

Montana's on the Move



# Governor Brian Schweitzer

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## Renewable Energy Workshop



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# Helena

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May 14,  
2010

# GOVERNING

CONNECTING AMERICA'S LEADERS

March 2010 \$4.50

## Riding High

Can green technology propel economic development?

Montana Gov. Brian Schweitzer astride a mammoth wind turbine.

Governor  
Brian  
Schweitzer

Economic  
Development  
"Vision"  
for  
Montana



# Schweitzer

## Economic Development Plan

- Diversify the economy

- More Jobs

- Better quality jobs - wages & benefits
- Jobs geographically dispersed

# Why Montana has been Strong <sup>(8<sup>TH</sup>)</sup> Economically

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- Strong resource, commodity & energy economy
- Growth in technology & knowledge economy
- Growth in tourism
- Attractiveness as a place to live and do business



# Schweitzer

## Economic Development Plan

- Diversify the economy

• Modernize

- Better jobs - wages & benefits

- Jobs geographically dispersed

**ENERGY**

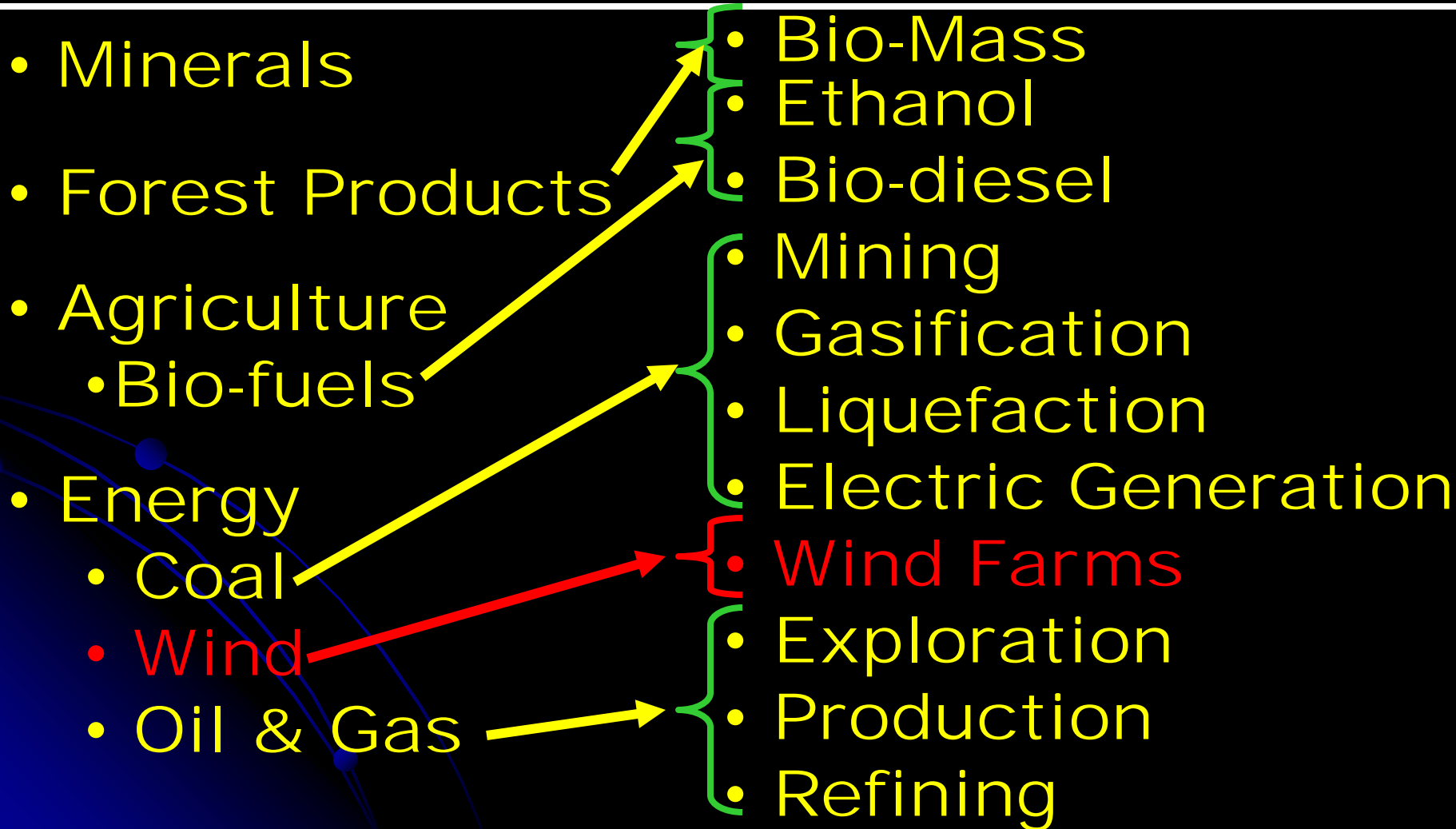
# Montana's on the *Move*

Energy as an  
economic driver



# MONTANA

## Comparative Advantages





WIND



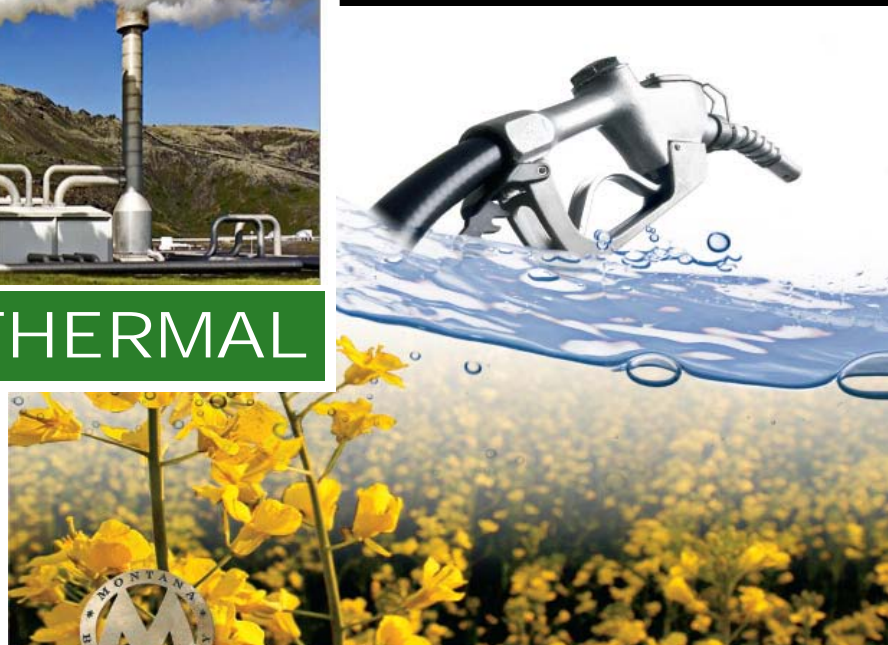
COAL



GEO THERMAL



OIL and GAS



BIOMASS/BIOFUEL

# MONTANA

## Schweitzer Energy Development Approach

- Take advantage of all of our energy advantages
- Do it right – quality jobs with a quality way of life
- “Clean & Green” for ourselves and to meet market demand

