O'Neill UNDERGRADUATE HONORS THESIS

Industry Bias in State Level Hydraulic Fracturing Regulation

The Colorado Case Study

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Abstract

Hydraulic fracturing (fracking) has cemented itself as a cornerstone technology in the energy extraction markets of the United States. In that time, state-level governments have been the primary regulators with state legislatures and agencies providing the policies for the fracking industry. While the fracking industry has grown, environmental groups and municipal governments have become increasingly concerned about it. The question of industry bias in the political process is one of continued and increasing concern for researchers of the policymaking process. While metrics like campaign contributions have been used to examine this topic, researchers have also examined statistical bias in agency rulemaking to study whether policy is slanted toward certain groups, and, specifically, industry interests. This paper attempts to extend this body of research to localized environmental issues being handled at the state level through a case study of Colorado rulemaking on fracking. The analysis shows a similar trend to the body of literature with a trend towards industry bias. While the results are not definitive, this research adds context through the close examination of a smaller set of rules and comments and begins to assess what aspects of industry comments are more persuasive, as well as trends in other comment types.

Introduction

The extraction of natural gas through hydraulic fracturing (fracking) is an energy technology that has rapidly moved from emerging to a cornerstone of the industry in the United States. The burning of natural gas as an energy source is largely seen, at least on the surface, as a cleaner alternative to coal or oil, and the fracking boom in recent years has lowered the production cost of liquid natural gas, making it a prime energy source and piece of local economies in several regions of the United States[1]. However, myriad concerns surrounding health effects, seismic activity, and increased reliance on fossil fuels have led to fracking being an incredibly contentious issue in the American political scene, mainly focused in communities that have received intense fracking industry growth[2]. As with other industries in the past, this growth raised questions surrounding the role of regulations and what interests should be the most highly valued, as well as what level of government should have delegated regulatory responsibilities. Environmental issues present a not unique but consistent debate on the role of state governments in regulatory regimes, with supporters of strong states identifying localized issues requiring localized solutions as a primary benefit to state control[3].

However, fracking's place in the energy market and environmental federalism more broadly naturally leads to lines of questioning surrounding what other factors might be at play when state governments are unable to manage the issue effectively, including the role of possible industry bias in legislation, agency rulemaking, and enforcement. The question of the "bias towards business" in enforceable policy of the United States has been a consistent debate between

[1] Gilbert and Sovacool 2017
[2] Zanocoo et al. 2018
[3] Konisky and Woods 2018

stakeholders across policy areas and government agencies[4]. This research will examine state level rulemaking to observe if industry comments are statistically more likely to be listened to by state agencies and, if so, what story the content of their submissions tell with regard to why this is.

Context of Hydraulic Fracturing

Environmental Impacts

Fracking has firmly become a contentious and hotly debated issue of environmental policy. The commonly cited environmental concerns associated with fracking include illnesses for those living near fracturing wells, water pollution from chemicals used in the fracking process, and potential for increased air pollution[5]. However, newer research has posited that there are much more severe impacts with respect to the changing geology and hydrology surrounding wells, greenhouse gas effects, and others, leading to an interdisciplinary set of issues stemming from the fracking boom[6].

Benefits

Proponents of the continuation and expansion of fracking are not without their own arguments and evidence for the benefits of fracking outweighing the potential ecological costs. Some proponents of fracking will point to its potential to replace coal with natural gas, a much cleaner

[4] Yackee and Yackee 2006
[5] Jackson et al. 2014
[6] Meng 2016

burning fuel, and lower the overall level of carbon dioxide in the atmosphere. While some groups have pushed back heavily on this claim (citing overuse due to cheaper energy and methane leakage at the point of extraction), there is no denying that replacing coal with another source would be beneficial for climate change concerns.

