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Shale Gas and Hydraulic Fracturing in the Great Lakes Region: Current Issues and Public Opinion

a report from the Energy and Environmental Policy Initiative

Introduction

This report presents the views of people living within the Great Lakes Basin[a] regarding hydraulic fracturing and shale gas drilling. Hydraulic fracturing, the injection of a fluid after drilling to crack open shale rock to release oil or gas, has been used by industry for decades. However, recent breakthroughs in horizontal drilling techniques combined with hydraulic fracturing, have enabled oil and gas recovery from "unconventional" oil and gas reserves, previously considered inaccessible. This process is commonly known as "fracking," which can refer to just the hydraulic fracturing process itself or the entire drilling process.

As the developments in hydraulic fracturing and horizontal drilling technology have produced an increase in oil and gas supplies, many states in the US and provinces in Canada are trying to determine how to leverage the associated economic potential. In response to this rapid change in the energy landscape and the potential future energy portfolios of the US and Canada, this report serves to provide background on shale developments within the Great Lakes Region—Ontario, Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin—as well as a preliminary assessment of public opinion of fracking from residents within the Great Lakes Basin (see *Figure 1*).

Figure 1
Map of the Great Lakes Basin

Source: Great Lakes Information Network. (2014). *The Great Lakes*. Retrieved from http://www.greatlakes.net/lakes/

a Throughout this report, we intentionally distinguish between the Great Lakes Basin and Great Lakes Region, primarily because our survey was limited to the former while energy statistics and energy policy refer only to the latter. The Great Lakes Basin, in a geological sense, is the land area over which surface water drains into one of the five Great Lakes. Thus, it encompasses the watersheds of all rivers that flow into the Lakes. As seen in *Figure 1*, it is substantially smaller than the Great Lakes Region, which includes the eight US states and one Canadian province (Ontario) which touch at least one of the Lakes.

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This survey was part of a larger public opinion survey, which also assessed public views from the Great Lakes Region about environmental issues and policy in the Region as well as a closer look at policy related to wind power.[1] These reports have been published by the Center for Local, State, and Urban Policy and are publicly available, among others, on related facets of this topic.[b]

A Note on Terminology

In colloquial use, the term "fracking" has taken on a range of interpretations, and can refer to just the hydraulic fracturing process or the entire drilling process. Throughout this report, "fracking" refers to the combination of hydraulic fracturing and drilling, while "hydraulic fracturing" refers to only the hydraulic fracturing process itself—the process of injecting fluid, often a mixture of water, sand, and chemicals, into rock.

Key Findings

1. Basin residents are more likely to oppose increases in shale gas and oil drilling in the Great Lakes Region than to favor increases (53% to 33%). Those who strongly oppose additional fracking (34%) substantially outnumber the proportion who strongly favor additional fracking (10%).

2. More US residents in the Basin—though still a minority—favor increases in hydraulic fracturing (38%) than their Canadian counterparts (22%). Ontarians are about two times more likely to say they are unsure about whether oil or gas drilling via hydraulic fracturing should increase.

3. Residents of the Great Lakes Basin tend to feel that both state/provincial governments and landowners should have a great deal of authority regarding hydraulic fracturing-related decisions.

4. US Basin residents are about two times as likely as Ontarians to feel that the federal government should have no decision-making authority in the context of hydraulic fracturing and shale gas drilling. Ontarians are more likely to favor a stronger federal role (43% to 32%).

5. Great Lakes Basin residents recognize both negative and positive potential impacts of hydraulic fracturing and shale gas and oil drilling for the Great Lakes Region. Fewer residents strongly agree about the potential positive impacts of fracking to local economies, jobs, and energy security than strongly agree about potential environmental, health and water supply risks.

b More information regarding CLOSUP's efforts related to fracking can be found through the "CLOSUP Energy & Environmental Policy Initiative Fracking Project" page. An in-depth assessment of public opinion in Pennsylvania and Michigan was analyzed in the May 2013 CLOSUP report *Public Opinion on Fracking: Perspectives from Michigan and Pennsylvania*. The January 2014 CLOSUP report *State of the Debate: Natural Gas Fracking in New York's Marcellus Shale* details fracking history and developments specific to New York State. CLOSUP intends to continue in-depth case studies of shale gas and oil regulatory developments in other US states and Canadian provinces.

Overview of Shale Activity, Regulation, and Legislation in Great Lakes Basin States and Ontario

North America has some of the greatest reserves of shale gas and oil in the world (see *Figure 2*). However, the existence of shale reserves within a shale basin, a plane containing an underground deposit of shale, may not automatically translate into economically feasible quantities of recoverable oil or gas. Potentially profitable recoverable oil and gas is typically within a shale play, an area within a basin that has been deemed favorable for exploration and recovery.

