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# **Economic Profile of the Ontario Oil, Gas and Salt Resources Industry**

*Prepared for  
The Ontario Oil, Gas and Salt Resources Trust  
February, 2001*

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The Ontario Oil, Gas and Salt Resources Trust commissioned Clayton Research to prepare this economic profile of the Ontario oil, gas and salt resources industry.<sup>1</sup> The industry is defined to include firms involved at various stages in the production of oil and natural gas, as well as salt solution mining and underground storage of natural gas and liquefied petroleum gas.

### Highlights

- **There are three main activities of the oil, gas and salt resources industry in Ontario: exploration and development, production and storage.** These activities are not mutually exclusive – rather they are co-dependent. The exploration and development stage is necessary to find the resources before production can occur. Production results in extra storage capacity for natural gas down the line. The need for additional storage capacity in turn spurs exploration and development.
- **A diverse range of players has an interest in the Ontario oil, gas and salt resources industry.** These range from producers to input suppliers to the end users of the industry's output. There are 80 companies involved directly in the exploration, development, production and storage aspects of the industry. In addition, more than 175 companies provide inputs (materials and services) to the oil, gas and salt resources industry in Ontario.
- **The oil and gas industry in Ontario is a mature one, and production over the past 150 years has been substantial.** Oil production in Ontario began in the mid 19<sup>th</sup> century, with natural gas production following late in the century. Cumulative production of oil in Ontario since 1863 (the first year for which data are available) is 12.6 million cubic metres (or 79 million barrels). Natural gas production since 1906 has totaled 32 billion cubic metres (or 1.1 trillion cubic feet).
- **The industry is helping to meet Ontario's oil and natural gas needs.** While the contribution of oil and gas produced in Ontario to total Ontario consumption may be relatively small, it is still playing an important part. For example, the production levels for natural gas during the 1990s would have been enough to heat about 80,000 homes a year – or a community the size of the City of Windsor. The industry's natural gas and liquefied petroleum product storage facilities also play a key role in meeting Ontario demand. Natural gas storage facilities are important to the well-being of Ontario businesses and households, as they allow supply to be close at hand to meet unexpected changes in demand. Storage capacity in caverns for liquefied petroleum products provide refineries and petrochemical industry with a lower cost, safer alternative to surface storage.

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<sup>1</sup> The analysis draws on information from many sources, including the Ontario Petroleum Institute, Ministry of Natural Resources (Petroleum Resources Section), Ministry of Northern Development and Mines, Statistics Canada, Census of Canada and Natural Resources Canada

- **In recent years, the oil and natural gas sector has been characterized by volatile prices.** Both oil and natural gas prices posted year-over-year declines in 1997 and again in 1998, before starting to recover in 1999. Prices soared in 2000, with oil prices up by over 50% on average compared to 1999, and natural gas prices almost double. From a historical perspective, average oil prices in real terms in 2000 were less than half the levels of the latter 1970s/early 1980s. For natural gas prices, however, real prices in 2000 matched the situation of the peak levels in the first half of the 1980s.
- **The oil and natural gas industry is making a contribution to the overall level and diversification of the Ontario economy.** Economic principles suggest that the more diversified an economy is, the “better”, as dependence on only a few sectors makes an overall economy more susceptible to ups and downs in those sectors. By its very existence, the oil and natural gas industry is contributing to Ontario’s economic diversification. And although relatively small in relation to the total Ontario economy, the output of the industry is still sizeable (in the \$80-\$100 million range in each year of the 1990s).
- **And its role in the economy has increased since the 1970s.** The role of the oil and gas industry has increased from the situation in the 1970s, now accounting for a larger share of the mineral industry output, as well as provincial GDP. Relatively stronger average oil and gas prices since the 1970s have played a role in this increased share.
- **The oil and gas industry supplies jobs for Ontarians.** In relation to total employment in Ontario, direct employment in the oil and gas resources industry is small, accounting for about 1 in every 4,000 jobs. However, in relation to the economies of those areas of Southwestern Ontario where production is focused, it plays a more significant role, accounting for about 1 in every 800 jobs. As well, the number of job in the oil and natural gas resource industry compares favourably with other sectors that have achieved a somewhat higher profile, such as the wine and tobacco industries.
- **And they are relatively well-paid jobs.** Average employment incomes among employees of the oil and gas companies are the highest of all sectors. These higher incomes are not only beneficial for the workers themselves, but they also provide higher tax revenues for governments.
- **The productivity of workers in the oil and gas resource sector is high.** This is due to high levels of investment by the industry in capital and technology, which allow its workforce to be more productive, as well as the fact that the output of the industry is a non-renewable resource in high demand. Higher labour productivity in this sector is reflected in its relatively higher wages.
- **The industry generates substantial tax and royalties payments.** In 1999, the oil and gas industry in Ontario paid an estimated \$2-\$3 million in non-income taxes – primarily sales taxes and property taxes. In addition, more than \$10 million went to royalty payments (to the Crown and private

landowners). Comprehensive information is not available, however, estimates suggest that oil and gas companies paid at least \$3 million in income taxes in 1999. Additional income taxes are paid by companies supplying products and services to the oil and gas companies, employees in companies operating in the oil and gas industry, and landowners receiving royalty payments.

- **Demand for the industry's output is expected to increase substantially over the next 20 years.** The demand for oil and natural gas in Ontario is forecast to increase by as much as 50% over the next 20 years. Comparable growth is expected in the U.S., and an increasing share of demand is expected to be filled by imports of natural gas, mostly from Canada.
- **This growth in demand suggests the potential for a larger relative economic role for the Ontario oil and gas industry in the future.** Part of this increased role could come from filling demand directly through higher production of oil and gas. As well, higher average demand levels over the next 20 years in Ontario and the U.S. suggest a corresponding need for significant growth in storage capacity over the next 20 years.
- **More exploration and development will be necessary to address this growing demand.** Both increased output and increased storage capacity require exploration and the development of new wells. Weaker prices reduced the number of new wells developed in the 1990s relative to the 1980s. However, stronger oil and gas prices relative to a few years ago have improved the reward-to-risk ratio and suggest the potential for increased exploration and development of new wells during the next decade relative to the 1990s.

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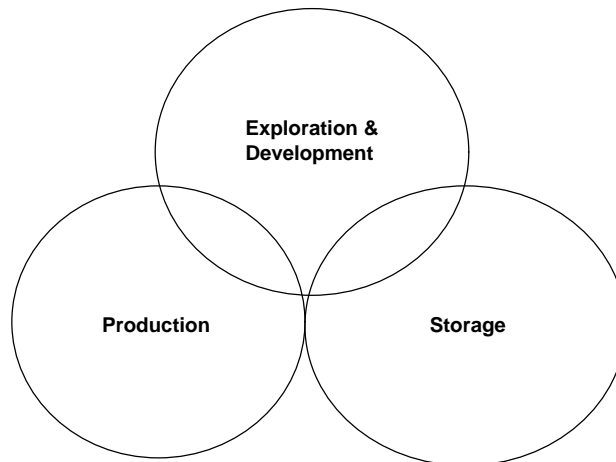
## The Activity and Structure of the Ontario Oil, Gas and Salt Resources Industry

This section looks at the main activities and key players in the Ontario oil, gas and salt resources industry.

