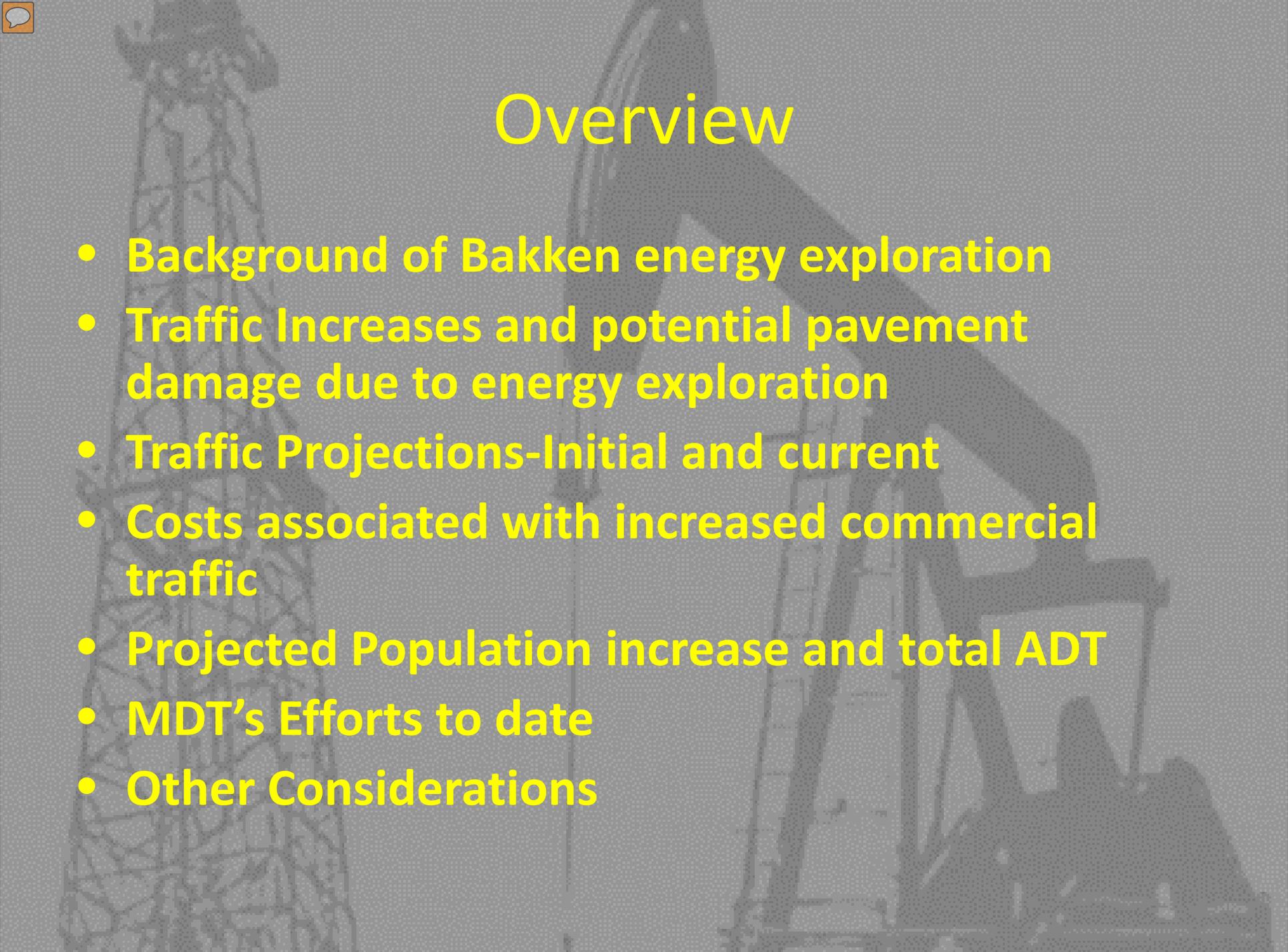


Meeting Demand: Transportation Needs in Montana

Impacts from Energy exploration to Montana's Highway infrastructure



May 8th, 2013

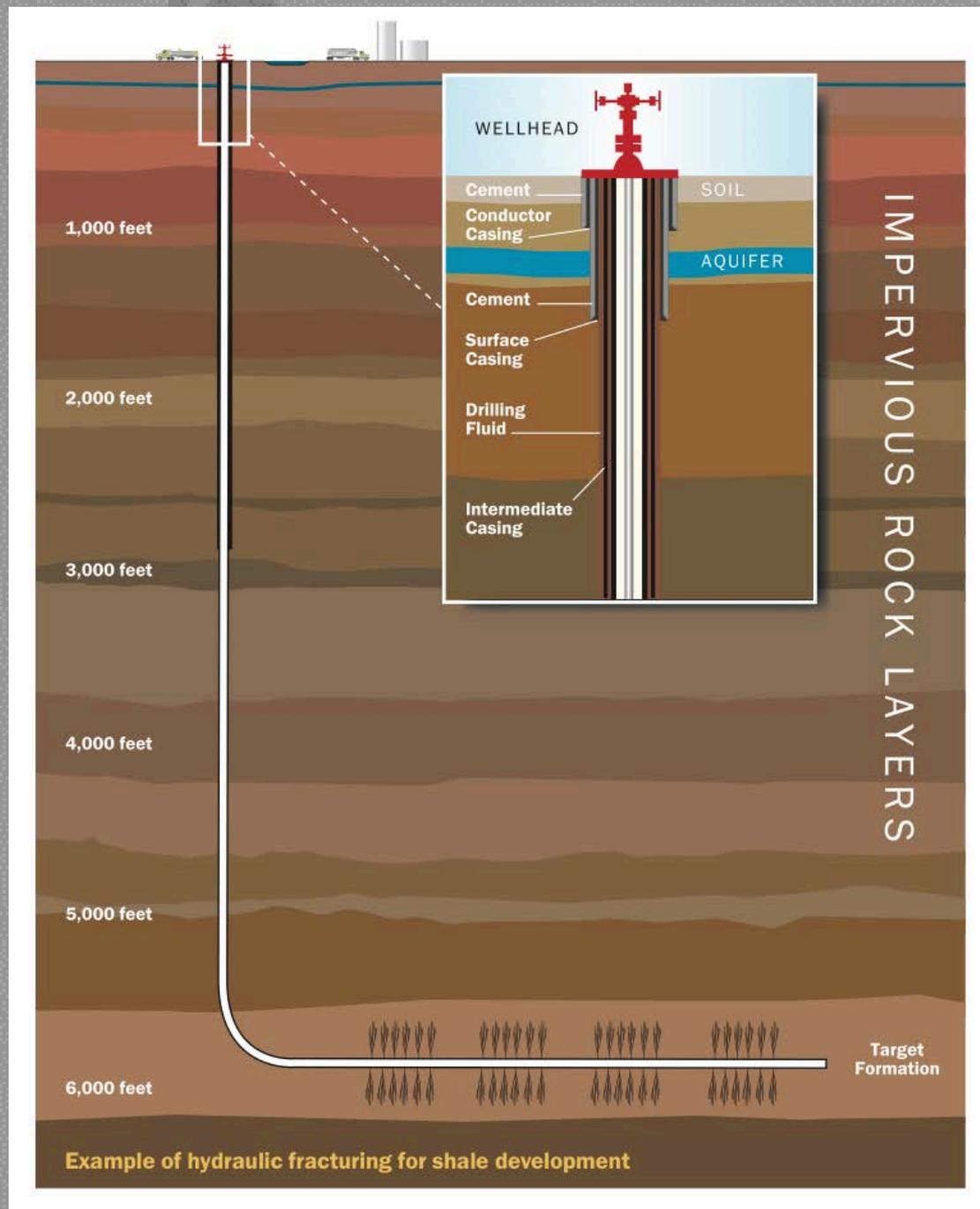


Overview

- **Background of Bakken energy exploration**
- **Traffic Increases and potential pavement damage due to energy exploration**
- **Traffic Projections-Initial and current**
- **Costs associated with increased commercial traffic**
- **Projected Population increase and total ADT**
- **MDT's Efforts to date**
- **Other Considerations**

