

A Summary Report of a 2015 Survey of the Politics of Oil and Gas Development Using Hydraulic Fracturing in Colorado

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Questions and Comments

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Objective

This report summarizes the results of a 2015 survey designed to gather perceptions of people actively involved in oil and gas development that uses hydraulic fracturing in Colorado from a diverse range of sectors and interests. The primary objective of the survey was to help understand policy issues and debates surrounding this issue, as part of an ongoing study conducted through the School of Public Affairs at the University of Colorado Denver.¹ Funding for the survey was provided by the National Science Foundation's AirWaterGas Sustainability Research Network (SRN).

Methods

The survey was administered by email through Qualtrics, an online survey platform. The survey population included 453 individuals actively involved or knowledgeable about oil and gas development in Colorado. These individuals were identified using a purposive sampling approach based on evidence in media reports, online reports, public hearings and testimony, and recommendations from interviews.² Researchers conducted 9 interviews in the spring of 2015 prior to administering the survey to help develop and test the survey instrument. The population of individuals in the sample are affiliated with multiple levels of government, industry, non-profits, citizen-based organizations, academia, consulting, and the media. The survey response period was five weeks, and three reminders were sent.

To understand the policy debates around oil and gas development in Colorado, the survey questions measured the following: respondents' positions (pro or con) on the issue; perceptions of problems and benefits related to oil and gas development; perceived levels of contentiousness of the policy debate; interactions and political activities among individuals involved; satisfaction with policy processes; and perceived environmental, economic, and political outcomes. Additionally, questions were included to gauge respondents' level of experience with different aspects of oil and gas development, their education level, and political leanings. The appendix to this report presents the summary statistics for the responses to each of the questions on the survey, including mean responses and standard deviations for questions with numeric or ordinal response categories, and the frequency and

¹ This study was approved by the Colorado Multiple Institute Review Board. Participation was entirely voluntary and individually identifiable information of the respondents is not presented or published.

² The initial target list of respondents was 630 individuals. After eliminating bounced emails from the list and individuals who were not actively involved in the issue, the final population was 453.

percentage of responses for questions with nominal response categories. Below, we highlight key findings from the survey and reference the survey question number associated with those results, as listed in the appendix. *Please refer to the appendix for all summary statistics of the results.*

Key Findings

General Description of Respondents: Two hundred thirteen people responded to the survey yielding a 47% response rate.³ Not all respondents chose to answer every question, so response rates vary by question. As this is not a public opinion survey, it is important to note that survey respondents report that the oil and gas development is a relatively high priority professionally or personally (*see Q21*) and they are moderately experienced with many aspects of the issue (*see Q22*). However, there is variance in the levels of experience, particularly with activities such as regulating oil and gas or living near drilling operations; some respondents report high levels, while others report none. Most respondents reported high levels of formal education (*see Q20*). The spread of respondents who consider themselves liberal and conservative is balanced (*see Q19*).

Positions: The positions reported by respondents on the issue of oil and gas development using hydraulic fracturing vary widely (*see Q3*).

- About a third want to continue oil and gas development at the current rate and a quarter want to limit it.
- Another third want to see oil and gas development either expanded moderately or extensively, while 12 percent want it stopped completely.
- Based on hypothetical questions about whether respondents would support either stopping/limiting or expanding oil and gas development under certain conditions (*see Q7 and Q8*), we find that positions are relatively fixed. However, there is more willingness, on average, to stop/limit oil and gas development if “convincing scientific evidence shows it is a threat to the environment or public health.” Similarly there is

³ The response rates by organizational affiliation are: local government (60 of 127 = 47%), industry (51 of 123 = 41%), environmental non-profits (31 of 61 = 51%), state government (21 of 28 = 75%), legal professionals (17 of 34 = 50%), organized citizen groups (9 of 18 = 50%), university/consultants (12 of 30 = 40%), industry non-profits (6 of 12 = 50%), other non-profits (5 of 9 = 56%), media (1 of 6 = 17% response rate), federal government (0 of 4 = 0%), and “other” (0 of 1 = 0%).

more support for significant expansion of oil and gas development if “convincing scientific evidence shows it is completely safe to the environment or public health.”

