar days | Within 5 Business days | Within 30 Calendar days | Within 45 Calendar days | Within 10 Business Days | Within 3 Business Days | Within 30 Calendar days | Within 90 Calendar days | Within 10 Business days | Within 3 Business days | Within 30 Calendar days | Within 90 Calendar days | Within 10 Business days | Within 30 Calendar days of Draft Report | Within 15 Business days | Within 30 Calendar days | Within 15 Business days |
| Day | 0 | 30 | 35 | 65 | 110 | 120 | 123 | 153 | 243 | 253 | 256 | 286 | 376 | 386 | 406 | 421 | 451 | 466 |
| | Application submitted | Scoping Meeting (has to be scheduled within 10 days) | NWE tenders FEAS study agreement | Customer returns FEAS study agreement along with deposit | Customer receives completed study report | Results meeting on FEAS results | SIS study agreement sent to Customer | SIS study agreement returned along with deposit | Customer receives completed study report | Results meeting on SIS results | FAC study agreement sent to Customer | FAC agreement returned along with deposit | Customer receives completed Draft report, estimates accurate within 20% | Results meeting on FAC held | Customer responds with written comments to FAC report | Customer receives Final FAC report | Customer receives draft LGIA | Final LGIA |



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# The Generation Queue

- Public/Private
  - Public: Project number, Date request received, Location, Type (Network or Energy), In-service date, available (scrubbed) studies
  - Private: Project name and sponsor (until signed)
- http://www.oatioasis.com/NWMT/NWMTdocs/GenConnect7.html

# The Generation Queue, continued

- 40 Active projects (unsigned, not yet in service)
  - 14 Wind, 26 Solar
- Approximately 140 MW of Solar, 2116 MW of Wind

# Funding of GIA projects

- All projects and upgrades are funded by the Customer
- Customer gets reimbursed for Network upgrades over time (for online generation)

# Transmission Service

- Customer applies for long-term, firm Transmission Service with Transmission Services Department
  - FERC OATT and Business Practices on OASIS describe required information
- Transmission Services reviews application and works with Planning to ascertain if request can be accommodated with the system “as is” or if study is required

# Transmission Paths

- Path 8 – Interconnections to BPA and Avista
  - ATC to BPAT.NWMT approximately = 158 MW
  - ATC to AVAT.NWMT approximately = 297 MW
- Path 18 – Interconnections to PAC
  - ATC to BRDY approximately = 6 MW
  - ATC to JEFF approximately = 0 MW
- Path 80 Interconnections to PAC and WAPA
  - ATC to Crossover (WAPA) approximately = 450 MW
  - ATC to Yellowtail (PAC) approximately = 400 MW
- www.oasis.oati.com/NWMT for current ATC

# Transmission Service Queue

- Currently very little activity in the long-term, firm Transmission Service Queue
  - This has varied in the past 5 years, with the queue being very busy at times (hundreds of MW)
  - Currently the queue is empty to the NorthWest
  - Customers must have transmission service in neighboring transmission providers areas to move energy from NorthWestern
- Queue may include Network (load serving) or Point to Point (wheeling) request

# Ancillary Services

- Ancillary Services to consider
  - System Balancing / Regulation
  - Contingency Reserves (3% of Generation and 3% of Load)

# Transmission Costs and Considerations

- NWMT OATT Firm Yearly Transmission Rate = $37,920 / MW-Year
  - Plus Scheduling fee (total coupled charge of $39,920 / MW-year)
  - Charge is based on capacity reserved
- Consider other Transmission Providers rates and requirements
  - Will need transmission service on systems from source to sink

# Transmission Service Study

- Very similar to GIA process
  - No Feasibility option
  - SIS is $10,000, 60 day study from start date
  - FAC is $30,000, 60 day study from start date
  - Customers pays actual study costs
- Studies available upon request once completed
- Transmission Service Agreement tendered upon completion of study process

# Insufficient Transmission Capacity

- Requires upgrades to the Transmission System
  - Similar to GIA, can be Direct Assignment or Network Upgrades
- NorthWestern's OATT has security requirements for resulting upgrades
- Resulting Transmission Cost could be higher than OATT embedded rate (Higher of Pricing structure)

