POLICY ACTOR BELIEFS AND BEHAVIORS IN CONTENTIOUS POLICY DEBATES:

EXAMINING POLICY ACTORS WITHIN THE STATEWIDE, FRACKING

SUBSYSTEMS OF COLORADO, TEXAS, AND NEW YORK.

by

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Policy Actor Beliefs and Behavior in Contentious Policy Debates: Examining Policy Actors Within the Statewide, Fracking Subsystems of Colorado, Texas, and New York.

Thesis directed by Professor Tanya Heikkila and Professor Christopher Weible

ABSTRACT

The goal of this dissertation is to address three areas in the policy process literature that require clarification. First, it examines how a policy actor's deep and policy core beliefs translate into secondary beliefs. To do so, the research models the effect of an individual's view of government in daily life and their policy belief towards fracking on their secondary belief of which level of government should regulate an issue. Second, the research examines how a policy actor's policy core beliefs affect a behavior called venue shopping. The research asks how policy actors' belief towards the policy status quo affects their shopping activity level, and how their beliefs toward decision makers influence venue selection. Third, the research examines local governmental representatives as policy actors in a state-level policy subsystem. Policy process research identifies local government representatives within advocacy coalitions, but little is known about how local governmental actors compare to other advocates in the coalitions. The research uses the Advocacy Coalition Framework (ACF) as an analytical and theoretical foundation and applies other policy process and organizational theories to inform its hypotheses. I use multiple quantitative data modeling techniques to explore each question. Data for the research is from original surveys of policy actors in state-level hydraulic fracturing subsystems in Colorado, Texas, and New York. Findings indicate policy actors' deep core and policy core beliefs significantly influence their

secondary beliefs. However, deep core beliefs have a greater effect on secondary beliefs related to more abstract issues, such as air quality, and less on more concrete issues, such as the distance a well should be from other structures. The venue shopping models indicate policy actors who oppose the policy status quo shop more venues than those who align with the status quo. Additionally, the strongest indicator of which venue a policy actor shops is not their beliefs toward the decision makers, but their other shopping choices. Finally, analyses show local governments are a unique group within and across coalitions because of their network relationships and they align with one another on a set of policy core beliefs, but are also divided among pro and anti-fracking coalitions on other policy core beliefs. Overall, this dissertation shows the ACF provides a theoretical and analytical frame to examine policy actor beliefs and behavior, but additional theories and sub-groupings of policy actors are needed to explain nuances in policy actor dynamics.

The form and content of this abstract are approved. I recommend its publication

Approved: Tanya Heikkila and Christopher Weible

For Caleb. He never gave up, so neither did I.

For Laura. Thank you for your unending love and support and patience. I love you.

For Mom and Dad.

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CHAPTER I

INTRODUCTION

Background

A government's policy decisions are powerful because they activate their ability to coerce actions of and redistribute resources to individuals and organizations. The Policy process is one way in which scholars describe and explain how governments and interest groups make and change policies. Depending on a researcher's scale and unit of inquiry, the policy process can be linear or something quite unlike a 'process'. For example, a single policy may follow a general path from inception through implementation. However, when the researcher examines bundles of policies surrounding a topic, the policy process can be something with neither a beginning nor an end, only an evolution. In either case, the policy process is a messy construct full of individuals, acting over a landscape defined by rules, and in an environment known for disruptions that come in the form of new and unexpected information. As policy scholars unpack the policy processes around a topic, a few of the big questions asked are "who was involved in the process?", "why did the outcome occur?", and "how did the outcome occur?" Two of the key elements used to explain those big questions are the beliefs and the behaviors of the individuals involved in the policy process. Indeed, while a multitude of institutions (e.g., rules, laws, or norms) govern the policy process, the policy process is also a social process in which individuals with strong belief and, cognitive and physical limitations are synthesizing information and making decisions.

Policy scholars who examine policy actor beliefs and behaviors often do so in the context of contentious debates. This is because contentious policy debates provide a research setting with rich variation in both belief and behavior to explore and test hypotheses. Eight

defining characteristics of contentious debates highlight these points. First, contentious

policy debates involve multiple advocacy groups working collectively based on shared

interests for or against the policy or policies in contention (Tilly & Tarrow, 2007; Sabatier,

1988). Second, advocacy groups, defined as coalitions, consist of a multiplicity of policy

actors from local, state, and federal levels of government, nonprofit and for-profit

organizations, media, and the scientific community (Sabatier, 1988). Third, the coalitions of

policy actors engage in a wide variety of activities in and out of the policy making venues

(Tilly & Tarrow, 2007; Sabatier & Jenkins-Smith 1993; Kingdon, 1984) to either increase or

contain the political conflict (Schattschneider, 1978). Fourth, policy actors target policy

venues to influence governmental decision makers, and fifth, the venues are located in

multiple levels and branches of government (Sabatier, 1988; Sabatier & Jenkins-Smith,

1993). Sixth, competing advocacy coalitions use scientific and technical information to

bolster their own arguments and/or to debunk their opponents (Jenkins-Smith, 1988; Sabatier

& Jenkins-Smith, 1993). Seventh, contentious policy debates related to a single topic often

last for a decade or more and so the individual policy actors and policy venues involved in

the debates are not constant (Sabatier, 1988). Finally, policy brokers may be present and

persuade policy actors (both governmental and nongovernmental) to find a policy solution to

end the debate (Sabatier, 1988). [1]

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[1] The policy broker is one who does not have interest in the outcome of the decision, but does wish for the debate to end and pushes for a decision or negotiation to be made. Another identified role is the policy entrepreneur (Baumgartner & Jones, 1993; Rocherfort & Cobb 1994; Mintrom & Vergani, 1997). The entrepreneur could be considered a policy advocate and part of an advocacy coalition, or a decision maker, or policy broker. The ACF acknowledges there are policy actors who are not part of coalitions, but do contribute to the policy debates within a subsystem (i.e., by making decisions within a policy venue). The policy broker and entrepreneur have similar traits in that they may or may not be part of a coalition and have a vested interest in a policy change occurring. Mintrom and Vergani's (1997) argument for differentiation is the entrepreneur actively seeks broad change within a domain or subsystem while a broker or activist seeks specific policy change. Maloney et al., & Olsson (2011) both discuss the insider activist, which is a type of policy advocate.

Research on the policy process has taught us a great deal about policy actor beliefs and behaviors. For example, the Institutional Analysis and Development Framework examines how rules and norms influences individual and group behaviors (Ostrom, 2005). The Multiple Streams Framework (Kingdon, 1984), Punctuated Equilibrium Theory (PET) (Baumgartner & Jones, 1993), and the agenda setting work of Schattschneider (1975) and Rocherfort and Cobb (1994) each provide valuable insights to how the policy actors advocating for policy change (or stasis) employ different strategies to exploit political opportunities and influence decision makers and the broader political conflict. Policy actors may strategically select a venue or change venues to expand political conflict, or policy actors attempt to keep discussions at the current venue to contain the conflict (Baumgartner & Jones, 1993; Schattschneider, 1975; Sabatier & Jenkins-Smith, 1993; Schattschneider, 1975; Pralle, 2003). Indeed, interest groups will strategically seek out venues where they think they have the best chances of achieving their policy goals (e.g., Baumgartner & Jones, 1993; Pralle, 2003; Constantelos, 2010). The Advocacy Coalition Framework examines how an individual's beliefs affect their policy goals, provide motivation for action, and act as a heuristic to filter information and identify allies (e.g., Sabatier, 1988).