# Renewable Portfolio Standards in the West

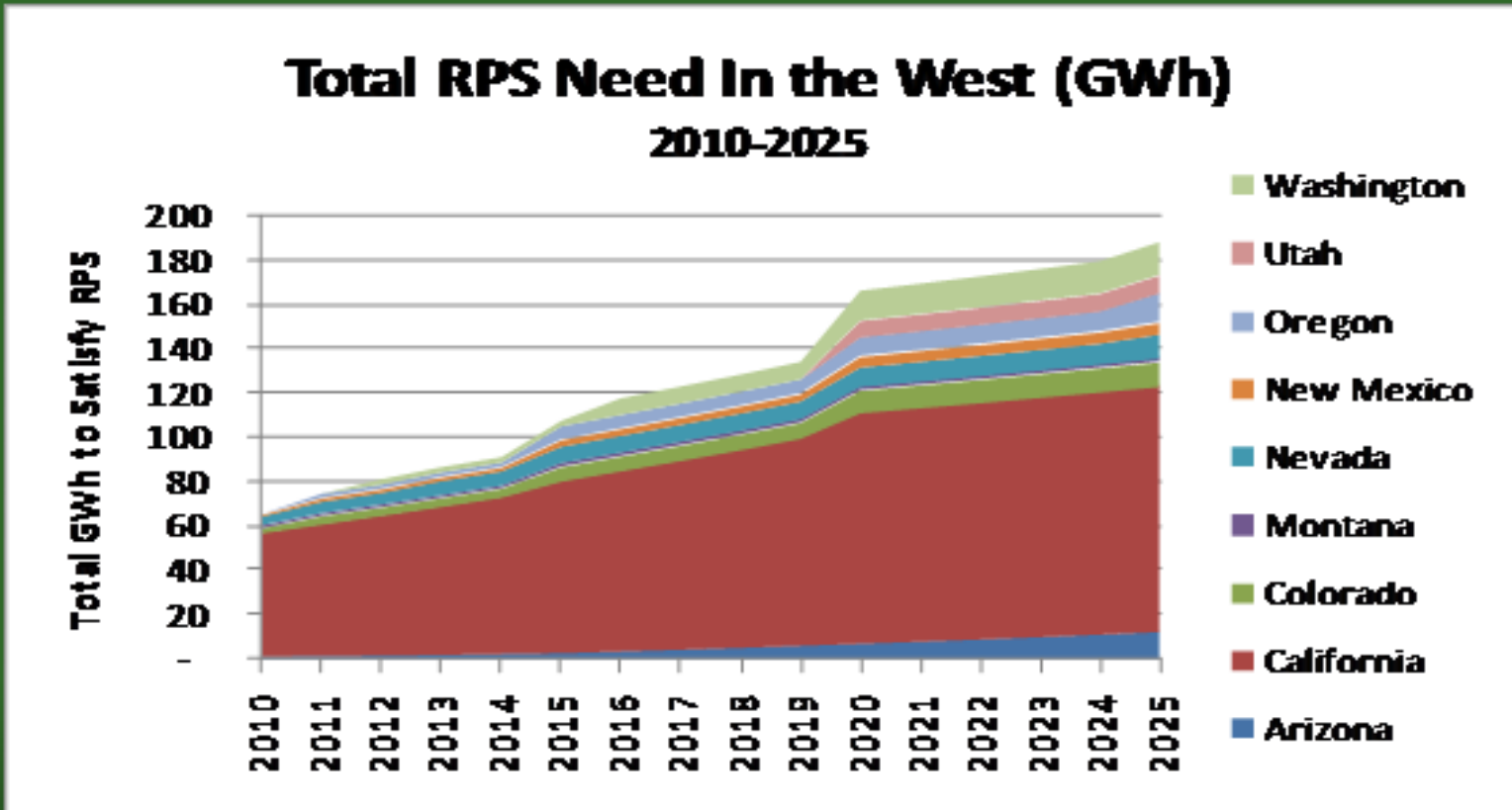


**MONTANA IS WIND COUNTRY**

**MONTANA MEANS BUSINESS**

# Total RPS Need in the West

123,000 GWh by 2025 (Approx. 40,000 MW)



Information gathered by ESI on a state-by-state basis from sources such as various FERC Form 1 documents, the CEC Demand Staff Forecast, and SNL