Strong fracking proponents also cite energy independence and economic benefits as being the essential benefit of the shale boom. Energy independence is a familiar debate in American politics through the age of oil price fluctuation and concerns of sending money to perceived unfriendly nations. Many see fracking as a way to untangle the United States from global energy markets, but some researchers suggest that the shale boom has deepened American reliance on these markets even more. Beyond all of these components, the driving debate behind the pro-fracking groups is the economic benefits that come with expanded natural gas production. In Pennsylvania, researchers found that counties with fracking development wildly outperformed those with no development by all economic metrics (though those benefits appear to be concentrated towards local landowners, with wages only increasing by about 2%). The economic benefits of fracking have certainly materialized in the form of the shale boom, propelling local communities with a fracking presence to new economic heights, often with the benefit being in royalties paid to landowners for drilling rights. There are reflections of this potential strength when looking at the international fracking scene, where fracking has often faced slower production due to a lack of incentive to private landowners to support gas development[7].

[7] This section is largely based on the book *The Fracking Debate* by Daniel Raimi. It provides an excellent overview of the technology and policy debate surrounding it.

Public Opinion

These issues all elevate fracking to an environmental policy issue with localized concerns, but for research in industry bias to continue, it must also be an area of regulation that the public is conscious of and participating in. Gottlieb et al. utilized fracking in New York state (where the state legislature has banned fracking entirely) as a case study for the narrative framework of policy change[8]. Based on FOIA requests for public concerns and the interviewing and collection of anecdotal responses, the authors concluded that the debate is active and lively with two distinct sides and strategies. While no clear preference appears in this research, it is certainly an area of public concern. This idea is extended and complicated when considering how the public can interact with the system through public issue concerns as well as through regulated and procedural processes[9]. Researchers have identified multiple paths for public participation in the process with varying weights and opportunities for success. Stewart et al. lay a baseline for how constituents can participate in the process for fracking specifically and how various groups have used those tools, as well as its importance in policy more generally. Using a different set of documents for analysis, Powers et al. followed a content analysis procedure on letters to the editor in one Pennsylvania community that was at the center of a fracking debate[10]. Beyond showing further examples of an active policy debate surrounding fracking, these two examples provide further credence to the idea that public participation can impact policy and plays an important role in regulatory frameworks. Further, this research importantly finds fracking to be an issue in the public eye with active debate but does not functionally show whether or not

[8] Gottlieb et al. 2018
[9] Stewart et al. 2018
[10] Powers et al. 2014

agencies are considering all sides of those debates in policymaking. This will be the primary question answered in the case study presented in this paper.

Industry Bias Research

The body of literature that this research will attempt to build upon and add to is the idea that industry concerns are weighed more heavily in regulatory and other policy decision making. This is a consistent theme in the literature surrounding why regulation might fail to account for multiple perspectives. The way that researchers have operationalized this question in past literature varies but largely focuses on content analysis through the notice and comment process of the Administrative Procedure Act. Existing research has shown that it is possible to apply these methodologies to a large variety of fields and agencies to examine the influence of business interests relative to other groups. An early example of this was a study of comments of comments received for a broad set of proposed agency rules. While the results varied, the general trend showed increased credence given to comments from business interests, but the authors noted other important trends, such as low overall participation in the notice and comment process[11]. Researchers have used similar approaches to examine comments on health care and food and drug regulation, with similar results[12][13].

The research presented here will add to this literature in two distinct ways. First, there is a present lack of industry bias in rulemaking analysis on environmental issues, which also requires significant amounts of agency rulemaking. Second, the literature lacks corollary analysis done at

[11] Yackee and Yackee 2006
[12] Hemmerich et al. 2017
[13] Pan 2017

the state level, even though state governments play an instrumental role in enforcement, and most have a law that functions in much of the same way as the APA.

The second major concern in this field is the level of government attributed to certain regulatory areas. All of the research discussed above focused on the federal level of government. As mentioned above, environmental regulation has long been a place for debates of federalism and the role of state and local governments. In this vein, some have argued that local and state governments should primarily manage fracking due to its hyper-localized impacts, citing failures of federal regulation in this field[14]. Counter-arguments have been put forth specifically with fracking using international comparative analysis. Some European countries have implemented stronger regulations at the national level in a precautionary style that researchers have argued will be more effective at countering environmental and health concerns (Centner and Ebarheart 2016). The research conducted below largely attempts to add to this body in looking for failings with the model presented in Pritchett under the assumption that pollution concerns are continuing or growing under greater control by the states.