Each of these theories and frameworks have strengths and limitations in their ability to explain policy actor behaviors or policy process outcomes. It is not the goal of this dissertation to highlight or address each of the gaps. However, the four proceeding chapters examine specific gaps in our understanding of policy actor belief or behavior in contentious policy debates. Each chapter of this research uses the Advocacy Coalition Framework (ACF), a prominent theory for describing and explaining policy processes in contentious settings, as its theoretical foundation. The ACF lays out a general logic for policy actor behavior within

the policy process. The ACF also provides researchers with clear conceptualizations of the research setting and the policy actors involved. Finally, researchers can apply multiple theories within the ACF. This research applies theories compatible with the ACF, such as the theory of venue shopping, to develop specific hypotheses when the ACF's logic cannot explain nuances related to each chapter's research question or questions.

The remainder of Chapter 1 introduces the contentious policy debate in which each empirical chapter is set: the state level hydraulic fracturing-based oil and gas development debates in the United States. Then it provides a literature review of the ACF and key concepts from the ACF applied in this dissertation. Last, it introduces the central theme and question of each independent, empirical chapter.

Research Setting: Statewide Hydraulic Fracturing (Fracking) Debates

One example of a contentious policy debate is the issue of oil and gas development that uses of hydraulic fracturing, aka fracking. Technological advances in fracking and horizontal drilling that began in the 1980s have enabled the economic extraction of oil and gas trapped in porous rock substrates (e.g., tight sands or shale). In the United States, the oil and gas industry used these technologies to expand its operations in the mid-2000s into known shale and tight sand formation as well as in previously unidentified deposits. By the late 2000s, the industry was experiencing a modern-day oil and gas boom. Fracking-based oil and gas operations expanded in areas accustomed to the industry and into areas unfamiliar with development. Areas unfamiliar with oil and gas development included population centers, residences, and schools. Further, industry found more opportunities to increase operations in environmentally sensitive areas such as lakes, streams, state and national forests, and wildlife preserves. Because of the risks associated with fracking, and where it is

being applied, multiple environmental and health groups and communities mobilized to oppose oil and gas development that sued fracking across the United States. However, due to the economic benefits, mineral owners, developers, and oil and gas industry groups also mobilized to support the industry.[2]

By 2007 and 2008, states regulators, such as the Railroad Commission in Texas and the Colorado Oil and Gas Conservation Commission, had updated their oil and gas development policies to incorporate the fracking process (Hydraulic Fracturing Information, 2012). In New York, in 2008, the Governor Paterson placed a moratorium on fracking until the New York Department of Environmental Conservation could update its supplemental environmental impact statement to reflect the industry's advancements (Brown, 2011; NYDEC, 2011). In addition, local governments in Colorado, Texas, and New York had also engaged in fracking policy debates. As a result, some local governments made policies that promoted development, and other local governments made policies in opposition to development (Gallaher, 2015; Fracktracker website).[3] Throughout these debates, policy actors fought to get policies changed in their favor (Heikkila et al., 2014). Opponents of oil and gas development argued to stop or limit fracking because the processes negatively impacts the environment and public health and safety (Food & Water Watch, 2015; Gallaher et al., 2014; Heikkila et al., 2014b; Pierce et al., 2013). Proponents of development downplayed the environmental and health concerns, and argued to continue fracking because

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[2] While several risks related to hydraulic-fracturing based development were not part of the actual process of hydraulic fracturing (e.g., the truck traffic used to bring water to well sites, or methane emissions from well heads), the term "fracking" became the colloquial phrase used by both sides of the debates to introduce and debate the issue. Fracking is therefore the blanket word used in this work as shorthand for hydraulic fracturing-based oil and gas development.

[3] Federal level activity is also present in the United States. For example, debates related to hydraulic fracturing-related regulation are found in both congressional and regulatory venues (e.g., the Bureau of Land Management and the Environmental Protection Agency). Federal activity is not included in this research because the dataset used suggests that federal actors and issues have a played a minor role in state-level debates (as of 2013) (Gallaher et al., 2014; Heikkila et al., 2014b; Pierce et al., 2013).

development provided significant economic and national security benefits (In the Matter of Changes to the Rules of the Oil & Gas Conservation Commission of the State of Colorado to Consider Hydraulic Fracturing Disclosure Rules, 2011; Hassett & Mathur, 2013; Heikkila et al., 2014b; COGA, 2014).

The political conflict and policy debates surrounding hydraulic fracturing-based oil and gas development are like other contentious policy debates in many ways. First, two opposing coalitions are attempting to sway policy outcomes and these coalitions are made of broad range of governmental and non-governmental actors (Heikkila et al., 2014). Representatives from each level of government, alongside environmental and industry interest groups, royalty owners, agricultural representatives, and concerned citizen groups are mobilizing and participating in policy discussions. Second, the policy actors on both sides of the debates use scientific and technical information to support their arguments (e.g., Colorado rule's and Texas' Chemical Disclosure rule making process, and New York's process updating their Supplemental Environmental Impact Statement beginning in 2009 through 2014). Third, the policy debates have occurred over long periods. For example, the states where the two technologies were first employed have addressed hydraulic fracturing-based development concerns with policy change since the early 2000s. For instance, Garfield County, Colorado created their Energy Advisory Board in 2004 made of industry, environmental, public, municipal, and county representatives, then in 2005 Garfield County signed a Memorandum of Understanding with the Colorado Oil and Gas Conservation Commission, industry, and environmental representatives in 2005 to evaluate water quality and potential impacts from drilling. Similarly, in 2003 the town of Flower Mound, Texas passed ordinances to regulate distance of wells to other buildings, noise, safety, and

environmental impacts, which have undergone multiple major policy change processes since 2007. Additionally, both Texas and Colorado underwent major rule making processes beginning in 2007 and New York began updating its supplemental general environmental impact statement (SGESI) for oil and gas operations. These states also are re-kindling policy debates from over 30 years ago (Gallaher 2014; Minor, 2014). Finally, the policy debates around hydraulic fracturing-based development resemble other contentious debates in that the policy actors involved are engaging in a wide variety of activities to sway both the public's and decision makers' opinions to achieve their policy change strategies. For example, policy advocates are using media, holding protests, re-defining the issue to gain broader support, mobilizing support from their association members, and engaging multiple policy making venues (Gallaher et al., 2014; Heikkila et al., 2014a; Heikkila et al., 2014b; Pierce et al., 2013; Gottlieb, 2012; Meyer, 2012; Brush, 2013).

Previous research on state-level fracking policy debates shows local government representatives (e.g., officials from county and municipal governments) as part of the advocacy coalitions involved in state-level politics (Heikkila et al., 2014a). The advocacy coalitions identified in the statewide policy subsystem are engaging in numerous activities at multiple policy venues at the state and local levels. Other research on hydraulic fracturing politics highlights local governmental decision makers are engaged in within their own jurisdiction on policy issues related to road maintenance, land use, setbacks, and environment (Riley, 2007; Groundwater Protection Council & ALL Consulting, 2009). Given that the issue of fracking involves statewide contentious policy debates, and a variety of activity of interest groups and governmental representatives, it is an appropriate policy context to

explore policy actor beliefs and behavior. This dissertation examines fracking policy debates within Colorado, Texas, and New York.

Literature Review: The Advocacy Coalition Framework

The Advocacy Coalition Framework (ACF) is built to describe and explain the actions of policy actors in contentious political contexts. The framework's focus is on how policy actors form advocacy coalitions to engage in the policy process and interact with governing sovereigns (i.e., decision makers in policy making venues). For example, The ACF is theoretically geared to answer questions in three areas: questions related to *policy change* such as "what influences policy change" and "when is policy change likely", questions related to *coalition behavior* such as "why coalition members make particular choices", and questions related to *policy-oriented learning* such as "when does learning occur" or "how does learning change beliefs". This section describes parts of the ACF relevant to the main concepts used in this dissertation to examine beliefs and behavior of policy actors. Those concepts include the policy subsystem, advocacy coalitions, policy actors, and policy actor beliefs. Policy actor beliefs are also used in this dissertation to compare groups of policy actors within a subsystem. In addition to beliefs, this section introduces three other concepts used in this dissertation distinguish local governmental policy actors from policy actors associated with interest groups. Those include resources for political advocacy, political activities, and networks.

