A Summary Report of a 2016 Survey of the Politics of Oil and Gas Development Using Hydraulic Fracturing in the United States

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Questions and Comments

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Objective

This report summarizes the results of a 2016 survey designed to gather perceptions of people actively involved in oil and gas development that uses hydraulic fracturing in the United States 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 Alfred P. Sloan Foundation.

Methods

The survey was administered by email through Qualtrics, an online survey platform. The survey population included 468 individuals actively involved or knowledgeable about oil and gas development at the national level or on federal lands in the United States. 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 11 interviews in Autumn 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 eight 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' policy positions 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' levels of experience with different aspects of oil and gas development, their education, 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 percentage of

[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 nor published.

[2] The initial target list of respondents was 595 individuals. After eliminating bounced emails from the list and individuals who were not actively involved in the issue, the final population was 468.

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*: 133 people responded to the survey, yielding a 28% 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 reported 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. Most respondents reported that they are experienced in researching, reading, and analyzing issues related to hydraulic fracturing, but few respondents are experienced with direct contact with oil and gas operations, such as living near a well site or owing mineral or surface rights. Most respondents reported high levels of formal education (*see Q20*). Finally, the spread of respondents' political ideology is biased somewhat towards liberal stance; only 12% of respondents reported either a conservative or extremely conservative political stance (*see Q19*). All others reported predominately a moderate or liberal stance.**

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

- **About a quarter wanted to continue oil and gas development at the current rate and a third want to limit it.**
- **Another quarter wanted to see oil and gas development either expanded moderately or extensively, while nearly 19 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 Q4 and Q5*), we found that positions are relatively fixed. Note that questions regarding respondents' willingness to expand were shown only to those respondents**

[3] The response rates by organizational affiliation are: Environmental or Conservation Groups (51 of 151 = 34%), Consulting Firms or Think Tanks (20 of 59 = 34%), Federal Government (15 of 83 = 18%), Oil and Gas Industry (14 of 91 = 15%), Oil and Gas Professional Associations (9 of 13 = 69%), Universities or Colleges (9 of 40 = 23%), Other (8 of 17 = 47%), Organized Citizen Groups (4 of 11 = 36%), and State Government (3 of 3 = 100%).

whose positions were "continued at current rate", "limited", or "stopped" (*see Q4*). These respondents, on average, disagreed with the expansion of oil and gas development, even if the majority of Americans supported such an initiative or if stricter regulations were passed. These respondents showed the most willingness to change their position if convincing scientific evidence shows it is completely safe; however, the general response was not overwhelming in agreement but rather relatively less disagreement. Similar results were found for those respondents whose position was "expanded moderately" or "expanded extensively". When faced with questions regarding the circumstances under which these respondents would support limiting oil and gas development (*see Q5*), there was generally widespread disagreement regardless of the situation. Again, the highest support was under conditions of convincing scientific evidence proving a significant threat to the environment or public health, but only slightly more than compared with other prompts.

Problem Perceptions: **On average, respondents agreed 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 Q11 and Q12*).**

- **The benefit with the highest level of agreement is the government revenue that comes from oil and gas operations, followed closely by job creation.**
- **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, followed by the boom-and-bust economic cycles from natural gas development.**
- **Just more than a third of respondents reported that their views have not changed about the benefits (*see Q11*) but that since "becoming involved or aware of oil and gas development that uses hydraulic fracturing", more than half of the respondents "have become more concerned about the risks" (*see Q12*).**

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 Q6*), we find the following notable patterns.**

- **Respondents were often generally split between the federal government and state government for the regulator of choice for most issues.**
- **However, for regulation of air emissions and disclosure of chemicals in hydraulic**

fracturing fluids, the federal government was heavily preferred. The only area in which local government was most commonly preferred was for the regulation of public nuisance issues.