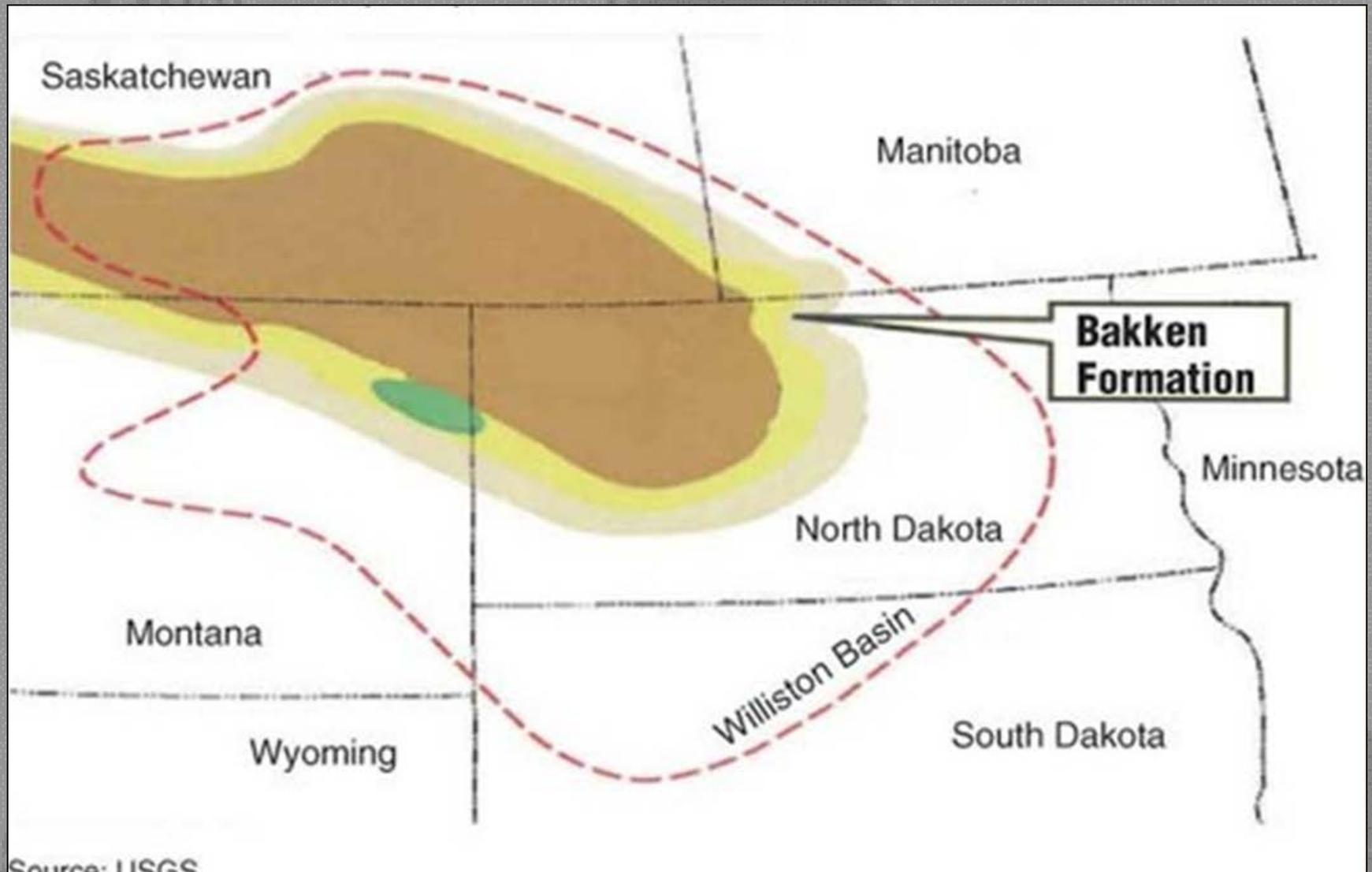
Hydraulic Fracturing

- Hydraulic fracturing is referred to as “Fracking”
- 2 miles down, 2 miles out
- Directional drilling enables turn, long horizontal runs
- Hydraulic forces cause fractures in the oil bearing shale
- Driller pushes gel/sand (proppants) into fractures to hold them open
- Less pressure in the well hole than in the surrounding shale so oil flows into the well.

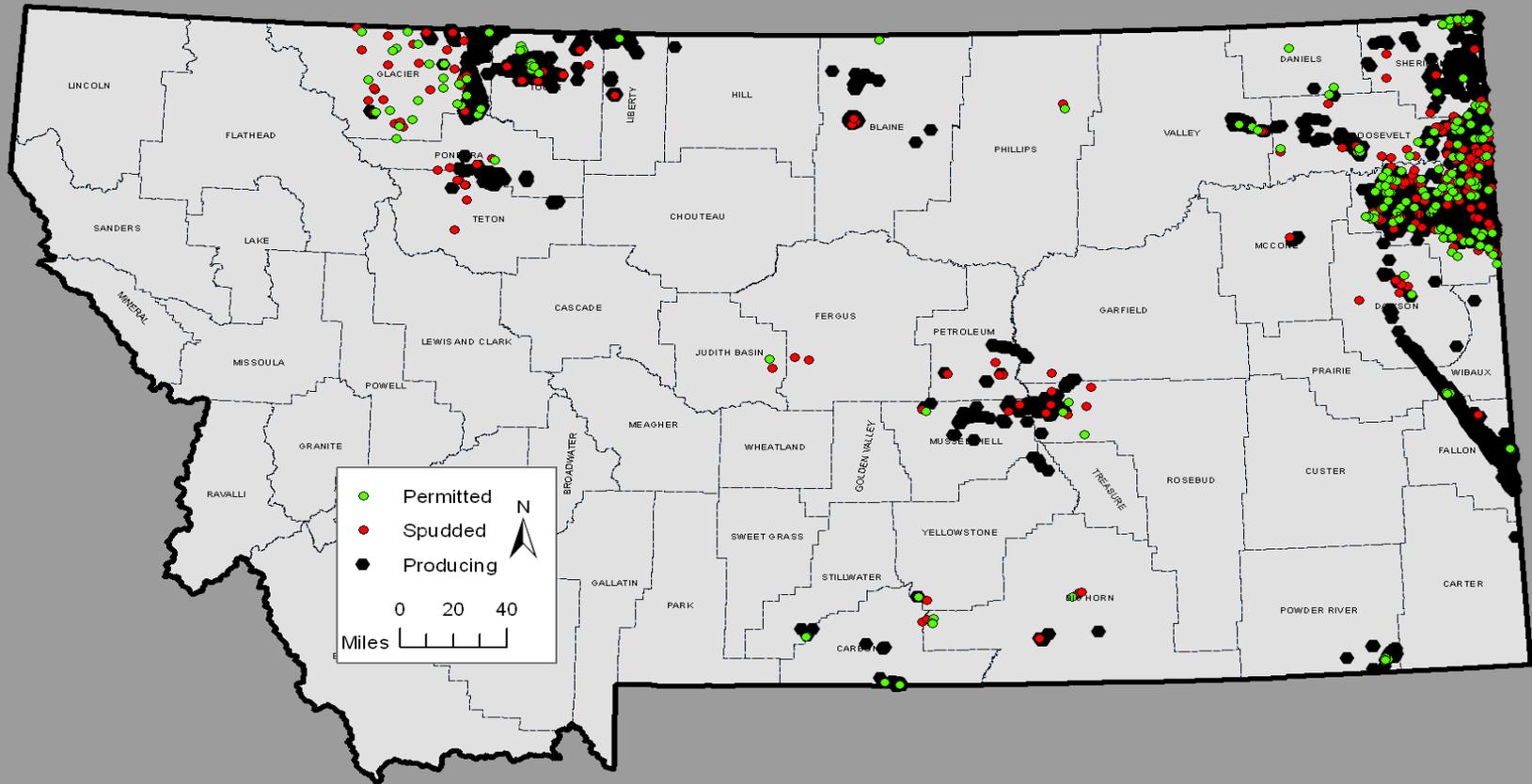


Background:

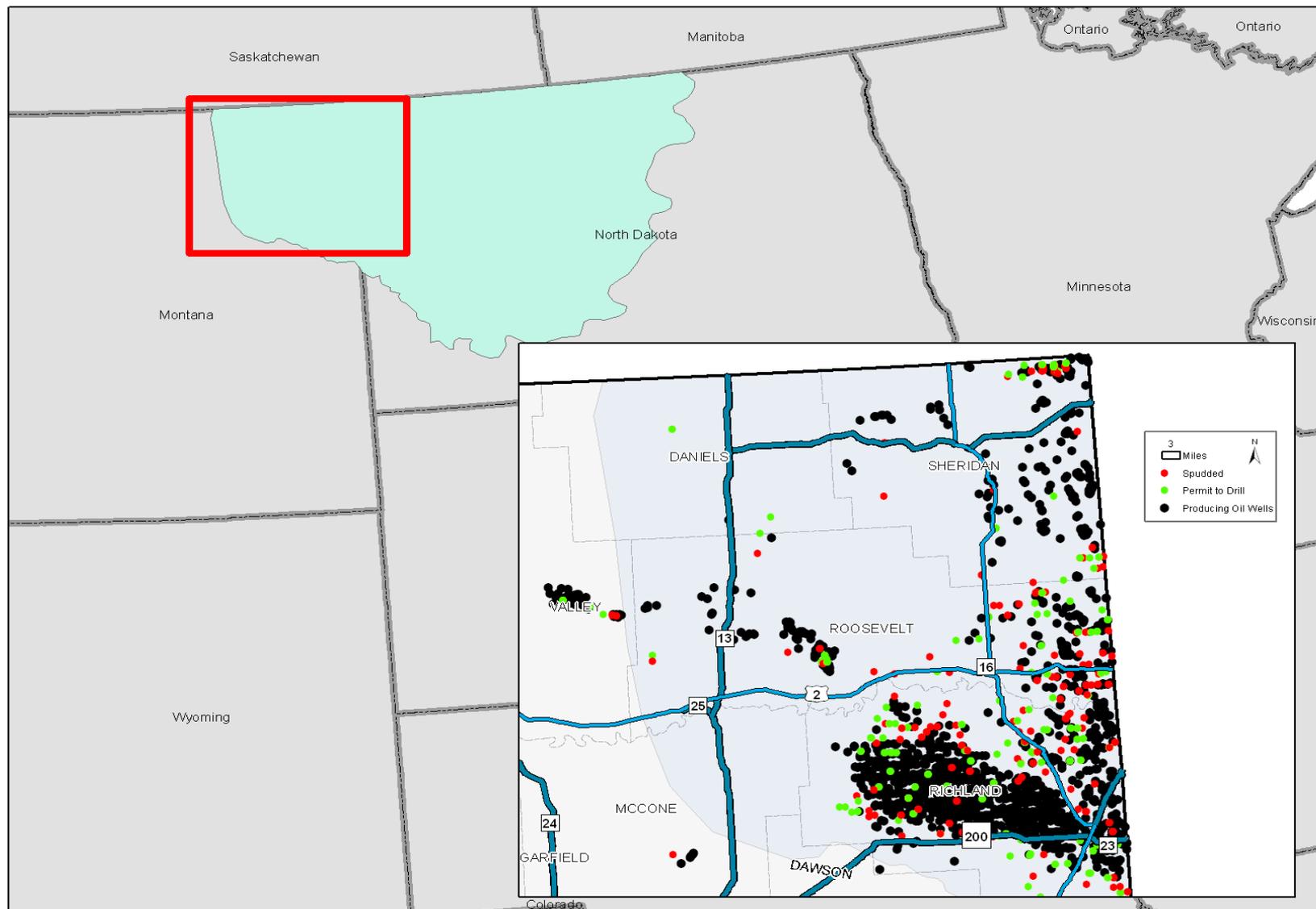
The Known Extent of the Bakken Oil Formation