Problem Perceptions: On average, respondents agree that there are both benefits (*see Q1*) and problems (*see Q2*) associated with oil and gas development using hydraulic fracturing. The standard deviations of the scores suggest that there is substantial variance in the opinions on the various benefits and problems associated with oil and gas development. Additionally, respondents were asked if their perceptions of the benefits and risks have changed over time (*see Q10 and Q11*).

- The benefit with the highest level of agreement is the government revenue that comes from oil and gas operations.
- The problem with the highest level of agreement is the nuisance to the general public caused by truck traffic, noise, and light from well operations.
- About a third of respondents further report that their views have not changed about either the benefits (*see Q10*) or the risks (*see Q11*) since they became involved with the issue.

Level of Government for Regulation: In asking about preferences for which level of government, if any, should regulate various issues associated with oil and gas development (*see Q4*), we find the following notable patterns.

- At least half of all respondents identify state government as most appropriate for all issues, county or municipal governments are most commonly preferred for regulating nuisance issues.
- About a third of respondents see the federal government as appropriate for regulating disclosure of chemicals in fracking fluids and air emissions.
- Nearly all respondents prefer some level of regulation across the range of issues we included in the response categories to this survey question.

Political Contentiousness: In exploring the contentiousness of the issue we find:

- Over three-quarters of respondents report that the issue of oil and gas development using hydraulic fracturing is either more or far more contentious of an issue than other political issues in Colorado (*see Q5*).
- Also, on average, respondents report moderate to strong levels of agreement when asked if views of people they disagree with threaten them personally (*see Q6*). Respondents, on average, are even more certain that the views of people they

disagree with threaten the State of Colorado.

Interactions and Political Activities: Respondents report a diversity of interactions with various entities in the state, which are generally collegial and important in achieving personal or professional goals related to oil and gas development that uses hydraulic fracturing.

- The most important types of interactions, on average, are with state government, the oil and gas industry, county governments, and environmental organizations (*see Q9*). Interactions with the federal government, city governments, agricultural organizations, and citizen groups are seen as moderately important.
- Respondents report that their relationships with those they disagree with are somewhat collegial, and their relationships with those they agree with are slightly more collegial, on average (*see Q12 and Q13*).
- Coordinating activities with those they agree with is effective in meeting respondents' goals related to oil and gas development, while collaborating with those they disagree with is slightly less effective (*see Q18*). Other activities, such as brokering agreements between parties and sharing opinions with government officials, are also seen as important.

Viability of Policy Processes: The survey included questions to assess whether current policy processes are capable of addressing the political debates associated with oil and gas development.

- Nearly two-thirds of respondents note that there are organizations or individuals who have the authority and trust to help negotiate policy solutions to oil and gas issues in Colorado, while a third do not feel that such organizations or individuals exist in the state (*see Q14*).
- In inquiring about the venues that are most viable for addressing personal or professional goals for oil and gas development that uses hydraulic fracturing, respondents report that regulatory processes are most viable, while public referenda are least viable (*see Q15*). However we find substantial variance in perceptions of public referenda as a viable venue.
- Respondents, on average, report very low levels of satisfaction with both the processes and outcomes of the recent Task Force that was created to negotiate policy alternatives and to resolve disputes between local and state government in Colorado (*see Q16*).

Perceived Outcomes: The survey included a question to gauge perceptions of how various economic, political, and environmental issues related to oil and gas development have either

improved or deteriorated in the last two years (*see Q17*).