- **All respondents, with the exception of just one who preferred "no regulation" on location of the wellhead," preferred some level of regulation across the range of issues we included in the response categories to this survey question.**
- **When asked about regulation on federal lands (*see Q7*), more than half of the respondents felt that responsibility for regulation should be shared between the federal government and state/local government.**

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

- **Over three-quarters of respondents reported that the issue of oil and gas development using hydraulic fracturing was just as contentious, more contentious, or far more contentious of an issue than other political issues in the United States (*see Q8)*.**
- **Also, on average, respondents reported a moderate level of agreement when asked if the views of people they disagree with threaten them personally or professionally (*see Q9)*. Respondents, on average, were even more certain that the views of people they disagree with threaten the United States.**

Interactions and Political Activities: **Respondents reported a diversity of interactions with various entities, 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 were, in descending order, with the Environmental Protection Agency (EPA), state governments, federal elected officials, environment or conservation groups, and federal legislators (*see Q10*). Interactions with industry, organized citizen groups, the Department of Energy, and local governments were seen as moderately important. The least important interactions were with the Forest Service and consulting firms or think tanks.**
- **Respondents reported that their relationships with those they disagree with are somewhat collegial, and their relationships with those they agree with were slightly more collegial, on average (*see Q13 and Q14)*.**
- **Collaborating activities with those they agree with was most effective in meeting respondents' goals related to oil and gas development, while collaborating with those they disagree with was much less effective (*see Q17)*. Other activities perceived as important were mobilizing the public and providing information to or sharing opinions with the media and government officials. Brokering agreements, implementing**

policies, and filing lawsuits were deemed the least effective activities used to meet respondents' goals.

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 three-fourths of respondents noted that there are organizations or individuals who have the authority and trust to help negotiate policy solutions to oil and gas issues in the United States *(see Q15)*.**
- **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 reported that general elections of government officials were most viable, while state or local ballot measures were least viable (*see Q16)*. However, we find substantial variance in perceptions of public referenda as a viable venue.**

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 Q18)*.**

- **Although there was wide variance in the responses to this question, on average, respondents ranked most of the issues as "worse."**
- **The issue where respondents have seen the most improvement was the availability of scientific information; however, the average improvement in quality was modest.**
- **The other issues that respondents, on average, ranked as showing slight improvement included the adoption and implementation of effective government regulations, communication by the media and environmental impacts and safety of hydraulic fracturing operations.**
- **Respondents perceived public trust in federal regulatory processes as having seen the biggest deterioration in the past two years. Other notable deteriorations were the consideration of vulnerable populations in political decision making, economic benefits, and relations between federal and state governments.**
- **In an open-ended question, respondents offered a variety of recommendations (*see Q23*) for improving the politics and policy outcomes in Colorado such as stakeholder engagement in the issue, honest dialogue by elected officials, better energy education**

for policy makers and the public, and continued research by industry and academia.

Conclusions and Next Steps

The results of this study provide insights on the opinions and perceptions of individuals in the United States 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 found general agreement that oil and gas development poses both benefits and risks and that there was a lack of consensus on the preferred level for regulating many of the risks, but there was variance across our sample in those perceptions. Generally, respondents' positions on whether to limit or expand hydraulic fracturing were set, but they reported that they are open to changing their 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, particularly at a national level, along with active mobilization and activities to affect the politics and policy outcomes. While the respondents to our survey recognized that there are viable venues to shape the politics, there are some who were concerned about a lack of leaders to negotiate policy solutions.

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 and 2015 survey in Colorado using similar questions. Finally, in early 2017, we will conduct a third survey to offer insights as to how the politics of this issue have 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 = 115	Mean Level of Agreement	Standard Deviation
National energy security	3.43	1.50
Job creation	3.63	1.31
Increase in government revenue through severance, property, and sales taxes	3.64	1.19
A bridge toward renewable energy sources from the natural gas produced	2.78	1.54
Fuel switching from coal to natural gas	3.66	1.39
Reduction of energy costs	3.50	1.35
Decrease in greenhouse gases	2.88	1.54