Background: Statewide Map

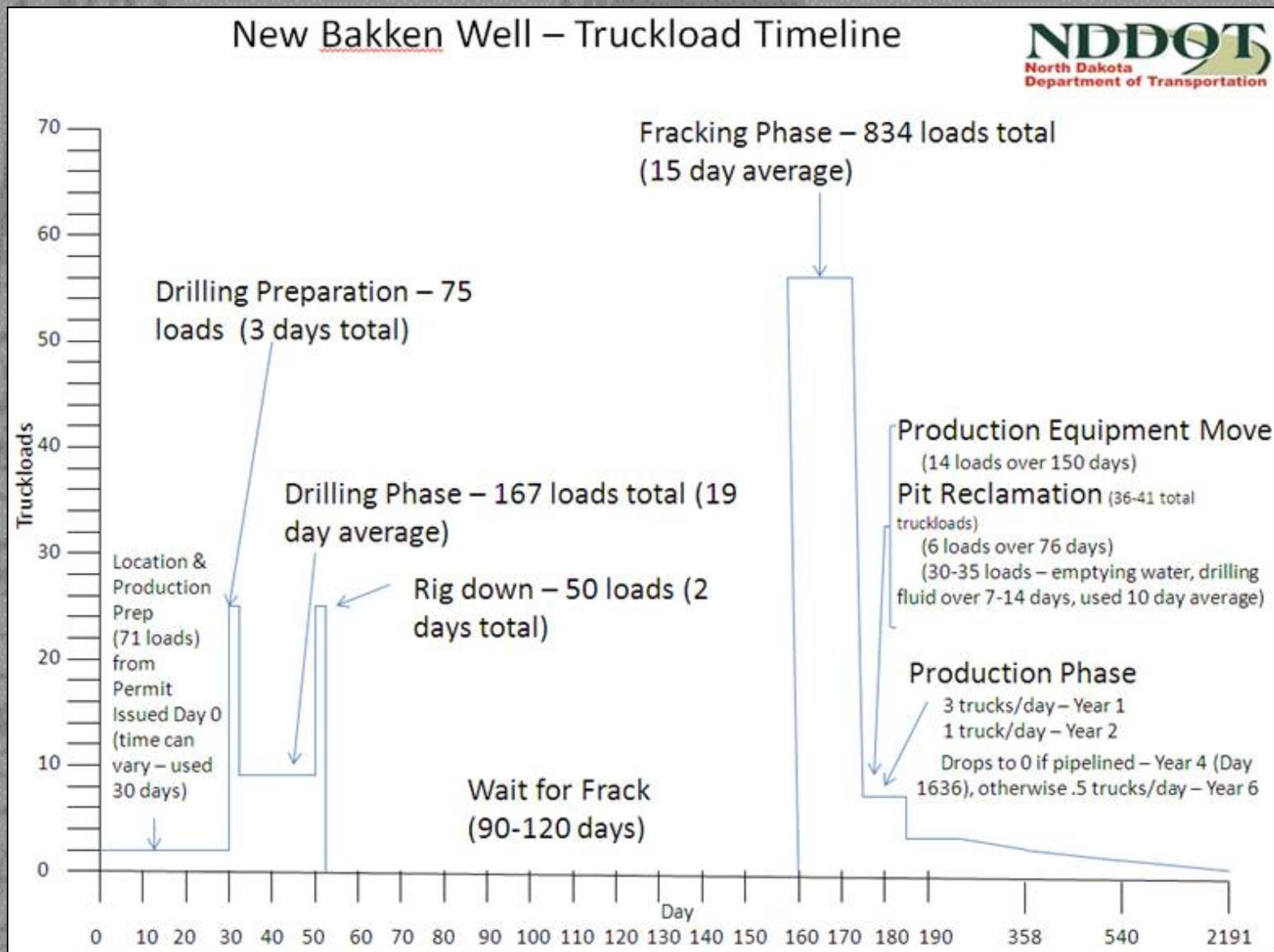


Background: Impacted Area & Routes



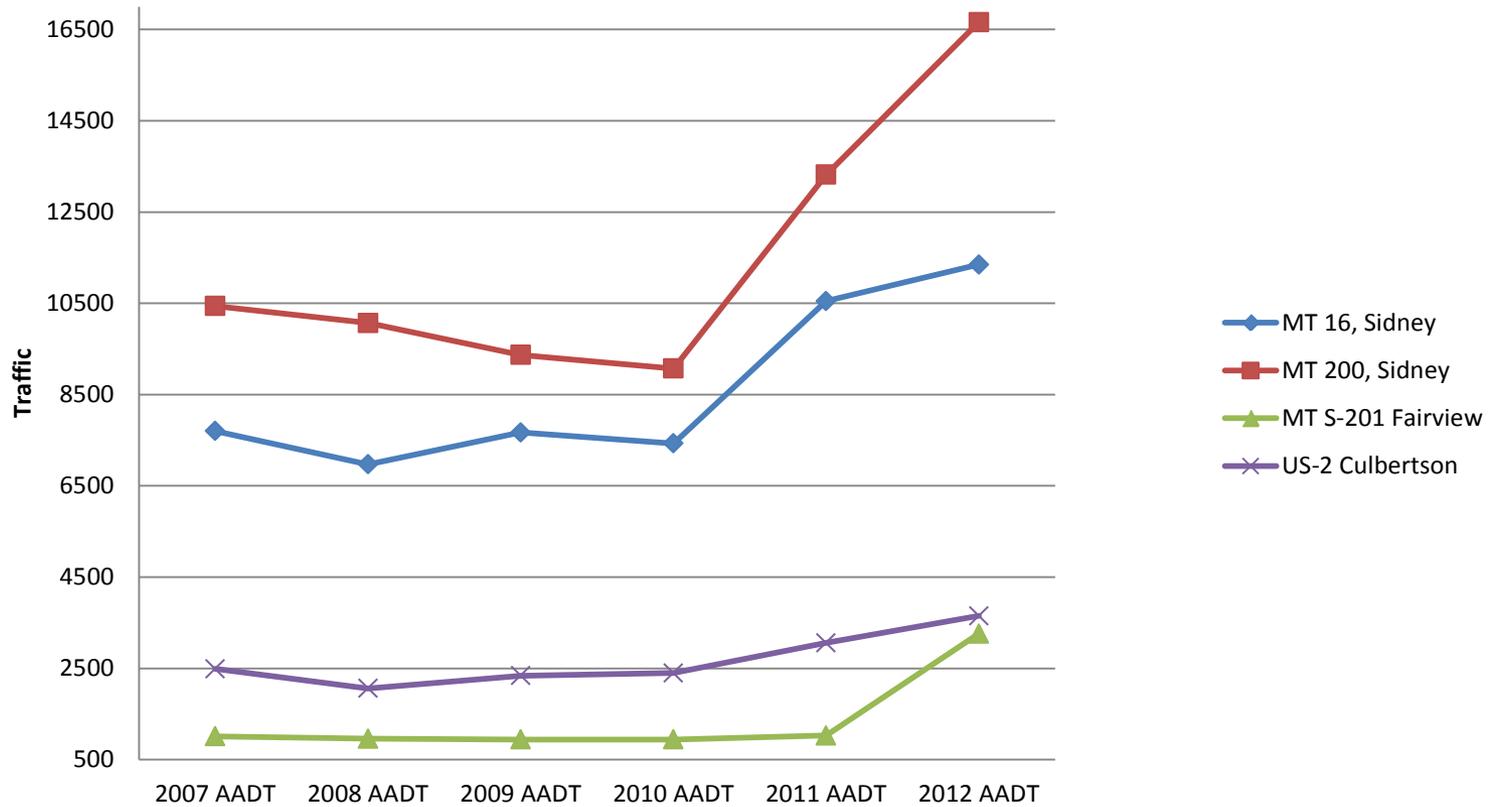
Traffic:

New Bakken Well Truckload Timeline



Increased Traffic for Study Area Routes

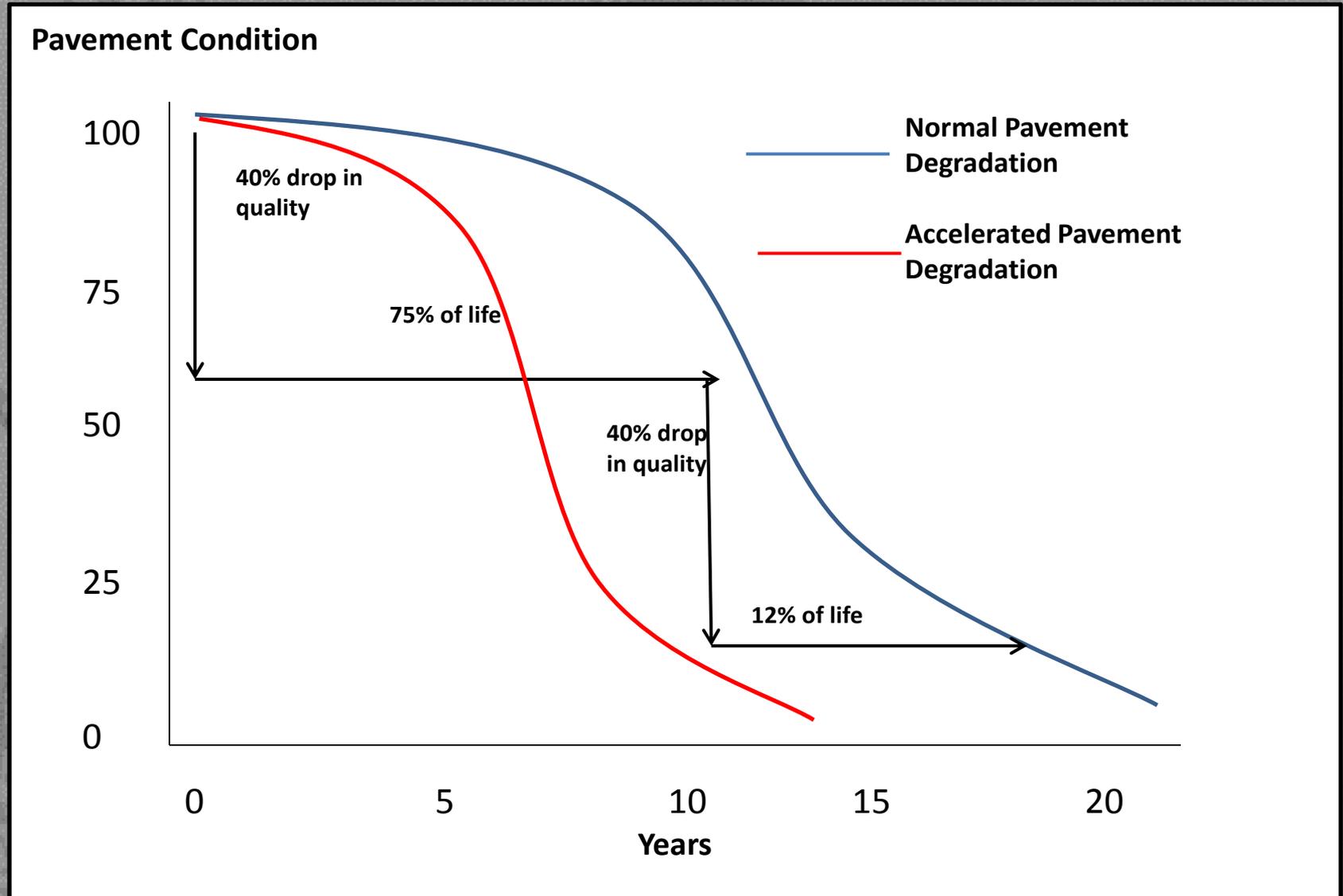
Traffic Growth



Increased Traffic: By Eastern Counties

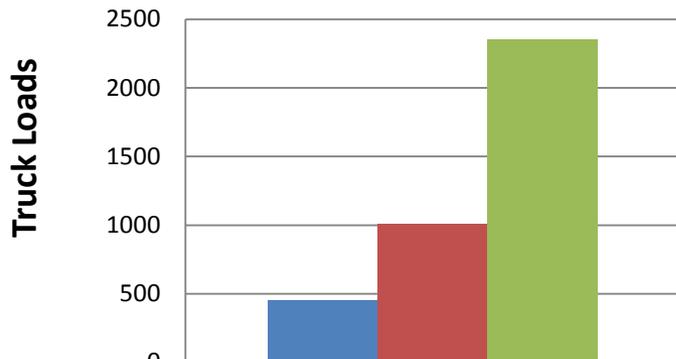
| Interstate | 2010 | 2011 | Percent Change |
|---|-------------|-------------|-----------------------|
| Dawson | 3,599 | 4,039 | +12.2% |
| Wibaux | 2,748 | 2,882 | +4.9% |
| Non-Interstate National Highway System | 2010 | 2011 | Percent Change |
| Dawson | 1,501 | 1,652 | +10.1% |
| Richland | 2,150 | 2,739 | +27.4% |
| Roosevelt | 1,623 | 1,987 | +23.4% |
| Sheridan | 722 | 1,035 | +34.1% |
| Primary | 2010 | 2011 | Percent Change |
| Daniels | 476 | 521 | +9.5% |
| Dawson | 1,279 | 1,515 | +18.5% |
| Richland | 1,304 | 2,138 | +64.0% |
| Roosevelt | 497 | 686 | +38.0% |
| Sheridan | 405 | 566 | +39.8% |
| Wibaux | 753 | 837 | +11.2% |

Traffic: Increased Traffic's Effect on Eastern Montana's Roads

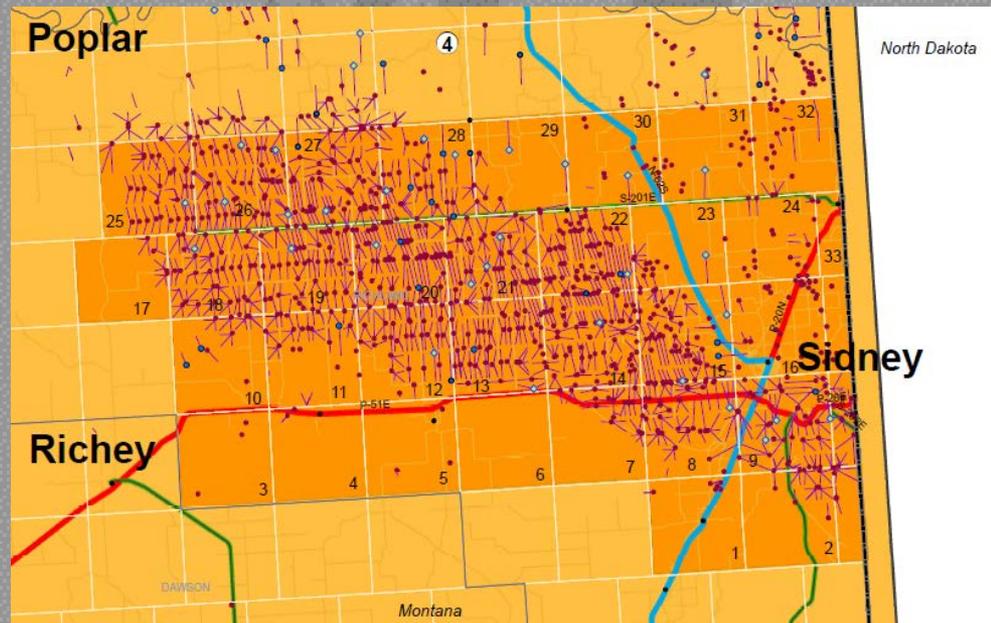


Future Projections: Initial Efforts

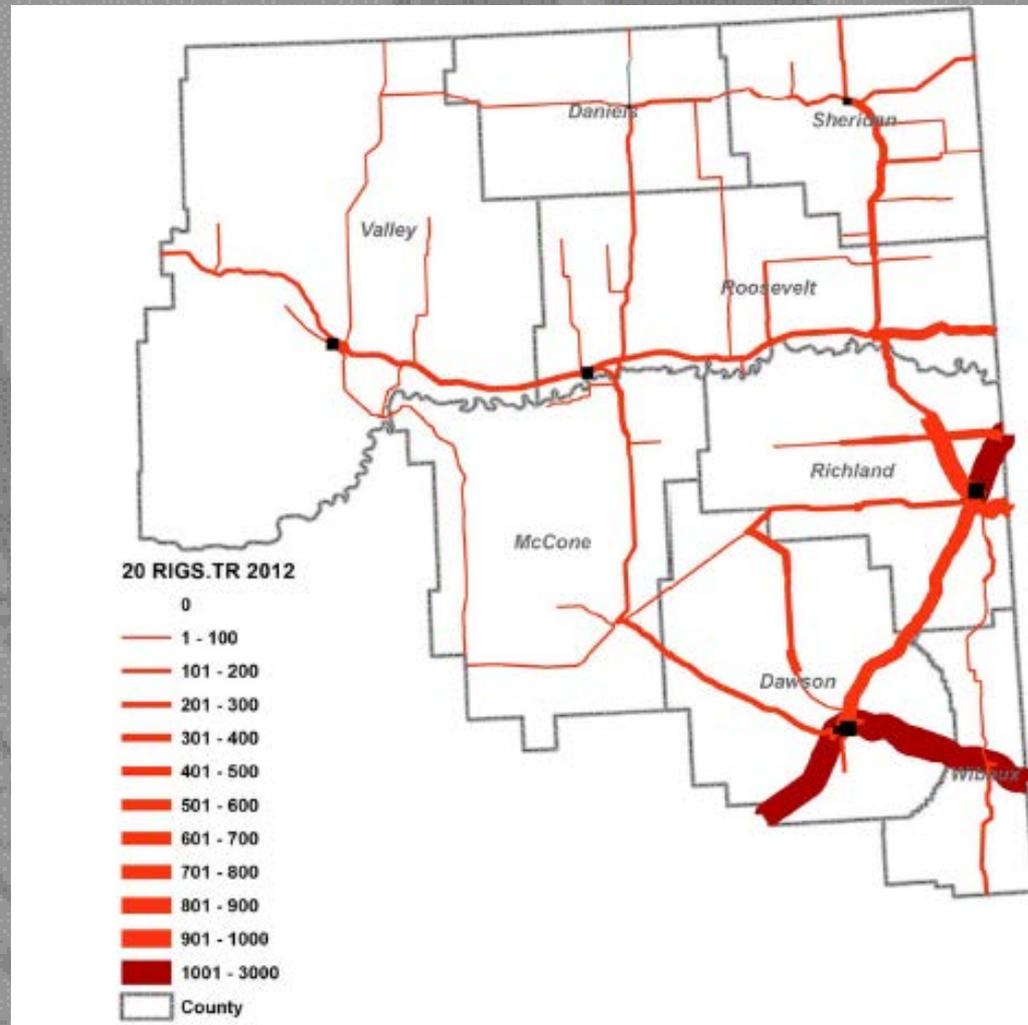
Sidney Hotspot Area Projected Truck Load Increase



| | Sidney Hotspot Load Increase |
|-----------------------|------------------------------|
| ■ Low Projection | 454 |
| ■ Med Projection | 1006 |
| ■ Med-high Projection | 2350 |

