

Petroleum Industry's Economic Contribution to North Dakota in 2007

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Purpose

- Measure the economic size of oil exploration, production, processing, and transportation segments of the petroleum industry in North Dakota
 - Direct and secondary economic activity
 - Employment
 - Tax revenues



Methods

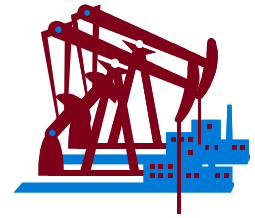
- Production, expenditure, and employment data came from industry sources
 - Survey of oil operators
 - Survey of processors (pipeline, gas processing, and refining)
 - Firms providing oil field services (from 2005 study)
 - Survey of lease/brokerage firms
- Other data from public sources
- North Dakota Input-Output Model used for secondary effects



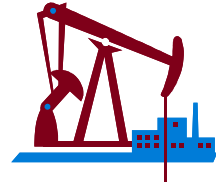
Survey Results - - Oil Operators

14 firms provided useful data	Survey Response	% of State
Wells owned or operated	1,897	50.5
Oil production (bbls)	13,504,000	30.0
Natural gas production (mcf)	34,361,000	48.5
Barrel of oil equivalent	19,230,418	37.8
Wells drilled (9 firms)	126	37.5

Survey Results - - Processors and Leasing/Brokerage



- 4 of 10 firms responded in pipeline/processing segment
 - All activities represented
- 4 of 5 firms responded in leasing/brokerage survey



Direct Impacts

- Represent first round of spending
- Combination of extrapolation, state-level statistics, and agency data
 - Financial benchmarks from surveys combined with state-level data (e.g., \$/BOE or \$/well drilled)
 - Agency data (e.g., severance tax collections)



Exploration - - Direct Impacts - - 2007

- In-state expenditures per well drilled = \$4.3 million
- 336 wells drilled = \$1.44 billion
- Lease bonuses \$100.4 million
 - \$6.3 million state lands
 - \$2.6 million federal lands (net)
 - \$91.5 million private lands
- **\$1.54 billion in direct impacts**



Production - - Direct Impacts - - 2007

- \$441.5 million extraction/production activities
- \$362.5 million general business expenses
- \$36.1 million state royalties
- \$19.3 million federal royalties (net)
- \$198.7 million private royalties
- \$250.3 million state severance taxes

- **\$1.31 billion in direct impacts**

Transportation/Processing - - Direct Impacts - - 2007



- \$69.3 million transportation
- \$192.4 million for in-state expenditures for pipeline, natural gas processing, refining activities
- **\$261.7 million in direct impacts**



Total Direct Impacts

- \$3.1 billion (all segments) in 2007
 - In-state spending in ND
- Production 42 percent
- Exploration 50 percent
- Processing 8 percent



Secondary Economic Impacts

- Secondary impacts represent effect on the economy from the spending and re-spending of the direct impacts (multiplier effect)
- Allocate direct impacts to various sectors of the ND economy (survey of service/support)
- North Dakota Input-Output Model



Secondary Economic Impacts

- \$2.72 billion Exploration
- \$1.96 billion Extraction/Production
- \$445 million Processing/Transportation

- \$5.12 billion All segments

Gross Business Volume

Direct and Secondary Impacts

All Segments



Economic Sector	Direct and Secondary (000s \$)
Construction	276,800
Transportation	104,600
Communications/Public Utilities	340,400
Manufacturing	289,000
Retail Trade	1,954,400
Finance, Insurance, & Real Estate	506,400
Services (business, professional, personal, social)	592,500
Households (wages and salaries)	3,064,000
Government	770,500
Total	8,230,000



Employment

- Direct Employment (FTE basis)
 - 1,808 oil operators
 - 579 pipeline/processing
 - 5,332 oil field service
 - 7,719 total for industry
- Secondary Employment (FTE basis)
 - 38,500 jobs (input-output analysis)



State and Local Government

Government Revenue/Tax	Included as Direct Impacts (000s \$)	From Secondary Impacts (000s \$)
Sales and Use	5,984	73,985
Property	78,957	- - -
Personal Income	7,723	45,960
Corporate Income	10,982	- - -
Royalties	55,744	- - -
Severance	250,314	- - -
Lease Bonuses	8,920	- - -
Licenses, Permits, Fees	14,298	- - -
Other/undetermined	86,921	- - -
Totals	519,843	119,945



Compare 2005 to 2007

2005 financial estimates corrected for economy-wide inflation using Gross Domestic Product—Implicit Price Deflator