### Exploration and Development, Production, Storage – All Are Important Activities of the Industry

- There are three main activities of the oil, gas and salt resources industry in Ontario:
  - **Exploration and development:** The Ontario oil and gas industry spent almost \$40 million in 1999 in locating and developing new wells.
  - **Production:** The value of oil and natural gas production totaled almost \$100 million in 1999.
  - **Storage:** Natural gas storage capacity is currently about 6 billion cubic metres (or about 60% of the total storage capacity in Canada). Storage capacity in caverns for liquified petroleum products is about 3.5 million cubic metres.

#### The Main Activities of the Ontario Oil, Gas and Salt Resources Industry

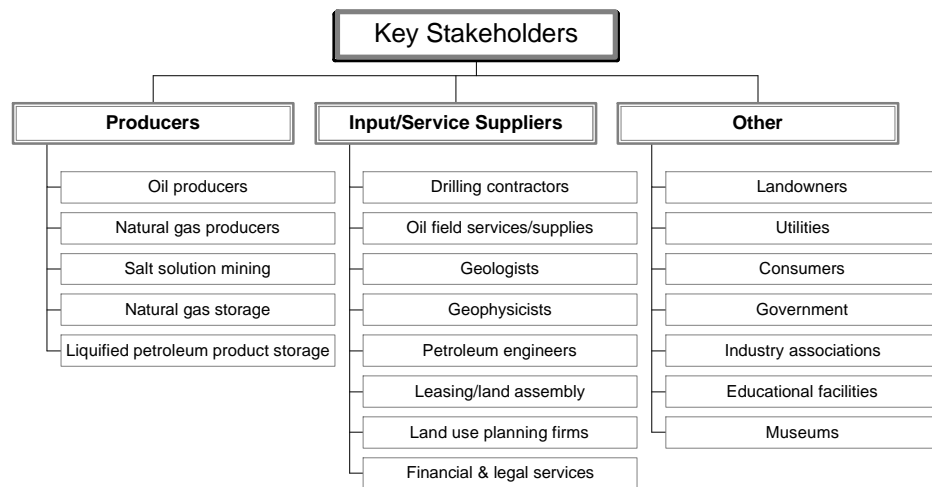


- These activities are not mutually exclusive – rather they are co-dependent. The exploration and development stage is necessary to find the resources before production can occur. Production results in extra storage capacity for natural gas down the line. The need for additional storage capacity in turn spurs exploration and development.

## Many, Diverse Stakeholders

- A diverse range of players has an interest in the Ontario oil, gas and salt resources industry.
- Most directly involved are the **producers**. The major activities of the producers include the exploration, development and production of oil and natural gas, salt solution mining, and storage of natural gas and liquefied petroleum products. There are currently 80 companies directly engaged in these activities (70 in oil and gas and 10 in salt solution mining).

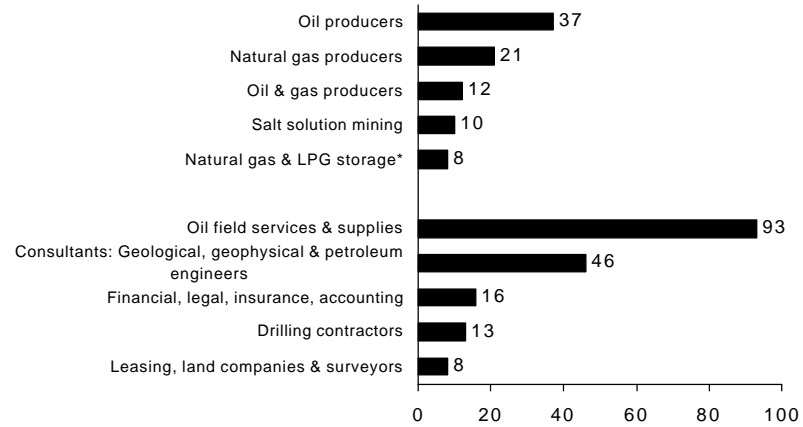
### The Ontario Oil, Gas and Salt Resources Industry



Source: Clayton Research based on Ontario Petroleum Institute membership directory

- The next group of stakeholders includes companies that **supply materials and services to the producers**. These include drilling contractors, companies supplying oil field services and supplies, geologists, geophysicists, petroleum engineers, companies involved in land leasing and assembly, land use planning firms, and companies providing financial, legal and accounting services. More than 175 companies provide inputs to the oil, gas and salt resources industry in Ontario.

### Number of Firms in the Ontario Oil, Gas and Salt Resources Industry



\* These 8 companies are also involved in production activities: 2 in oil & gas production, 1 in oil production only and 5 in salt solution mining

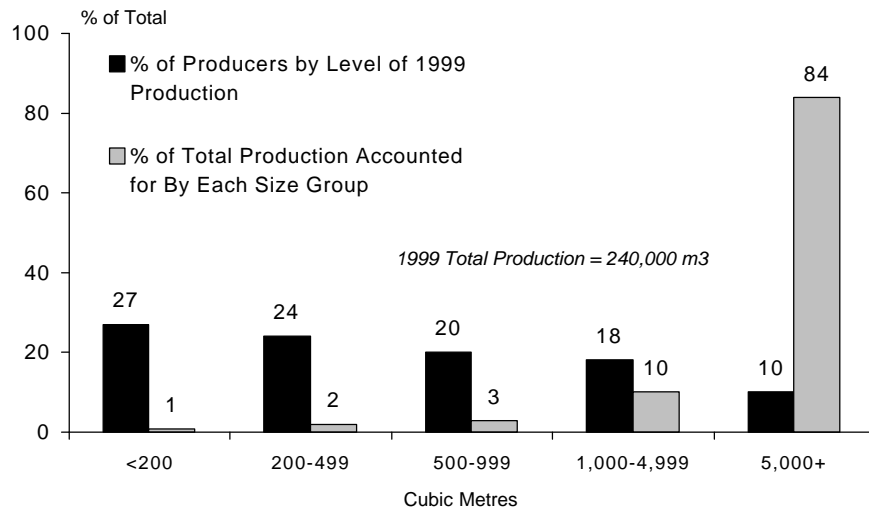
Source: Clayton Research based on data from Ministry of Natural Resources, Petroleum Resources Centre and Ontario Petroleum Institute

- Other groups also have an interest in the industry, including landowners with wells on their properties, government (in terms of regulation and taxation), consumers (households and industry), utilities (who purchase the production), industry/trade associations, educational facilities that provide training for the industry and petroleum industry related museums.

### Many Producers - But Output is Concentrated Among A Few

- In 1999, about 240,000 cubic metres of oil and 422,000,000 cubic metres of natural gas were produced by 70 oil and gas producing companies from about 1,100 oil and 1,200 gas wells. Of these 70 companies, 12 were involved both in oil and gas production, 37 were only involved in oil production and 21 only in gas production.
- The size of producers ranged substantially. For 27% of oil producers, 1999 output was less than 200 cubic metres; about 28% produced 1,000 cubic metres or more.
- Over half of oil producers had 1999 output of less than 500 cubic metres – combined, they accounted for only about 3% of the total production. While only 10% of producers had output of 5,000 cubic metres or more in 1999, they accounted for the bulk of production (84%).