Figure 2
North American shale plays and basins

Source: US Energy Information Administration (2011). *Lower 48 states shale plays*. Retrieved from http://www.eia.gov/oil_gas/rpd/shale_gas.jpg

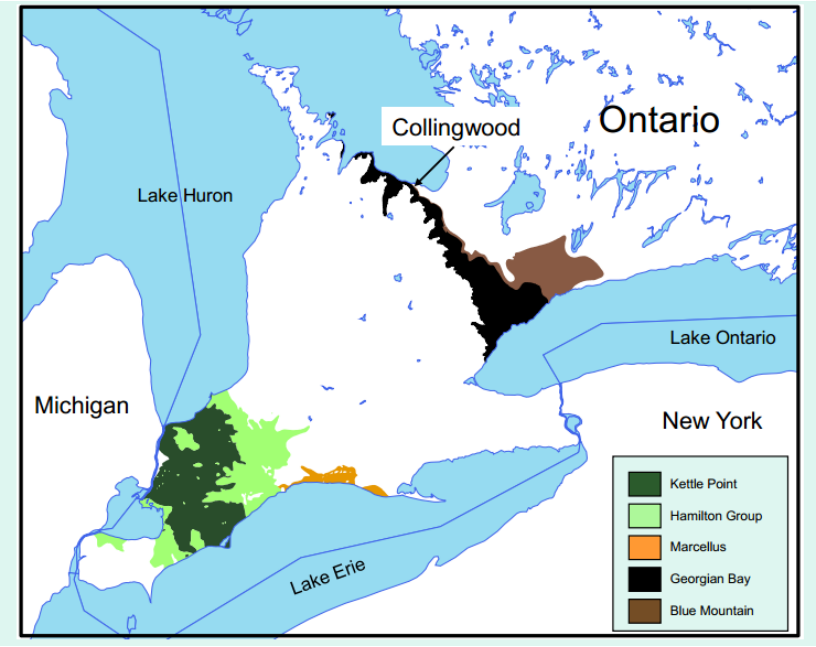
In both Canada and the US, the provinces and states are, respectively, the primary decision-making bodies for hydraulic fracturing-related regulations. In Canada, due to provisions within the Canadian Constitution (1867), the provinces have legislative authority for the development, conservation, and management of non-renewable natural resources within their borders and are responsible for establishing the regulatory environment for oil and gas exploration. Federal influence in fracking operations emerges in cases wherein operations might occur on designated federal lands and in the regulation of chemicals used in fracking operations. The federal Chemical Management Plan and the Canadian Environmental Protection Act regulate chemicals used in fracking processes in Canada. The former assesses toxicity of chemicals before being imported or manufactured in Canada and the latter assesses chemical substances and their toxicity within the country.

In the United States, while federal regulation of hydraulic fracturing is not prohibited by the federal constitution, it is also not currently within the purview of the federal government. This state-centric approach to oil and gas regulation in the US dates back to the late 1800s and the early 1900s, and it has continued, encouraged by several key oil and gas industry exemptions from federal environmental laws. For example, oil and gas waste is not considered "hazardous waste" under the Resource Conservation and Recovery Act. Pertinent to chemical disclosure, chemicals used in hydraulic fracturing are exempted from the federal Emergency Planning and Communities Right to Know Act, which requires disclosure of certain chemicals to the Environmental Protection Agency.[2] The most prominent federal exemption related to hydraulic fracturing is its omission from the Safe Drinking Water Act. It was amended by the Energy and Policy Act of 2005 to exclude hydraulic fracturing from the definition of "underground injection."[3]

Ontario

Ongoing controversy surrounding shale exploration and drilling throughout Canada, particularly in British Columbia and New Brunswick, has sparked increased opposition to fracking across the provinces. While most of Canada's shale is located in its western region, Ontario has shale formations in the southern region of the province (see *Figure 3*). Although there are many rumors and discussions about companies exploring fracking operations in the province, to date, none have formally taken place there. However, with growing interest in shale plays in Ontario's neighboring province, Quebec, Ontario may be experiencing a growing awareness regarding fracking operations.

Figure 3
Shale formations in Ontario



Source: Carter, T., Fortner, L., & Béland-Otis, C. (2009). *Shale gas opportunities in southern Ontario – An update.* Presentation at the 48th Annual Ontario Petroleum Institute Conference and Trade Show, Sarnia, Ontario. Retrieved from http://www.ogsrlibrary.com/downloads/Ontario_Shale_Gas_OPI_2009_Nov11.pdf

The Ontario Ministry of Natural Resources (MNR) regulates oil and gas well permitting, construction, and inspection, while the Ontario Energy Board oversees natural gas production and price setting.[4] The MNR's Oil, Gas, and Salt Resources Act regulates the exploration, drilling, and production of oil and natural gas, and requires well owners to apply for well licenses to perform drilling or exploratory activity.[5] The MNR's Provincial Operating Standards establish both safety procedures and protocols for, among other things, well licensing, drilling, oil and gas production, and storage.[6]

Illinois

Similar to Ontario, Illinois has limited shale gas potential, and has not withdrawn shale gas between 2007 and 2012.[7] Although encompassed by much of the Illinois basin, the New Albany shale play overlaps only a small portion of southern Illinois. The New Albany shale, however, is receiving increased attention amid hopes that exploratory drilling will indicate profitable reserves of shale oil and gas.[8]

In the face of a potential surge in shale activity, in June 2013 the Illinois legislature enacted SB 1715, the Hydraulic Fracturing Act, an unusually comprehensive approach compared to other states' hydraulic fracturing regulations to shale oil and gas regulation and governance. It establishes procedures for drilling permits, enacts an oil and gas severance tax, and sets standards for wastewater storage, waste fluid management requirements, water monitoring requirements, and evaluating the risks of seismic events. Under

the Act, the Illinois Department of Natural Resources is the primary authority to administer the requirements outlined in the law.[9] The Department of Natural Resources is currently in the midst of a rulemaking process to further detail and codify the Act's requirements.[10] No new high-volume hydraulic fracturing permits will be accepted until the completion and adoption of the new rules.[11]

Indiana

As of 2012, Indiana had not reported any shale gas withdrawals.[12] However, similar to Illinois, its natural gas industry is facing increasing growth potential due to the projected natural gas recovery from the New Albany shale play. Coupled with the increased potential of coalbed methane, an unconventional form of natural gas extracted from coal beds, Indiana's natural gas reserves may significantly increase.[13] While Northern Indiana overlaps with some of the Antrim shale play, the Antrim exploration has currently occurred only in Michigan.