Colorado Case Study

Reasoning

While Colorado is not the only state with a lively debate surrounding fracking, it serves as a suitable case study to build perspective of fracking regulation around. The criteria used to select

[14] Pritchett 2018

Colorado are outlined below in an effort to show biases avoided and the strengths of the results presented.

First, Colorado has a longstanding, widespread, and economically important fracking industry. According to FracTracker (a non-profit that tracks well development, sometimes through required reporting by state governments), in 2016 Colorado had 51,356 gas development sites while the average for the 30 states with substantial development was 39,782 , putting it well within the range of an average developed extraction state[15]. Further, the industry itself calculates that the oil and gas industry contributes approximately $32 billion to the state's economy[16].

Second, Colorado is a politically diverse state with a lively debate over fracking specifically. While the Democratic party controls the state legislature and governor's office, it is still widely considered a purple state with conservative strength in rural counties. Further, there is active participation in debate from multiple stakeholders, including both advocacy and industry groups, private citizens, and other government agencies, which can be seen in the data set. This level of participation allowed for pulling of data from a set of rules passed recently and engaged with by groups of interest.

Lastly, for data collection purposes, the Colorado agency (Colorado Oil and Gas Conservation Commission - referred to as the COGCC or the agency from here on) that crafts fracking regulation is conducive to research by a private citizen. The COGCC requires a public notice and

[15] https://www.fractracker.org/2017/03/34-states-active-drilling-2016/
[16] https://www.nytimes.com/2018/05/31/us/colorado-fracking-debates.html

comment period and makes those comments, from all sources, publicly available. Further, the agency has organized the process online (available for viewing here: https://cogcc.state.co.us/reg.html#/rules) to include the proposed drafts of the rules, the comments, and final drafts of the rules, all of which are necessary to explore each facet of this question. While other states require a comment period and some publish those comments online, in many cases, the comments or the rules themselves are behind a portal or buried in state registers that are cumbersome to gather. Utilizing Colorado and COGCC data effectively narrows the scope of the data collection while still allowing for a depth of exploration.

Data

The data analyzed here come from the published catalog on the COGCC website. While there is precedent to cull rules based on level of engagement, the proposed rules here all had some number of long-form comments, from varying groups that allowed for analysis. The resulting set was composed of 4 rules proposed between 2017 and 2018, all written comments on those rules and a differently designated set of written statements published by COGCC. As will be described in the methodology section below, this data collection resulted in a set of 36 long-form comments and 120 unique "asks" from public commenters, which will be the primary quantitative data set in this research. Below will be a brief outline of the rules included in this data set to provide necessary context for how different stakeholders participated and the ways in which the agency included comments in their final versions.

Mill Levy Rulemaking

The Mill Levy was by far the shortest and simplest rulemaking in the data set, at only a paragraph long with virtually only one component. This rulemaking was simply the COGCC

raising a levy, which they are legally authorized to do. However, there are a few important factors to consider. First, due to the simplicity of the rulemaking, the comments were equally simple, with commenters either supporting the level of the proposed levy or requesting an increase. Importantly, there is a legal ceiling imposed on what levy the COGCC can raise (at 1.7 mills), which the commenters from government or advocacy sources asked to be the new level. Comments from industry supported the raised levy, advocating for the uses proposed by the COGCC but requested it go no higher without presenting legitimate reason. There was also a conflict between the advocacy organization that commented asking for the COGCC to create a 'rainy day fund' and industry groups pointing to legislation that discouraged sitting funds. In the final version of the rule, the COGCC settled on a compromise between the groups, raising the levy above the originally proposed amount supported by industry but not to the level requested by the other groups. Due to the nature of the methodology (outlined below), this rule did not add to my quantitative data set but was useful in gauging some aspects of the general comment interaction qualitatively.