### Size of Ontario Oil Producers



Source: Clayton Research based on data Ministry of Natural Resources, Petroleum Resources Centre

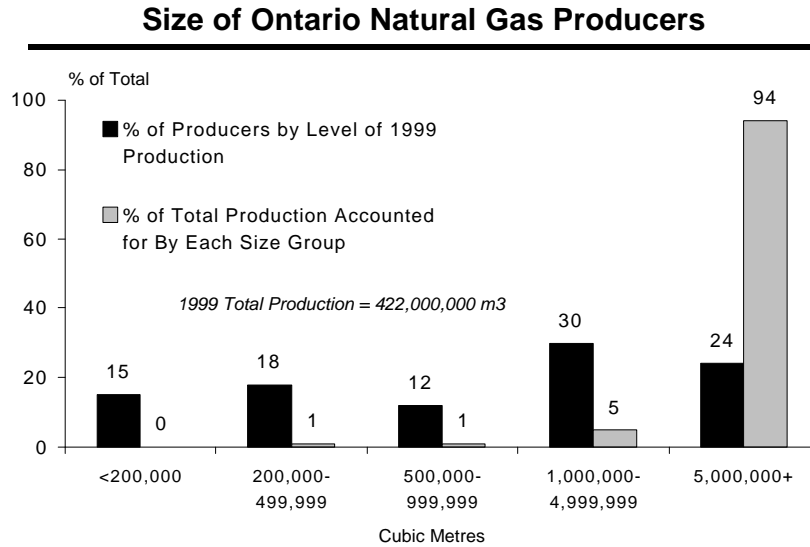
- The 10 largest oil producing companies in Ontario are shown on the chart below. Together, these accounted for 91% of the output of the industry in 1999.

### Top 10 Ontario Oil Producers in 1999

- Talisman\*
- North Rock\*
- CanEnerco\* } 78% of Total Production
- Shining Bank
- Clearbeach
- Enbridge
- Forbes
- Charles Fairbank
- Gaiswinkler
- Farmer's } 91% of Total Production

\* Also in top 10 natural gas producers

- The concentration of output among relatively few producers is also evident in the natural gas sector. Less than one-quarter of companies produced more than 5,000,000 cubic metres of natural gas in 1999 – but these companies accounted for 94% of production.



Source: Clayton Research based on data Ministry of Natural Resources, Petroleum Resources Centre

- As with oil producers, the top 10 natural gas producers account for the majority of output (95%) in 1999.

### Top 10 Ontario Natural Gas Producers in 1999

- Talisman\*
  - Cambright
  - CanEnerco\*
  - Lakeville
  - Clearwood
  - Northern Cross
  - Metalore
  - North Rock\*
  - Greentree
  - Cameron
- } 84% of Total Production
- } 95% of Total Production

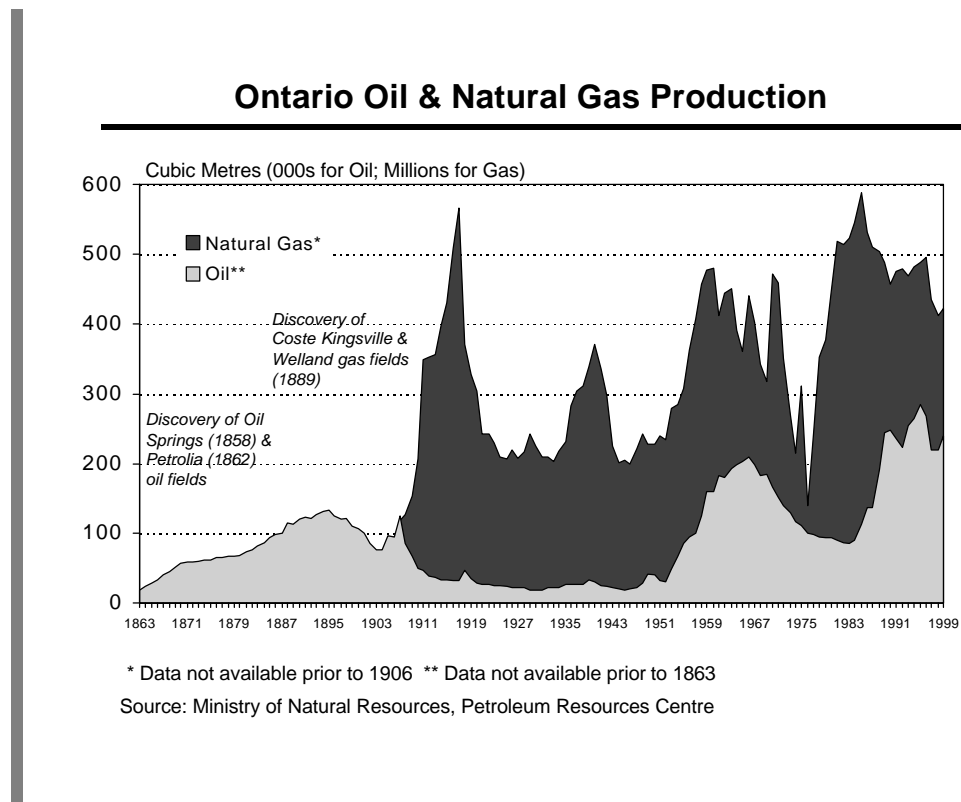
\* Also in top 10 oil producers

## Trends in Output and Prices

This section reviews trends in production of oil and natural gas.

### Ontario Oil and Gas Production Has Been Significant in the Past 150 Years

- The oil and gas industry in Ontario is a mature one. Oil production in Ontario began in the mid 19<sup>th</sup> century, with natural gas production following late in the century.
- Production has fluctuated over that timeframe, in response to a range of factors, including market conditions (the level of demand, prices, etc.) as well as the discovery of new fields.

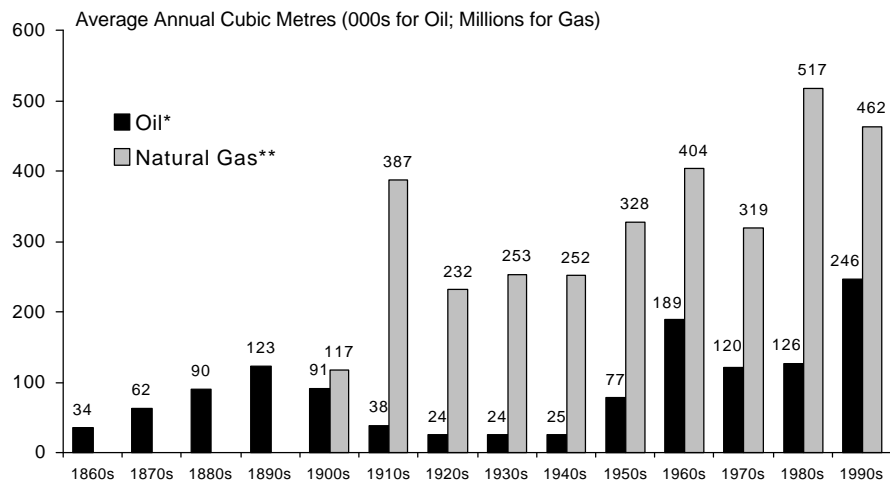


- Cumulative production of oil in Ontario since 1863 (the first year for which data are available) is 12.6 million cubic metres (or 79 million barrels). Natural gas production since 1906 has totaled 32 billion cubic metres (or 1.1 trillion cubic feet).
- Comprehensive information on salt solution production is not available, however, recent production has been in the 1 million tonnes range, with approximately 50 active solution mining wells.