The Indiana Department of Natural Resources has released figures detailing the long-time use of hydraulic fracturing techniques in the state and currently reports no safety concerns.[14] Additionally, in 2012, the Indiana legislature enacted HB 1107, which required the Indiana Natural Resource Commission to adopt rules to govern the reporting and disclosure of hydraulic fracturing treatment fluids.[15] These rules took effect July 2012.[16]

Michigan

Michigan, home to the majority of the Antrim shale play, has seen most of the play's development and exploration.[c] While over 12,000 well sites have used some form of hydraulic fracturing statewide since the 1960s,[17] the Michigan Department of Environmental Quality has reported only 54 active high-volume hydraulic fracturing permits and three pending active applications as of January 23, 2014.[18] This reflects the relatively nascent nature of high-volume hydraulic fracturing methods in the state.

The Michigan legislature, especially its Democratic Caucus, has actively pushed for legislation to more strictly regulate hydraulic fracturing and high-volume drilling, to commission studies, and to establish protocols for mandatory hydraulic fracturing fluid disclosure. In November 2013, the Michigan Department of Environmental Quality released notification of a rule-making process to formalize hydraulic fracturing and shale gas exploration and recovery in Michigan. The proposed rule would establish hydraulic fracturing fluid disclosure regulation and address water withdrawals and baseline water quality sampling, monitoring, and reporting.[19] The rule-making process, still ongoing, will include public engagement through public hearings and a public comment period. Michigan voters may also have the opportunity to vote to ban hydraulic fracturing in the state in the November 2014 general election. The Committee to Ban Fracking in Michigan initiated a petition that, if passed, would amend Michigan's Natural Resources and Environmental Protection Act to prohibit horizontal hydraulic fracturing in the state.[20]

New York

While endowed with a significant portion of the Marcellus shale play, New York has not permitted high-volume hydraulic fracturing for unconventional gas and oil exploration.[d] Although a moratorium currently exists in the state, many pending bills from the 2013-2014 legislative session, perhaps in anticipation of the eventual removal of the moratorium, push for strict regulation of hydraulic fracturing techniques and fluids and the management of the waste produced by exploration, drilling, and oil and gas recovery.[21]

The New York Department of Environmental Conservation currently regulates the drilling, operation, and plugging of natural gas wells and would manage high-volume hydraulic fracturing-related regulations if the ban were lifted. It has proposed regulations, which are currently undergoing the state's rulemaking process, to regulate hydraulic fracturing in the state as long as the Department of Environmental Conservation deems the process can be performed safely.[22] These rules are currently under review by the New York State Commissioner of Health. Based on the outcome of this health review, the governor of New York, Andrew Cuomo, has pledged to decide whether or not to permit hydraulic fracturing to occur in New York before the November 2014 general election.[23]

c More details about the shale development in Michigan is available through CLOSUP's publication "Public Opinion on Fracking: Perspectives from Michigan and Pennsylvania." Further, in September 2013, the University of Michigan's Graham Institute for Sustainability released a hydraulic fracturing integrated assessment, outlining the impacts of fracking on Michigan. The assessment covers a variety of topics, including public perception, environmental impacts, and public health.

d More details about the shale development in New York is available through CLOSUP's publication "State of the Debate: Natural Gas Fracking in New York's Marcellus Shale."

Even if New York lifts its moratorium, however, many localities may invoke localized bans because local jurisdictions in the state have control over land use.[24] A 2013 New York Appellate Court decision upheld the power of municipalities to ban hydraulic fracturing, thus heightening the influence and importance of local grassroots efforts regarding related regulations in the state.

Pennsylvania

With a significant portion of the Marcellus shale play under its jurisdiction, Pennsylvania has actively pursued the development of its unconventional natural gas and oil industry.[e] While Pennsylvania reported no production of natural gas from shale in 2007, it accounted for more than 90% of the state's natural gas production in 2012.[25] Since 2008, Pennsylvania's Department of Conservation and Natural Resources has approved 941 shale gas wells for drilling.[26] The shale gas activity in Pennsylvania has invoked a flurry of controversy in the state, which may have encouraged the establishment of numerous laws and regulations. While localities may not enact local drilling bans, they are able to establish restrictive zoning ordinances that may deter drilling activity.

In 2012, the Pennsylvania legislature passed the Oil and Gas Act, or Act 13, which authorizes local governments to adopt an impact fee on wells drilled in their locality. Act 13 also provides for baseline water supply protections and fracking fluid chemical disclosure, and establishes statewide environmental standards with respect to fracking and to processes for well inspections, permitting, environmental protections, well location restrictions, and water-use regulations.[27] Act 13 does not, however, include an extraction tax for gas produced through hydraulic fracturing. In December 2013, the Pennsylvania Supreme Court struck down several Act 13 provisions that enabled the state to preempt many local zoning laws to pursue oil and gas drilling.[28] The Pennsylvania Environmental Quality Board has also developed new regulations governing surface activities related to oil and gas well development. The regulations, which closed to public comment on February 12, 2014, are designed to enhance protection of the environment and of public health and safety.[29]