School Setback Rulemaking

In brief, this rule aimed to increase the distance from a school that manufacturers could build oil and gas infrastructure. While there was already some regulation of this type in place, the proposed rule extended the banned area to be based on the property line rather than the closest building, effectively extending the restriction to include distance from outdoor spaces. Since the COGCC built this rulemaking to add regulation where oil and gas infrastructure might put the health and safety of a vulnerable population at risk, it might be assumed that advocacy organizations and citizens would come out in force to support its strengthening; however, there

were no comments of this type. Further, there was low participation overall in this rulemaking and no comments from citizens or advocacy groups of any kind.

Flowline Rulemaking

This rulemaking primarily focused on added requirements for gas infrastructure, specifically with mapping, testing requirements, and protocols for abandoned wells. This rulemaking was born out of a direct request by the governor to improve regulation in these areas as part of a broader goal of regulating of oil and gas. Primarily technical in nature, this rule and some of the comments focus on requirements based on frequency of testing, technology used, and method of inspection or other necessary tasks of fracking well operators. Concerning participation, this rulemaking represented almost the opposite trend observed in the School Setback Rulemaking, with the industry groups paying little attention and the bulk of the comments coming from citizens, advocacy groups, and government.

Pooling and Hearing Process Rulemaking

The last rule examined as part of this data set was also by far the longest and most complex, as well as receiving the greatest number of comments from all sources. This rulemaking aimed to accomplish two major goals. First, it fleshed out the procedure for communication involving forced pooling, in which unleased minerals are 'pooled' with leased minerals for an extraction company to be able to drill without full mineral rights[17]. In some cases, industry was advocating for increased regulation; however, in these cases, what appeared on its face to be imposing new restrictions benefited industry by raising the barrier for those unleased mineral owners to argue

[17] https://earthworks.org/issues/forced_pooling/

against drilling. For this reason, comments like these were coded as ‘weaken standards’ in accordance with other industry comments. Second, this rule adjusted previous COGCC rulemaking on the process for hearings and participation by the public on gas infrastructure concerns. This rule also received a proportionally large amount of attention from commenters and this rule made up a large percentage of the data set. Lastly, it is important to note that this rule showed a different process of participation in which the industry as a whole rallied around one comment, with several sending an identical document 'joining' another company's comment. While the other rules saw similar and possibly coordinated suggestions from both sides, this was the first case observed to be an explicitly concerted effort by industry as a whole.

Methodology

The first method of analysis used was a general and concise form of qualitative data collection through document analysis. Comments were coded using Nvivo 12 to isolate the goals and designate the purpose and motivation of the comment. The codes for each comment included source of comment (industry, advocacy/citizen, government) and generally requested change (strengthen fracking standards weaken fracking standards). Groups generally self identified, with advocacy groups submitting under an organization name (League of Oil and Gas Impacted Coloradans for example), citizens submitting under an individual name with no affiliation, and government agencies (Colorado Department of Transportation or Health) submitted as such. Industry groups generally submitted as a single operator but also as organizations representing the industry as a whole like the Colorado Alliance of Mineral and Royalty Owners. From there, the coded material was entered into an overview spreadsheet that included additional

information, including a subjective designation of credibility and links to the results of the quantitative method outlined below.

The second method was a more in-depth analysis of changes adopted from initial to final versions of a rule-based on requested changes from comments. Through this form, comments that requested specific changes to the proposed rule could be compared with the changes made to the eventually implemented version of the rule. In order to shift to quantitative data, the long-form comments were organized by the ‘strengthen/weaken standards’ that was already coded for in the above section into individual "asks." As most comments requested the COGCC to make many changes to the proposed rule, this allowed the data set to be increased from the 36 total comments to 120 individual asks. From there, the asks were entered into a spreadsheet and compared with the final version of the rule to determine if the COGCC included that ask in the adopted version.