Oil and Gas Production Statistics

Industry Output	2005	2007	%	
Crude oil (bbls)	35,660,000	45,058,000	26.4	
Natural gas (mcf)	57,970,000	70,800,000	22.1	
Operating/active wells	3,391	3,759	10.8	
Wells drilled	240	336	40.0	
Crude oil (\$/bbl)	(nominal)	51.41	65.10	26.6
	(real)	54.20	65.10	20.1
Natural gas (\$/mcf)	(nominal)	8.57	6.69	-22.0
	(real)	9.04	6.69	-26.0



Operator Survey Responses

Description	2005	2007
Number of firms responding	19	14
Wells owned/operated share of state	1,628 49%	1,897 50%
Crude oil (bbls) share of state	7,228,000 20%	13,434,000 30%
Natural gas (mcf) share of state	9,224,000 16%	34,228,000 48%
Barrel of oil equivalent share of state	8,765,000 19%	19,139,000 34%
Wells drilled share of state	75 29%	126 37%



Exploration/Development

Category	2005	2007	%
Wells drilled	240	336	40
	----- 000s 2007 \$ -----		
Expenditures per well drilled	1,590	4,274	168
Net federal and state lease bonuses	18,075	8,918	-51
Private*	<u>68,578</u>	<u>91,505</u>	33
Total lease bonuses	86,600	100,400	16
Well drilling expenditures	382,600	1,436,000	275
Total direct effects	469,300	1,536,000	227

* Private lease bonuses estimated using different data and techniques in each study.



Production/General Expenses

Category	2005	2007	%
Oil and gas output (000s BOE)	45,321	56,858	26
Extraction and Gen Bus Expense/BOE (07 \$)	13.17	15.36	17
	----- 000s 2007 \$ -----		
Production expenditures	320,900	441,500	38
General business expenses	230,100	362,500	57
Severance taxes	160,800	250,300	56



Production/General Expenses-cont.

Category	2005	2007	%
	----- 000s 2007 \$ -----		
Net federal and state royalties	39,500	55,400	40
Private*			
Total	207,700	369,200	78
In-state	na	198,700	
All royalties**	247,200	254,100	3
Total direct effects	959,000	1,308,000	36

* Private royalties in 2005 not adjusted for ratio of in-state versus out-of-state mineral ownership. In-state mineral ownership estimated at 53.8 percent from survey of leasing/brokerage firms in 2007 study.

** Royalty rates for oil and gas were 13.0% and 13.3%, respectively, in 2005. In 2007, royalty rates were estimated at 14.9% and 14.2% for oil and gas, respectively.