Pennsylvania Governor Tom Corbett, a strong Act 13 supporter, has prioritized shale gas exploration and development throughout his term as governor. He has received numerous campaign donations from those aligned with the oil and gas industry,[30] and shale gas and oil drilling appears likely to remain a central component of his 2014 bid for re-election. However, the revocation of several Act 13 provisions may come as a liability for Corbett in the 2014 election by enabling Democratic challengers to point to his shale policies.[31]

Ohio

Ohio has recently been actively exploring its unconventional oil and gas potential in the Marcellus and Utica shale plays. As of January 25, 2014, Ohio had issued 34 horizontal drilling permits for the Marcellus shale, and 1060 permits for the Utica shale.[32] In 2012, the Ohio legislature passed SB 315, which established a regulatory framework to govern shale gas drilling. Its provisions include, among others, a hydraulic fracturing fluid chemical disclosure requirement that enables disclosure of trade secret chemical information to healthcare providers, requirements to sample water prior to drilling, and disclosure of proposed water sources.[33] The current 2013-2014 legislative session has several pending bills related to drilling for shale gas and oil, revising oil and gas permit requirements, modifying disclosure requirements, and adjusting fees related to drilling.

The Ohio Department of Natural Resources has primary authority over oil and gas drilling activity. It regulates drilling permits and well locations, and wastewater management, storage, and disposal. The Ohio Environmental Protection Agency oversees the authorization necessary for activity that may impact state water and requires drillers to obtain air permits if activities release air pollutants. Ohio's Governor John Kasich, hoping to profit from shale gas, has proposed an increase in the state's oil and gas severance tax from 1% of production value to 4% in his 2014-2015 budget to offset an income tax rate decrease.[34] While Kasich has stressed the potential revenue from a severance tax increase, opponents fear it will hurt Ohio's shale industry. Kasich has threatened to veto severance tax proposals that he deems insufficient.[35]

e More details about the shale development in Pennsylvania is available through CLOSUP's publication "Public Opinion on Fracking: Perspectives from Michigan and Pennsylvania."

Frac Sand Activity in Wisconsin and Minnesota

Both Wisconsin and Minnesota are the only states within the Great Lakes Basin without shale plays, although the Michigan Basin, primarily located in Michigan, does stretch into part of Wisconsin. Both states, however, are rich with silica sand resources of the quality preferred for hydraulic fracturing. Often referred to as "frac sand," it is typically added to the fracking fluid as a "proppant" to help hold open fractures in the shale rock (caused by the high-pressure fluid pumped into the rock) to enable more effective oil or gas recovery.

While the existence of these high-quality silica mines are not new, the recent surge in hydraulic fracturing, particularly high-volume hydraulic fracturing coupled with horizontal drilling, has dramatically increased the demand for frac sand. As such, Wisconsin and Minnesota have found themselves awash in much of the controversy surrounding hydraulic fracturing. Further, the increase in silica mining has raised concerns regarding the environmental and public safety of the mining.

Wisconsin

Most of Wisconsin's mines reside in the western-central area of the state. The mining is regulated largely by local ordinance, but is under the purview of the federal Safe Water Drinking Act and must pass air and water permit requirements.[36] Wisconsin has a number of current legislative proposals related to frac sand zoning and licensing. SB 139, for example, would require the disclosure of frac sand mining contracts to neighboring properties, while SB 142 regulates the location of frac sand mines and facilities.

Minnesota

Minnesota is also actively considering new laws and regulations to govern the growing silica sand mining industry. Legislation in 2013 (HB 906 and SB 1018) directed the Minnesota Department of Natural Resources, the Pollution Control Agency, and the Environmental Quality Board to develop new state rules governing silica sand.[37] These agencies are currently undergoing the rulemaking process, which generally takes one to two years to develop and finalize.[38]

Survey Findings

Between November 6 and December 5, 2013, a telephone survey was conducted with randomly-selected households in the Great Lakes Basin.[f] All 1,247 respondents were asked questions about their perceptions of the health of the Great Lakes and major policy issues facing the Region. To limit the overall length of the survey, roughly half (n=614) were randomly assigned to a survey that included 10 questions about hydraulic fracturing, while the other half (n=633) were given 10 questions about wind energy. More details about the findings from questions related to environmental policy, as well as those related to wind policy are respectively available in two companion reports.[g]

All data summarized in this report are weighted by age, gender, and educational attainment to reflect population estimates in the Great Lakes Basin. Percentages throughout the report were rounded up from the 0.5 percent mark. The surveys were primarily funded by the Social Sciences and Humanities Research Council of Canada under the auspices of the Great Lakes Policy Research Network centered at Ryerson University in Toronto. Supplemental funds were provided by the Center for Local, State, and Urban Policy at the University of Michigan and the Muhlenberg Institute of Public Opinion. The survey instrument was developed by Professor Christopher Borick of Muhlenberg College, Professor Chris Gore of Ryerson University, and Professor Barry Rabe of the University of Michigan.

f The survey sample included all households in Ontario (where the vast majority of the population lives within the Basin) and households in US counties that were at least partially within the Basin.

g Maack, E., et al. (2014). *Environmental policy in the Great Lakes Region: Current issues and public opinion.* Ann Arbor, MI: The Center for Local, State, and Urban Policy at the Gerald R. Ford School of Public Policy, University of Michigan. Retrieved from http://closup.umich.edu/issues-in-energy-and-environmental-policy/10/; Mills, S., et al. (2014). *Wind energy development in the Great Lakes Region: Current issues and public opinion.* Ann Arbor, MI: The Center for Local, State, and Urban Policy at the Gerald R. Ford School of Public Policy, University of Michigan. Retrieved from http://closup.umich.edu/issues-in-energy-and-environmental-policy/8/