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 = 115	Mean Level of Agreement	Standard Deviation
Insufficient capacity by federal agencies for regulation	3.53	1.40
Boom-and-bust economic cycles from natural gas development	3.92	1.13
Contamination of ground and surface water supplies	3.50	1.57
Degradation of air quality	3.51	1.51
Nuisance to the general public caused by truck traffic, noise, and light from well operations	4.09	1.07
Competition over available water supplies	3.67	1.27
Increase in greenhouse gases	3.30	1.52
Public health impacts from exposure to drilling operations	3.47	1.52

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 = 113	Frequency of Responses	Percent of Responses
Stopped	19	18.8%
Limited	39	34.5%
Continued at current rate	29	25.7%
Expanded moderately	16	14.6%
Expanded extensively	10	8.4%

Q4 Please indicate the extent that you agree or disagree with the following statements.

I would support government decisions that would significantly EXPAND oil and gas development that uses hydraulic fracturing in Colorado if… ***(On a scale of 1 to 5: 1 = strongly disagree; 5 = strongly agree)***

N = 84*	Mean Level of Agreement	Standard Deviation
Convincing scientific evidence shows it is completely safe to the environment or public health	3.06	1.36
Convincing scientific evidence shows it boosts the economy	2.42	1.14
Stricter regulations are passed and enforced	2.84	1.28
If local governments had more authority	2.45	1.13
If the federal government had more authority	2.63	1.27
A majority of Americans support its expansion	2.11	0.95
The US adopted an energy plan that included a transition away from all fossil fuels	2.85	1.18

*** This question was shown only to respondents whose positions (Q3) were reported as "Stopped", "Limited", or "Continued at current rate".**

Q5 I would support government decisions that would LIMIT or STOP oil and gas development that uses hydraulic fracturing in Colorado if…

N = 53*	Mean Level of Agreement	Standard Deviation
Convincing scientific evidence shows it is a significant threat to the environment or public health	**3.51**	**1.09**
Convincing scientific evidence shows it hurts the economy	**3.07**	**1.19**
A majority of Americans support a ban	**2.15**	**0.95**
Mineral right owners were compensated for their potential lost income	**2.49**	**1.09**
A catastrophic disaster or emergency occurred from oil and gas development using hydraulic fracturing	**2.64**	**1.21**
The US significantly expanded its renewable energy production	**2.26**	**1.04**

*** This question was shown only to respondents whose positions (Q3) were reported as "Continued at current rate", "Expanded moderately", or "Expanded extensively".**

Q6 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 = 107*	No regulation	Local government	State government	Federal government
Water quality	0%	4.7%	43.0%	52.3%
Air emissions	0%	1.9%	32.7%	65.4%
Disclosure of chemicals in hydraulic fracturing fluids	1.0%	1.9%	37.0%	60.1%
Setbacks of wells from occupied buildings or natural features	0%	36.1%	46.3%	17.6%
Location of the wellhead	1.0%	35.2%	48.2%	15.6%
Water supply	0%	11.2%	63.6%	25.2%
Disposing or treating produced water	0%	1.0%	50.0%	50.0%
Mitigating public nuisances caused by truck traffic, noise, and light from well site operations	0%	50.0%	36.1%	13.9%
Safety of well operators at the well site	0%	2.8%	45.4%	51.8%
Induced seismicity	0%	0%	47.7%	52.34%

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

Q7 On *federal lands*, what level of authority should local and/or state governments have to regulate issues related to oil and gas development that uses hydraulic fracturing?

N = 104	Frequency of Responses	Percent of Responses
None	16	15.4%
Limited	26	25.0%
Shared	53	51.0%
Complete	9	8.6%

Q8 Many political issues in a democracy can be characterized as contentious. Compared to other political issues in the United States, the level of political contention about oil and gas development using hydraulic fracturing in Colorado is…

N = 107	Frequency of Responses	Percent of Responses
Far less contentious	**3**	**2.8%**
Less contentious	**16**	**15.0%**
Just as contentious	**42**	**39.3%**
More contentious	**36**	**33.7%**
Far more contentious	**10**	**9.2%**

Q9 Do the views and actions of those you disagree with on oil and gas development that uses hydraulic fracturing...