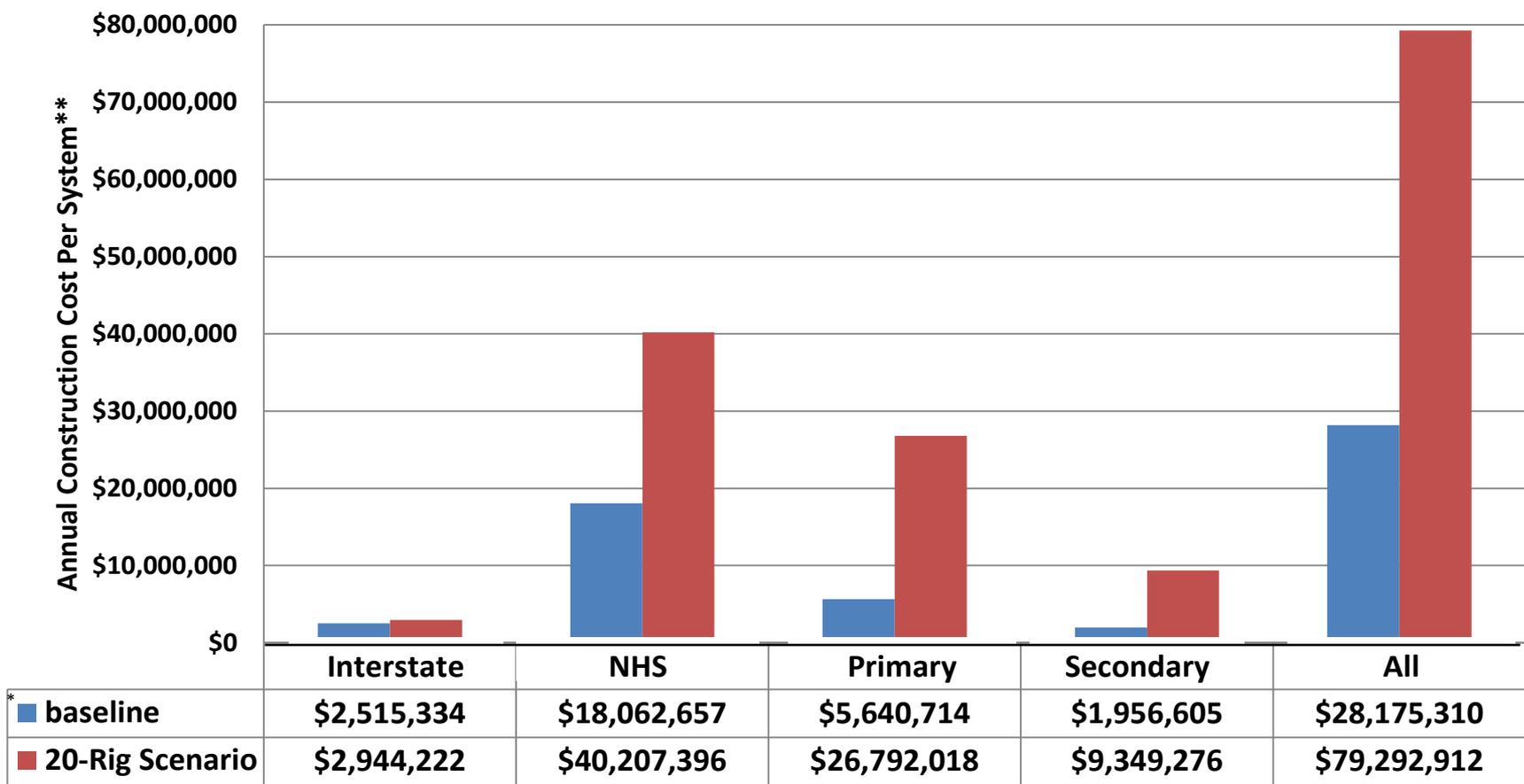


Initial Efforts: Upper Great Plains Transportation Institute





Potential Cost to Maintain Montana's Infrastructure in the Glendive district

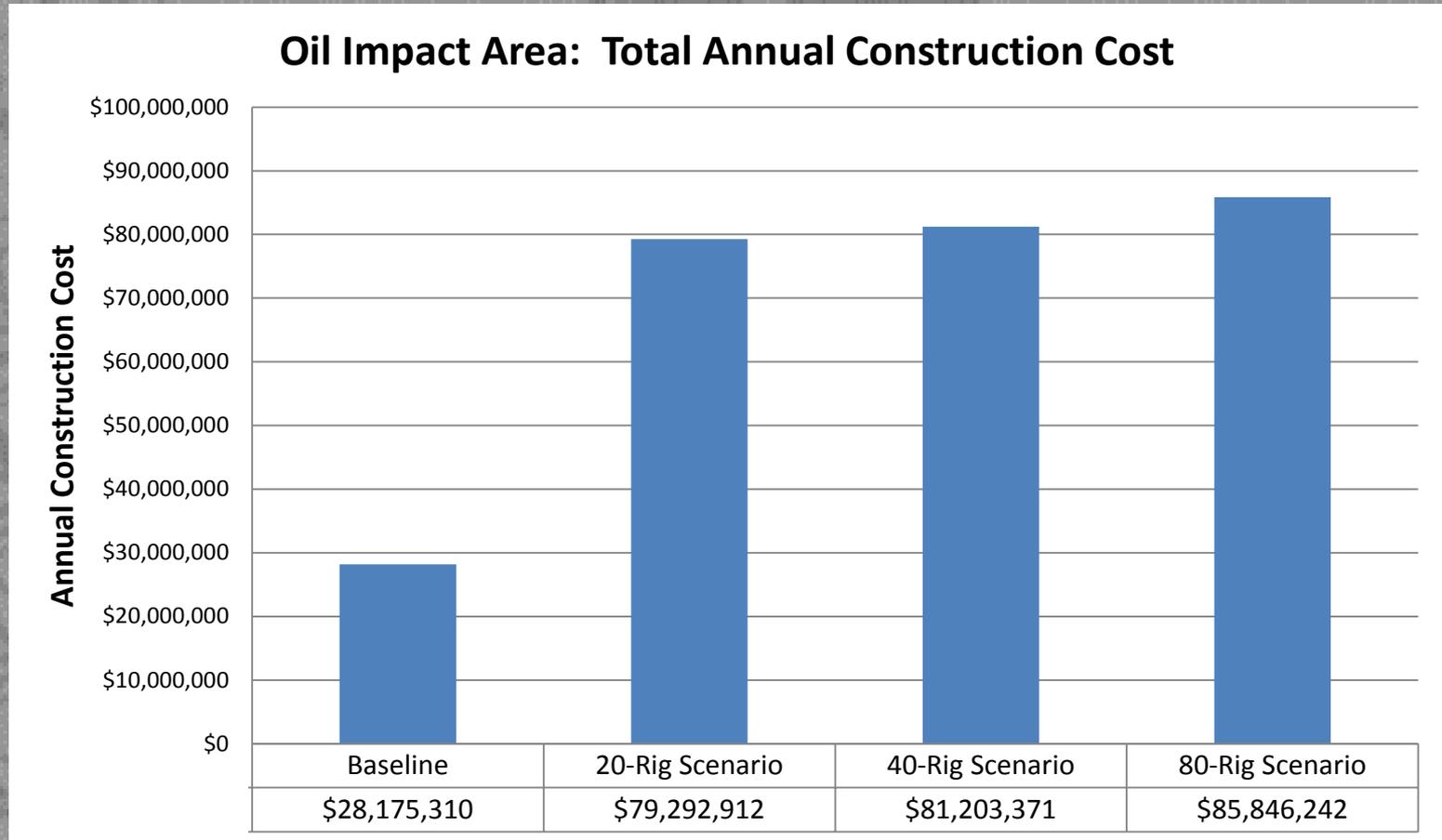


* 2009 Base line data

** Costs are based on construction only.

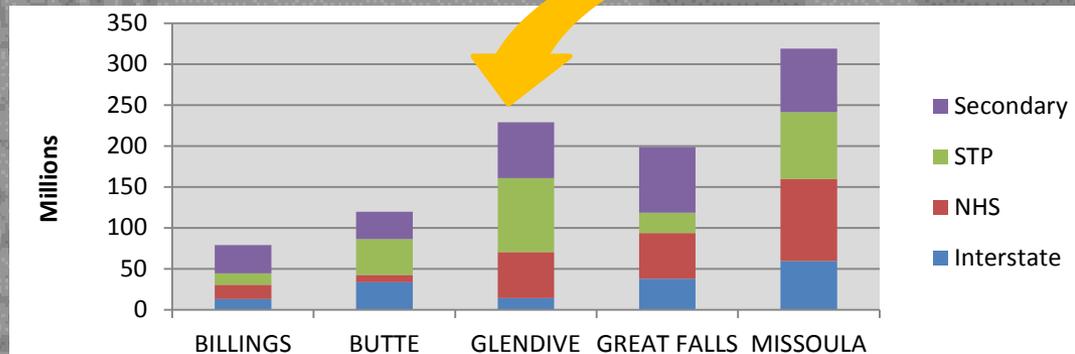


Potential Cost to Maintain Montana's Infrastructure in the Glendive District