Public views on increasing fracking in the Great Lakes Basin Region

Residents from the entire Basin area lack consensus on whether or not the Region should support increased fracking; however, a majority of residents (53%) indicate at least slight opposition to it (see *Table 1)*. Moreover, residents who oppose drilling increases are more likely to strongly oppose than to somewhat oppose them (34% to 19%). Conversely, those in favor of drilling increases are more than two times as likely to somewhat favor increases (23%) than to strongly favor them (10%). Residents are also more opposed to increased offshore oil and gas drilling in the Great Lakes than they are increased drilling in the Region as a whole (61% to 53%).

Table 1
Views on increasing fracking and offshore drilling in Great Lakes, entire survey population

"Please tell me whether you would 'strongly favor,' 'somewhat favor,' 'somewhat oppose,' or 'strongly oppose' the implementation of each in the Great Lakes Region."

	Strongly Favor	Somewhat Favor	Somewhat Oppose	Strongly Oppose	Not Sure
"Increase drilling for natural gas and oil through hydraulic fracturing, also known as 'fracking,' in the Great Lakes Region."	10%	23%	19%	34%	14%
"Allow more offshore oil and gas drilling in the Great Lakes."	8%	21%	25%	36%	11%

Margin of Error: 3%

More Americans than Ontarians—though still a minority—express views in favor of increased hydraulic fracturing in the Great Lakes Region, 38% to 22%, while roughly the same number in both countries oppose it (see *Table 2)*. Canadians were about two times more likely to say they were unsure about whether oil or gas drilling via hydraulic fracturing should increase (22% to 10%). These differences may reflect the relatively less developed shale oil and gas industry in Ontario compared to several of the Great Lakes states and the high levels of media attention directed toward hydraulic fracturing in the United States.

Table 2
Views on increasing fracking, United States versus Canada comparison

"Increase drilling for natural gas and oil through hydraulic fracturing, also known as 'fracking,' in the Great Lakes Region."

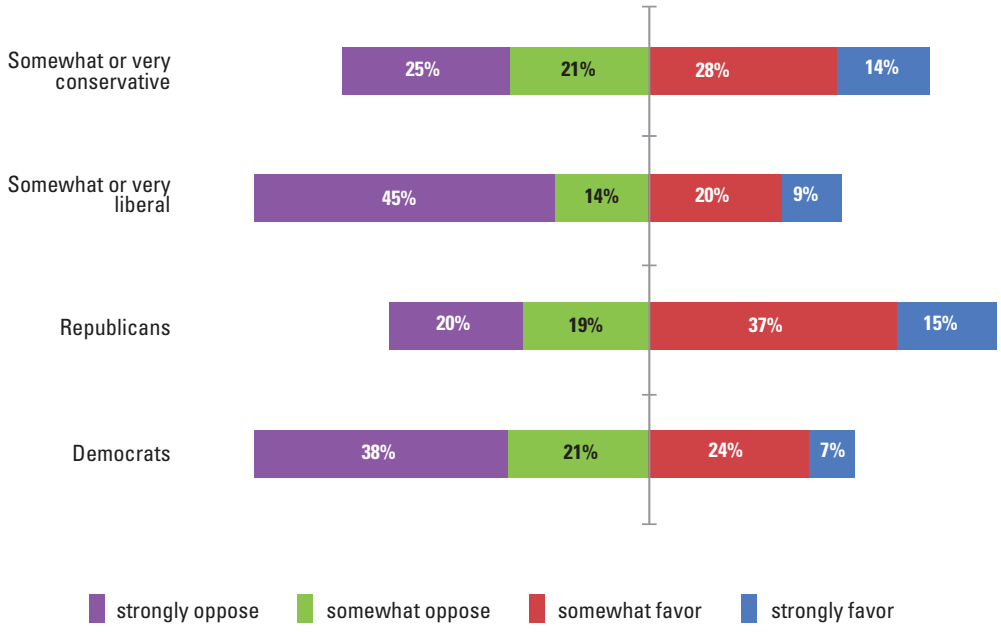
	Strongly Favor	Somewhat Favor	Somewhat Oppose	Strongly Oppose	Not Sure
Canada	7%	15%	17%	38%	22%
United States	11%	27%	20%	32%	10%

Margin of Error: 5%

Popular US rhetoric depicts Democrats as being more environmentally concerned than Republicans, perhaps reflecting the fact that Democratic politicians have typically pushed for stricter oil and gas regulations compared to their Republican counterparts. Looking specifically at US respondents, almost 60% of those identifying as Democrats and slightly less than 40% of Republicans oppose increased drilling to some degree (see *Figure 4*). Democrats also tend to express strong opposition to increases in fracking in the Great Lakes Region. Conversely, Republicans are more likely to favor increased hydraulic fracturing in the Great Lakes Region—about 50% of Republicans compared with about 30% of Democrats.

Figure 4:
Views on fracking and offshore drilling, comparison of political party (US only) and political ideology

"Increase drilling for natural gas and oil through hydraulic fracturing, also known as 'fracking,' in the Great Lakes Region."