## The 1990s Was a Decade of Strong Output for the Industry

- Production of oil for the decade of the 1990s was the highest that the industry has seen, averaging almost 250,000 cubic metres a year.
- It was also a good decade for the natural gas industry in terms of output, averaging about 460 million cubic metres a year. This was second only to the decade of the 1980s, when average annual production topped 500 million cubic metres a year.

### Ontario Oil & Natural Gas Production by Decade



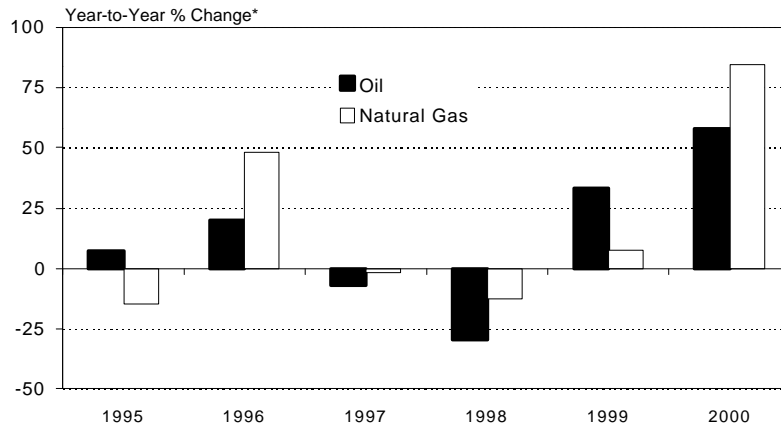
\* Data not available prior to 1863 \*\* Data not available prior to 1906

Source: Ministry of Natural Resources, Petroleum Resources Centre

## Volatile Prices Have Characterized the Industry in Recent Years

- In recent years, the oil and natural gas sector has been characterized by volatile prices.
- Both oil and natural gas prices posted year-over-year declines in 1997 and again in 1998, before starting to recover in 1999.
- Prices soared in 2000, with both oil prices up by over 50% on average compared to 1999, and natural gas prices almost double.

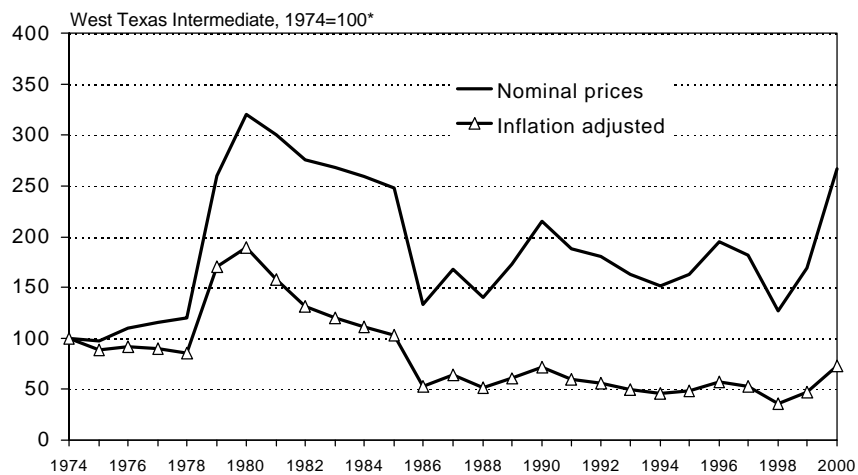
### Medium-Term Trends in Nominal Oil and Natural Gas Prices



\* Based on average monthly prices through the year  
 Source: Clayton Research based on data from TD Bank

- What do these price increases mean in terms of the longer-term perspective? With the price increases since 1998 nominal oil prices on average in 2000 exceeded the situation in the early 1990s and approached the high levels of the latter 1970s/early 1980s. However, in real terms (i.e. adjusted for inflation), average oil prices in 2000 were less than half the levels of the latter 1970s/early 1980s.

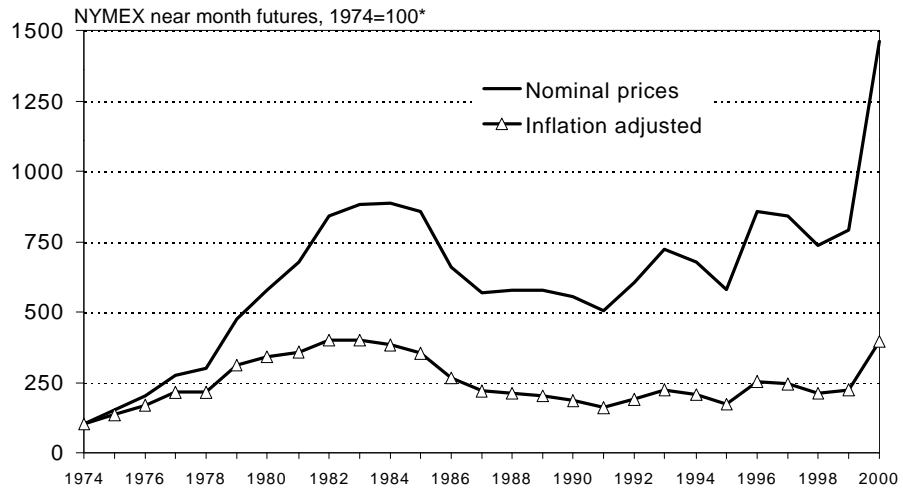
### Long-Term Trends in Oil Prices



\* Based on average monthly prices through the year  
 Source: Clayton Research based on data from TD Bank and Statistics Canada

- The situation is somewhat different for natural gas prices. Nominal prices on average in 2000 were at their highest levels ever. And real prices matched the situation of the peak levels in the first half of the 1980s.

### Long-Term Trends in Natural Gas Prices



\* Based on average monthly prices through the year

Source: Clayton Research based on data from TD Bank and Statistics Canada

## The Role of the Oil, Gas and Salt Resources Industry in the Ontario Economy

This section reviews the contribution of the oil, gas and salt resources industry to the Ontario economy.