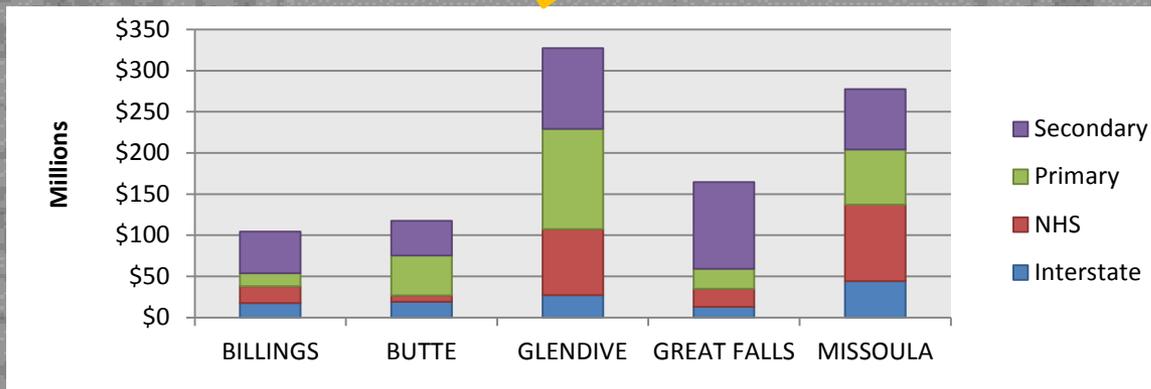
Cost: Fiscal Needs by District

2012 Fiscal Needs



\$230 M

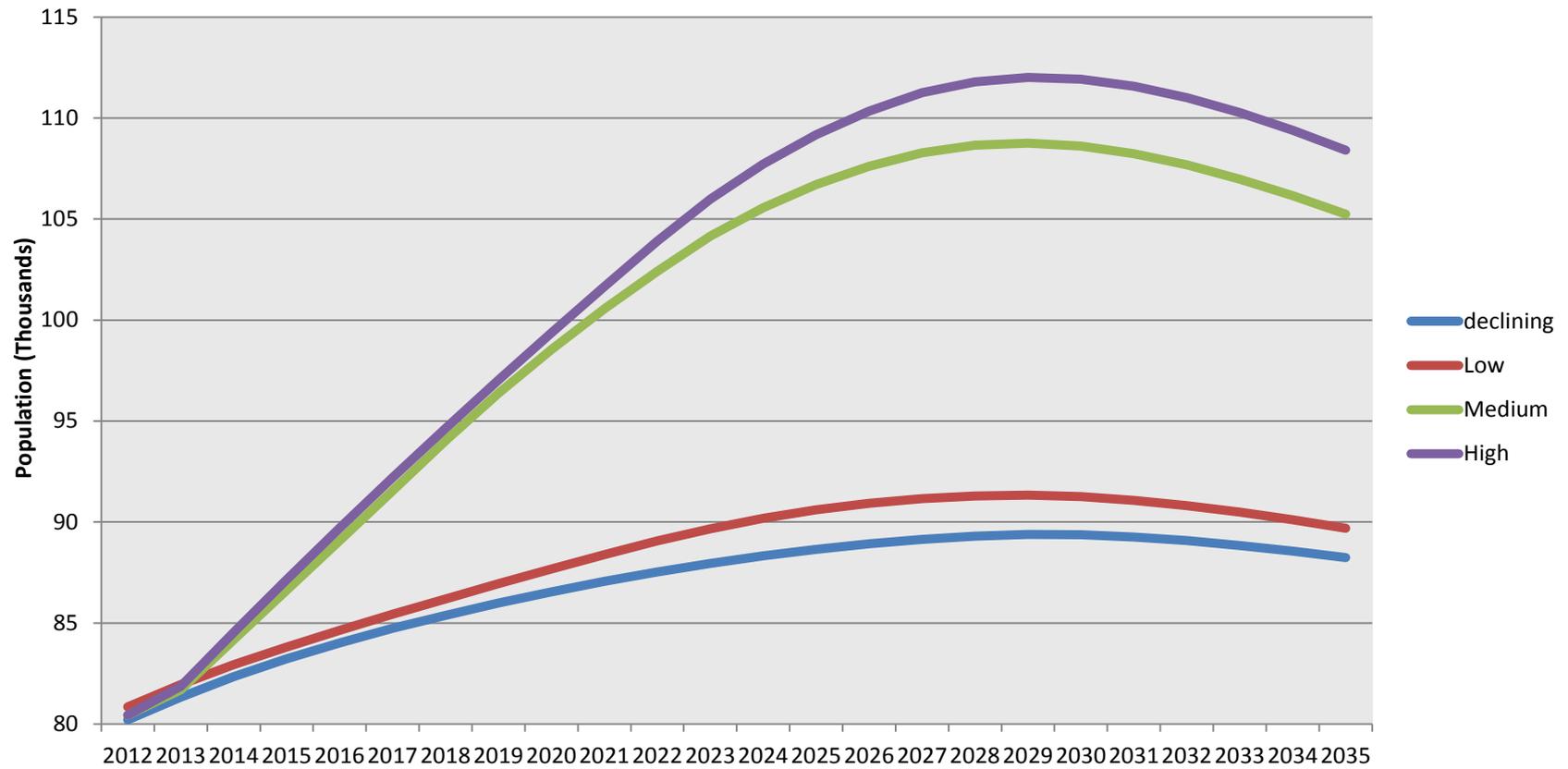
2013 Fiscal Needs



\$325 M

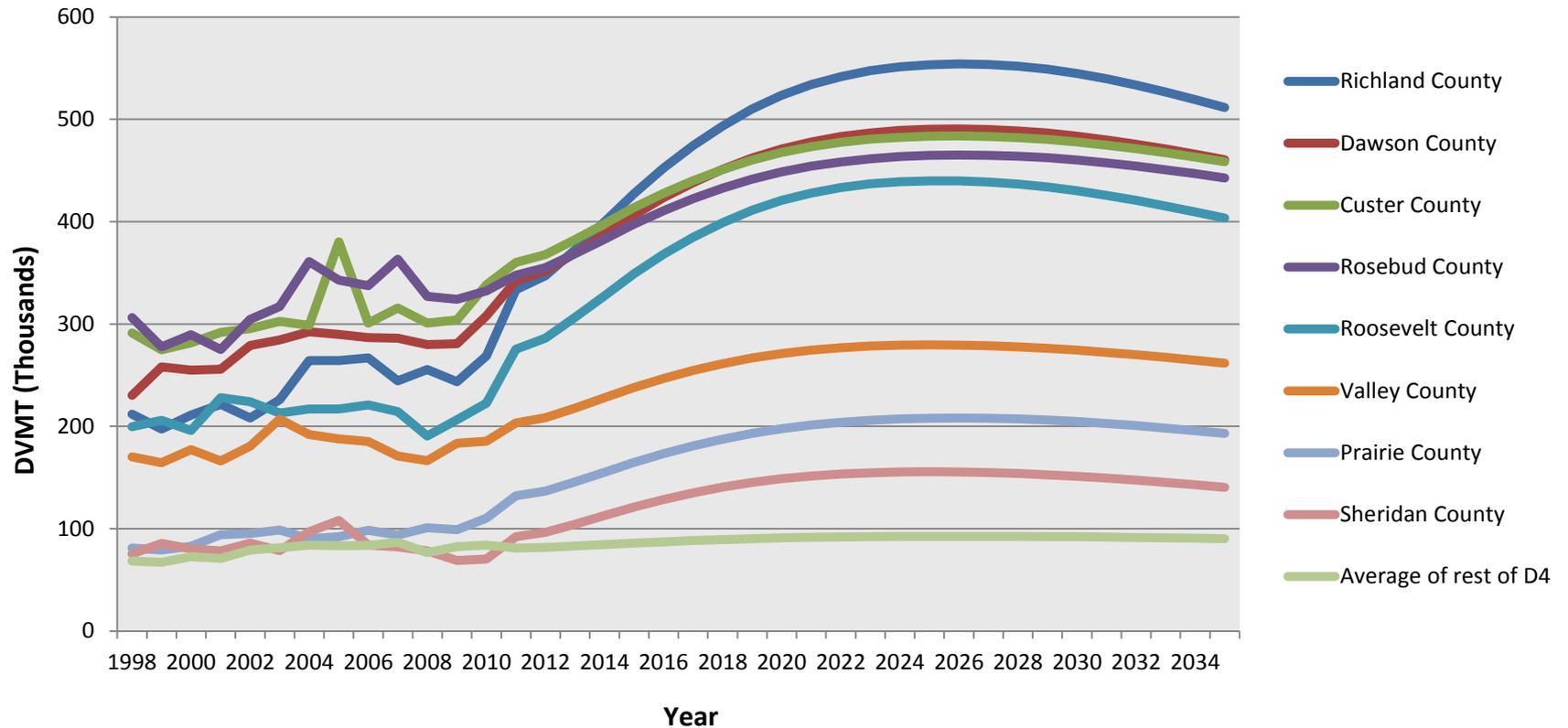
Projected Population Increase

Projected Population in MDT Glendive District



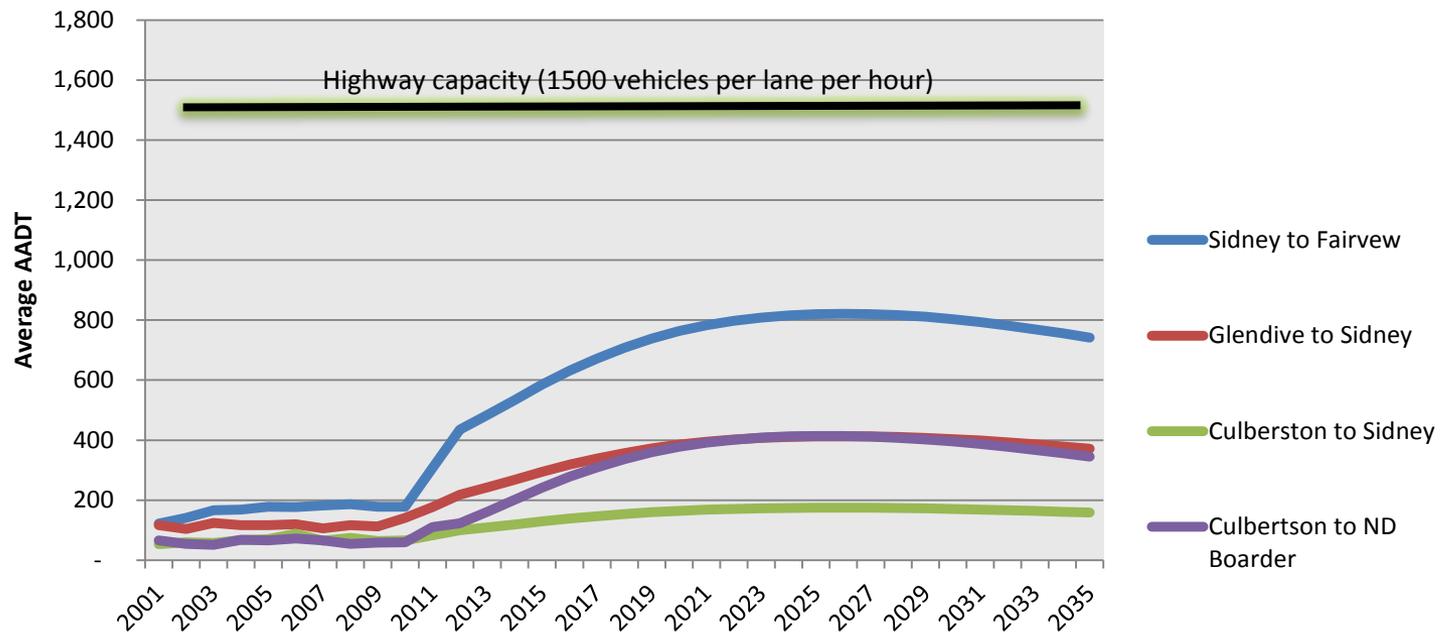
Increase to Total Traffic Based on Population increase