Note: "Not sure" responses not shown.
Margin of error: 7%

Similar to the full population, both Democrat and Republican residents are more likely to somewhat favor rather than strongly favor an increase in drilling, but those who oppose a fracking increase are more likely to strongly oppose rather than somewhat oppose one. There were an insufficient number of Ontarian responses to perform a parallel analysis based upon Canadian political identification. However, the preferences of US residents self-identifying as Democrats correspond roughly with the views of residents from the entire sample who identified as somewhat or very liberal. Republican US residents are more likely to at least somewhat favor drilling increases (52%) than Ontarian and US respondents who identified as at least somewhat conservative (42%).[h]

h As residents self-identified political affiliation, their personal definition of "liberal" and "conservative" may vary. Further, understandings of what is liberal and conservative differ greatly in Canada and the US, making it difficult to draw firm conclusions about ideology and fracking. While Ontario residents were asked about party affiliation, because of the Canadian multi-party political system, the survey lacked sufficient observations to assess the opinions of Ontarians based on this factor.

Views on who should have decision-making authority regarding fracking

About half of Basin residents feel that state/provincial governments and landowners should have a great deal of authority for decisions related to hydraulic fracturing (see *Table 3*). Conversely, a small minority of residents feel that state/provincial governments and landowners should have no authority to make hydraulic fracturing-related decisions (6% for both entities), which may echo the substantial role of states and provinces in the current regulation of oil and gas resources, especially with regard to hydraulic fracturing. This is possibly reflected further by the 18% of Basin residents who feel that the federal government should have no role in fracking decisions.

Table 3
Views on decision-making authority for hydraulic fracturing-related decisions, Great Lakes Basin population

"Hydraulic fracturing operations are sometimes regulated in terms of their location, setbacks, waste disposal, chemical disclosure, and so on. For each of the following entities, please indicate whether you think they should have a great deal of authority, some authority, or no authority for such decisions regarding fracking."

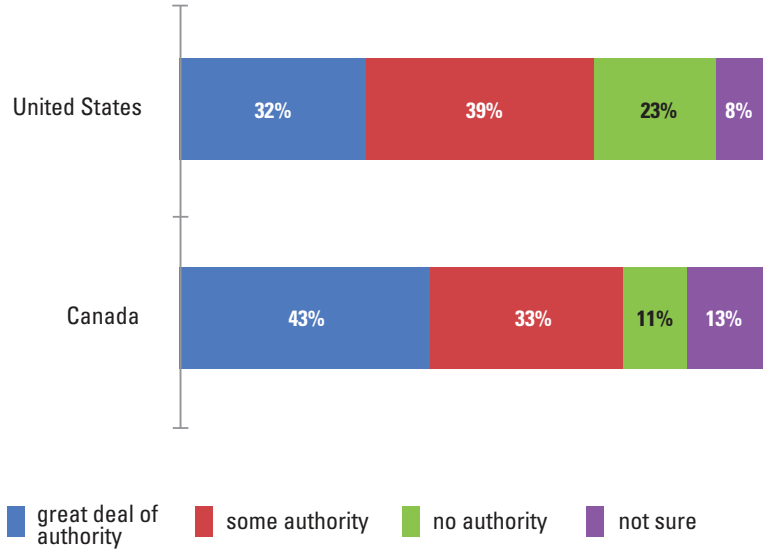
This entity should have…	Great Deal of Authority	Some Authority	No Authority	Not Sure
The Federal Government	36%	37%	18%	9%
Provincial/State Governments	47%	40%	6%	7%
Local Governments	35%	47%	11%	8%
Landowners	49%	38%	6%	7%

Margin of Error: 4%

Interestingly, even though Canadian provinces are given the central authority for natural resource regulation via the Canadian constitution, Ontarians are more likely than Americans to believe that the federal government should have a great deal of authority in hydraulic fracturing-related decisions, 43% to 32% (see *Figure 5*). Further reflecting this, Americans are about twice as likely as (21% to 11%) to believe that the federal government should have no authority in hydraulic fracturing related decisions. This may reflect historical trends in Canadian federalism wherein federal involvement in environmental issues is likely to increase alongside periods of enhanced public attention toward environmental issues.[39] Despite this, it is a surprising finding given that the federal government has been widely criticized for an apparent weakening of environmental regulation in Canada.

Figure 5
Views on federal government as decision-making authority for hydraulic fracturing related decisions, Canada versus US comparison

"Hydraulic fracturing operations are sometimes regulated in terms of their location, setbacks, waste disposal, chemical disclosure, and so on. For each of the following entities, please indicate whether you think they should have a great deal of authority, some authority, or no authority for such decisions regarding fracking."