While the ACF has many strengths, and provides researchers with concepts and relationships between the concepts to explain the policy process, the ACF also has limitations. For example, it lacks some explanatory power on how advocacy coalitions choose among the available governing sovereigns within a subsystem to deploy their

advocacy activities. Additionally, even though the ACF is built upon a model of the individual, it does not engage in explaining or comparing individual level attributes (beliefs withstanding) such as resources, political activities, or networks. When these limitations arise in each individual chapter, this dissertation borrows ideas from other compatible theories to develop its hypotheses and expectations. Specific ACF limitations are identified as each chapter is introduced below.

Policy Subsystems and Advocacy Coalitions

Sabatier (1988), the founder of the ACF, recognized that the study of the policy process and policy change needed to expand beyond a focus on single policy events and decision makers at a single venue. To do so, he proposed that scholars change their unit of analysis to the policy subsystem. He argued that viewing policy processes a policy subsystem enables a broader view on policy processes and change in three ways. First, a substantive policy topic, rather than an event or single decision, is the focal point of a subsystem. Second, the policy subsystem includes all policy activity within a geographic region and can include multiple political jurisdictions. Third, the subsystem view acknowledges all policy actors engaged in policy processes related to a specific topic (e.g., scientists, interest groups, news media, and decision makers at all levels of government) and all policy making venues within geographic boundary (Sabatier, 1988). While the analyst could vary the geographic scope of the subsystem to change the level of granularity of analysis of the policy processes within, typical ACF studies examine subsystems bound by national, regional, or state boundaries. Therefore, once the analyst defines the policy subsystem they can then define internal versus external influences on the policy subsystem, who 'is' and 'is not' a policy

actor, and identify the available political venues through which political conflicts may play out.

The ACF assumes subsystems are largely independent of each other due to the time and resources required for a policy actor to specialize on a topic to engage in a single subsystem (Heclo, 1978). However, outputs from one subsystem can impact other subsystems. In these instances, the outputs from one subsystem are treated as external events on another subsystem. The influence of one subsystem's outputs on another subsystem depends on the topic salience and proximity of the two subsystems (Zafonte & Sabatier, 1998). For example, the influence of one subsystem's outputs on another subsystem may be stronger when the policy issue of the two subsystems is similar than when subsystems share the same geographic boundary, but focus on different policy issues (Nohrstedt & Weible, 2010). For example, outputs from the Colorado water policy subsystem may inform policy debates in the New Hampshire water policy subsystem, but outputs from the Colorado water policy subsystem would likely have little effect on the Colorado child welfare subsystem. Additionally, policy actors within different subsystems may interact in the search for allies or new policy making venues (Zafonte & Sabatier, 1998). In their research, Lubell, Henry, and McCoy (2010) argue actions like venue shopping increase the interconnections between dissimilar policy issues because a single policy making venue may hold authority over both topics. Therefore, the decisions made on one policy topic could affect decisions made within the same venue on a separate policy topic. The interactions between different policy subsystems are not a focus of this research.

Advocacy coalitions operate within policy subsystems. The advocacy coalition simplifies a researcher's analyses of political activity within a subsystem because the

coalition conceptually recognizes the multitude of policy actors involved in policy processes (e.g., individuals from all levels of government, interest groups, the scientific community, and the media), but does not require every policy actor to be identified or examined. In other words, when researchers collect individual-level data they can treat the data as representative points and aggregate the information to describe beliefs and political behaviors of coalitions.

The ACF uses a model of the boundedly rational individual and insights of group behavior from policy network theory to inform the advocacy coalition concept (Sabatier, 1988; Sabatier & Weible, 2007). The ACF's model of the individual assumes information gathering and decisions of the individual are filtered through their personal beliefs and that these beliefs drive their policy preferences. Furthermore, the ACF argues that to overcome individual physical and cognitive limits, policy actors form coalitions to share resources and coordinate political activities. Policy actors coalesce into coalitions, in part, by identifying with whom they share similar policy preferences (Sabatier, 1988; Zafonte & Sabatier 1998; Sabatier & Weible, 2007). An advocacy coalition is therefore a broad network of policy actors from local, state and federal governments, interest groups, the scientific community, and the media. These policy actors have individual, belief-driven goals, but choose to act collectively to increase their ability to influence decision makers, and translate their beliefs into policies.

The nature of interactions between advocacy coalitions within a subsystem ranges from cooperative to conflicting (Weible, 2008). In policy subsystems with a contentious substantive topic there are typically two or three conflicting coalitions (Weible, Sabatier, & McQueen, 2009), but can range between one and five (Weible, Sabatier, & McQueen, 2009). In contentious subsystems, the coalition that maintains political control over policy decisions

over extended periods is considered a dominant coalition and acts to keep the status quo or supports policy changes that are congruent with their beliefs and support their goals. When there is a dominant coalition, the opposition, mobilized in one or more minority coalitions, seeks policy change to affect policy in ways that are congruent with their beliefs (Sabatier & Jenkins-Smith 1993; Nohrstedt, 2010). Minority coalitions often seek allies from outside the subsystem or take policy debates to venues that differ from where debates are traditionally held in the subsystem (Fritschler, 1983; Baumgartner & Jones, 1993; Browne, 1990; Worsham, 1997).

Policy Actors

Policy actors within a subsystem are individuals, usually professionally affiliated with an organization, involved in the policy area and dedicating at least some time to influencing either directly or indirectly the politics of the subsystem. In contrast, an individual who submits an official comment on a policy debate, participates in a protest, or votes on a law related to a policy topic is not necessarily a policy actor. In the ACF, policy actors differ from other citizens by the time they devote to an issue and the extent they specialize in the issue. A policy actor may play multiple roles within a subsystem: they can be a policy advocate and member of an advocacy coalition, they may be a decision maker within a governing body, or they may be a policy broker. There is no reason one policy actor may not take on multiple roles within the same subsystem at different times or in different situations. For example, in one situation a governor may act as a policy broker for a regulatory body attempting to develop policies where competing coalitions are deadlocked on details within the policy. In a second situation, the governor may be the decision maker being lobbied by the competing coalitions.

Policy Actor Comparison – Beliefs, Resources, Activities, and Networks

Scholars compare advocacy coalitions using four key attributes from the ACF: beliefs, resources, political activities, and networks. While the ACF's focus is on similarities and differences of coalitions in a subsystem, rather than individual policy actors, those attributes can be applied to examine policy actors and other groupings of policy actors. I argue that beliefs, resources, political activities, and networks can also be used to describe an individual's or an organization's capacity to engage in the policy process, just as they can be used to describe an advocacy coalition's capacity to engage in the policy process. This section briefly introduces the four attributes, leaving the deeper discussions of how the attributes may differ across groups to the relevant empirical chapter.

The ACF's Belief System. Policy actor beliefs are a key attribute of individual policy actors, and a foundational element of the ACF. The ACF views a policy actor's beliefs as their motivation for acting within the subsystem and the basis for their policy preferences. The ACF categorizes an individual's beliefs using a three-tiered hierarchical belief system. At the highest level of the hierarchy are deep core beliefs, then policy core, and finally secondary beliefs. In this hierarchy, beliefs range from the abstract to the specific (Sabatier & Jenkins-Smith, 1993; Peffley & Hurwitz, 1985).