- Although there is wide variance in the responses to this question, on average, respondents ranked most of the issues as “stayed the same”.
- The issue where respondents have seen the most improvement is the availability of scientific information.
- Other issues that respondents, on average, see as showing modest improvement include protection of the environment and public health and the adoption and implementation of effective government regulations.
- Among the issues that respondents perceive as having become somewhat worse are the intensity of the political debate and communication by media with the general public about risks and benefits.
- In an open-ended question, respondents also offered a variety of recommendations (*see Q23*) for improving the politics and policy outcomes in Colorado such as better public communication, more scientific research on the health effects, more neutral parties engaged in the debates, and more transparency in decision-making, among others.

Conclusions and Next Steps

The results of this study provide insights on the opinions and perceptions of individuals in Colorado who are actively involved in or knowledgeable about oil and gas development using hydraulic fracturing. These individuals represent an array of public, private, and non-profit organizations. We find general agreement that oil and gas development poses both benefits and risks and that the state government is often the preferred level for regulating many of the risks, but there is variance across our sample in those perceptions. Generally respondents’ positions on whether to limit or expand hydraulic fracturing is set, but they are open to changing opinion if sound scientific evidence clarifying whether or not the technique is safe for the public and environment were available. There is also widespread recognition of the high level of contentiousness of this issue politically, along with active mobilization and activities to affect the politics and policy outcomes. While the respondents to our survey recognize that there are viable venues to shape the politics, there are some who are concerned that the state lacks leaders to negotiate policy solutions. Disappointment with Colorado’s recent Task Force was also widely expressed, along with concerns that there has

been a lack of improvement in many of the political, environmental, public health, and economic challenges the state is facing.

In the coming months, additional data analyses will be conducted to examine and test theory and to explore bivariate and multivariate relationships among the variables. We will also be comparing results from this survey with some of the results from a 2013 survey of a similar sample using similar questions. Finally, in 2017, we will conduct a third survey to offer insights as to how the politics of this issue has changed over time. These additional analyses and data collection efforts will be made available upon completion, with results posted on the Workshop on Policy Process Research website at the University of Colorado Denver's School of Public Affairs.

Appendix: Survey Questions and Statistics

Q1 To what extent do you agree or disagree that the following are potential benefits of oil and gas development that uses hydraulic fracturing? *(On a scale of 1 to 5: 1 = strongly disagree; 5 = strongly agree)*

N = 206	Mean Level of Agreement	Standard Deviation
National energy security	3.93	1.31
Job creation	3.94	1.17
Increase in government revenue through severance, property, and sales taxes	4.01	1.09
A bridge toward renewable energy sources from the natural gas produced	3.30	1.40
Fuel switching from coal to natural gas	3.66	1.15
Reduction of energy costs	3.59	1.28
Decrease in greenhouse gases	3.09	1.38

Q2 To what extent do you agree or disagree that the following are potential problems related to oil and gas development that uses hydraulic fracturing? *(On a scale of 1 to 5: 1 = strongly disagree; 5 = strongly agree)*

N = 206	Mean Level of Agreement	Standard Deviation
Insufficient capacity by state agencies for regulation	3.09	1.57
Boom-and-bust economic cycles from natural gas development	3.69	1.22
Contamination of ground and surface water supplies	3.10	1.48
Degradation of air quality	3.39	1.45
Nuisance to the general public caused by truck traffic, noise, and light from well operations	3.91	1.14
Competition over available water supplies	3.19	1.47
Increase in greenhouse gases	3.26	1.37
Public health impacts from exposure to drilling operations	3.07	1.45

Q3 Please indicate what comes closest to your current position in relation to oil and gas development that uses hydraulic fracturing. It should be...

N = 196	Frequency of Responses	Percent of Responses
Stopped	24	12.2%
Limited	49	25.0%
Continued at current rate	61	31.1%
Expanded moderately	34	17.3%
Expanded extensively	28	14.3%

Q4 If you were to choose between no regulation or one level of government to regulate the following issues related to oil and gas development that uses hydraulic fracturing, which would you choose?