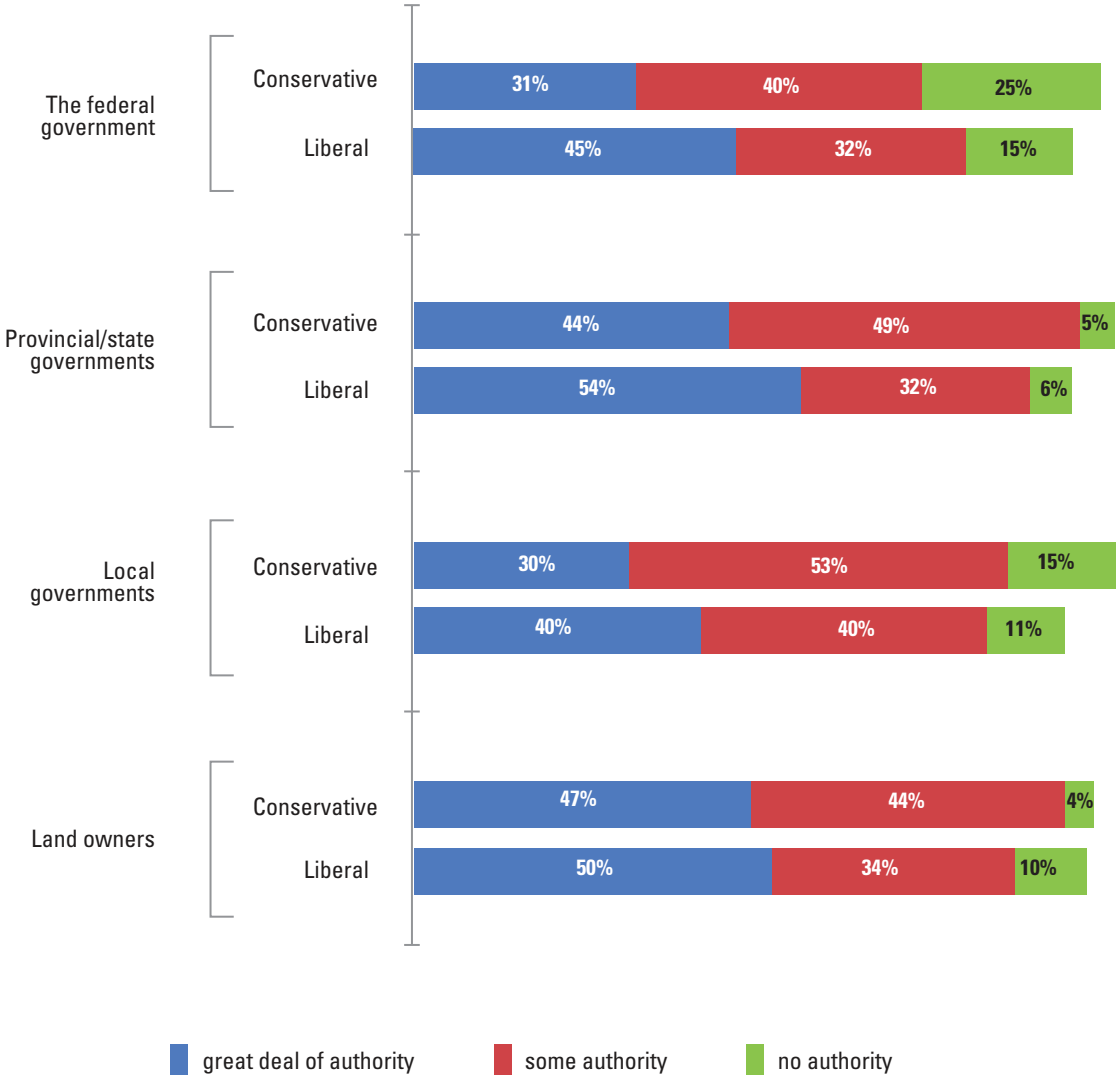
Margin of Error: 7%

The views of US residents may reflect a more state-centric approach to policymaking, especially in light of a very state-driven political climate surrounding hydraulic fracturing and a historical aversion among many Americans to federal regulations. The distribution of views regarding the decision-making authority of local governments, state/provincial governments, and landowners among American and Ontarian respondents showed no significant differences.

When assessing perspectives on decision-making authority, political outlook appears to create significant differences in the distribution of responses. Somewhat liberal and very liberal residents tend to support a stronger role for involvement from all levels of government—local, state, and federal—regarding shale gas-related decisions than somewhat conservative and very conservative residents (see *Figure 6*). More specifically, those identifying as somewhat or very conservative are more likely to favor all levels of government having some as opposed to a great deal of authority. Conservative respondents are also more likely than liberal respondents to believe the federal government should have no decision-making authority (25% to 15%). Both groups support providing landowners with a great deal of decision-making authority.

Figure 6
Views on decision-making authority for hydraulic fracturing related decisions, liberal versus conservative comparison

"Hydraulic fracturing operations are sometimes regulated in terms of their location, setbacks, waste disposal, chemical disclosure, and so on. For each of the following entities, please indicate whether you think they should have a great deal of authority, some authority, or no authority for such decisions regarding fracking."



Note: "Not sure" responses not shown.
Margin of error: 7%

Views on potential consequences of shale gas drilling

People within the Great Lakes Basin appear both concerned about the negative potential consequences of shale gas drilling and optimistic about its potential positive impacts (see *Table 4*). Much of the negative press surrounding shale gas drilling has focused on its environmental risks and its potential impacts on water supplies. This may be reflected in how people assess whether or not fracking poses risks to the environment, to human health, and to states/provinces' water supplies. Over half of residents at least somewhat agree that each of these factors are legitimate dangers posed by shale gas drilling.

Table 4
Views on potential positive and negative consequences of shale gas drilling

"Debate about shale gas drilling (also known as 'fracking') often focuses on a number of potential positive and negative consequences. To what extent do you strongly agree, somewhat agree, somewhat disagree or strongly disagree with each of the following statements about fracking?"