Projected Daily Vehicle Miles Traveled (DVMT) by County in Glendive District



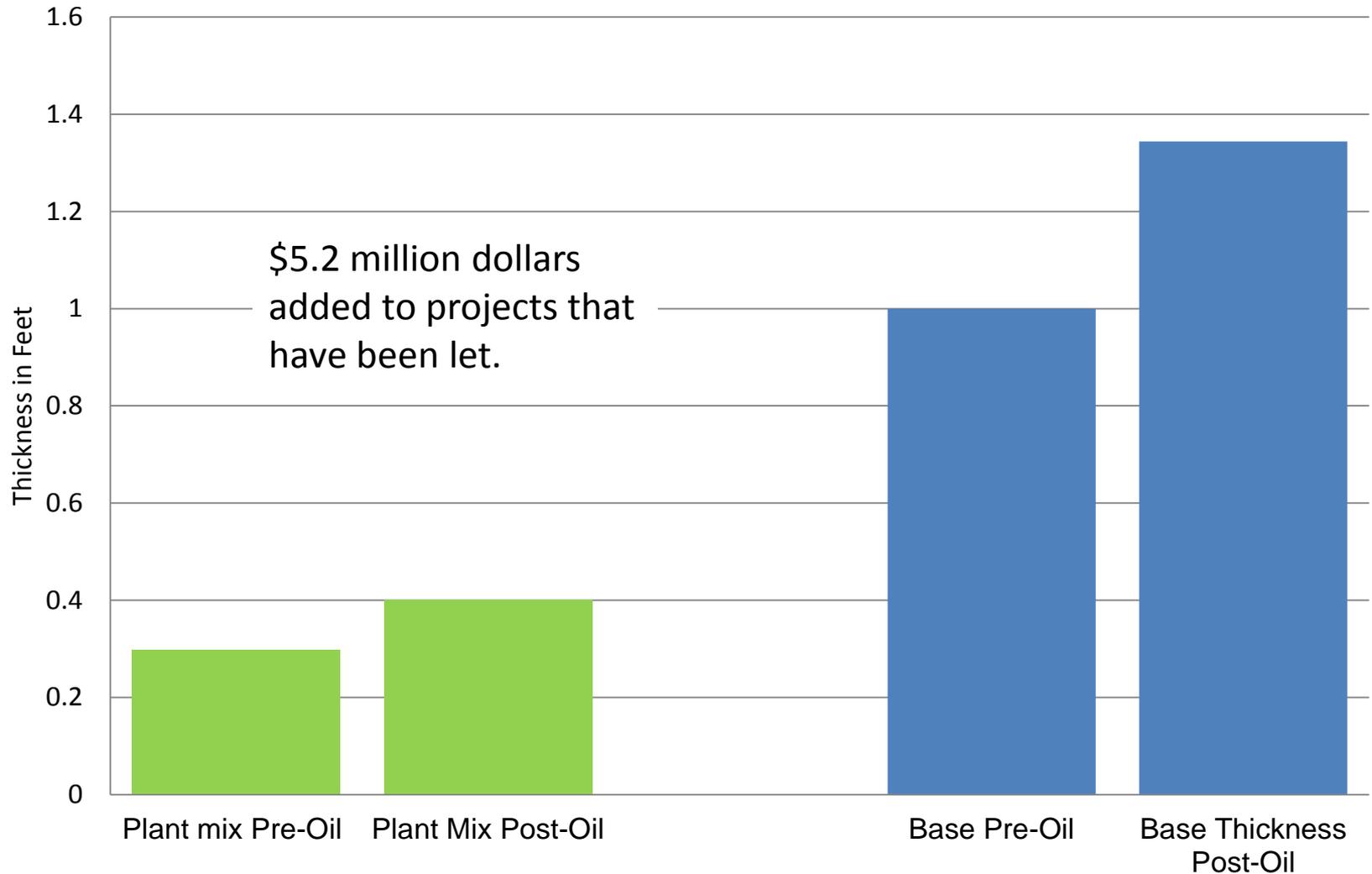
Projected Population Increase and Total Traffic

Projected Peak Average AADT by road segment in Glendive District (one lane and per hour)

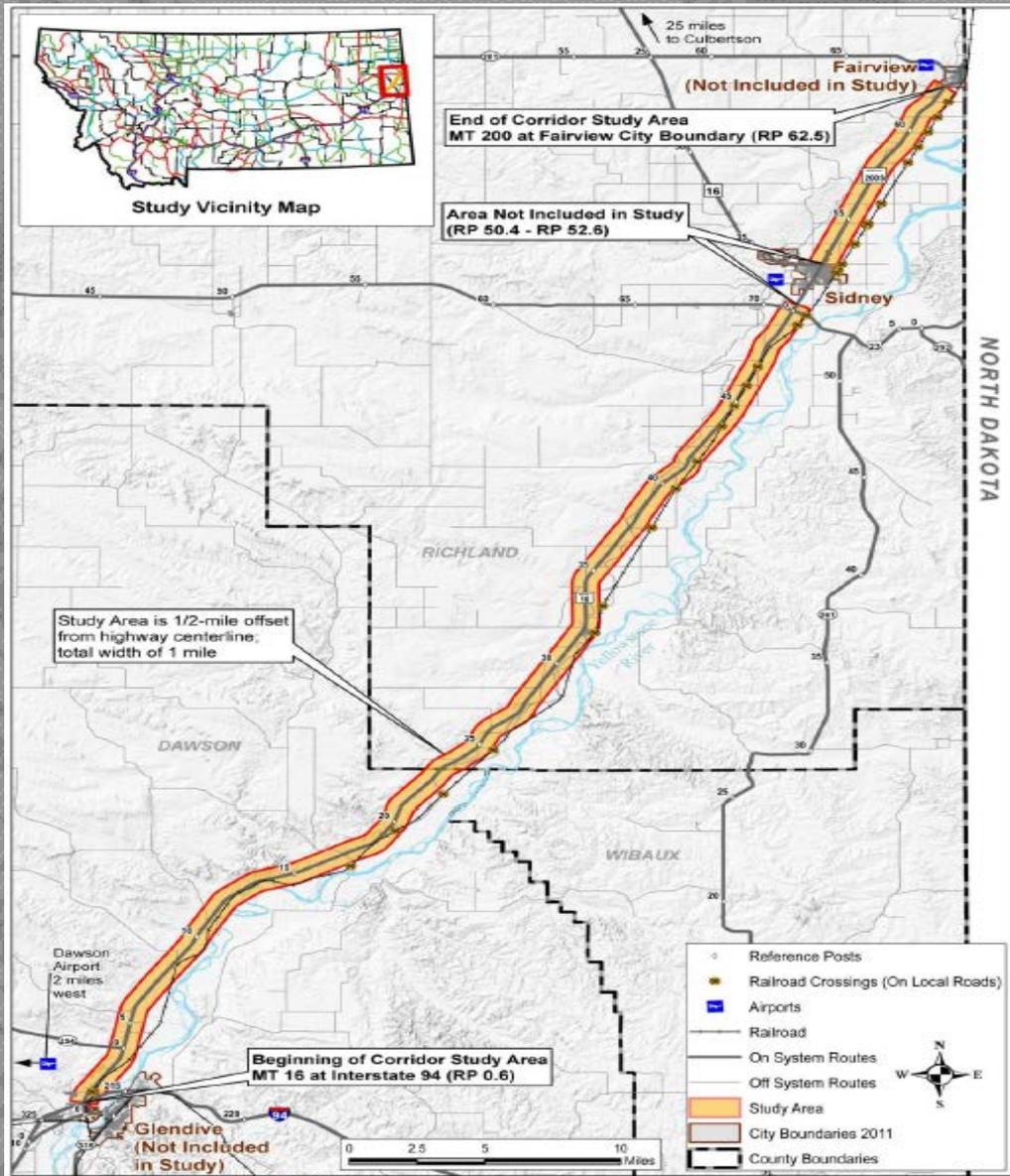


Efforts to Date: Design Changes

Change in Design (Thickness of Plant Mix and Base)