N = 108	Mean Level of Threat	Standard Deviation
Threaten you personally or professionally (e.g., your job, values, income, or quality of life)? ***(On a scale of 1 to 5: 1 = not at all; 5 = a great deal)***	**2.57**	**1.40**
Threaten the United States? ***(On a scale of 1 to 5: 1 = not at all; 5 = a great deal)***	**3.40**	**1.37**

Q10 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 = 103	Mean Importance of Interactions	Standard deviation
Federal legislators	**3.82**	**1.06**
Federal elected officials	**3.88**	**1.09**
State government	**3.99**	**0.94**
Local governments	**3.28**	**1.12**
Bureau of Land Management	**3.51**	**1.32**
Department of Energy	**3.14**	**1.31**
Environmental Protection Agency	**4.14**	**1.08**
Forest Service	**2.99**	**1.29**
Oil and gas professional associations	**3.20**	**1.20**
Oil and gas industry	**3.43**	**1.19**
Environmental or conservation groups	**3.85**	**0.98**
Organized citizen groups	**3.52**	**1.20**
Universities or colleges	**3.12**	**1.19**
Consulting firms or think tanks	**2.71**	**1.13**
News media	**3.48**	**1.27**

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

N = 105	Frequency of Responses	Percent of Responses
I have become more convinced about the benefits	**33**	**31.4%**
My views of the benefits have not changed	**32**	**30.5%**
I have become less convinced of the benefits	**40**	**38.1%**

Q12 Since I became involved or aware of oil and gas development that uses hydraulic fracturing...

N = 105	Frequency of Responses	Percent of Responses
I have become more concerned about the risks	**55**	**52.4%**
My views of the risks have not changed	**23**	**21.9%**
I have become less concerned about the risks	**27**	**25.7%**

Q13 How would you describe your working professional relationship with people you <u>disagree</u> 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 = 104	Mean Level of Collegiality	Standard Deviation
Collegiality of relationships of those you disagree with	**2.23**	**0.75**

Q14 How would you describe your working professional relationship with people you <u>agree</u> 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 = 104	Mean Level of Collegiality	Standard Deviation
Collegiality of relationships of those you agree with	**3.03**	**0.61**

Q15a Are there any organizations or individuals who have the authority and trust to help negotiate policy solutions to oil and gas issues in the United States?

N = 98	Frequency of Responses	Percent of Responses
Yes	**72**	**73.5%**
No	**26**	**26.5%**

Q15b If yes, please indicate the names of any such organizations or individuals:

Responses varied widely and include specific environmental organizations; the Environmental Protection Agency; the Obama administration; the Environmental Defense Fund; Food and Water Watch; the Interstate Oil and Gas Compact Association; and some state-level leadership.

Q16 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 = 101	Mean Level of Viability	Standard Deviation
General elections of government officials	**4.14**	**0.89**
Federal regulatory process	**3.61**	**1.03**
Legislative process	**3.18**	**1.09**
State or local regulatory process	**3.62**	**0.99**
State or local ballot measures	**3.01**	**1.28**
Court/legal process	**3.37**	**1.11**

Q17 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 = Engaged, but not effectively; 2 = Engaged and moderately effective; 3 = Engaged and very effective, with a response option for "not engaged")*

N = 102	Not Engaged (N)	Mean Level of Effectiveness of those Engaged	Standard Deviation
Brokering agreements between parties	**64**	**1.92**	**0.64**
Countering arguments made by people you disagree with	**13**	**2.13**	**0.64**
Collaborating with people you disagree with	**34**	**1.68**	**0.66**
Collaborating with people you agree with	**10**	**2.45**	**0.54**
Mobilizing or consulting with public	**28**	**2.22**	**0.67**
Providing information to or sharing your opinion with government officials	**14**	**2.27**	**0.66**
Providing information to or sharing your opinion with the news media	**20**	**2.29**	**0.58**
Conducting and disseminating research	**24**	**2.34**	**0.68**
Implementing policies or programs	**55**	**1.96**	**0.70**
Filing lawsuits or opinions with courts	**73**	**1.93**	**0.77**
Using social media	**41**	**2.00**	**0.69**