# MONTANA

## Energy Policy Filters

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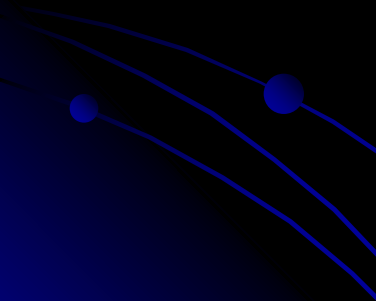
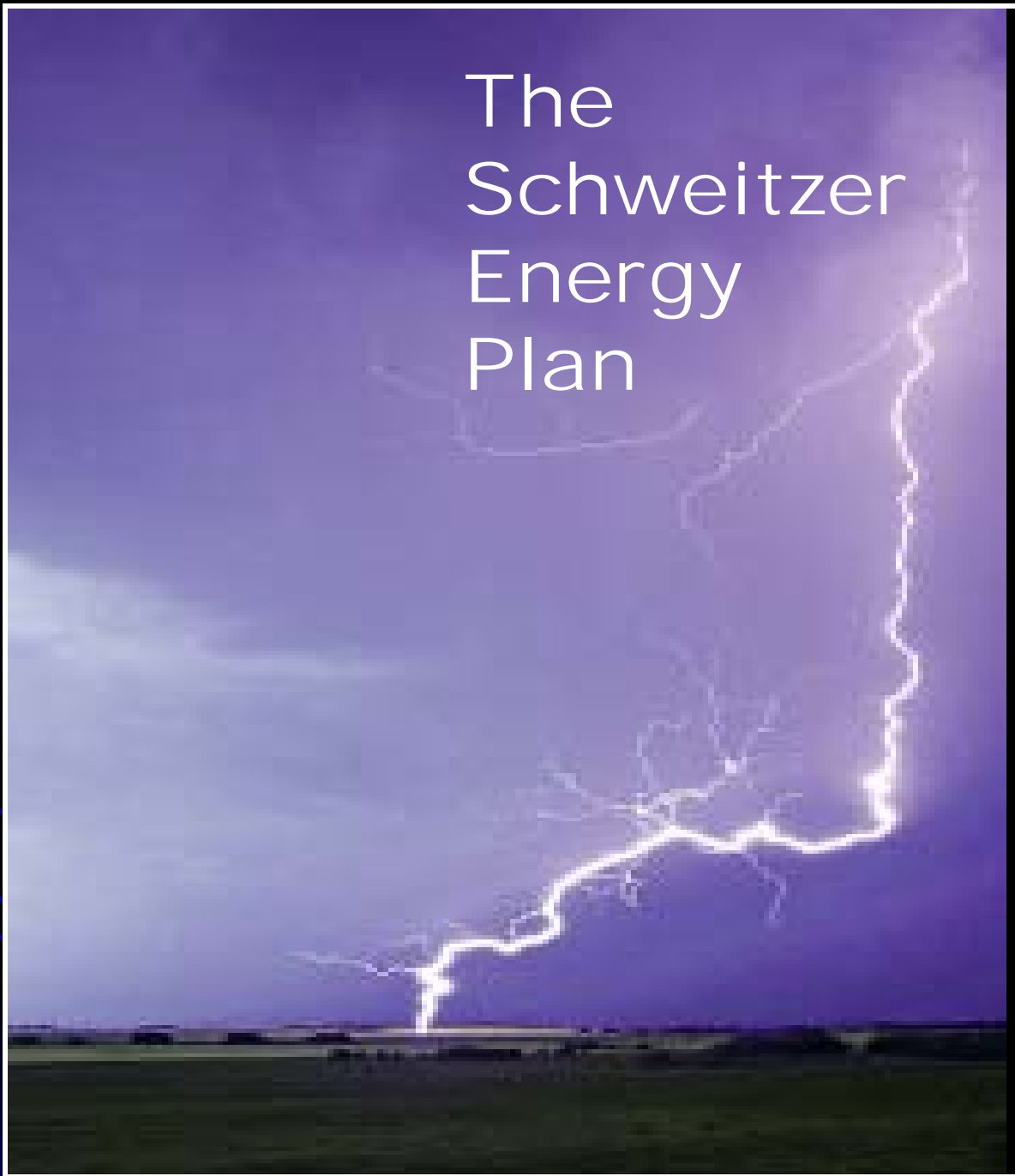
- **Internationally** – Global climate change
- **Nationally** – Energy security
- **Statewide** – Jobs & growth in areas that suffer chronic dislocation

# Developing Montana's Energy

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- Planning
  - Policy
  - Projects
- 

# The Schweitzer Energy Plan



# Schweitzer Energy Plan

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- Diversified Energy Development
- Renewable Energy Development
- Cleaner Energy Development
- Development with Clean Coal Technologies
- Value-added Energy Development
- Energy Efficiency & Conservation
- Energy Availability & Affordability
- Adherence to Environmental Laws & Community Acceptance
- Supportive Infrastructure Development

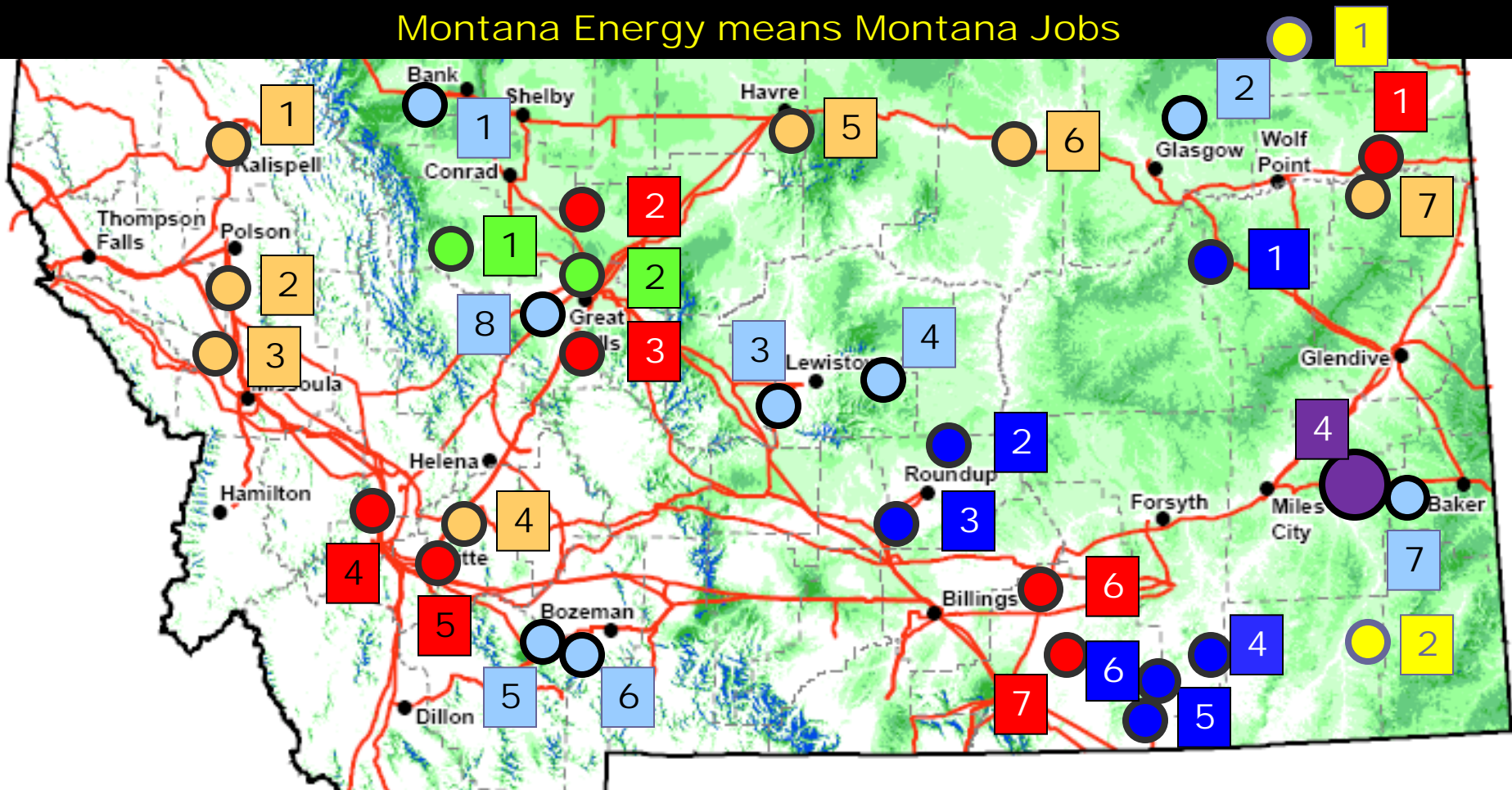
# Schweitzer Energy Policies

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- Clean & Green Tax Incentives
- Other Tax incentives
- Market Development (Renewable Portfolio Standards)
- Permitting Efficiency
- Coordination with Other States & Feds
- Community Impact Assistance (Partial & Pending)
- Capture & Sequester CO<sub>2</sub>