This method required some subjective decisions while coding. Though rare, there were occasional comments that did not provide a true recommendation to COGCC and were utilized more as a space to critique past actions of the agency. These comments were coded but ultimately were not included in the quantitative analysis. The analysis does not include comments if they consisted of correcting a typo or changing the formatting of the rule (for example, changing bullet points to numbered sections.) However, the size of the ask was not considered when coding, with large asks still being coded as a single data point, as long as it was viewable as included or not included in the final version of the rule. Occasionally, an ask was split into multiple data points if this binary was not possible. An area to possibly expand upon

this research would be to gauge the magnitude of the ask, but that was determined to be out of the scope of this research.

Results

The methods described in the section above revealed quantitative results and some noteworthy trends. They also illuminated potential areas for continued research or the application of these methods to other areas.

Quantitative Results

The analysis of the asks data set, though drawn from a relatively small sample, shows significant results from a simple counting method of analysis. This analysis resulted in two important findings, displayed graphically, and discussed below.

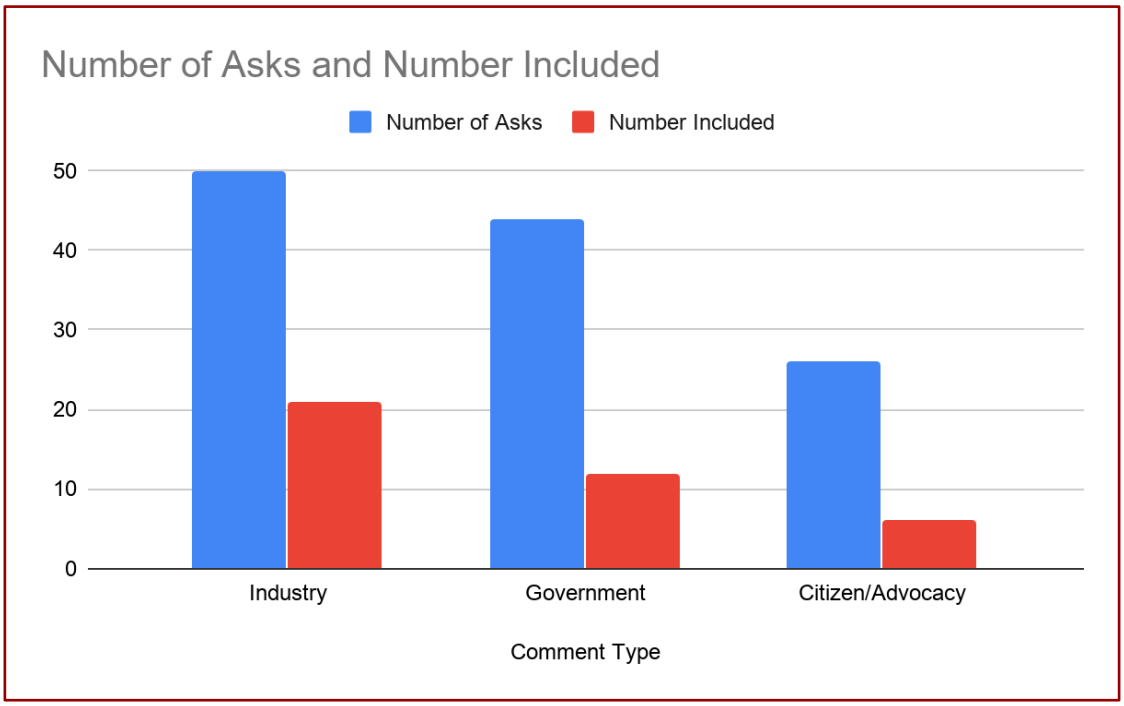

Image 1

The first graph shows the overall participation (in asks) by industry group across the four rules, and the number of those asks included in the respective final versions. The most important finding in this component of raw participation comes in the form of industry groups participating far more than citizens and advocacy groups put together. Further, the participation by government is notable in that it also outpaced commenting from advocacy but also in its content, which will be discussed in the next section. Lastly, the red bars within this graph (representing the total asks included in the final version) combined with the graph below tell the most important story of potential industry bias.