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	Not Sure
"Fracking offers economic benefits to communities, such as job creation and lower energy prices."	23%	34%	11%	16%	17%
"Fracking poses serious environmental risks due to spills and leaks."	39%	23%	17%	7%	15%
"Fracking for natural gas reduces carbon emissions by reducing the use of coal."	15%	31%	18%	8%	29%
"Fracking promotes energy independence by increasing the supply of fossil fuels extracted in the US/Canada."	18%	34%	16%	8%	24%
"Fracking poses serious risks to health of residents living near drilling operations."	31%	22%	18%	7%	23%
"Fracking in (state/province) poses major risks to the state's/province's water resources."	36%	23%	16%	6%	19%

Margin of error: 5%

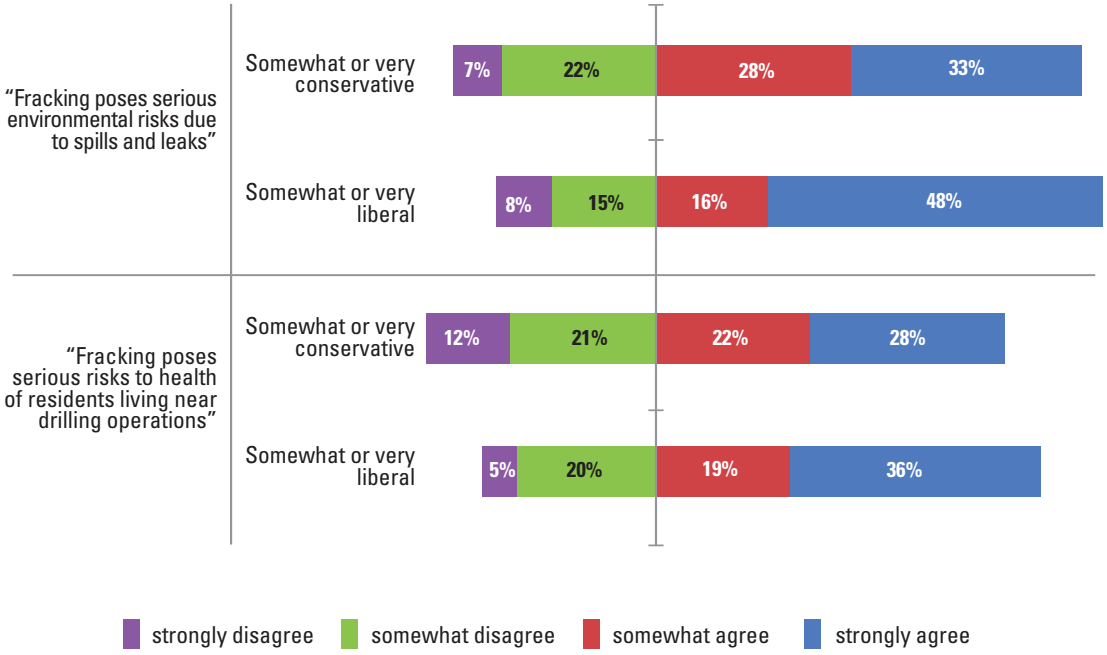
While views also reflect optimism regarding the potential positive impacts of drilling on local communities' economies and energy security, residents are more fervent about the negative potential risks than the positive potential benefits. Fewer residents strongly agree about the potential positive impacts of fracking to local economies, jobs, and energy security than strongly agree about potential environmental, health, and water supply risks. Residents are most equivocal about the potential carbon emission reductions caused by natural gas drilling enabling a reduced use of coal, although a simple majority at least somewhat agree that fracking for natural gas may reduce carbon emissions. This may reflect the lack of consensus within the research community regarding the carbon mitigation potential of natural gas. While natural gas produces less emissions of carbon dioxide, release of the greenhouse gas methane, as a drilling byproduct or through gas pipe leakages, may counteract the mitigated carbon dioxide.

Once again, most differences between US and Ontario residents assessing risks and benefits on these survey questions are not statistically significant. However, Ontarians are more likely to be unsure about many statements than their American counterparts. This may reflect the lower prominence of the issue on the public agenda, as Ontario does not currently have high shale gas potential.

Although most responses to questions related to the potential impacts of shale gas and oil drilling do not change when ideology is a controlled factor, differences in responses to whether or not fracking poses serious environmental risks may reflect the polarizing nature of environmental impacts in the context of hydraulic fracturing (see *Figure 7*). Basin residents who identified as at least somewhat liberal are more likely than those identifying as at least somewhat conservative to feel that fracking poses serious environmental risks (48% to 33%, respectively). Those who identified as liberal (36%) are also more likely than conservatives (28%) to believe that fracking poses serious health risks to residents of the Basin.

Figure 7
Views on potential environmental and health risks posed by fracking, liberal versus conservative comparison

"Debate about shale gas drilling (also known as 'fracking') often focuses on a number of potential positive and negative consequences. To what extent do you strongly agree, somewhat agree, somewhat disagree or strongly disagree with each of the following statements about fracking?"



Note: "Not sure" responses not shown.
Margin of error: 7%

Conclusions

This report assesses public opinion of hydraulic fracturing combined with horizontal drilling, or "fracking," in the Great Lakes Basin. While part of a larger public opinion survey assessment, it provides initial data to help better understand public views on shale gas and oil development in a region where there are robust shale plays. Notably, this project represents the only hydraulic fracturing public opinion survey and assessment of the Region to date that includes both the US and Canada. Although Ontario residents seem comparatively less certain about the risks and benefits of fracking, people across the Basin appear to believe there are both positive and negative potential impacts of hydraulic fracturing. Further, political ideology appears to be a key initial determinant for predicting views on fracking.

While many factors likely impact a person's view of hydraulic fracturing, this study is a starting point for further research into public perception of fracking within the entire Great Lakes Region. As the oil and gas industry in the Region develops and changes, this report may serve as a useful baseline for further study of public views in this important geographic area.

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