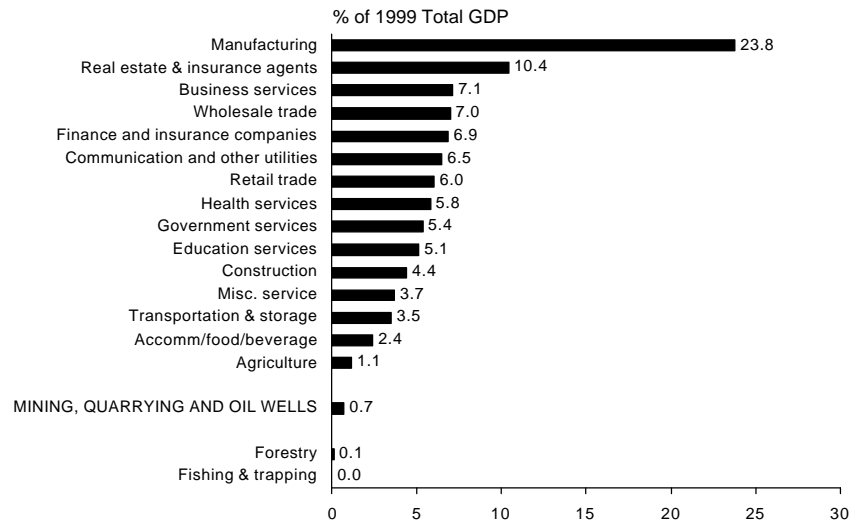
### The Ontario Oil and Gas Industry Has Passed the Market Test

- The oil and gas industry in Ontario has been in business for over 100 years – it is here today, and undoubtedly will be here tomorrow
- The free market has determined day-after-day, year-after-year that this industry is important to our economy.

**The Industry May Be Small Relative to the Total Provincial Economy ...**

- In 1999, the latest year for which data are available, the mining, quarrying and oil wells sector as a whole in Ontario accounted for 0.7% of total provincial economic activity (as measured by Gross Domestic Product or GDP).

**Contribution to Total Ontario GDP by Sector**



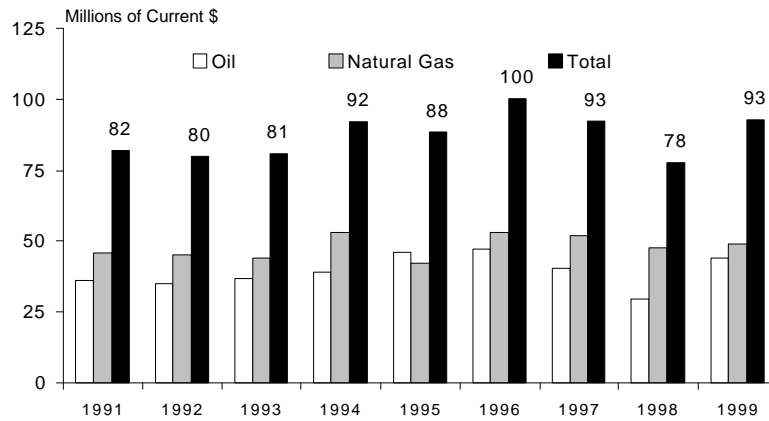
Source: Clayton Research based on data from Statistics Canada

- Data on the individual contribution of the oil and gas resource industry to the total mining, quarrying and oil wells share is not available. However, the oil and gas sector generally accounts for less than 2% of the value of Ontario total mineral production. Its direct contribution to the total provincial economy, therefore, is very small.

**... But the Absolute Dollars Are Still Substantial**

- Although relatively small in relation to the total Ontario economy, the output of the industry is still sizeable.
- The annual value of total production of the oil and gas resource sector during the 1990s was in the \$80-\$100 million range.

### Value of Ontario Oil and Gas Production

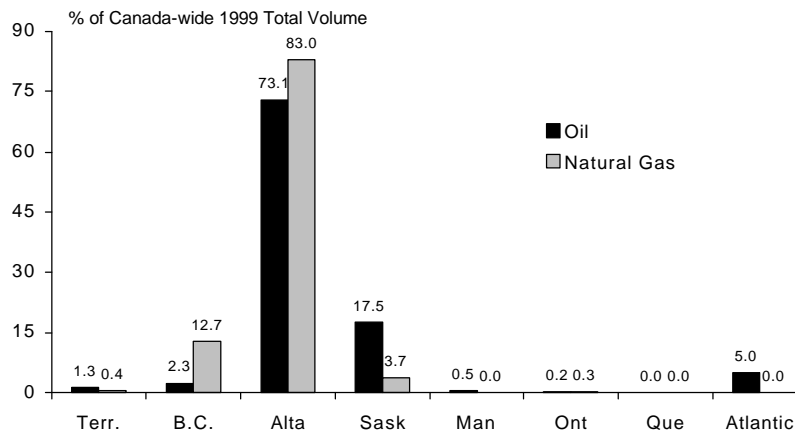


Source: Clayton Research based on data from Ministry of Natural Resources, Petroleum Resources Centre

### Ontario Oil and Gas Production Accounts for a Small Proportion of Total Canadian Production ...

- While Ontario production of oil and natural gas has been significant over the years, it plays a relatively small role in the overall Canadian picture, accounting for less than 1% of national production.

### Canadian Oil & Natural Gas Production by Region



Source: Clayton Research based on Statistics Canada data

### ... But is Helping to Meet Ontario's Needs

- In 1999, about 27 billion cubic metres of natural gas was consumed in Ontario. Of this, about 1.6% was produced in Ontario. Ontario oil production in 1999 accounted for a somewhat smaller portion of the total consumption (just under 1%).

#### Ontario Production and Consumption of Oil and Natural Gas, 1999

	<u>Oil</u>	<u>Natural Gas</u>
	<i>Cubic Metres</i>	
	<i>000s</i>	<i>Millions</i>
<b>Ontario production</b>	<b>247</b>	<b>422</b>
Transfers from other Cdn regions	21,303	45,730
Imports	8,055	802
Exports	3,633	22,976
Change in stock	-36	-1,833
Other adjustments	2,485	745
<b>Total Available</b>	<b>28,493</b>	<b>26,555</b>
 Ontario production as % of Total Available	 0.9%	 1.6%

Source: Clayton Research based on data from Statistics Canada and Ministry of Natural Resources, Petroleum Resources Centre

- While the contribution of oil and gas produced in Ontario to total Ontario consumption may be relatively small, it is still playing an important part. For example, the average annual production levels for natural gas during the 1990s would have been enough to heat about 80,000 homes a year – or a community the size of the City of Windsor.