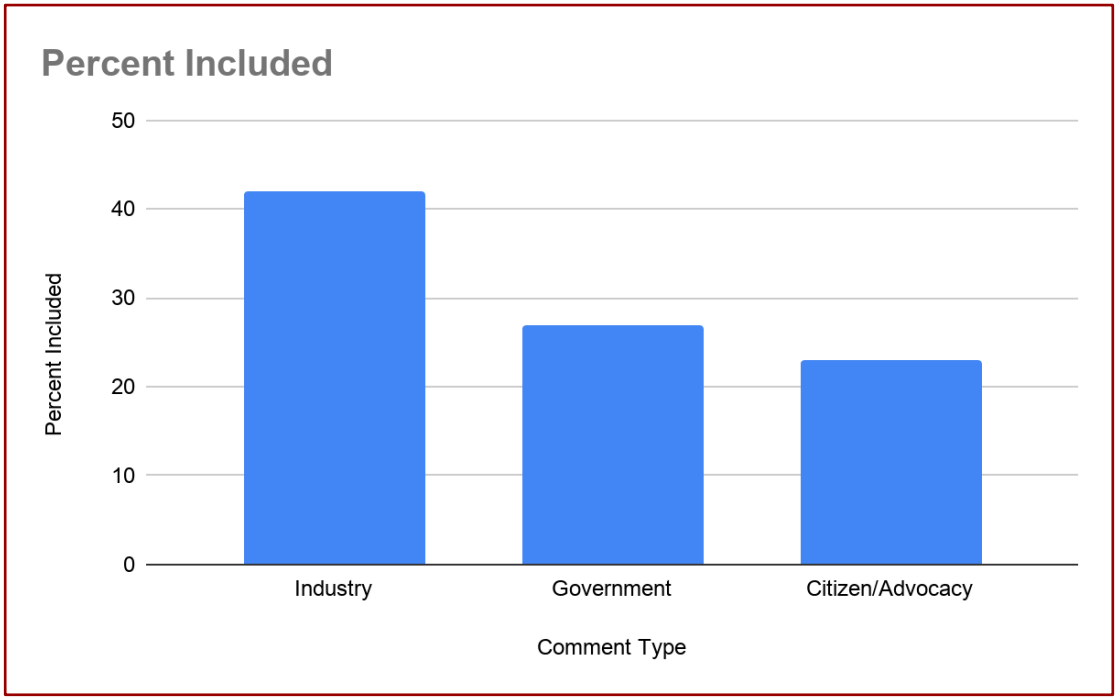

Image 2

Adding Image 2 to the evidence presented in Image 1, we see a clearer correlation between the source of the comment and its likelihood of inclusion in the final rule. In the data collected from this case study, the COGCC included 15% more asks in comments from industry than government and 19% more asks from industry than citizens or advocacy groups. The types of comments that the COGCC included from different groups will be further discussed below.

Discussion of Trends

There are important trends not fully captured when the transition from qualitative data to qualitative analysis occurs.

It is difficult to gauge the level of overall participation in this rulemaking process with little other research to compare it to, but it is possible to make claims about different groups and how they participated. As was noted above, industry did participate the most with citizens and advocacy groups participating the least. One counter-argument to the idea that the agency is biasing towards industry for any other reason is simply that those who show themselves to be consistently involved in the process of rulemaking will become more known and trusted to the rule-makers. Further supporting this hypothesis, the same companies and industry groups consistently commented on multiple rules, advocacy groups were less likely to do so and no individual citizen commented more than once. Further, citizens were the only bloc to submit comments that were removed from the data due to a lack of credibility. While many submitted with substance and evidence, there were examples of citizen commenters writing unprofessionally, without evidence, or off-topic in comments. This issue was not reflected in government or industry comments and could be another counter to the hypothesized reasons of biasing towards industry. Lastly, comments were not submitted simply stating support of the rulemaking, meaning there is a potential loss of a demographic that is generally supportive of what the COGCC are doing.