The researcher can identify a belief's place on the hierarchy by considering multiple attributes including the belief's level of abstraction, how empirically based the belief is, the geographic scope of the belief with respect to the subsystem, and the level of difficulty to change the belief (Sabatier, 1988; Sabatier & Weible, 2007; Weible, Sabatier, & McQueen, 2009). For example, an individual's deep core beliefs are analogous to basic world views and values. Deep core beliefs are considered constant and are not related to specific policy topics.

Policy core beliefs are thought to be subsystem-wide and define priorities such as whose welfare matters most in the subsystem, the role of government (including which level of government should regulate), problem identification and its seriousness at the subsystem level, and preferred policy solutions (Sabatier & Weible, 2007; Jenkins-Smith, Nohrstedt, Weible, & Sabatier, 2014). Policy core beliefs are considered difficult to change but may shift over long periods of time of a decade or more (Sabatier, 1998). The lowest level beliefs are secondary beliefs. Secondary beliefs are not subsystem-wide and typically associated with preference for a policy tool or "seriousness and cause of a problem in a specific locale" (Sabatier & Weible, 2007 p. 196). Secondary beliefs are the most malleable of the three belief types, yet still resistant to change, and are more easily measured (Weible & Sabatier, 2006).

Overall, individual beliefs guide problem perceptions and policy preferences, and are the inception of an individual's policy goals (Sabatier, 1988). Further, an individual's beliefs moderate information processing and act as a cognitive heuristic to identify potential allies (Scholz & Pinney, 1995; Sabatier, 1988).

Beliefs as a Comparative Attribute. Not only are beliefs a defining characteristic of policy actors, but beliefs can be used to describe differences between and within advocacy coalitions. While the ACF's theory and empirical evidence from applications of the ACF shows policy actors form coalitions with others who share similar policy core beliefs, there is also evidence that policy actors of the same advocacy coalition have varying policy core beliefs (Sabatier, 1988; Nohrstedt, 2010). ACF scholars attribute coalition-level variation in policy core beliefs, such as policy preferences, to differences in the member's individual beliefs (Sabatier, 1988; Weible, 2006; Nohrstedt, 2010) and to the individual's organizational

affiliation (Jenkins-Smith & Claire, 1993; Nohrstedt, 2005; Nohrstedt, 2010). There are endogeneity issues with the organization affiliation argument (Sabatier, 1988), however there is evidence that an individual may have their beliefs or self-interests coopted by their organization's goals. These organizational-level goals then influence a policy actor's final policy preferences. For example, the policy preferences of governmental actors are influenced by their interest for continued public support, and that this interest supersedes their policy core beliefs (Nohrstedt, 2005; 2010).

Resources. A second attribute for comparing policy actors is their resources for political activity. The ACF states that resources give coalitions capacity to plan and act on different strategies and support their information processing and learning (Sabatier & Weible, 2007; Howlett, 2009; Elgin & Weible, 2013). For example, resources provide policy actors or coalitions with the capacity to engage decision making venues (Holyoke, Brown & Henig, 2012). Further, when two or more coalitions are engaged in a political debate, they use resources to influence policy outcomes (Jenkins-Smith, 1988). Resource categories include finances, leadership, access to authority, access to scientific and technical information, and mobilizable supporters (Sabatier & Weible, 2007; Weible 2007). Because a coalition's resources are an aggregation of individual organizational resources, the same logic that resources are a key attribute of coalitions and that those resources allow coalitions to act can be applied to individual policy actors.

Political Activities. The ACF connects the resources and beliefs of coalitions to its strategies to influence decisions by governmental authorities (Sabatier & Weible, 2007, Fig 7.1, pg. 191). This dissertation examines specific political activities rather than broad strategies. If strategies are a plan or method for achieving a goal over a short or long period

of time, then political activities can be thought of as the discrete actions of political advocates used to implement a political strategy. For example, a coalition may venue shop as a strategy to achieve a goal of policy change (Pralle, 2003), but within a strategy, many activities may ensue such as lobbying, testifying, or making official comments during policy making processes, or mobilizing troops to engage the decision makers of the venue. While describing the activities of a policy actor or coalition may not reveal their strategy, it does highlight the discrete ways in which they are engaging in the policy process within the subsystem.

Networks. One way to describe the nature of activities and relationships between policy actors is through the policy network literature. For example, an advocacy coalition represents a network of individual policy actors who coalesce through shared beliefs and a desire for policy change and coordinate activities aimed at achieving a policy goal. Advocacy coalitions, however, are but one type of network that may be found within a subsystem. Advocacy coalitions are like ally and coordination networks described in the policy network literature (Salisbury, Heinze, Laumann, & Nelson, 1987; Zafonte & Sabatier, 1998; Weible & Sabatier, 2005). Other networks found in the policy network literature include power, information and advice, and resource sharing networks (Weible & Sabatier, 2005). Each of these networks share a common theme related to resource control or exchange and has the potential to include policy actors who are identified in separate coalitions. Indeed, applications of the ACF that examine the interactions of disparate groups acknowledge that policy actors who are members of conflicting advocacy coalitions may interact outside of the policy debates. These policy actors interact to acquire resources or because of institutional or functional links that dictate their interactions (Zafonte & Sabatier, 1998). While the ACF focusses on coordination of individuals as they relate to forming advocacy coalitions, other

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coordination patterns exist among policy actors within the subsystem. This dissertation does not define the other coordination patterns, but describes the networks of individuals in two ways: first it describes an individual's network pattern by who else they collaborate with, and second, the number of other actors with whom the individual collaborates.

Chapter Introduction

The research for this dissertation is broken into four empirical chapters. Each chapter is written as a stand-alone publishable article. Therefore, some information in the theory and background on the issue of fracking is repeated across the chapters. For example, the research in each empirical chapter of this dissertation applies the ACF to examine policy actor engagement in the policy process within state-level fracking debates.

<u>Chapter 2</u>

Chapter 2 of this dissertation examines questions related to ACF's hierarchical belief system in two ways. First, it models the relationship between deep core, policy core, and secondary beliefs to address a limitation within the ACF regarding how an individual's beliefs interact with one another (Jenkins-Smith et al., 2016). Using the fracking debates in Texas and Colorado as the backdrop, the chapter models how an individual's general attitude toward the role of government in daily life (deep core) and their normative policy preference related to fracking (policy core) affects their preference for which level of government should regulate issues related to fracking (secondary). Policy process scholars agree that the higher-level, normative, deep core beliefs inform policy core and secondary beliefs (Jenkins-Smith & Sabatier, 1994; Sabatier, 1998; Sabatier & Weible, 2007; Jenkins-Smith, Nohrstedt, Weible, & Sabatier, 2014). For example, an individual's deep core belief related to the relationship of humans and the natural environment will inform their policy preference on

climate change, and potentially their secondary belief on addressing water use in their community. But, the degree to which deep core beliefs constrain policy core and secondary beliefs remains unclear (Jenkins-Smith & Sabatier, 1994; Weible, Sabatier, & Lubell, 2004).[4] Following the same example, ACF theory and empirical evidence from models of the belief system do not describe if an individual's deep core belief that nature is something to protect will constrain their preference for a policy tool to manage local water use (i.e. a secondary belief). Chapter 2 seeks to address this limitation within the ACF regarding how an individual's different beliefs interact with one another by

Second, Chapter 2 examines how the context of the policy debate impacts policy preferences. Specifically, it uses differences in Colorado's and Texas' regulations estimate how current policies affect a policy actor's preference for which level of government should regulate an issue. The ACF acknowledges that the context surrounding the policy issue, such as the nature of the good, the current rules in place, and physical attributes related to the problem, also constrains policy actor's goals and action (Sabatier, 1988; Jenkins-Smith & Sabatier, 1994). For example, Jenkins-Smith & Sabatier (1994) describe how air policy is affected by the fact that air quality is a collective good and the physical properties of the earth that impact air flow (pg. 180). Indeed, the logic of the ACF highlights that advocacy groups' actions and goals are strategic and a result of contextual issues surrounding an issue and the beliefs of policy actors within the advocacy coalitions (Sabatier & Weible, 2007; Jenkins-Smith, Nohrstedt, Weible, & Sabatier, 2014). The theory of venue shopping is applied alongside the ACF to develop hypotheses related to how normative beliefs and the context of a policy debate affect specific policy preferences.