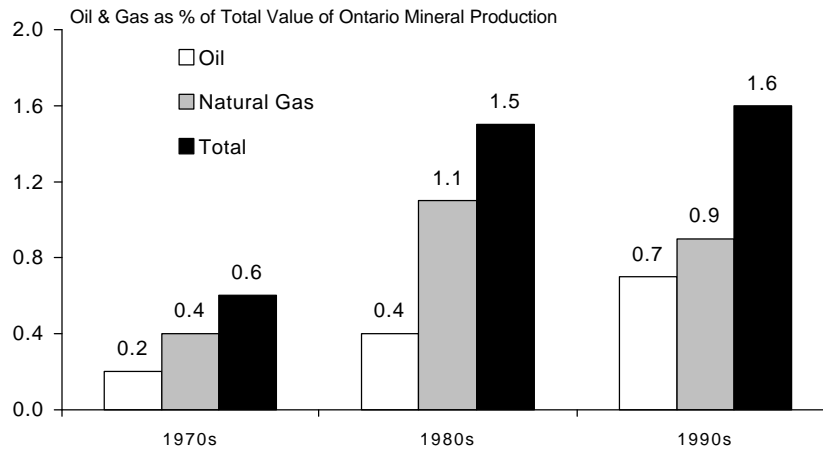
### Storage Facilities Play a Vital Role in Meeting Ontario's Needs

- The industry's natural gas and liquefied petroleum product storage facilities are playing a very key role in meeting Ontario's needs.
- Current natural gas storage capacity is about 6 billion cubic metres – or about 60% of the total storage capacity in Canada. These storage facilities are important to the well-being of Ontario businesses and households, as they allow supply to be close at hand to meet unexpected changes in demand.
- Storage capacity in caverns for liquefied petroleum products is about 3.5 million cubic metres. These facilities are playing an important role by providing the refineries and petrochemical industry in Sarnia with a lower cost, safer alternative to surface storage.

## The Role of the Oil and Gas Industry in the Ontario Economy Has Grown Since the 1970s

- While the oil and natural gas sector may account for a relatively small share of the total output of the mining, quarrying and oil wells sector, and the provincial economy, that role has grown since the 1970s.
- In the 1970s, this sector accounted for only about 0.6% of the total value of Ontario mineral production. By the 1990s, however, that share had almost tripled, to 1.6%.
- Relatively stronger per unit price increases obtained for oil and gas output versus other minerals as a whole have played a role in this increased share.

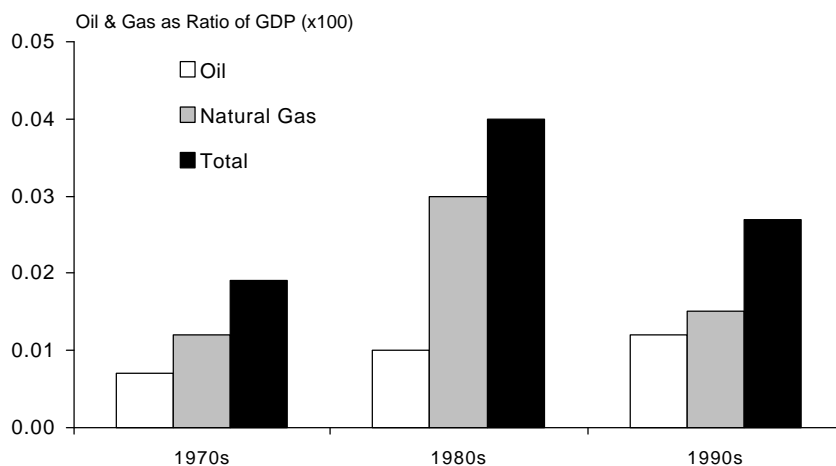
### Value of Ontario Oil & Natural Gas Production in Relation to Total Mineral Production



Source: Clayton Research based on data from Ministry of Natural Resources, Petroleum Resources Centre and Ministry of Northern Development and Mines

- As indicated earlier, data are not available specifically for the “gross domestic product” of the Ontario oil and gas industry (that is, the amount of value added specifically by this sector, exclusive of purchased inputs). However, an idea of its changing importance to the Ontario economy as a whole can be gained by comparing the total value of its output to total Ontario GDP.
- The analysis shows that the role of the sector has grown in importance since the 1970s, although that role was reduced in the 1990s relative to the 1980s. Again, fluctuating prices for oil and natural gas output have played a role in these trends.

### Value of Ontario Oil & Natural Gas Production in Relation to Ontario Gross Domestic Product

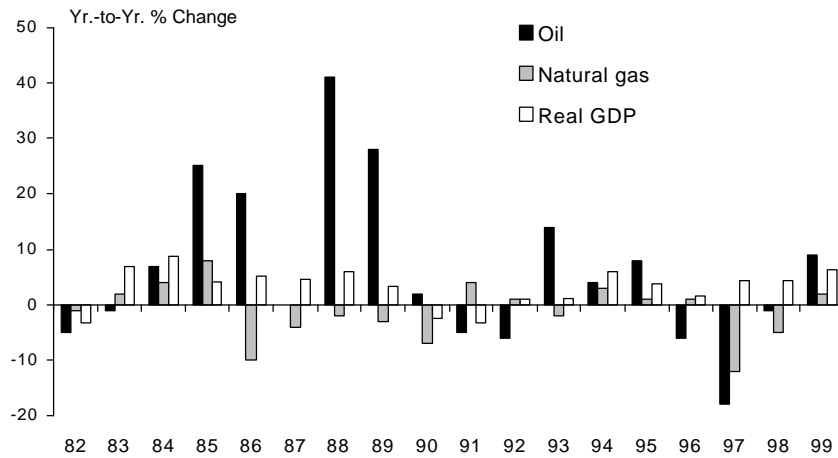


Source: Clayton Research based on data from Statistics Canada, Ministry of Natural Resources, Petroleum Resources Centre and Ministry of Northern Development and Mines

#### Trends in the Oil and Natural Gas Resource Sector Have Not Always Followed Trends in the Overall Economy, Underscoring the Industry's Contribution to Economic Diversification

- Trends in production of oil and natural gas since 1982 were compared to trends in the overall provincial economy to examine to what extent the sector moves in step with the overall economy.
- There is some correlation between overall economic activity and production of oil and natural gas, but it is not a particularly strong one. During the years 1982 through 1999, oil production increased when the overall economy increased and decreased when the overall economy decreased 12 out of 18 times; in the remaining 6 years, one was up while the other was down. For natural gas, it followed a similar direction to the overall economy in 10 out of 18 years.
- In particular, in 1997 and 1998, strong years for overall growth in the Ontario economy, the oil and natural gas industry saw a contraction in output.
- The divergent patterns for oil and natural gas from the overall economy in part reflect the impact on production of new sources of supply, as well as changes in inventories.

### Comparison of Trends in Ontario Oil & Gas Production and Economic Growth



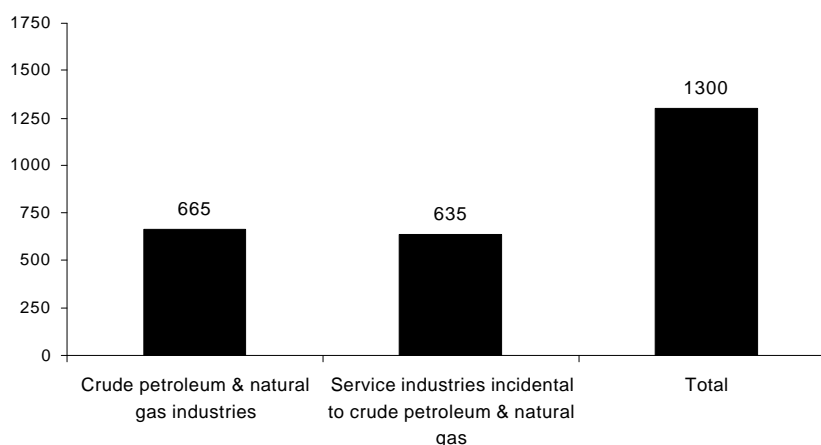
Source: Clayton Research based on data from Statistics Canada and Ministry of Natural Resources, Petroleum Resources Centre

- The divergent patterns also underscore the contribution that the industry is making to economic diversification. Economic principles suggest that the more diversified an economy is, the “better”, as dependence on only a few sectors makes an overall economy more susceptible to the inevitable ups and downs in those sectors. In this sense, an economy with a range of many smaller industries, rather than only a few very large ones, can be viewed as preferable. By its very existence, the oil and gas industry is contributing to the diversification of the Ontario economy.