# Projects since 2005

Montana Energy means Montana Jobs



- Power Plant Activity
- Bio-Fuels Activity
- Carbon Capture/Storage Activity
- Wind Generation Activity
- New or Expanded Coal Mine Activity  
~permitted or under review
- Hydropower Activity

# Wind Energy Development

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*Fastest growth  
in nation*



# Wind Energy Development

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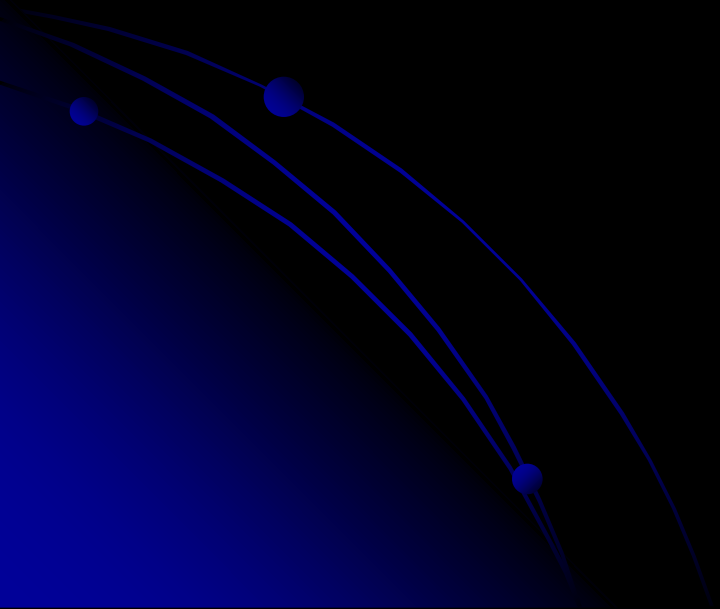
*Fastest growth  
in nation*

*386 Mw – up from  
1 Mw in 2004*

# NEW WIND GENERATION SINCE 2005

\$1.9 Billion of Investment  
Over 900 Megawatts of Clean Power

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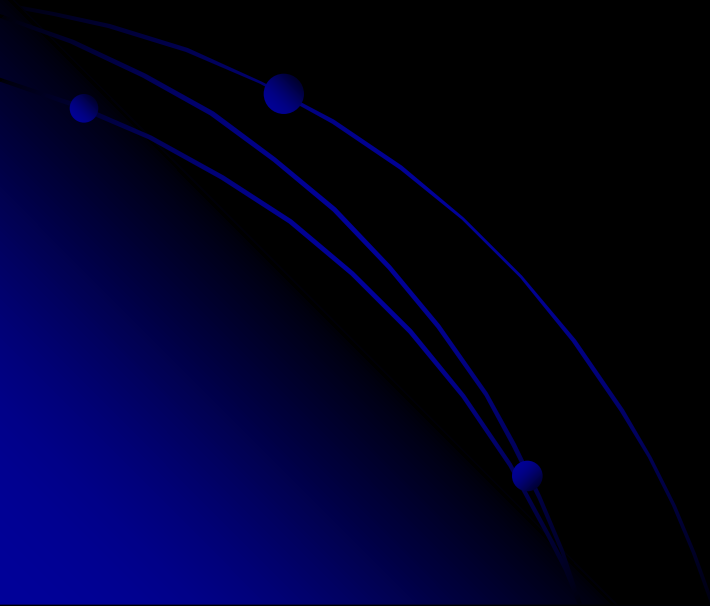


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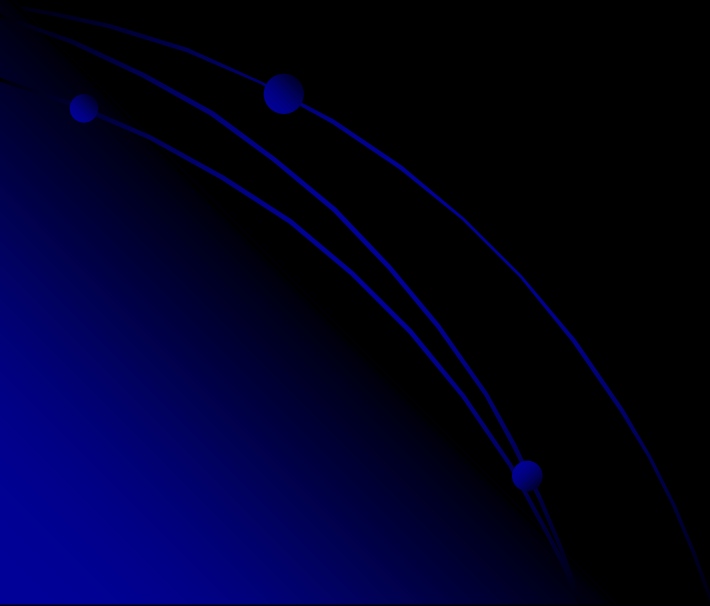
- Judith Gap (Harlowton): 135 MW
- Glacier (Shelby-Cut Bank): 210 MW
- Horseshoe Bend (GF): 9 MW
- Diamond Willow (Baker): 30 MW



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- 386 MW
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	386 MW

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## In Progress

● Rim Rock:	309MW
● Judith Gap Expansion:	53MW
● Martinsdale:	80MW
● Beaver Creek:	100MW