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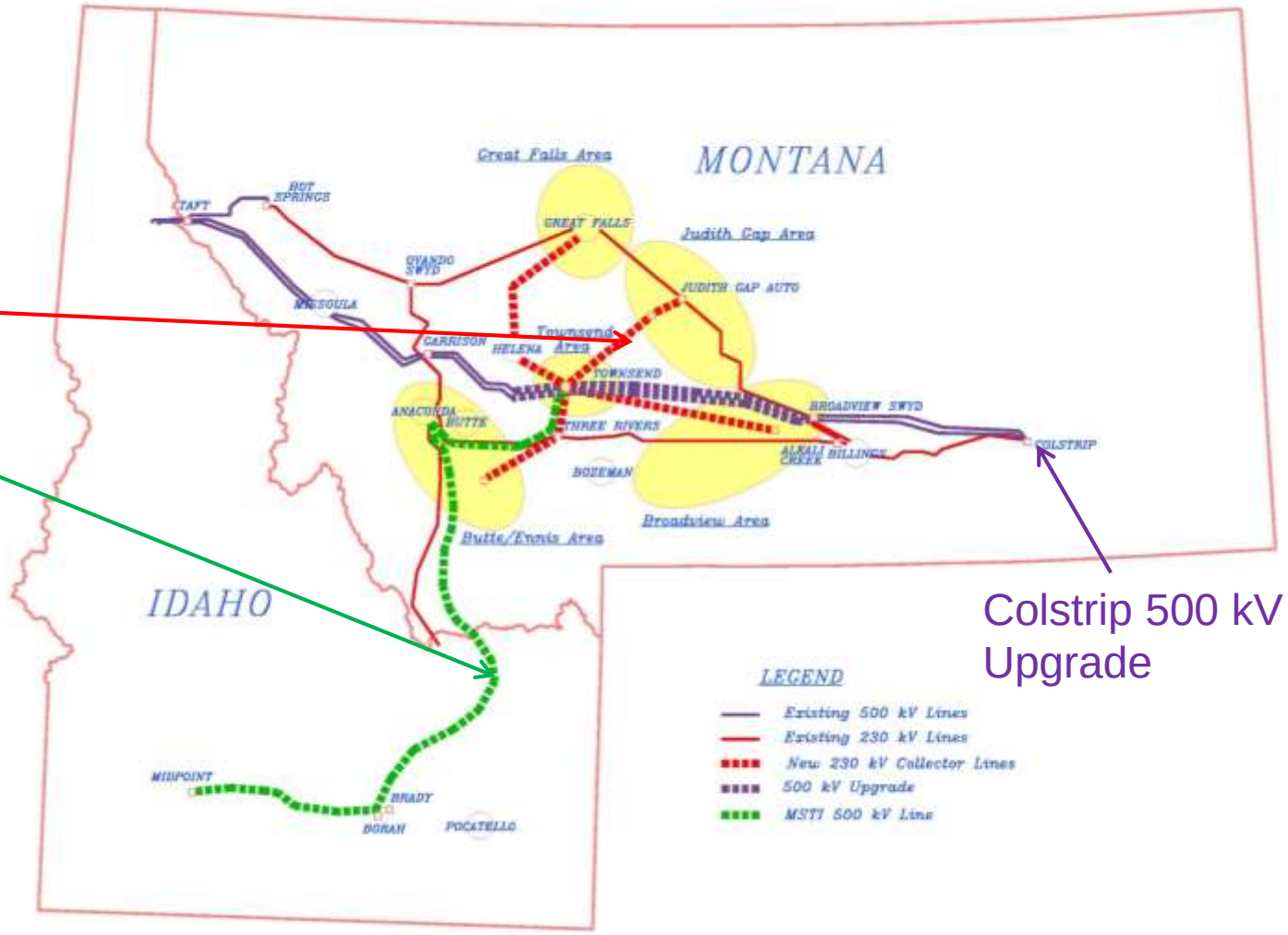
# Major Transmission Development Challenges

# NWE Past Proposed Transmission Projects




Collector System

MSTI

Colstrip 500 kV Upgrade

- Collector System
- MSTI, 500 kV AC Townsend to Midpoint substation, 1500 MW
  - Shelved in 2012, $24M write off
- Colstrip 500 kV Upgrade, $1.1M write off



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# Shutdown of Colstrip Units 1 and 2

- Large spinning mass, loss of which has many potential impacts, including:
  - Export capability/reductions
  - Local area voltage support
  - Loss of resource to Large Industrial Customers
  - Transfer capability through the South of Great Falls cut plane
  - Replacement generation and the issue of Inertia
  - Change in operation of Colstrip Transmission System

# So What is Different Today?

- Potential Colstrip Shutdown
  - What happens to that capacity?
  - Colstrip Transmission System
  - Montana Intertie
  - Puget/Talen
- Still No Clear Indication that Montana Wind will be competitive and valuable to out of State Interests
  - NorthWestern not interested in funding development – won't "build and they will come"
  - Mechanisms under OATT for interested customers to fund through TSRs
- Siting Challenges are still present – may be worse

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