N = 204*	No regulation	Municipal government	County government	State government	Federal government
Water quality	1.0%	3.9%	5.9%	62.7%	26.5%
Air emissions	1.0%	2.5%	5.9%	57.8%	32.8%
Disclosure of chemicals in hydraulic fracturing fluids	2.4%	3.4%	3.4%	55.3%	35.4%
Setbacks of wells from occupied buildings or natural features	.5%	21.5%	22.0%	47.8%	8.3%
Location of the wellhead	2.9%	20.6%	21.1%	50.5%	4.9%
Reclamation of old well sites	1.0%	7.4%	5.9%	71.6%	14.2%
Responding to accidents at the well site	.5%	12.7%	25.9%	52.7%	8.3%
Water supply	4.4%	10.8%	10.3%	65.2%	9.3%
Disposing or treating produced water	0%	5.9%	7.8%	63.4%	22.9%
Mitigating public nuisances caused by truck traffic, noise, and light from well site operations	1.5%	30.2%	45.4%	20.5%	2.4%
Safety of well operators at the well site	.5%	2.9%	3.4%	57.4%	35.8%

*Frequency of responses per category not shown for ease of readability of the table.

Q5 Many political issues in a democracy can be characterized as contentious. Compared to other political issues in Colorado, the level of political contention about oil and gas development that uses hydraulic fracturing in Colorado is ...

N = 205	Frequency of Responses	Percent of Responses
Far less contentious	1	.5%
Less contentious	6	2.9%
Just as contentious	44	21.5%
More contentious	107	52.2%
Far more contentious	47	22.9%

Q6 Do the views and actions of those you disagree with on oil and gas development that uses hydraulic fracturing...

N = 205	Mean Level of Threat	Standard Deviation
Threaten you personally or professionally (e.g., your job, values, income, or quality of life)? <i>(On a scale of 1 to 5: 1 = not at all; 5 = a great deal)</i>	3.03	1.36
Threaten the state of Colorado? <i>(On a scale of 1 to 5: 1 = not at all; 5 = a great deal)</i>	3.80	1.18

Q7 Please indicate the extent that you agree or disagree with the following statements.

(On a scale of 1 to 5: 1 = strongly disagree; 5 = strongly agree)

I would support government decisions that would significantly EXPAND oil and gas development that uses hydraulic fracturing in Colorado if...

N = 196	Mean Level of Agreement	Standard Deviation
Convincing scientific evidence shows it is completely safe to the environment or public health	3.52	1.15
Convincing scientific evidence shows it boosts the economy	3.05	1.28
Colorado regulators passed and enforced stricter regulations	2.89	1.22
The state provides more authority to local government	2.78	1.34
A majority of Coloradans support its expansion	2.55	1.13
Colorado adopted an energy plan that included a transition away from all fossil fuels	2.76	1.28

Q8 I would support government decisions that would LIMIT or STOP oil and gas development that uses hydraulic fracturing in Colorado if...

N = 197	Mean Level of Agreement	Standard Deviation
Convincing scientific evidence shows it is a significant threat to the environment or public health	3.77	1.25
Convincing scientific evidence shows it hurts the economy	3.37	1.27
A majority of Coloradans support a ban	2.60	1.36
Mineral right owners were compensated for their potential lost income	2.97	1.24
A catastrophic disaster or emergency occurred from oil and gas development using hydraulic fracturing	3.13	1.36
Colorado significantly expanded its renewable energy production	3.08	1.31

Q9 To what extent are the interactions with the following groups important in achieving your personal or professional goals related to oil and gas development that uses hydraulic fracturing? (On a scale of 1 to 5; 1 = not at all important and 5 = very important)

N = 193	Mean Importance of Interactions	Standard deviation
Federal government	3.46	1.26
State government	4.35	.82
County government	3.82	1.06
City government	3.41	1.31
Oil and gas industry	3.99	1.11
Oil and gas professional associations	3.40	1.23
Environmental or conservation groups	3.62	1.13
Real estate developers or home builders	2.81	1.19
Agricultural organization or farmers	3.31	1.13
Organized citizen groups	3.40	1.14
Churches or other religious organizations	2.13	1.18
Universities or colleges	3.09	1.25
Consulting firms or think tanks	2.51	1.13
Informal personal networks	2.77	1.28
News media	2.70	1.26

Q10 Since I became involved or aware of oil and gas development that uses hydraulic fracturing...