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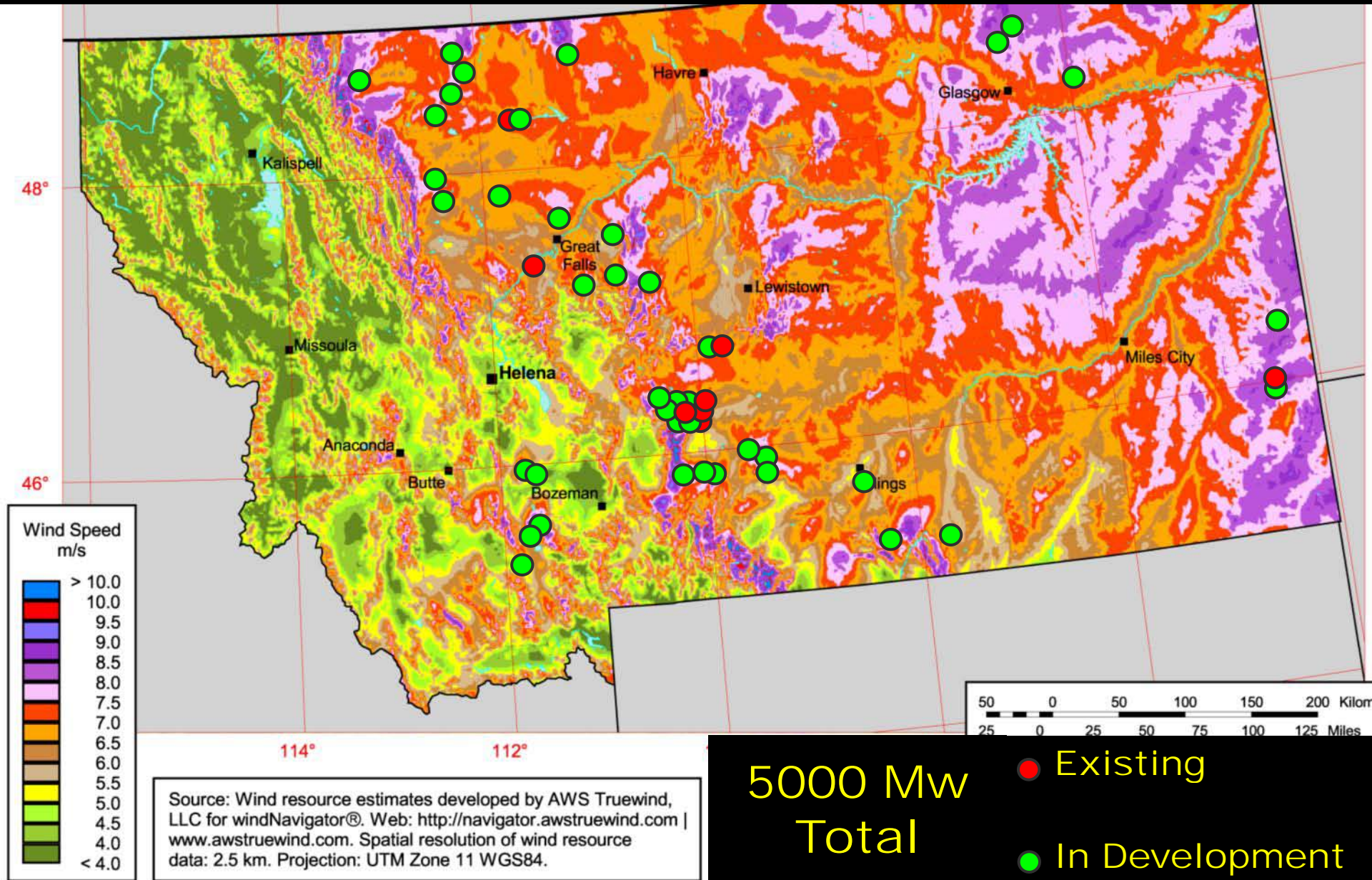
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## In Progress

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• Judith Gap Expansion:	53MW
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	542MW

# 50 Wind Projects in Various Levels of Development





# Current Wind Generation On-line by State

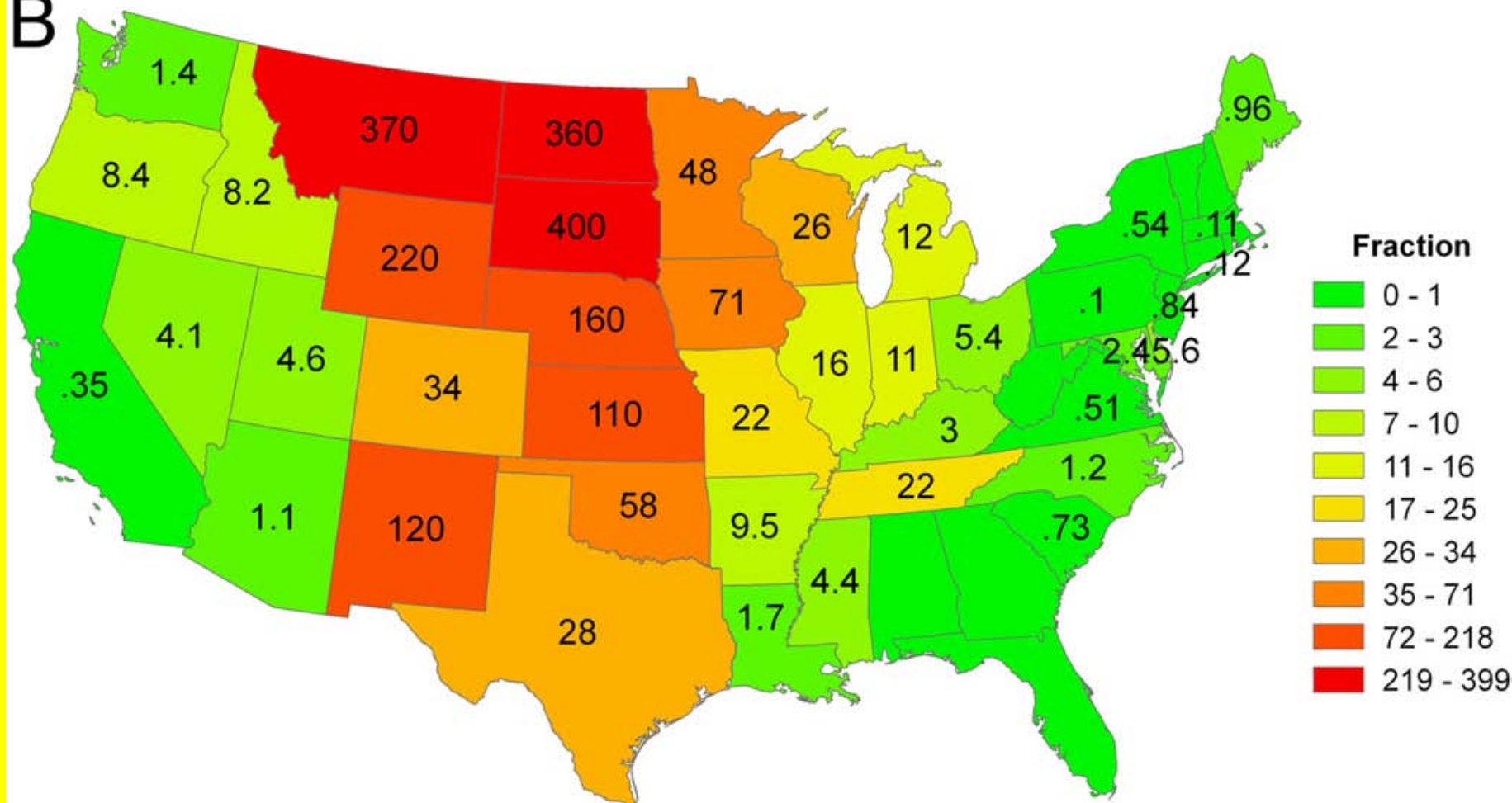
Rank	State	MW		Rank	State	MW
1	Texas	9,506		11	Oklahoma	1,130
2	Iowa	3,670		12	Wyoming	1,101
3	California	2,723		13	Indiana	1,036
4	Oregon	1,920		14	Kansas	1,026
5	Washington	1,908		15	Pennsylvania	748
6	Illinois	1,848		16	New Mexico	597
7	Minnesota	1,796		17	Wisconsin	449
8	New York	1,274		<u>18</u>	<u>Montana</u>	<u>375</u>
9	Colorado	1,246		19	W. Virginia	330
10	N. Dakota	1,203		20	S. Dakota	313