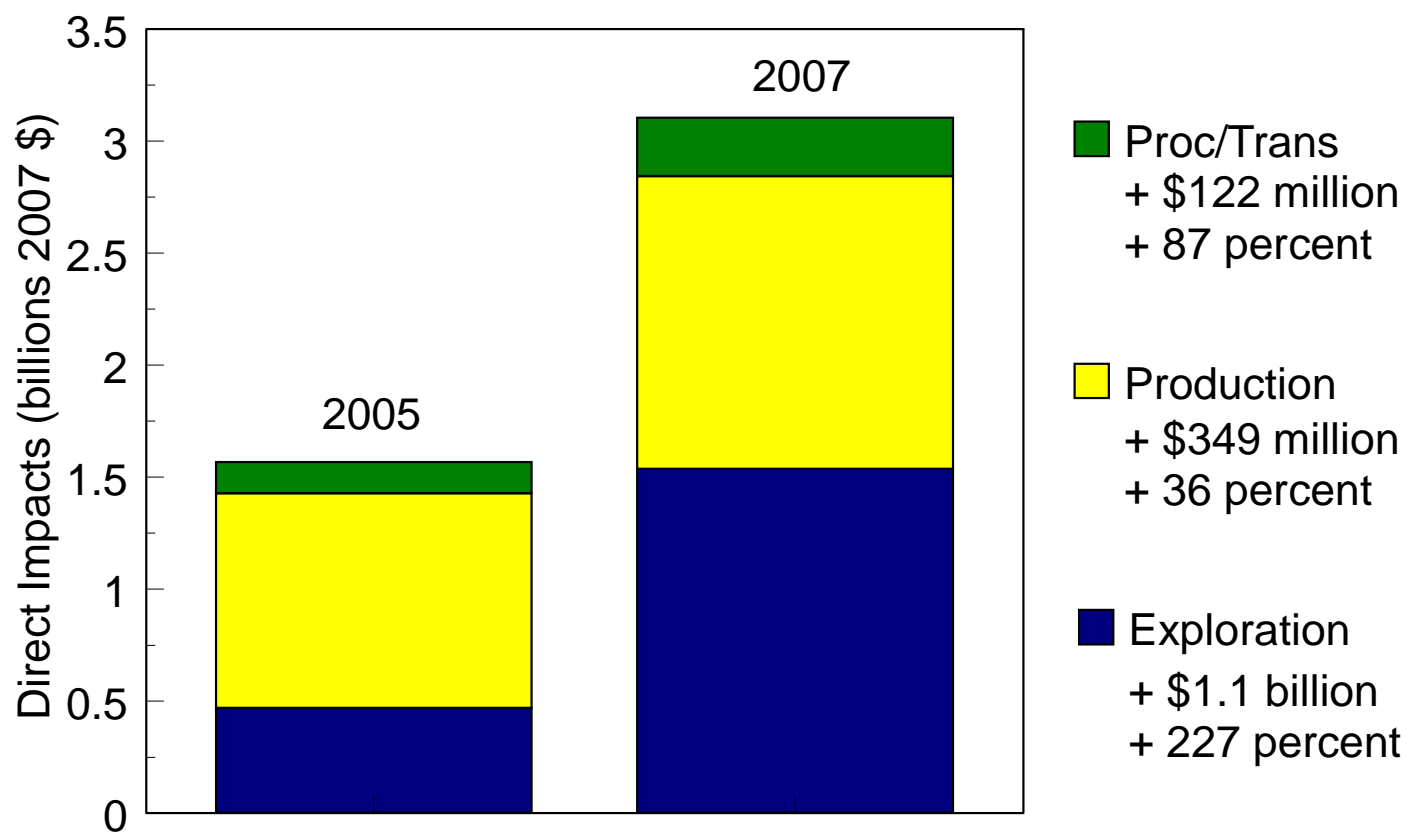


Processing/Transportation

Category	2005	2007	%
	----- 000s 2007 \$ -----		
Transportation	28,100	69,300	146
Processing and pipeline expenditures	111,500	192,400	73
Total direct effects	139,700	261,700	87



Industry-wide Direct Impacts





Petroleum Industry – all segments

	2005	2007	%
	----- millions 2007 \$ -----		
Direct impacts	1,568	3,106	98
Secondary impacts	2,553	5,123	101
Gross Business Volume	4,121	8,229	100



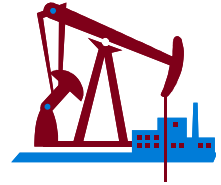
Government Revenues

State and Local Government Revenues	2005	2007	%
	----- 000s 2007 \$ -----		
Sales & use, property, and income taxes	39,000	103,600	166
Royalties	40,100	55,700	39
Severance taxes	160,800	250,300	56
Lease bonuses	18,100	8,900	-51
Licenses, fees, permits, donations, and undisclosed/undetermined	38,300	101,200	164
Totals, included as direct impacts	296,100	519,800	75
Indirect, sales & use and personal income	58,500	119,900	105



Employment

Category	2005	2007	%
Oil operators	1,794	1,808	1
Firms providing oil field services	3,001	5,332	78
Processing and pipelines	471	579	23
Total direct employment	5,267	7,719	47
Secondary employment	20,650	38,500	86



Conclusions

- Industry doubles in size -- another shocker?
 - 2005 study – surprised by size; 2007 study – surprised by growth
 - Exploration key to dramatic increase
- Positive storylines extend beyond numbers
 - Re-investment in North Dakota by the industry
 - ND is benefactor of a positive business climate and policies directed at encouraging oil and gas development
 - Timing of positive economic news, concern over economy



Conclusions

- Put results of study in context, necessary, but not most important message
 - Coal industry – GBV of \$2.4 billion in 2007
 - Wheat industry – GBV of \$4.1 billion (07 \$), average annual from 2001-2003
 - Friendly caveats:
 - Assessments are snap shot in time
 - All of the state's basic-sector industries are large (and important)
 - Size can be manipulated by definition (e.g., sales versus employment, inclusion/exclusion of activities)



Acknowledgments

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 - North Dakota Petroleum Council
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- Companies and individuals who participated in the surveys



Questions/Additional Info

- Reports are available
 - <http://www.ndoil.org/> (ND Petroleum Council)
 - <http://ageconsearch.umn.edu> (Ag Econ Depository)
 - Norma.Ackerson@ndsu.edu
 - 701-231-7441