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[4] Researchers find it is operationally difficult to differentiate between policy core and secondary beliefs (e.g., Olson, Olson, & Grawronski, 1999).

<u>Chapter 3</u>

Chapter 3 examines a strategic behavior of policy actors – venue shopping – in the fracking debates in New York. Venue shopping is the act of a policy actor engaging a policy making venue (e.g., a state legislature, or court, or a city council) to achieve their policy goals. The current venue shopping literature limits our understanding of policy actors' strategic behaviors in two ways. First, the current studies do not include the range of policy actors in a subsystem; rather they typically focus on interest groups (e.g., Holyoke et al., 2012; Ley, 2016; Buffardi et al., 2015; Beyers & Kerreman, 2012; Constantelos, 2010). [5] Second, the vertical or multi-level venue shopping research designs are complex and include venues in multiple states or across national boundaries, which draw theoretical focus away from policy actor behavior and onto institutional effects (e.g., Beyers & Kerreman, 2010; Constantelos, 2010).

To address these limitations in the venue shopping literature, Chapter 3 applies the Advocacy Coalition Framework (ACF) to examine how a policy actor's beliefs affect their venue shopping behavior. The ACFs theoretical and analytical tools address the two limitations described above. First, the ACF's definition of the advocacy coalition includes a broad definition of policy actors involved in the policy process. Similarly, the ACF's definition of the subsystem includes all potential venues within the subsystem boundaries. Second, the policy subsystem allows the researcher to place boundaries on the research to avoid institutional features that could impact venue choices. The state-level subsystem holds constant those institutional features commonly hypothesized in the venue shopping literature

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[5] Holyoke et al., (2012), for example, surveyed charter schools in three states boards. Another example is Ley's (2016) case study which focused on industry groups in Oregon. Others have examined a set of interest groups within a subsystem. For example, Buffardi et al.'s (2015) examination of nonprofits in Seattle, Beyers and Kerreman's (2012) study of NGOs, business organization, and labor associations in the European Union, or Constantelos' (2010) study of trade, business, or professional associations in Ontario, CA and Michigan, USA.

as influential on multi-venue choice (e.g., Constantelos, 2010; Holyoke, Brown, & Henig, 2012; Beyers & Kerremans, 2012), allowing for an empirical focus on policy actor attributes. For example, in this chapter, the ACF's subsystem boundary is drawn around the state of New York. This boundary contains the venue shopping inquiry within the state, and avoids interstate or international differences in lobbying rules or other rules that may affect how often or why a policy actor shops a venue.

Contemporary ACF research highlights how a coalition's ability to select the right venue can have major impacts in policy change (Nohrstedt, 2011), but the ACF neither describes nor explains the advocacy coalition's selection process between one governing sovereign and another. The ACF's guidance in venue shopping is limited to the expectation that advocacy coalitions strategically engage 'governing sovereigns' to ensure their decisions align with the coalition's beliefs and advocacy coalitions require resources to engage in the policy process (Sabatier, 1988). At the individual level, the ACF states decisions and information are shaped by their beliefs and perceptions. Therefore, Chapter 3 uses the ACF as a starting point and then applies compatible theories within the ACF to develop hypotheses to explain the policy actor's choice to engage with governmental venues. As such, venue shopping-related ideas from the work of Schattschneider (1975), punctuated equilibrium theory (Baumgartner & Jones, 1993) and other related scholarship (Pralle, 2004; Holyoke, Brown, & Henig, 2012; Constantelos, 2010) are applied to build hypotheses on the venue choices of policy actors.

Chapter 3 focuses its inquiry into venue shopping through two common venue shopping question. It asks what factors influence the total number of venues shopped by a policy actor and what factors affect a policy actor's shopping frequency at specific venues?

<u>Chapter 4 and 5</u>

Chapter 4 and Chapter 5 examine how policy actors associated with local governments compare to policy actors associated with interest groups within a contentious policy debate. Policy process research on regional, state, and national environmental policy issues show local governmental representatives are active in policy advocates alongside other stakeholders and interest groups working to influence policy change (e.g., Sabatier, 1988; Sabatier & Jenkins-Smith, 1994; Weible, 2006; Koontz et al., 2004; Blomquist, Schlager & Heikkila, 2004; Scholz & Stiftel, 2005). However, little is known about how local governmental representatives compare to other advocates within these broad policy debates. The ACF offers some insight into variation among coalition members who are affiliated with government versus interest groups, but the framework's focus largely remains at the coalition level of analysis. Insights from the ACF regarding coalition beliefs, resources, political activities, and networks are applied to develop expectations related to how policy actors associated with local governments compare to policy actors associated with interest groups.

Chapter 4 asks how the beliefs of local governmental policy actors compare to policy actors associated with interest groups. Chapter 4 builds on previous research that finds policy preferences of individuals are mediated by their organizational affiliation and on one of the ACF's original hypotheses, which states: "[w]ithin a coalition, administrative agencies will usually advocate more moderate positions than their interest-group allies" (Sabatier, 1998, p. 106). Chapter 5 compares the resources, political activities, and collaborative networks of local governmental policy actors to policy actors associated with interest groups.

To build the expectation that policy actors from different organizational types will have different resources Chapter 5 uses ideas from the resource based view of the firm

(Penrose, 1959; Wenderfelt, 1984) and resource dependence theory (Pfeffer & Salancik, 1978). To compare the political activities of policy actors affiliated with local governments with the resources of policy actors affiliated with interest group allies, Chapter 5 uses ideas from the public management literature to set the expectation that governmental actors will engage in different activities than non-governmental actors (Rainey & Bozeman, 2000; Rosenbloom, 2015). Finally, to compare the networks of policy actors affiliated with local governments with the resources of policy actors affiliated with interest group allies, Chapter 5 examines two aspects of policy actor networks. First, it explores the size of the networks. No expectations are developed for how the size of the network will compare across policy actors associated with local governments and interest groups. Second, it examines the network pattern of policy actors. Resource dependence theory is used to build the expectation that the network pattern of policy actors associated with local governments will be similar to each other and different than the network patterns of policy actors associated with interest groups.

<u>Wrap up</u>

The four independent, empirical chapters are presented next. The final chapter, Chapter 6, provides an over-arching conclusion and discussion of the future direction of my research.

TRANSLATING BELIEFS: HOW POLICY ACTORS' DEEP AND POLICY CORE

BELIEFS AFFECT THEIR SECONDARY BELIEFS

Introduction: Who Regulates

A policy debate is a situation where individuals and/or organizations engage with

governments to change or maintain the government's acknowledgement of and involvement

in a problem. The result of a policy debate could include a redistribution of resources, new

regulations, or other governmental tools to address a problem. The individuals or

organizations involved in the debates use their limited resources to develop problem

definitions, policy solutions, form coalitions, and engage with governing sovereigns. In

contentious policy debates, there are typically two opposing groups who compete to achieve

disparate goals. Policy process scholars examine these policy debates, and the choices made

by those involved, to develop theories that explain individual and group behavior, and policy

change. The Advocacy Coalition Framework (ACF) is one of the prominent policy process

theory that focusses on group behavior within contentious policy debates. Through the ACF,

individual and group behavior is explained, in part, through their beliefs. The ACF argues

that an individual's beliefs provide them motivation to act and that their policy goals reflect

their beliefs. While policy scholars have learned much about beliefs, a kind of belief that has

not received much attention in policy process research is the preference over which level of

government should regulate a policy issue.

