PORTS-TO PLAINS
4TH ANNUAL ENERGY CONFERENCE
Scott Haywood
Chief of Staff
ENERGY DEVELOPMENT IMPACT ON TRANSPORTATION INFRASTRUCTURE

April 26th, 2013
Well Permits by Year

2002-2003
Well Permits by Year

2002-2005
Well Permits by Year

2002-2007
Well Permits by Year

2002-2008
Well Permits by Year

2002-2009
Texas recently had 839 drilling rigs operating — nearly half of all rigs in the U.S. and 22.7 percent of rigs worldwide.

Early estimates for the Cline Shale development (West-Central Texas) put the estimated recoverable reserves at 30 billion barrels of oil.

By comparison, the U.S. Geological Survey estimates the Eagle Ford Shale (South Texas) holds up to 7 billion to 10 billion in recoverable reserves, while the Bakken Shale (North Dakota) could hold as much as 4.3 billion barrels of recoverable oil.
Texas has 12,200 MW of wind generation, more than double any other state.

More than +1,500 MW of capacity in wind installations just in 2012.

Most wind farms are located in areas overlapping oil and gas development.
Typical 1940’s Tractor Trailer
Loaded Trucks Per Gas Well

- 1,184 loaded trucks to bring one gas well into Production, plus
- 353 loaded trucks per year to maintain, plus
- 997 loaded trucks every 5 Years to re-frac the well

This is equivalent to roughly 8 Million cars to drill a well, plus an additional 2 Million cars per year to maintain the well
Increase in Traffic
Traffic Impacts
Research has determined that the service life on IH, US, SH, and Farm to Market highways is reduced:

- Due to truck traffic associated with natural gas well operations alone between:
  - 1% and 16% for rig movements
  - 1% and 34% for the saltwater disposal traffic
  - 4% and 53% for construction traffic
  - Overall Impact (Average) 30%
Impact to the System

- Due to truck traffic associated with crude oil well operations alone between:
  - 1% and 3% for construction traffic
  - 2% and 16% for the production traffic
  - Overall impact (Average) 16%
Estimated Annual Impacts

- Original Estimate for FM System: $890 million
  - Additional 20% for heavier trucks
  - Additional 15% for higher road material prices
  - Very conservative: well over $1 billion annually

- Extrapolating to local roads
  - Similar number of lane miles
  - Lower original design requirements
  - Estimated impacts well over $1 billion annually
Proactive/Reactive

- Dimmit County (South Texas)
  - Rehabilitation Project on FM 2688 (12.61 Miles)

- Reactive vs. Proactive
  - Reactive: roads are fixed or maintained after damage has occurred.
  - Proactive: maintains roads before damage is done to preserve the quality of the road.

<table>
<thead>
<tr>
<th>Additional Wells</th>
<th>Reactive Cost</th>
<th>Proactive Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$13,756,000</td>
<td>$2,004,536</td>
</tr>
<tr>
<td>1</td>
<td>$19,271,448</td>
<td>$2,004,536</td>
</tr>
<tr>
<td>5</td>
<td>$23,303,952</td>
<td>$4,654,149</td>
</tr>
<tr>
<td>10</td>
<td>$27,452,880</td>
<td>$5,723,553</td>
</tr>
</tbody>
</table>
Impact on Infrastructure
Impact on Roadways
Impact on Roadways
Impact on Roadways
Impact on Bridges

[Images of bridge damage and truck incidents]
2012 Crash Data

Eagle Ford Shale (23 Counties):
- 2012 = 248
- 2011 = 177
- 40% increase in fatalities

Permian Basin (58 Counties):
- 2012 = 320
- 2011 = 252
- 27% increase in fatalities

Leading causes of crashes according to law enforcement were failure to control speed and driver inattention.
Possible State Legislation

- Tax Increment Reinvestment Zone/Mobility Authority for Counties
- Dedicate Oil and Gas Severance Tax Revenues to Transportation
- Greater Enforcement of Oversize/Overweight Trucks
- One-time appropriation from Economic Stabilization Fund
QUESTIONS