### The Industry Supplies Jobs for Many Ontarians ...

- Data from the 1996 Census of Canada on employment provides some insight into the extent of employment generated by the oil, gas and salt resources industry in Ontario.
- In 1996, there were 665 jobs in the companies producing oil and gas. In addition, another 635 jobs were in companies providing specialized services that are incidental to the oil and natural gas industry – these are primarily jobs in firms supplying drilling services to the producers. For purposes of the analysis here, these 2 categories are referred to as direct employment in the oil and gas resources industry.

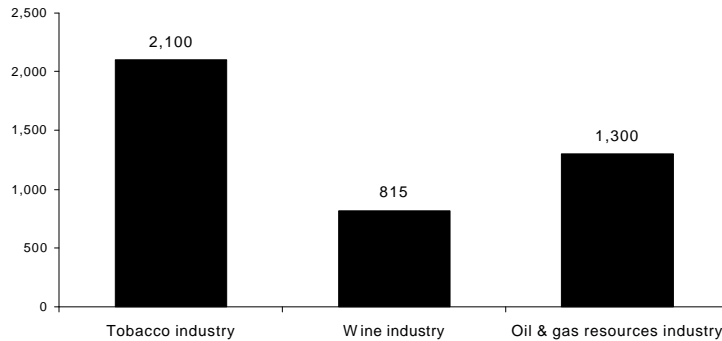
### Direct Jobs in the Ontario Oil & Gas Resources Industry



Source: Clayton Research based on 1996 Census of Canada data

- In addition to the jobs created directly in the oil and gas companies and incidental services companies, there are jobs created in the firms that supply materials and services to the oil and gas producers. There is no comprehensive data to measure these impacts for the oil and gas industry in Ontario. However, estimates by Clayton Research suggests that for every 2 direct jobs in the oil and gas companies and incidental services industry, another job is created in the firms that supply materials and services to these companies.
- In addition, there are additional jobs created in the broader economy, as workers employed directly in the industry, or in the companies that provide materials and services to the industry, spend their incomes. Similarly, landowners who receive lease payments and royalties generate jobs by spending their incomes.
- In relation to total employment in Ontario, direct employment in the oil and gas resources industry is small, accounting for about 1 in every 4,000 jobs. However, in relation to the economies of those areas of Southwestern Ontario where production is focused, it plays a more significant role, accounting for about 1 in every 800 jobs.
- As well, the number of jobs in the oil and natural gas resource industry compares favourably with other sectors that have achieved a somewhat higher profile, such as the wine and tobacco industries.

### Total Ontario Employment Selected Industry Comparisons

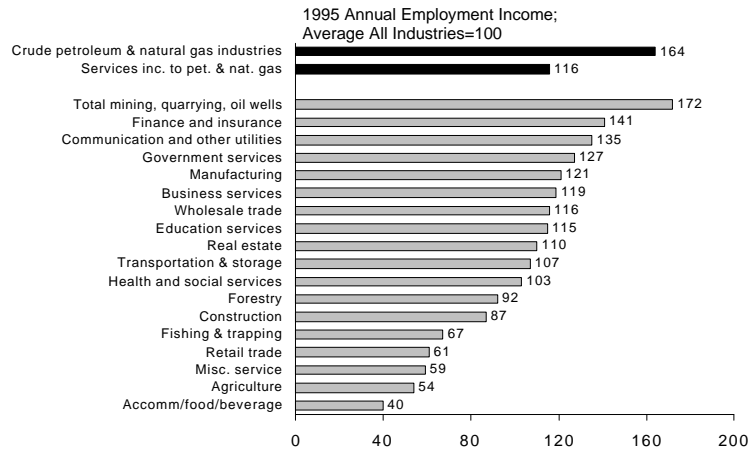


Source: Clayton Research based on 1996 Census of Canada data

### ... And They are Well-Paying Jobs

- The oil and gas resources industry is not only generating jobs for Ontarians, it is generating relatively well-paid ones.
- Average employment incomes among employees of the oil and gas companies are the highest of all sectors. Average incomes are somewhat lower among workers in the incidental services sector, but still well above average. These relatively higher incomes are not only beneficial for the workers themselves, but they also provide higher tax revenues for governments.

### Comparison of Ontario Employment Income by Broad Sector

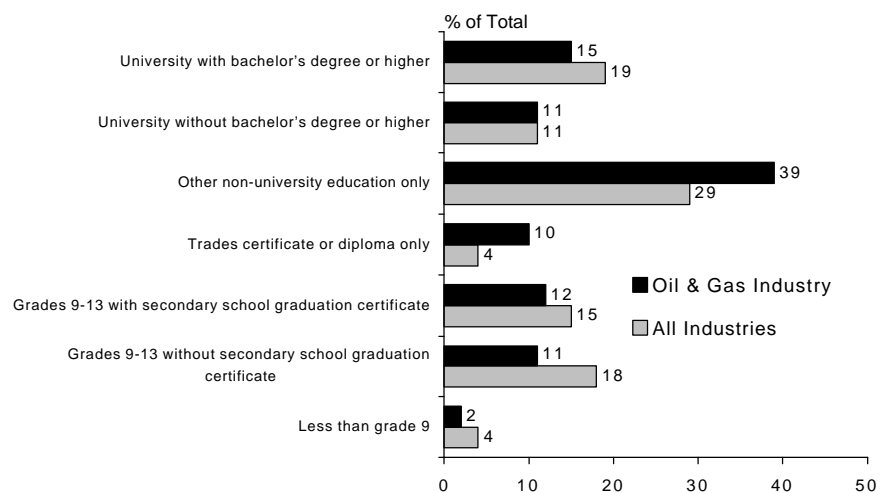


Source: Clayton Research based on 1996 Census of Canada data

## Economic Profile of the Ontario Oil, Gas and Salt Resources Industry

- The relatively higher earnings are being achieved despite the fact that compared to many industries fewer jobs in the oil and gas resource sectors are full-year, full-time.
- One factor in the higher incomes of the oil and gas resources sector is the higher skills levels of its workforce. In 1996, three-quarters of workers in this sector had post high-school educations – this compares to two-thirds of workers in general. More important, however, is the relatively high labour productivity, as discussed in the next section.