"Who regulates" is a contentious question due to the nature of regulations.

Regulations are a specific type of policy tool used by governments to i) control the entry of a

firm, its price setting decision, or its production levels, or ii) limit the impact of an economic

activity on social or environmental welfare (Salamon, 2002, pg. 119). Regulations are solutions to problems identified as market failures (Weimer & Vining, 2011). Further, regulations are a coercive type of policy tool that governments use to exert their power to restrict a firm's actions to produce or secure goods (Salamon, 2002). Regulations not only influence the distribution of resources and actions of individuals or organizations, but also influence local, state, and national economies (Teske, 2004). Therefore, scholars consider regulations a critical area of public policy in the United States (Teske, 2004, p. 5). The decision over *who regulates* (i.e., which level of government regulates an issue) can be as contested and debated as *what* is regulated. In the United States, interest groups have fought long and fierce political battles to change which level of government has regulatory authority over a topic such as transportation, commerce, and social welfare (Teske, 2004).[6]

Policy scholars identify two potential reasons that policy actors attempt to change which level of government has regulatory authority over an issue. First, the policy actor's ideology, or attitude toward government, may affect his or her preference for who regulates. Looking back to the inception of the United States, the founders engaged in ideological debates as they outlined the federal system. Their debates centered on where the federal powers would end and state powers begin (Middlekauf, 2007). These debates continue in modern day policy debates. Political ideologies seen in the Republican and Democratic parties are centered on the size and role of government. Donahue (1997) argues contemporary shifts in regulatory power were observed as the Republican Party under

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[6] State-level regulatory authority seemed to dwindle after the Civil war and through the Great Depression as federal regulations over transportation, commerce, and social welfare increased and states' economic regulations were preempted by federal action. However, Teske (2004) notes that states maintained some power as they were required to implement many federal programs, and then, in the last part of the 20th century, devolution and deregulation at the federal level took its course, providing even more power back to state governments and regulators.

President Nixon, President Reagan, and the 1994 Republican Congress successfully fought to devolve federal regulatory authority to the states. However, ideology alone is not likely to completely explain preferences for federal or state level regulation.

A second, a policy actor may desire to shift regulatory authority from one level of government to another for strategic reasons, based on the context of the debate. For example, as federal actors moved to shrink the federal government in the 1990s other interest groups reacted (Donahue 1997; Teske, 2004). Organized labor, environmental, and consumer groups moved toward open venues at the state level to pass policies to shore up changes or fill perceived voids in regulation at the federal level (Teske, 2004). Interest groups may also push for particular regulations at one level of government to preempt regulation from another (Teske, 2004; Hundley, 1986). Finally, policy actors may strategically seek open venues at multiple levels of government to push their policy agendas (Teske, 2004).

This chapter tests how policy actor beliefs translate into a preference for a specific level of government to regulate an issue (referred to as preferred level of government). The Advocacy Coalition Framework (ACF) is used as the theoretical foundation to address this question. The ACF's model of the individual and its hierarchical belief system is applied to develop hypothesis on how beliefs affect their preferred level of government. The theory of venue shopping is also applied in this research to develop hypotheses for how context affects a policy actor's preferred level of government. This research examines a policy actor's preferred level of government over a range of specific policy issues related to the topic of hydraulic-fracturing-based oil and gas development, aka fracking. The research includes two localized issues and two broad issues (explained below). The variation in issue breadth is included because if an individual's beliefs can be distinguished based on the level of

abstraction, may also be a difference in how individuals conceptualize policy issue, based on the issue's level of abstraction.

This research uses empirical data gathered via an electronic a survey of policy actors involved in the state-level fracking debates in Colorado and Texas. The two state-level fracking debates provide this research a rich testing environment for its question. For example, within the two debates, there are differences between Colorado and Texas in which level of government regulates specific issues. Further, the issues at the center of the fracking debates in both states vary in breadth (e.g., road damage, a more localized issue vs. air pollution, a broader issue). Finally, the topic of who regulates is contentious. Within each state, policy conflicts developed when policy actors attempted to change the level of government that regulates issues related to fracking.

Contributions and Map of the Paper

The hypotheses are tested by building a model of a policy actor's preferred level of government using multinomial regression with post estimation marginal effects. The model will estimate the effect of government attitude and policy preference on preferred level of government for specific fracking-related issue. This research adds to the ACF by empirically testing the relationship of beliefs within its three-tiered hierarchical belief system. Specifically, it tests the relationship of broad, normative beliefs to specific preferences. Second, the research draws in other theoretically-backed factors that may affect a policy actors' specific preferences. Finally, this research adds to the ACF by applying the model of regulatory preference over a range of localized and broader issues. The variation in issue breadth allows for the factors in the models to be compared and contrasted and provides

scholars with more information on the nature of context when examining how normative beliefs translate into specific preferences.

The following section builds the theoretical arguments through a review of the ACF and regulator choice. Next, the paper develops its hypotheses. Then, the paper introduces the research setting, the fracking-based oil and gas development subsystems of Texas and Colorado and explains the similarities and differences in the two states' regulatory structure. Next, the paper describes the methodology and results of the analysis. The paper ends with a discussion of the results, evaluation of the hypotheses, and research limitations.

Theoretical Arguments and Hypotheses Development

The Advocacy Coalition Framework (ACF)

The ACF's hierarchical belief system provides this research with a theoretical foundation to explore how broad beliefs may affect more specific preferences, such as a policy actor's preferred level of government to regulate an issue. The ACF also acknowledges that contextual factors, such as the nature of the problem and existing rules, affect a policy actor's goals and decisions (Sabatier, 1988). Finally, the ACF is compatible with other policy process theories, such as the theory of venue shopping. Therefore, this research can apply insights from the venue shopping literature to examine how contextual factors affect the relationship between of higher-level beliefs and lower level beliefs.

In addition, and with respect to research design, the ACF's construct of the subsystem provides a conceptual boundary around the fracking policy debates. Policy subsystems include multiple policy actors engaging a multiplicity of policy making venues in policy debates over long periods of time. A policy subsystem is defined by a geographic area, a policy topic, and the actors within the geographical area involved in the substantive topic. In

this research, the policy subsystem is defined by state boundaries, the topic of Fracking, and the policy actors involved in fracking-related policy debates. The ACF assumes subsystems are largely independent of each other due to the time and resources required for a policy actor to specialize on a topic to engage in a single subsystem (Heclo, 1978). With this said, outputs from one subsystem can impact other subsystems, and policy actors in different subsystems may interact (Zafonte & Sabatier, 1998). However, this study, described in more detail below, assumes two independent subsystems for analysis of regulator preference. These are the fracking policy subsystem in Colorado and the fracking policy subsystem in Texas.

Hypothesis 1 – Higher Level Beliefs Influence Lower Level Beliefs

The ACF postulates that public policies are made through a process in which boundedly-rational, belief-motivated individuals form advocacy coalitions, and engage governmental decision makers (Sabatier, 1988; Sabatier & Weible, 2007). A boundedly-rational actor has cognitive limits and their beliefs act as a heuristic for processing information (Scholz & Pinney, 1995). Further, an individual's beliefs provide them with criteria by which they measure what is an appropriate policy response to a problem.[7] Therefore, an individual's beliefs are an important part of deriving range of preferences. For example, the preference for what should be regulated, how it should be regulated, which policy making venue to select for a policy debate, and who should regulate the issue (Sabatier & Weible, 2007).