# Harvard Wind Power Study

## Underperformance Ratio

### Montana 2<sup>nd</sup> Worst in Nation












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# Western States Wind Energy Potential

Wind Electricity Potential  
(GWh/yr) Class 4-7

Montana's Wind  
Electricity Potential

Total Potential (GWh/yr)		
Montana	830,504	
Wyoming	733,350	
New Mexico	208,090	
Colorado	198,197	
California	60,068	
Washington	27,172	
Oregon	20,572	
Nevada	17,589	
Utah	9,908	
Idaho	9,748	
Arizona	7,268	

Wyoming's Wind  
Electricity  
Potential

Prepared by Energy Strategies, LLC

= scale of wind resources relative to Montana's



**MONTANA IS WIND COUNTRY**

**MONTANA MEANS BUSINESS**

# Wind Energy Development



*Giddy Up*

# Wind Energy Development



*Constraints*



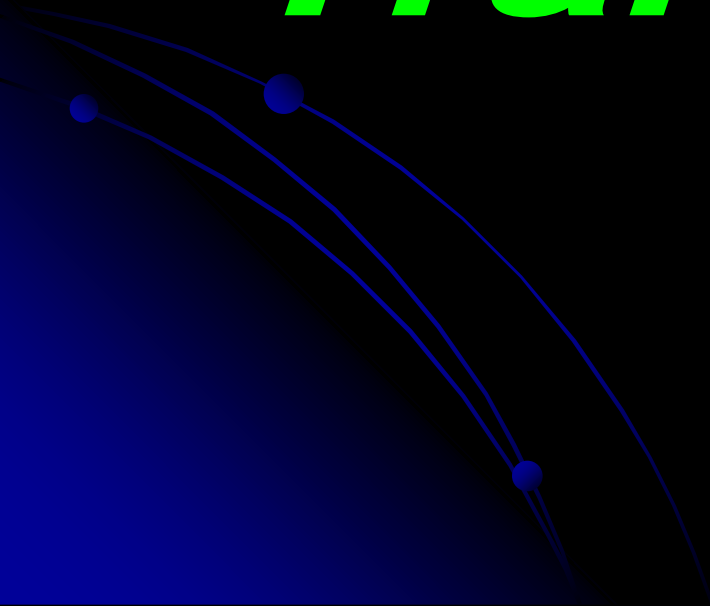
# Firming Wind

- Natural Gas
- Pump Hydro
- Wind-on-Wind
- Other

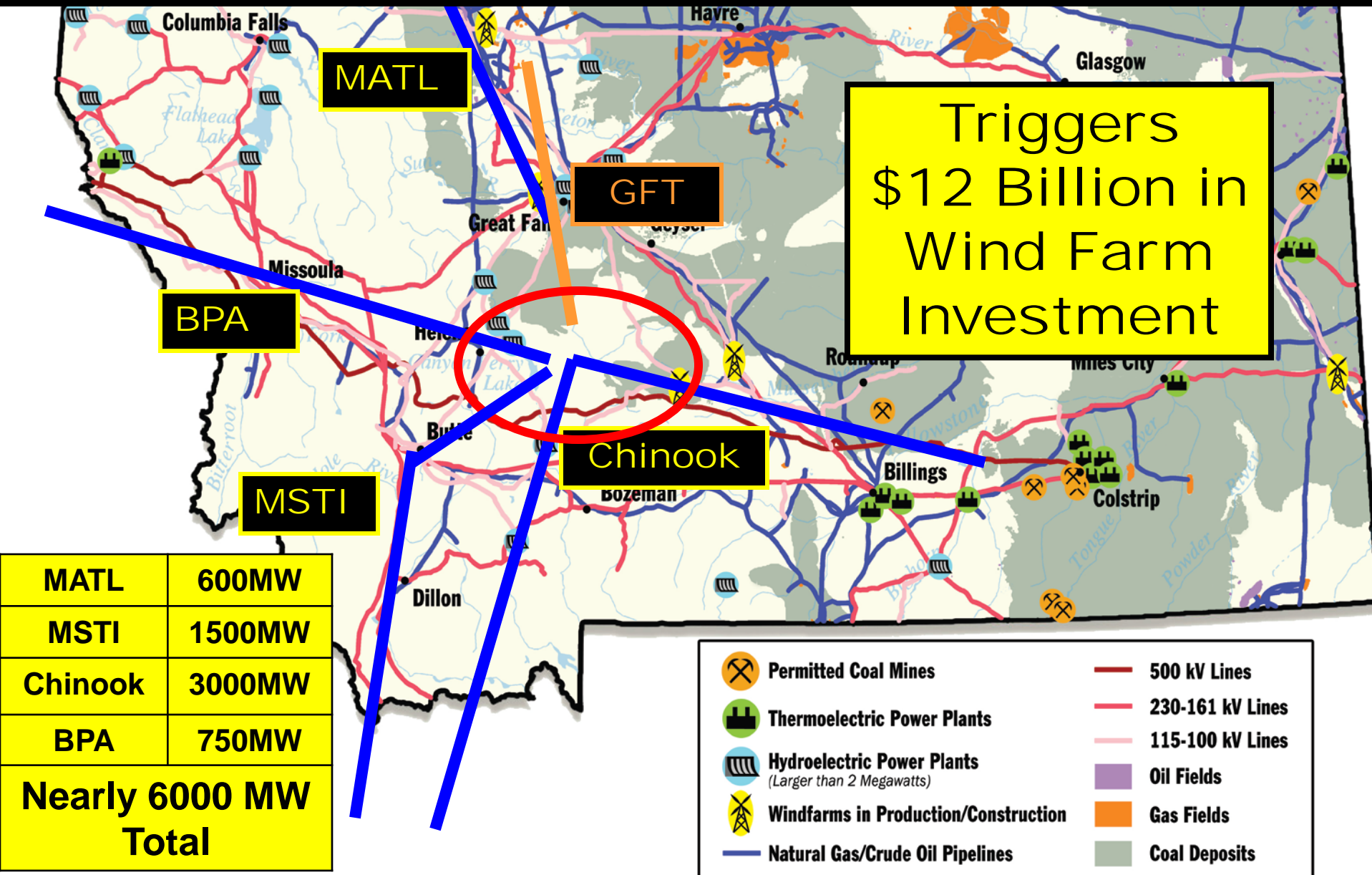
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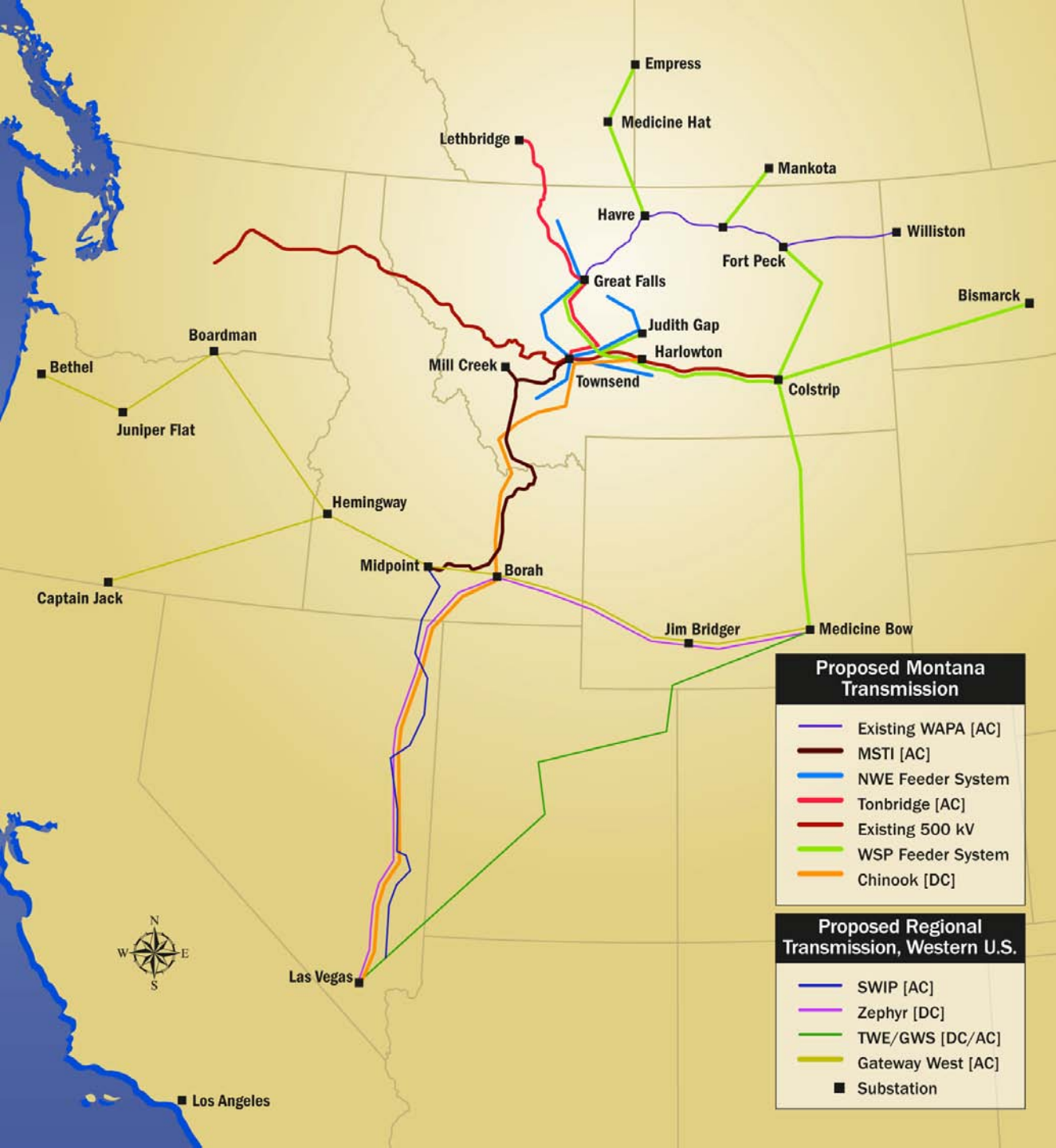
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## *Transmission Lines*



# Major New Transmission Lines in Development





**Proposed Montana Transmission**

- Existing WAPA [AC]
- MSTI [AC]
- NWE Feeder System
- Tonbridge [AC]
- Existing 500 kV
- WSP Feeder System
- Chinook [DC]

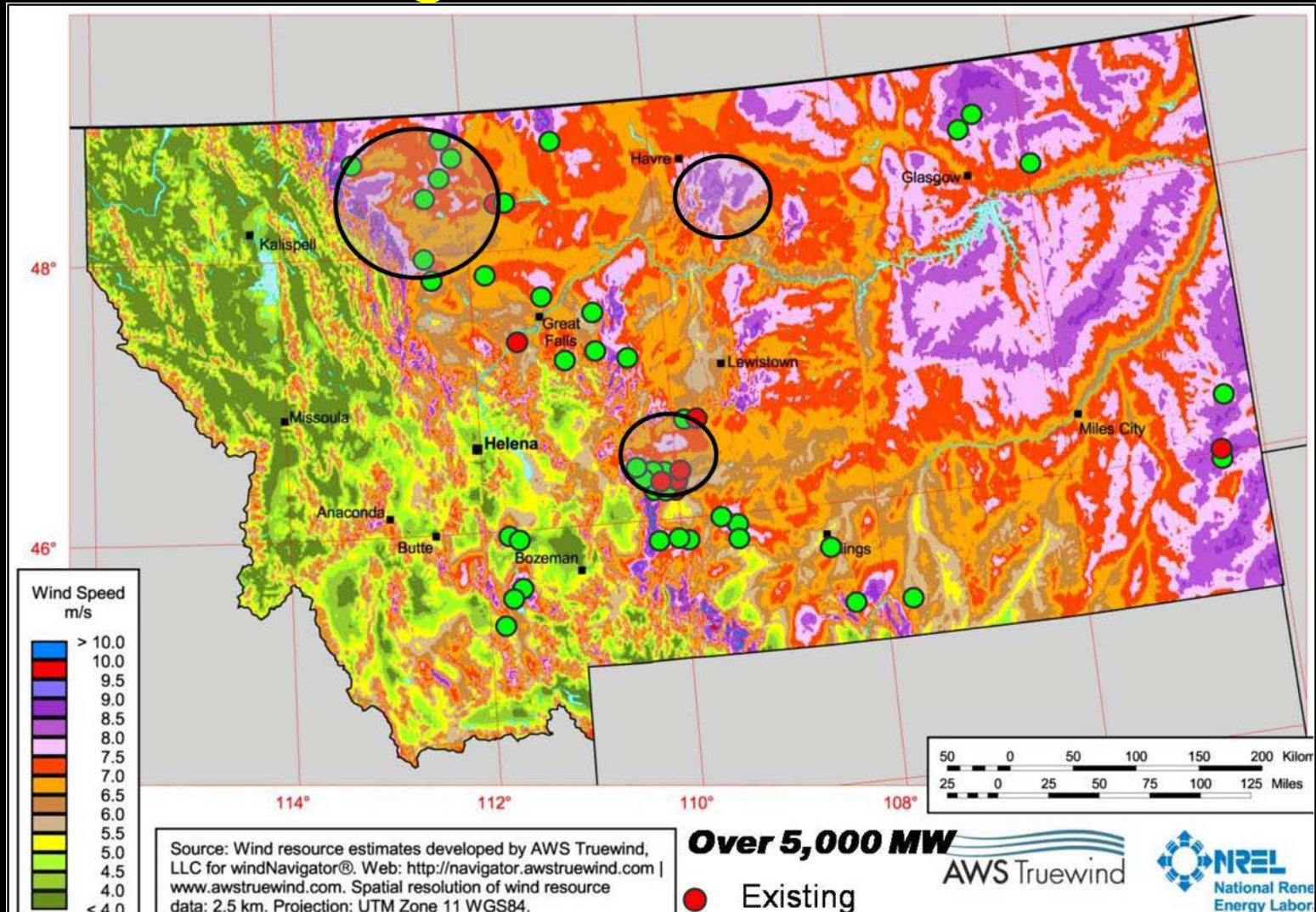
**Proposed Regional Transmission, Western U.S.**