N = 193	Frequency of Responses	Percent of Responses
I have become more convinced about the benefits	76	39.4%
My views of the benefits have not changed	63	32.6%
I have become less convinced of the benefits	54	28.0%

Q11 Since I became involved or aware of oil and gas development that uses hydraulic fracturing...

N = 193	Frequency of Responses	Percent of Responses
I have become more concerned about the risks	74	38.5%
My views of the risks have not changed	53	27.6%
I have become less concerned about the risks	65	33.9%

Q12 How would you describe your working professional relationship with people you disagree with on the issue of oil and gas development that uses hydraulic fracturing in Colorado? (On a scale of 1 to 4: 1 = Not collegial at all; 4 = Completely collegial)

N = 193	Mean Level of Collegiality	Standard Deviation
Collegiality of relationships of those you disagree with	2.16	.66

Q13 How would you describe your working professional relationship with people you agree with on the issue of oil and gas development that uses hydraulic fracturing in Colorado? (On a scale of 1-4: 1 = Not collegial at all; 4 = Completely collegial)

N = 193	Mean Level of Collegiality	Standard Deviation
Collegiality of relationships of those you agree with	2.38	.83

Q14a Are there any organizations or individuals who have the authority and trust to help negotiate policy solutions to oil and gas issues in Colorado?

N = 189	Frequency of Responses	Percent of Responses
Yes	139	69.8%
No	57	30.2%

Q14b If yes, please indicate the names of any such organizations or individuals:

Responses varied widely and include specific environmental organizations; the Colorado Oil and Gas Conservation Commission, among other state agencies; the Hickenlooper administration; Colorado universities; the Colorado Oil and Gas Association; and some individual leaders of public, private and non-profit organizations.

Q15 To what extent do you think the following ways to influence government are viable for addressing your personal or professional goals for oil and gas development that uses hydraulic fracturing? (On a scale of 1 to 5: 1 = Not viable at all; 5 = Completely viable)

N = 191	Mean Level of Viability	Standard Deviation
General elections of government officials	3.23	1.20
Public referendum	2.58	1.34
Regulatory process	3.70	1.16
Legislative process	3.17	1.16
Court/legal process	3.22	1.15

Q16 In general, to what extent are you satisfied or dissatisfied with...

(On a scale of 1 to 4: 1 =Not satisfied; 4 = Very Satisfied, with a response option for “don’t know”)

N = 192	Don’t Know (N)	Mean Satisfaction*	Standard Deviation
The decision-making process of the Governor’s Task Force?	11	1.60	.70
The recommendations of the Governor’s Task Force?	11	1.66	.71

*The mean level of satisfaction is calculated based on the 181 respondents who responded with a level of satisfaction.

Q17 Over the past two years, have the following issues in relation to oil and gas development that uses hydraulic fracturing in Colorado become worse, stayed the same, or become better?

(On a scale of -2 to +2: -2 =Much worse; 0 = About the Same; +2 = Much better)

N = 176	Mean Level of Change in Quality	Standard Deviation
Adoption and implementation of effective government regulations	.25	1.09
Protection of the environment and public health	.36	1.14
Economic benefits	.27	1.15
Intensity of the political debate	-.54	1.00
Communication by media with the general public about risks and benefits	-.35	1.10
Relations between state and local governments	-.21	.93
The availability of scientific or technical information	.64	.79
Government decision making processes	-.02	.96
Greenhouse gas emissions	.07	1.15
Consideration of vulnerable populations in political decision making	-.10	1.00
Public trust in the COGCC	-.14	1.04
Environmental impacts and safety of hydraulic fracturing operations	.22	1.22

Q18 Over the past two years, to what extent have you engaged in the following activities and used them effectively in achieving your personal or professional goals related to oil and gas development that uses hydraulic fracturing? (On a scale of 1 to 3: 1 =Not effective; 3 = Very effective, with a response option for “not engaged”)