The ACF categorizes an individual's beliefs using a three-tiered hierarchical belief system. At the highest level of the hierarchy are deep core beliefs, then policy core, and

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[7] The ACF argues beliefs to be such a strong motivator that it allows individuals to overcome collection action problems, but, as Jenkins-Smith, Nohrstedt, Weible, & Sabatier (2014) point out, this premise is under-developed in the ACF, and not pursued here.

finally secondary beliefs. In this hierarchy, beliefs range from the abstract to the specific (Sabatier & Jenkins-Smith, 1993; Peffley & Hurwitz, 1985). The researcher can identify a belief's place on the hierarchy by considering multiple attributes including the belief's level of abstraction, how empirically based the belief is, the geographic scope of the belief with respect to the subsystem, and the level of difficulty to change the belief (Sabatier, 1988; Sabatier & Weible, 2007; Weible, Sabatier, & McQueen, 2009). For example, an individual's deep core beliefs are analogous to basic world views and values. Deep core beliefs are considered constant and are not related to specific policy topics. Policy core beliefs are thought to be subsystem-wide and define priorities such as whose welfare matters most in the subsystem, the role of government (including which level of government should regulate), problem identification and its seriousness at the subsystem level, and preferred policy solutions (Sabatier & Weible, 2007; Jenkins-Smith, Nohrstedt, Weible, & Sabatier, 2014). Policy core beliefs are considered difficult to change but may shift over long periods of time of a decade or more (Sabatier, 1998). The lowest level beliefs are secondary beliefs. Secondary beliefs are not subsystem-wide and typically associated with preference for a policy tool or "seriousness and cause of a problem in a specific locale" (Sabatier & Weible, 2007 p. 196). Secondary beliefs are the most malleable of the three belief types, yet still resistant to change, and are more easily measured (Weible & Sabatier, 2006).

Policy process scholars agree that the higher-level, normative, deep core beliefs inform policy core and secondary beliefs (Jenkins-Smith & Sabatier, 1994; Sabatier, 1998; Sabatier & Weible, 2007; Jenkins-Smith, Nohrstedt, Weible, & Sabatier, 2014).). For example, an individual's deep core belief related to the relationship of humans and the natural environment will inform their policy preference on climate change, and potentially

their secondary belief on addressing water use in their community. But, the degree to which deep core beliefs constrain policy core and secondary beliefs remains unclear (Jenkins-Smith & Sabatier, 1994; Weible, Sabatier, & Lubell, 2004).[8] Following the same example, ACF theory and empirical evidence from models of the belief system do not describe if an individual's deep core belief that nature is something to protect will constrain their preference for a policy tool to manage local water use (i.e. a secondary belief).

To test the relationship between deep core and secondary beliefs this paper examines the effect of a specific deep core belief on a series of secondary beliefs. Recent scholarship finds individuals' general attitudes from cultural cognition theory are consistent with the ACF's deep core beliefs (Ripberger, Gupta, Silva, & Jenkins-Smith, 2014; Jenkins-Smith, Silva, Gupta, & Ripberger, 2014). This research uses one of those general attitudes, the attitude toward government involvement in daily life, as the deep core belief (Kahan et al., 2007; Gastil et al., 2016) and the preference for who should regulate as the secondary belief. Hypothesis 1 is therefore:

H1: Policy actors who believe governments should be involved less in daily life (deep core) will prefer lower levels of government to regulate issues (secondary belief). Policy actors who believe governments should be involved more in daily life will prefer higher levels of government to regulate issues.

Hypothesis 2 – Context Mediates Lower Level Beliefs

The ACF acknowledges that the context surrounding the policy issue, such as the nature of the good, the current rules in place, and physical attributes related to the problem,

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[8] Researchers have also shown it is operationally difficult to differentiate between policy core and secondary beliefs (e.g., Olson, Olson, & Grawronski, 1999).

constrain policy actors' goals and actions (Sabatier, 1988; Jenkins-Smith & Sabatier, 1994

Sabatier & Weible, 2007; Jenkins-Smith, Nohrstedt, Weible, & Sabatier, 2014). Another

policy process theory, the theory of venue shopping, supports the idea that context mediates a

policy actor's policy decisions and goals. Venue shopping is defined as the strategic act of a

policy actor choosing a policy making venue to hold a political debate. The theory of venue

shopping postulates that a policy actor's decisions are contingent on their relative position

within a policy debate with respect to the status quo (Pralle, 2003). For example, if the policy

actor is dissatisfied with the status quo, they will engage in tactics to increase conflict

(Baumgartner & Jones, 1993; Pralle, 2006; Schattschneider, 1975). One method a policy

actor may use to increase the conflict and disrupt the status quo is to move the policy debate

from one policy venue to another (Baumgartner & Jones, 1993). Conversely, individuals who

desire to maintain the status quo may engage in tactics to contain a policy conflict, such as

blocking another group or individual's attempt to move the debate to new venues (Pralle,

2006).

   While the theory of venue shopping focusses on strategic actions, it can help inform

this researcher's inquiry into the policy actor's preferred level of government to regulate a

specific issue. Indeed, Teske (2004) found that policy advocates pushed for regulators at the

state level over regulators at federal level through a context-informed strategic decision. In

other cases, advocates desired to preempt federal regulation. In other cases, advocates wanted

to fill voids in the governing structure left open by lack of federal regulation (Teske, 2004). If

policy goals and strategic actions can be influenced by contextual factors, then secondary

beliefs, such as regulator preference, may be influenced as well. Hypothesis 2 of this chapter

maintains the ACF's hierarchical belief system and applies the idea that context matters.

Specifically, Hypothesis 2 draws upon the venue shopping literature's finding that policy actors who desire to expand political conflict will attempt to move a debate away from policy venues where the debates are currently held. Conversely, policy actors who support the status quo will attempt to maintain the debates at the current policy venues (Pralle, 2006). Drawing upon the ACF and venue shopping literature produces an original hypothesis. Hypothesis 2 is:

H2: Policy actors whose policy core beliefs do not align with the status quo are more likely to prefer regulators at levels of government that are different than where they are currently administered.

Lastly, this paper expects the preference for which level of government to regulate an issue to change depending on the nature of the issue. The ACF identifies the nature of the problem at hand as a factor that impacts a policy actor's opportunity structure to act on their policy preferences (Jenkins-Smith & Sabatier, 1994). Following Jenkins-Smith and Sabatier's (1994) example of air quality policy, the policy choices available to a policy actor may be affected by the type of good in question and characteristics of the physical environment that relate to the policy issue (pg. 180). Therefore, I expect the type of issue in question to mediate a policy actor's preference for level of government. For example, issues with broader externalities, such as air quality are expected to be viewed differently than issues with localized externalities, such as road damage. To examine this expectation, the research includes issues with easily identifiable externalities (explained further in the operationalization section).

Research Setting

The topic of hydraulic fracturing-based oil and gas development, aka fracking,

became a national issue following an expansion of the oil and gas industry that spurred from

their technological advances in hydraulic fracturing and horizontal drilling. In the mid-2000s

the oil and gas industry in the United States used these two technologies to expand its

operations into known shale and tight sand formation as well as in previously unidentified

shale deposits. Because of the success of these technologies, and the current price of oil, the

industry quickly found themselves in a modern-day oil and gas boom. The industry expanded

into areas accustomed to the industry, largely rural, extraction-based communities, but they

also grew into areas unfamiliar with oil and gas operations. For example, the industry began

drilling near population centers, schools and sensitive natural environments. While the

industry expansion provided economic benefits, individuals across the country became

concerned that fracking-related development would negatively impact their health or the

environment.

Because of the risks associated with fracking, multiple groups and communities

mobilized to oppose hydraulic fracturing-based development across the United States.