Q18 Over the past two years, have the following issues in relation to oil and gas development that uses hydraulic fracturing in the United States 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 = 102	Mean Level of Change in Quality	Standard Deviation
Public trust in federal regulatory processes	**-0.38**	**0.86**
Protection of the environment and public health	**-0.05**	**1.06**
Economic benefits	**-0.27**	**1.10**
Greenhouse gas emissions	**-0.16**	**1.27**
Consideration of vulnerable populations in political decision making	**-0.28**	**0.88**
Adoption and implementation of effective government regulations	**0.19**	**0.94**
BLM rules and regulations on hydraulic fracturing on Federal and Indian lands	**-0.04**	**0.97**
Intensity of the political debate	**-0.08**	**0.90**
Communication by media with the general public about risks and benefits	**0.16**	**0.88**
The availability of scientific or technical information	**0.93**	**0.93**
Relations between federal and state governments	**-0.32**	**0.74**
Environmental impacts and safety of hydraulic fracturing operations	**0.17**	**0.90**

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

N = 100	Frequency of Responses	Percent of Responses
Extremely liberal	**11**	**11.05%**
Liberal	**40**	**40.0%**
Moderate	**37**	**37.0%**
Conservative	**10**	**10.0%**
Extremely conservative	**2**	**2.0%**

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

N = 102	Frequency of Responses	Percent of Responses
Some College	**2**	**1.96%**
Bachelor's Degree	**27**	**26.47%**
Master's or Professional Degree	**39**	**38.24%**
J.D.	**21**	**20.59%**
Ph.D. or M.D.	**13**	**12.75%**

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 = 103	Mean Level of Priority	Standard Deviation
Priority of dealing with the issues related to oil and gas development that uses hydraulic fracturing	**3.69**	**1.01**

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)*

N = 103	Mean Level of Experience	Standard Deviation
Researching or conducting science on the technical aspects of oil and gas development	**2.72**	**1.28**
Reading scientific studies about the economic, environmental, and public health impacts of oil and gas development	**3.58**	**0.62**
Analyzing economic or financial impacts of oil and gas development	**2.98**	**0.87**
Planning, working, or managing oil and gas operations	**1.62**	**1.09**
Owning or leasing mineral or surface rights toward oil and gas development	**1.36**	**0.86**
Living within visual proximity of oil and gas operations	**1.75**	**1.07**
Regulating or governing oil and gas development	**1.79**	**1.12**
Participating in political activities to influence government decisions about oil and gas development	**2.92**	**1.08**

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 the United States?

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

- Stakeholder engagement on both sides of the issue.
- Continued research by industry and academia into more efficient and environmentally sound technologies…the quality of research by EPA is very low. Given that agency budgets won't allow for the hiring needed to improve its scientific capability in hydraulic fracturing, EPA should leave it to the states and academia.
- Open and thoughtful dialogue on a narrow topic. Presentation from industry, academic, think tanks and grass-root groups and policy makers in one summit.
- An honest dialogue, by elected leadership in particular, regarding the nation's dependency on oil and natural gas, and the critical role of hydraulic fracturing in producing that oil and natural gas.
- Prohibit fossil fuel companies from spending unlimited amounts of money on lobbying and elections.
- Socialize the means of production and political governing system.
- More respect by elected officials of the rapidly emerging science on environmental and health impacts.
- Better energy education for policy makers and the public.
- People should stop focusing on the "hydraulic fracking" aspect, because that is simply the latest technology for oil and gas production. The issue is that the oil and gas extraction and production industry is, and has always been, very lightly regulated, and often exempted from regulation.
- Stronger regulations, elimination of loopholes enjoyed by oil and gas industry to seven major environmental laws, including Safe Drinking Water Act.

- Better public participation and a more democratic process.
- Implement the recommendations of the Secretary of Energy's Advisory Board (SEAB) Natural Gas Subcommittee report on hydraulic fracturing.