### Education of the Ontario Oil & Gas Industry Labour Force

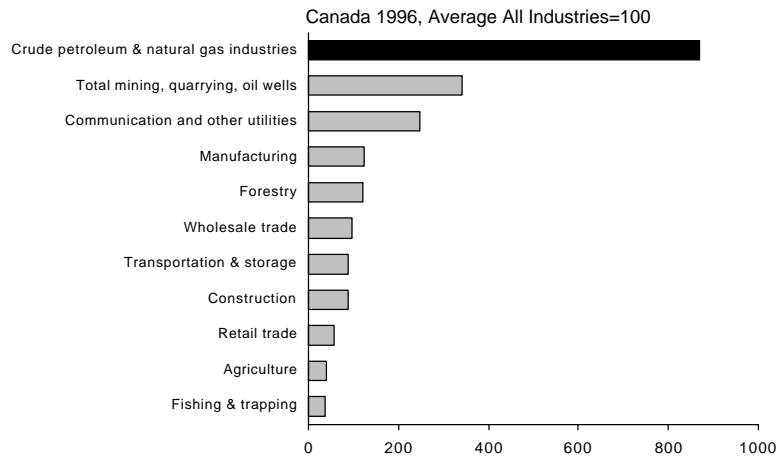


Source: Clayton Research based on 1996 Census of Canada data

### Labour Productivity is High in the Oil and Natural Gas Sector

- Based on Canada-wide information (comparable data for Ontario are not available), the productivity of workers in the oil and gas resource sector (as measured by gross domestic product, or value added per hour worked) was more than 8 times the average in the Canadian economy.
- This higher productivity reflects a variety of factors. One of these is the high level of investment by the industry in capital and technology, which allows its workforce to be more productive.
- The key factor, however, is that the output of the industry is a non-renewable resource in high demand. The relatively high value of the product itself contributes to value added per worker.

### Comparison of Labour Productivity\* by Selected Sector



\* Gross domestic product per hour worked  
Source: Clayton Research based on Statistics Canada data

### The Industry Generates Substantial Tax and Royalty Payments

- According to Statistics Canada data, oil and gas companies in Ontario paid \$2-\$3 million in non-income taxes (primarily sales taxes and property taxes) in 1999.
- Comprehensive information on income taxes paid is not available for the oil and gas sector in Ontario. However, estimates suggest that in 1999, Ontario oil and gas companies paid at least \$3 million in income taxes – about two-thirds of this to the federal government and one-third to the provincial government. Additional corporate income tax revenues are obtained from companies who supply products and services to the oil and gas companies, and through personal income taxes paid by employees in the oil and gas industry.
- In addition, more than \$10 million went to royalty payments in 1999. These include both royalty payments for provincial Crown lands and royalty payments to private landowners. The royalties paid to private landowners in turn generate additional income tax revenues.

## Looking Ahead

### **Demand for the Industry's Output Expected to Increase Substantially Over the Next 20 Years**

- The demand for oil and natural gas in Ontario is forecast to increase by as much as 50% over the next 20 years.<sup>2</sup>
- Comparable growth is expected in demand in the U.S., and an increased share of demand is expected to be filled by imports of natural gas, mostly from Canada.<sup>3</sup>
- This growth in demand suggests the potential for a larger relative economic role for the Ontario oil and gas industry in the future.
- Part of this increased role could come from filling demand directly through higher production of oil and gas.
- There is also the potential for a growing economic role based on natural gas storage requirements. Higher average demand levels over the next 20 years in Ontario and the U.S. suggest a corresponding need for significant growth in storage capacity in the years to come.

### **More Exploration and Development of New Wells Will Be Necessary to Address This Demand**

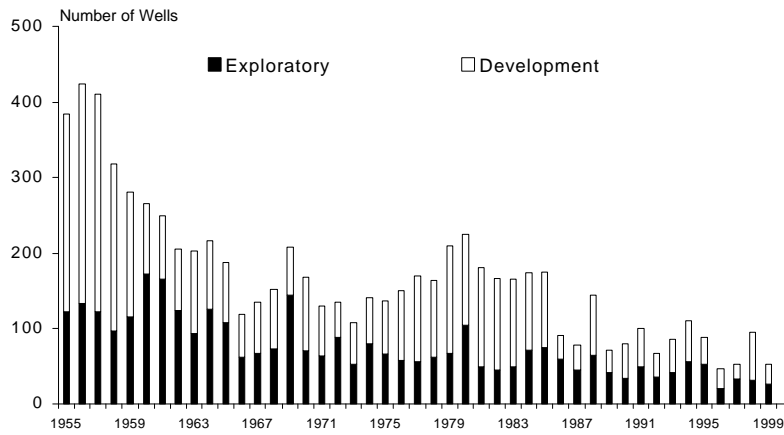
- Both increased output and increased storage capacity require exploration and the development of new wells.
- However, the number of drilling completions of new wells has been declining over time. Rising prices in the latter 1970s and early 1980s (refer back to pages 12 and 13) were accompanied by an increase in exploration and development of new wells, but softer prices in the mid 1980s to latter 1990s were less conducive to this type of activity.

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<sup>2</sup> National Energy Board, **Canadian Energy: Supply and Demand to 2025, 1999**

<sup>3</sup> U.S. Department of Energy, **National Energy Outlook 2000, December 1999**

### Drilling Completions



Source: Clayton Research based on data from Ministry of Natural Resources, Petroleum Resources Centre

- The reduced levels of drilling completions in the 1990s have had an impact on reserves.
- While available reserves of natural gas are still substantial, this will not remain the case, as production is outpacing new sources of supply.
- And oil reserves are currently at less than a 10 years supply, based on average production levels in the 1990s.

### Current Reserves of Oil and Natural Gas and Undiscovered Potential, Ontario

	Natural <u>Gas</u> <i>Cubic Metres Billions</i>	<u>Oil</u> <i>Millions</i>
Remaining reserves end of 1998	12.18	1.93
Remaining reserves end of 1999	11.99	1.86
Net new supply	-0.19	-0.07
Years of production(1)	26	8
Undiscovered potential	75 +	150 +

(1) Based on average annual production levels in the 1990s

Source: Clayton Research based on data from Canadian Association of Petroleum Producers and Osadetz, Hannigan, Carter & Trevail: **Re-appraising Petroleum Potential in Eastern Canadian Cratonic Basins in Light of New Methods and Data**

## **Economic Profile of the Ontario Oil, Gas and Salt Resources Industry**

- The resource potential is certainly there to meet this increased demand for output and storage capacity. Estimates suggest that the undiscovered oil potential in Southwestern Ontario is more than 150 million cubic metres and the undiscovered natural gas potential is more than 75 billion cubic metres.
- But an environment conducive to undertaking the financial risks associated with exploration and development will be necessary to tap these resources. Stronger oil and gas prices relative to a few years ago have improved the reward to risk ratio and suggest the potential for increased exploration and development of new wells during the next decade relative to the 1990s.

The Oil, Gas and Salt Resources Trust is a non-profit organization which funds information management, research, and laboratory and library operations relating to oil, gas, salt and underground hydrocarbon storage resources in the province of Ontario.

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