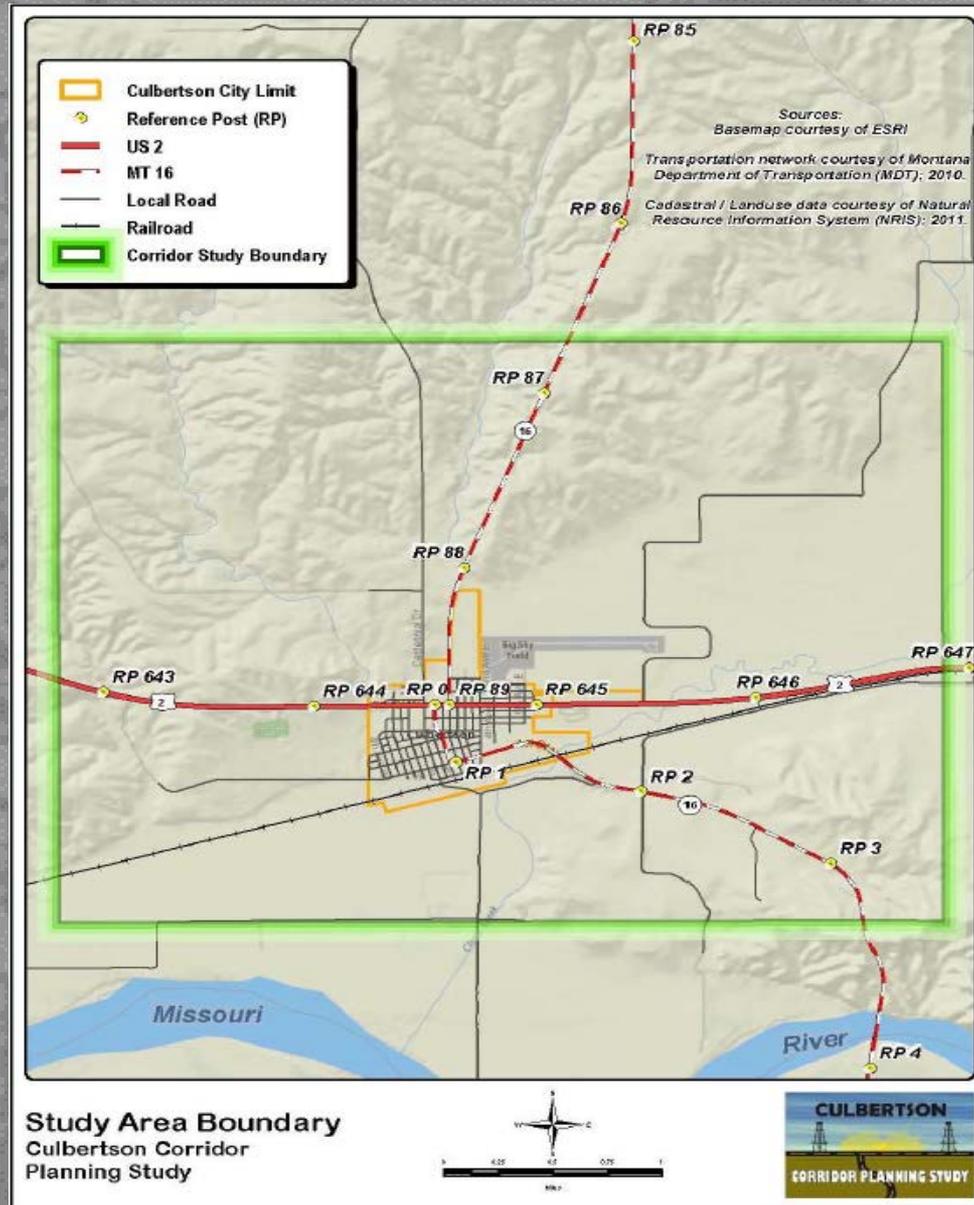


Efforts to Date: Corridor studies



- MT 16 Study
 - Glendive to Sidney
 - Sidney to Fairview

Efforts to Date: Corridor studies



- Culbertson Study
 - Focused on the routes through town-Highway 2 and Highway 16



Other Industry Impacts: Transloading Facilities (Northern Montana)

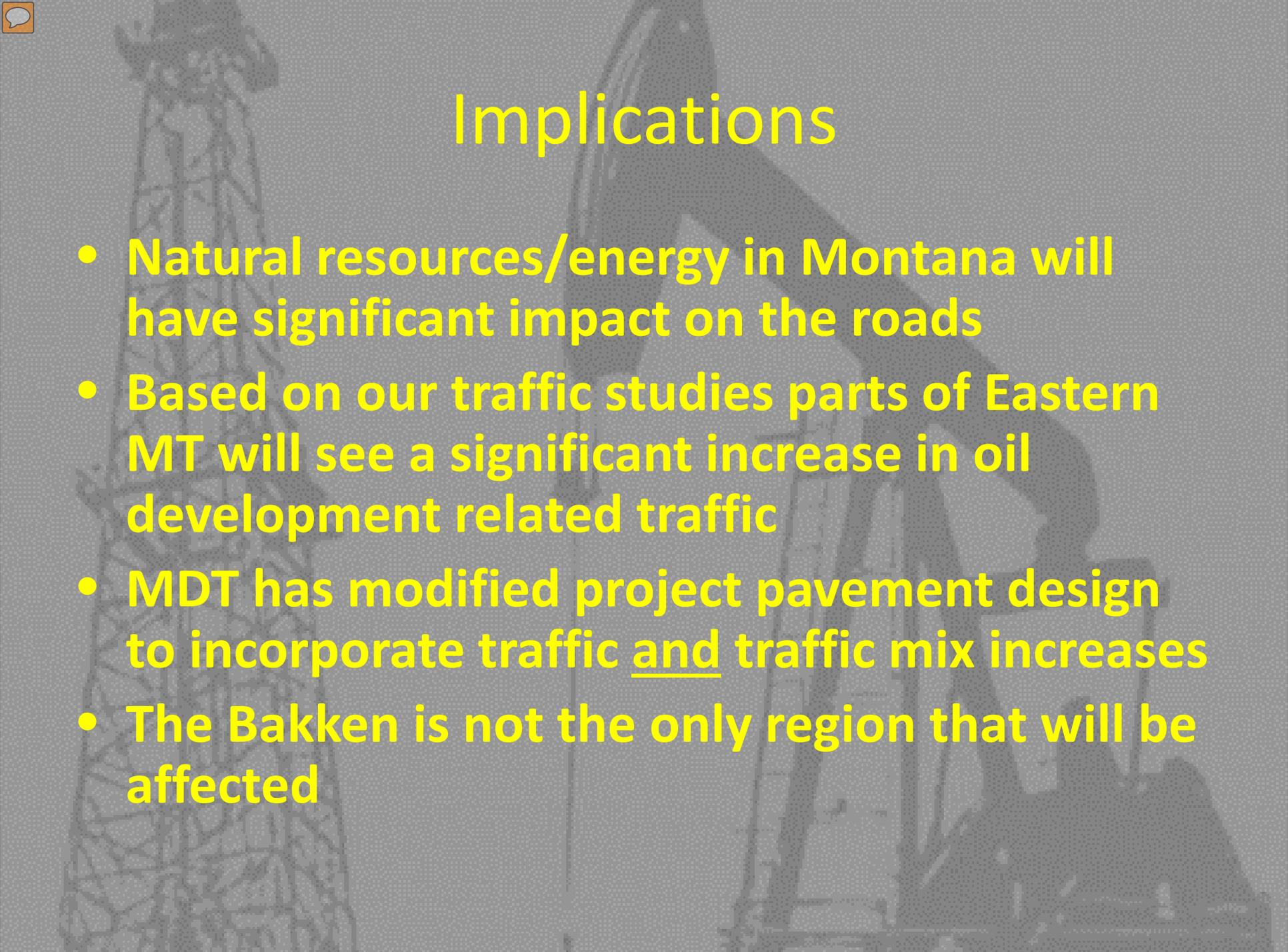
- Induced traffic from transloading facilities
- Several new/expanded facilities: Sidney, Dore, Culbertson, and Glendive (330 trucks/train load)
- Compound impact with current agriculture consolidation into 110-car facilities (trucks/train load)



Other Energy Industry Impacts: Coal Development in Southeast Montana

- Southeast Montana coal impacts are similar to N.E. Montana oil
- Otter Creek is the next intended coal tract development
 - Little supporting infrastructure
 - Tongue River Road
- If no rail, projected trucks are 1/minute on MT332





Implications

- Natural resources/energy in Montana will have significant impact on the roads
- Based on our traffic studies parts of Eastern MT will see a significant increase in oil development related traffic
- MDT has modified project pavement design to incorporate traffic and traffic mix increases
- The Bakken is not the only region that will be affected



Thanks For Your Time

- Questions

