North Dakota Department of Mineral Resources

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http://www.oilgas.nd.gov
http://www.state.nd.us/ndgs
Phase 1
“Discovery”
Define the area
35 rigs in April 2006
200 rigs in January 2012
completed first phase of drilling
Phase 2
“Homesteading”
De-risk leases

Sec's 16 & 21, T148N, R95W
Dunn County, ND

9 5/8" Surface Casing
set at approx. 2500'

7" Production Casing
set at approx. 11,300' MD, 11,050' TVD

Bottom Hole Location
600' FSL and 1320' FEL (approximate) of section 21
218 rigs in May 2012
190 rigs through January 2015
complete phase 2 of drilling
North Dakota Spacing Units and well pads are designed for multiple wells

Phase 3
“Harvest”
Increased well density

190 rigs will take 20 years to complete phase 3 of drilling

8–20 wells per 1,280 acres proposed
Vern Whitten Photography  6 wells producing - drilling 7-12 - and 11-18 coming soon
North Dakota Spacing Units and well pads are designed for multiple wells

Phase 4?
“EOR”
2,000-2,500 wells

Entering Phase 2

3 rigs = 3-6 years
Starting Phase 1
Western North Dakota

- 1,100 to 2,700 wells/year = 2,000 expected
  - 190 rigs = 2,280 wells per year
  - 218 rigs in May 2012 completed first phase of drilling mid 2012
  - 190 rigs will complete the second phase of drilling in 6-12 months
  - 190 rigs will require about 20 years to complete phase 3 drilling
  - 40,000 / 60,000 / 70,000 new wells
• 1,100 to 2,700 wells/year = 2,000 expected
  – 2014 drilling = 1,537 permits to drill approved and 829 pending approval
    • 185-195 rigs for 12 months
  – 2015-2019 drilling = 1,099 orders approved for 7,075 more wells
    • 3 orders for 28 wells / SU
    • 1 order for 22 wells / SU
    • 1 order for 21 wells / SU
    • 3 orders for 19 wells / SU
    • 3 orders for 18 wells / SU
    • 3 orders for 17 wells / SU
    • 6 orders for 16 wells / SU
    • 7 orders for 15 wells / SU
    • 40 orders for 14 wells / SU
    • 5 orders for 13 wells / SU
    • 25 orders for 12 wells / SU
    • 5 orders for 11 wells / SU
    • 35 orders for 10 wells / SU
    • 14 orders for 9 wells / SU
    • 155 orders for 8 wells / SU
    • 219 orders for 7 wells / SU
    • 107 orders for 6 wells / SU
    • 81 orders for 5 wells / SU
    • 416 orders for 4 wells / SU

266 orders for approximately 1,700 increased density wells pending approval
Reclamation

- 26,346 wells permitted as of 9/1/13
- 1,291 approved locations
- 1,136 drilling and completing
- 9,096 producing

- 8,432 reclaimed locations
Widespread support for oil development in North Dakota

“Do you favor or oppose oil development in North Dakota?”

» **83%** Statewide favor  
  » **49%** Strongly favor

» **80%** Oil counties favor  
  » **50%** Strongly favor
Benefits of oil development outweigh risks

“Do you agree or disagree that the benefits of oil development outweigh the risks?”

73% Statewide agree

72% Oil counties agree
Wide majority wants to maintain or increase production

“Do you think there should be more oil and natural gas production in the state, the same amount, or less?”

» 83% statewide &
» 82% in oil counties think production should increase or stay the same.
State regulations on oil and gas are about right

“Would you say the state regulations on oil and natural gas development are...?”

55% statewide say about right

Too harsh
- 3% (2013)
- 4% (2012)
- 4% (2011)

Too lax
- 28% (2013)
- 26% (2012)
- 26% (2011)

About right
- 55% (2013)
- 61% (2012)
- 57% (2011)

Don't know
- 14% (2013)
- 9% (2012)
- 14% (2011)

59% in oil counties say about right

Too harsh
- 4% (2013)
- 4% (2012)
- 3% (2011)

Too lax
- 25% (2013)
- 23% (2012)
- 28% (2011)

About right
- 59% (2013)
- 67% (2012)
- 57% (2011)

Don't know
- 13% (2013)
- 6% (2012)
- 12% (2011)
More than half support current oil and gas production levels despite flaring

“Which one of the following statements comes closest to your view?

- Flaring is a waste of a valuable energy resource. I support reducing oil development and the amount of oil produced in order to reduce flaring until natural gas infrastructure catches up.

- I believe natural gas infrastructure is being improved to reduce flaring and I support keeping oil development at current levels to keep more jobs for North Dakota and a strong state economy?”

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**Statewide**

- Reduce oil production/flaring: 34%
- Keep current levels: 55%

**Oil Counties**

- Reduce oil production/flaring: 35%
- Keep current levels: 56%

**Don't know**

- Statewide: 11%
- Oil Counties: 9%
Social issues & infrastructure remain primary concerns

“Which one of the following concerns you most about oil and natural gas development in North Dakota?”

<table>
<thead>
<tr>
<th>Issue</th>
<th>Statewide</th>
<th>Oil Counties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crime</td>
<td>27%</td>
<td>23%</td>
</tr>
<tr>
<td>Oil spills and pipeline safety</td>
<td>14%</td>
<td>7%</td>
</tr>
<tr>
<td>Roads and infrastructure</td>
<td>14%</td>
<td>18%</td>
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<tr>
<td>Traffic</td>
<td>9%</td>
<td>16%</td>
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<tr>
<td>Housing</td>
<td>8%</td>
<td>12%</td>
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<tr>
<td>Hydraulic fracturing or fracking</td>
<td>6%</td>
<td>6%</td>
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<tr>
<td>Flood protection and water issues</td>
<td>5%</td>
<td>3%</td>
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<tr>
<td>Flaring</td>
<td>3%</td>
<td>5%</td>
</tr>
<tr>
<td>Drilling waste</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>5%</td>
<td>7%</td>
</tr>
</tbody>
</table>
Majority do not blame oil industry for decrease in wildlife

“As you may know, some wildlife populations in North Dakota have declined in recent years. Here are two views on this issue, we will call them Smith and Jones. Smith blames the oil and natural gas industry for the decline, saying that as oil and natural gas well sites and roads to these sites continue to be built, some wildlife is being pushed away from its prime habitat and food sources. Jones says the oil and natural gas industry is not the cause but blames the decline in some wildlife populations on declining acreage in the Conservation Reserve Program, or CRP and three brutal winters starting in 2008. Which view comes closest to your own?”