It is important to describe not only how often the COGCC included industry comments into the final versions of rules within this case study, but also what types of comments the agency

decided to include. While this spreads pretty broadly in comment type, there are a few trends that are worth noting here. There were several examples of provisions in rules that would force information to be made public by industry changing after comments from the affected groups. Perhaps more impactfully in function, comments appeared to influence the removal of some testing and reporting requirements that would have been placed on industry by proposed rulemaking. Other types of commenters (notably government) were most successful when they commented on expanding the scope of existing provisions in the proposed rule, and much less so when offering new provisions to be added. Interestingly, there was one example of a scientist commenting as a citizen with likely the most scientific backing, and the only ask from that comment implemented in the final rule was an expansion of one testing requirement.

Concerning the coordinated actions listed in the Quantitative Data section, industry was the only commenting block to submit multiple comments' joining' another; however, other types did this in different ways. There were multiple examples of a coalition submitting a single comment as a block, most notably from Allied Local Governments. There is no clear correlation between if one strategy was more successful than the other, but when looking at raw participation, the additional comments joining appear to show more overwhelming support than the jointly submitted comments. For this reason, the comments joining were not included in the quantitative analysis displayed graphically above, but there is room for further research on these strategies if a greater sample was identified.

The participation by government was prevalent and notable, appearing in two forms. First, other state agencies participated in multiple rulemakings, with the primary goal being to strengthen

fracking standards through either direct connection with their government function or through lessons learned through their own activities. Often these comments appeared to be self-serving to increase regulation in ways that prevented oil and gas from interfering with other functions of government that might not have been considered by the COGCC.

On the other prevalent type of government participation was from local governments, who largely favored strengthening standards. This fact raises new and interesting questions on the topic of environmental federalism in fracking policy. The oft pointed to reason for the states to handle fracking policy is that it allows for more tailored and closely created regulation to handle localized issues. However, the industry that often pushes for regulation to go to states was largely working against the even more localized level of government in the notice and comment period, raising questions about the true motives or reasoning behind seeking state-level regulation. While it is likely true that the governments participating are not a representative sample of all localities in the state, it does show that moving down the levels of government is not always equivalent to deregulating. Participation by lower levels of government was not something focused on in the literature surrounding federal rulemaking, which might prove itself to be a unique phenomenon at the state level in further research.

Limitations

It is necessary to acknowledge where limitations occur in this methodology and where there are opportunities for further research in the area, of both of which there are many.

First, as has already been acknowledged throughout the previous sections, the sample size in this case study is relatively small and not drawn randomly. Taking from a random sample of comments from multiple state agencies would certainly strengthen any claims of broader implications. Further, the sample of rules themselves was small enough to raise concerns about the application of this research to other questions of environmental federalism. Second, with a single coder and limited time, the chance for human error or subjective decisions altering the results of coding is present. Using the direct asks methodology helps to account for this by adding objective and specific criteria to reduce subjectivity, but the chance remains, and larger applications of this methodology would benefit from additional coding criteria or double-blind coding. Perhaps most importantly, there was little opportunity to discover the origins of the rules themselves and whether industry groups (or others) were involved in earlier stages of the process. While in most cases the rulemaking is an implementation of either legislation passed by the state government or a directive by the governor (where groups certainly have influence), the School Setback rulemaking originated from citizen petition, showing that the potential exists for a lack of consideration of this influence. This issue is consistent with other forms of industry bias research and can lead to the omission of different layers of policymaking in which industry can have influence.

Conclusion and Implications

Fracking as a science is facing intense skepticism from the environmental community matched by its support from advocates of increased domestic energy extraction. While this debate will continue to play out in campaigns and electoral politics nationally, other layers of policymaking, including state-level agency rulemaking, will be necessary markers of the success of both sides

of this debate. If the institutions designated to protect the best interests of constituents fail to do so, it will become increasingly important to discover why and what interests have the ear of the powerful. The implications of this research and all that came before it has the potential to tell important stories about those institutions and how they succeed or fail in serving the greater good. Especially in this case where the federal government has excluded itself from the process, and the regulatory power is handed purely to the states, how these often overlooked agencies proceed will have huge impacts on the lives and well-being of people and ecosystems across the country. While this case study in itself does not prove one or the other, it is imperative for research like this to continue and be heard when constituents raise questions of a just process.