- SWIP [AC]
- Zephyr [DC]
- TWE/GWS [DC/AC]
- Gateway West [AC]
- Substation



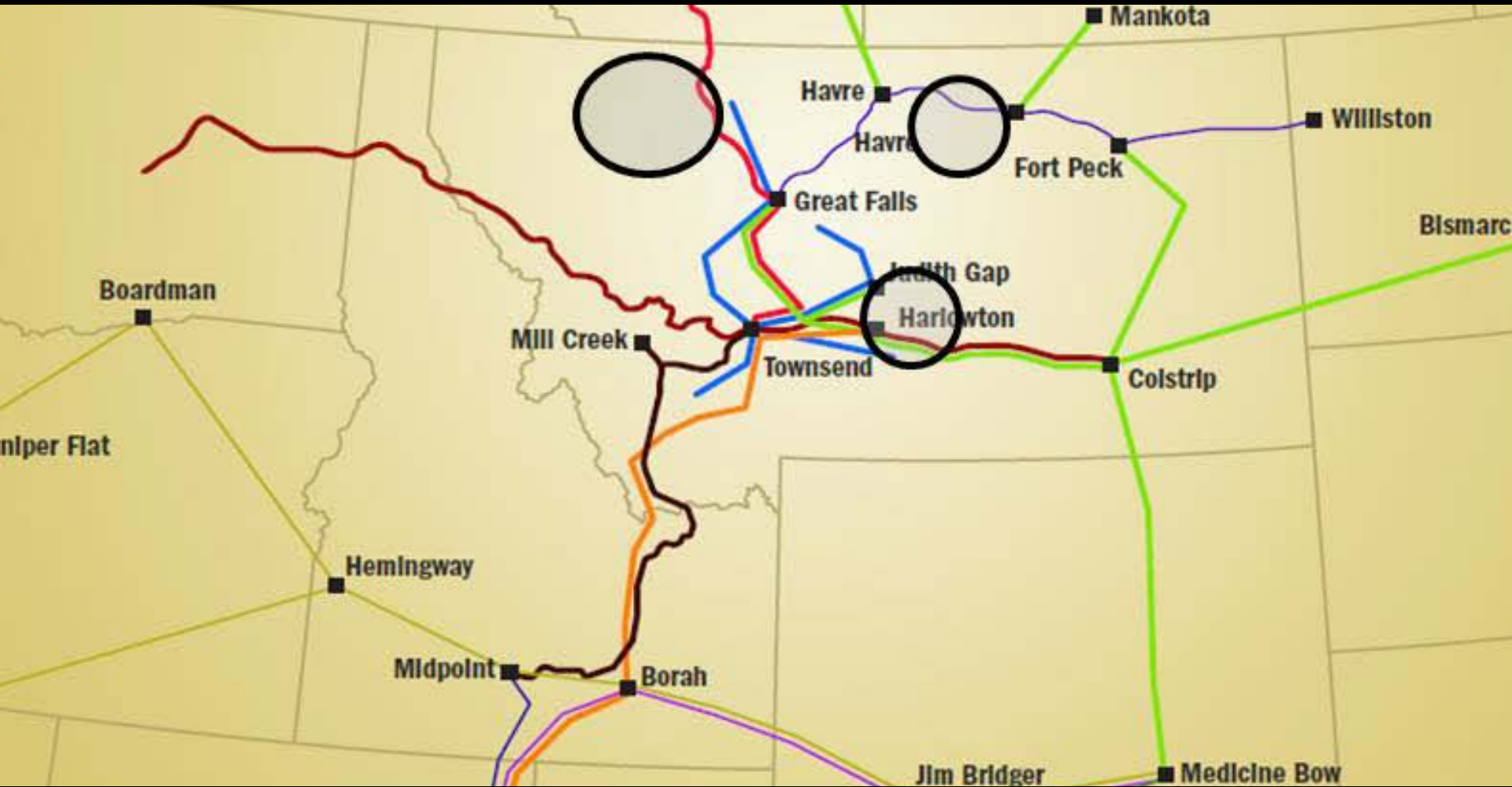
**Proposed Montana  
Transmission**

# Wind Projects in Montana



WREZ Renewable Energy Zones

# WREZ Renewable Energy Zones



Montana Transmission Map

# Tax Comparison

## Wind Power Tax Estimate

### RimRock Wind Farm

Hours /Year	Megawatts	Megawatt Hrs/Year	Output Rate	Power Tax @ \$1/MW Hour
8760	309	2,706,840	40%	\$ 1,082,736

# Tax Comparison

## Property Tax Estimate

### RimRock Wind Farm

Market Value	Rate	Millage	Property Tax
\$800,000,000	3%	500	\$ 12,000,000

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11-1  
Ratio

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# Wind Energy Development



*Opportunities*

# Wind Energy Development



*Opportunities*

# Wind Energy Development



*Construction*  
*Service*  
*Engineering*  
*Manufacturing*





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