N = 177	Not Engaged (N)	Mean Level of Effectiveness of those Engaged*	Standard Deviation
Brokering agreements between parties	63	2.19	.63
Countering arguments made by people you disagree with	18	1.99	.58
Mobilizing the public	66	2.08	.66
Collaborating with people you disagree with	38	1.89	.62
Coordinating political activities with allies	69	2.28	.56
Providing information to government officials	27	2.15	.62
Providing information to the news media	50	1.92	.56
Sharing your opinion with government officials	28	2.08	.63

Q19 When it comes to politics, do you usually consider yourself...

N = 186	Frequency of Responses	Percent of Responses
Extremely liberal	9	4.8%
Liberal	64	34.4%
Moderate	78	41.9%
Conservative	34	18.3%
Extremely conservative	1	.5%

Q20 Please indicate the highest level of education you have attained:

N = 189	Frequency of Responses	Percent of Responses
High School Graduate	2	1.1%
Some College	12	6.3%
Bachelor's Degree	40	21.2%
Master's or Professional Degree	78	41.3%
Ph.D. or M.D.	13	6.9%
J.D.	44	23.3%

Q21 How much of a priority is it for you professionally or personally to deal with political and policy issues related to oil and gas development that uses hydraulic fracturing? (On a scale of 1 to 5: 1 =Not a priority; 5 = The highest priority)

N = 189	Mean Level of Priority	Standard Deviation
Priority of dealing with the issues related to oil and gas development that uses hydraulic fracturing	3.83	.77

Q22 Please indicate your level of experience with the following: (On a scale of 1 to 4: 1 =No experience; 4 =A lot of experience)

	Mean Level of Experience	Standard Deviation
Researching or conducting science on the technical aspects of oil and gas development	2.72	1.08
Reading scientific studies about the economic, environmental, and public health impacts of oil and gas development	3.32	.73
Analyzing economic or financial impacts of oil and gas development	2.84	.88
Planning, working, or managing oil and gas operations	2.11	1.20
Owning or leasing mineral or surface rights toward oil and gas development	1.87	1.13
Living within visual proximity of oil and gas operations	2.19	1.18
Regulating or governing oil and gas development	2.67	1.22
Participating in political activities to influence government decisions about oil and gas development	2.91	1.10

Q23 What would you recommend, if anything, that might lead to better processes, policies, and outcomes in oil and gas development that uses hydraulic fracturing in Colorado?

A diverse set of responses to this question were received. Some sample recommendations include:

- Better information flow from operators to regulators.
- We need facts about health impacts.
- Neutral or trusted entities (i.e. state government, universities, professors, health professionals) need to come out more publicly and join the debate.
- Independent scientific evaluations of the process and complete open records of substances injected in the processes.
- Emphasis on facts in reporting rather than emotional claims.
- More actual data and scientific analysis, by 3rd parties
- Enforcement of the regulations and inspections of the operations.
- Continued education of actual oil and gas operations for all individuals and group who are interested in learning.
- Local governments should have final authority regarding siting of wells. COGCC should play a consulting - but not determinative - role in helping local governments avoid takings issues.

- ...transparency is key to many things that arise as a problem. The more transparency, the more informed a person can be. The hope is that more information will leave people feeling more included in the process, rather than an outsider just trying to be heard.
- Recognize the constitutional rights of citizens to protect their own health, safety and environment by banning hydraulic fracturing in their communities.
- Convene stakeholders with opposing views in order to fully inform any argument for or against current oil and gas practices.
- More public education. Breaking down the bias barriers that polarize groups on oil and gas issues. Recognize economic benefits of oil and gas to communities.
- Engage the scientific community and community activists to come up with solutions that are based on facts and experiences by real people living with fracking.
- Better engagement and education of the general public by the oil and gas industry.
- Much better communication and education about the critical issues.
- Less propaganda in the media