References

Centner, T. J., & Eberhart, N. S. (2016). The use of best management practices to respond to externalities from developing shale gas resources. Journal of Environmental Planning & Management, 59(4), 746–768. https://doi.org/10.1080/09640568.2015.1039641

Gilbert, A. Q., & Sovacool, B. K. (2017). US liquefied natural gas (LNG) exports: Boom or bust for the global climate? Energy, 141, 1671–1680. https://doi.org/10.1016/j.energy.2017.11.098

Gottlieb, M., Bertone Oehninger, E., & Arnold, G. (2018). "No Fracking Way" vs. "Drill Baby Drill": A Restructuring of Who Is Pitted Against Whom in the Narrative Policy Framework. Policy Studies Journal, 46(4), 798–827. https://doi.org/10.1111/psj.12291

Hemmerich, N., Klein, E. G., & Berman, M. (2017). Evidentiary Support in Public Comments to the FDA's Center for Tobacco Products. Journal of Health Politics, Policy & Law, 42(4), 645–666. https://doi-org.proxyiub.uits.iu.edu/10.1215/03616878-3856121

Jackson, R. B., Vengosh, A., Carey, J. W., Davies, R. J., Darrah, T. H., O'Sullivan, F., & Pétron, G. (2014). The Environmental Costs and Benefits of Fracking. Annual Review of Environment & Resources, 39(1), 327–362. https://doi.org/10.1146/annurev-environ-031113-144051

Konisky, D. M., & Woods, N. D. (2018). Environmental Federalism and the Trump Presidency: A Preliminary Assessment. Publius: The Journal of Federalism, 48(3), 345–371. https://doi.org/10.1093/publius/pjy009

Meng, Q. (2017). The impacts of fracking on the environment: A total environmental study paradigm. Science of the Total Environment, 580, 953–957. https://doi.org/10.1016/j.scitotenv.2016.12.045

Pan, J. (2017). Messy but Fair: The ACA's Hospital Value-Based Purchasing Program and the Notice-and-Comment Process. Journal of Legal Medicine, 37(3/4), 325–369. https://doi-org.proxyiub.uits.iu.edu/10.1080/01947648.2017.1385038

Powers, M., Saberi, P., Pepino, R., Strupp, E., Bugos, E., & Cannuscio, C. (2015). Popular Epidemiology and "Fracking": Citizens' Concerns Regarding the Economic, Environmental, Health and Social Impacts of Unconventional Natural Gas Drilling Operations. Journal of Community Health, 40(3), 534–541. https://doi.org/10.1007/s10900-014-9968-x

Pritchett, M. (2018). Federal Lands, Federal Authority: The Case for Federal Regulation of Fracking on Public Lands. UCLA Journal of Environmental Law & Policy, 36(2), 303–345. Retrieved from https://search-ebscohost-com.proxyiub.uits.iu.edu/login.aspx?direct=true&db=aph&AN=133801458&site=ehost-live&scope=site

Raimi, Daniel. The Fracking Debate: the Risks, Benefits, and Uncertainties of the Shale Revolution. COLUMBIA UNIV PRESS, 2019.

Stewart, J., Lucas, A., & Bruno, G. (2018). A transboundary comparative analysis of opportunities for public participation in the regulation of hydraulic fracturing in the Bakken Shale Formation. Journal of Energy & Natural Resources Law, 36(3), 299–350. https://doi.org/10.1080/02646811.2017.1374092

Yackee, J. W., & Yackee, S. W. (2006). A Bias Towards Business? Assessing Interest Group Influence on the U.S. Bureaucracy. Journal of Politics, 68(1), 128–139. https://doi-org.proxyiub.uits.iu.edu/10.1111/j.1468-2508.2006.00375.x

Zanocco, C., Song, G., & Jones, M. (2018). Fracking Bad Guys: The Role of Narrative Character Affect in Shaping Hydraulic Fracturing Policy Preferences. Policy Studies Journal, 46(4), 978–999. https://doi.org/10.1111/psj.12278