Opponents of oil and gas development argued that hydraulic fracturing and the processes

surrounding the extraction technique would negatively impact the environment and public

health and safety (Food & Water Watch, 2015; Gallaher et al., 2014; Heikkila et al., 2014b;

Pierce et al., 2013). Proponents argued that not only were the environmental and health

concerns unfounded, but the economic and national security benefits outweighed the risks

(Hassett & Mathur, 2013; Heikkila et al., 2014b; COGA, 2014; In the Matter of Changes to

the Rules of the Oil & Gas Conservation Commission of the State of Colorado to Consider

Hydraulic Fracturing Disclosure Rules, 2011). In response to the industry's technological

advances and these debates, local, state, and federal lawmakers and agencies began updating

or creating their oil and gas policies. The policies addressed a wide range of issues. For

example, state agencies in Colorado and Texas updated their regulations in the mid-to-late

2000s to adjust where drilling could occur; to require industry disclose the chemicals used in

fracking fluids; the minimum distance between the wellhead and another building or land

feature; and the amount of methane permissible into the atmosphere from a well (Galbraith,

2012; Neslin, 2009). Indeed, fracking had become a contested policy issue in multiple states

by the late 2000s.

In addition to the variety of fracking-related issues debated by the opposing groups,

there were also debates over which level of government should regulate fracking. In the late

2000s and early 2010s, environmental and citizen interest groups were lobbying for more

federal or municipal level regulations over the oil and gas industry. For example,

environmental interest groups led multiple campaigns to develop federal level regulations for

the disclosure of fracking chemicals and emissions from hydraulically fracked wells (FracAct

2011 and 2013). In 2012, the EPA released the first air standards for fracking wells and oil

and gas pollutants that had yet to be regulated at the federal level (EPA, 2012).[9] Further,

groups opposed to fracking sought to expand local regulatory authority in the late 2000s and

early 2010s (Gallaher, 2015; Silverman, 2014). In response to the efforts by anti-fracking

groups to increase federal or local regulation over fracking, state regulators and pro-fracking

groups opposed changes to who regulated the industry. A typical response by state officials

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[9] Federal level activity includes debates in both congressional and regulatory venues (e.g., the Bureau of Land Management and the Environmental Protection Agency). Federal activity is not included in this research because the dataset used suggests that federal actors and issues have a played a minor role in state-level debates (as of 2013) (Gallaher et al., 2014; Heikkila et al., 2014b; Pierce et al., 2013).

or industry groups to the local level oil and gas policy is a lawsuit against the municipality (Gallaher, 2015; Sandberg, 2012; Fehling, 2015). Industry associations and other industry representatives often noted that the state was the preferred level of regulation (COGA, 2015). They argued that the industry was too nuanced to be regulated by the federal government (COGA, 2015), but local governments were not equipped to regulate the industry (Sandberg, 2012). Pro-industry groups argue local level regulations would create an unmanageable "patchwork of regulation" that would hurt the industry (UOGR, 2014; Haley, n.d.; COGA, 2016).

The fracking-related policy debates provide this research with a setting to examine how an individual's beliefs at different levels of the hierarchy and the context of the debate interact. Within the debates, individuals represent a range of positions on whether fracking should continue and are concerned about many problems related to fracking and oil and gas development that vary in scope (Weible & Heikkila, 2016; Heikkila et al., 2014b). For example, some individuals are concerned about dust and noise near a well, while others are concerned about fracking chemicals contaminating the water table (Heikkila et al., 2014a). In addition, individuals have varying preferences over which level of government should regulate fracking (Heikkila et al., 2014b).

Finally, the current legal structure around oil and gas development provides this research with a regulatory landscape that is spread over multiple levels of government. For example, in the United States, state governments hold most regulatory authority over oil and gas development. However, within the two states used in this research, local governments have varying authority over nuisance issues (e.g., noise and dust) and the distance a well can be from neighboring buildings. These nuances are explained next.

Two Similar Subsystems: Colorado and Texas

Two state-level policy subsystems, the fracking-related oil and gas subsystems in Colorado and Texas, are used to examine regulatory preferences of statewide policy actors. Colorado and Texas were selected because of their strong similarities related to oil and gas development and regulation and similarities in the reaction to the rise in development due to new techniques of fracking and horizontal drilling. However, Colorado and Texas have different regulatory structures with respect to local-level issues. In this sense, they are considered most-similar cases (Gerring, 2007) and appropriate for hypothesis testing the affect current regulation has on a policy actor's preferred level of government to regulate an issue.

Regulatory Similarities and Differences

Both states have similar histories with oil and gas development and similar regulatory structures in terms of the state agency developing and promulgating rules for development activities (STRONGER, 2011; STRONGER, 1993). Both Colorado and Texas have oil and gas activity dating back to the 1800s and recent booms attributed to horizontal drilling and hydraulic fracturing innovations and discoveries of shale deposits. Texas and Colorado's state legislatures give authority to a state-level regulatory body: The Railroad Commission of Texas (RCC) and the Colorado Oil and Gas Conservation Commission (COGCC), respectively. Both states have had multiple rule changes to update their regulations to accommodate the new technologies of hydraulic fracturing and horizontal drilling. They each have addressed disclosure of fracturing chemicals in 2011 (first in Texas and shortly followed in Colorado), but do address issues independently and with slight variations (i.e., Texas has had more focus on water recycling and seismic activity and Colorado has

examined the distance between wells and public or private structures and water monitoring).

Both Colorado's COGCC and Texas' RCC oversee the rule change process and policy actors

from industry, environmentalists, local representatives, and other organizations make

comments during the rule making process.

 Regulation in Texas. The RRC regulates a wide range of activities related to oil and

gas operations. At the time of this study rules and regulation for oil and gas regulation were

contained in the Texas Administrative Code Part 1 Title 16 § 3. The RRC rules contain

chapters regarding practice and procedure, informal complaint procedure, oil and gas

division, environmental protection, carbon dioxide, gas services division, pipeline safety

regulations, LP-gas (liquefied petroleum gas) safety rules, surface mining and reclamation

division, coal mining regulations, regulations for compressed natural gas, regulations for

liquefied natural gas, alternative fuels research and education division, underground

regulations for liquefied natural gas, alternative fuels research and education division,

underground pipeline damage prevention, and administration. Most notable is chapter three,

which contains the regulations of the Oil and Gas Division. Chapter 3 section 1 through 107

cover rules ranging from water protection and other environmental management (§3.8,

§3.22, §3.91, and §3.93), well design; including casing, cementing, drilling, and completion

requirements(§3.13), plugging and other completion activities (§3.14- §3.16), testing during

and after well drilling (§3.17), safety and emergency management (§3.20, §3.21, and §3.84),

hydraulic fracturing chemical disclosure (§3.29), well spacing and density (§3.29, §3.38),

waste (§3.98), fees, taxes and exemptions (§3.50, §3.78, §3.83, §3.101, §3.102, and §3.103),

and penalties (§3.107).

The Texas Commission on Environmental Quality is another key regulator of oil and gas operations. The TCEQ is the environmental agency for the State of Texas whose primary goals are to ensure clean air, clean water, and the safe management of waste. The TCEQ and RRC share responsibility over waste, water quality, and injection wells. Since 1982, the TCEQ and RRC have used memorandums of understanding to clarify duties related oil and gas. In 2011, the MOU was updated again and passed responsibility for "providing surface casing and/or groundwater protection recommendations for oil and gas activities…" as well as moving the TCEQ's Surface Casings Program and staff to the RCC and renamed the program as the Groundwater Advisory Unit (Railroad Commission of Texas 16 TAC Chapter 3 – Oil and Gas Division, 2012). With respect to waste, and as of the time of this research, the TCEQ had responsibility over solid waste, which excludes waste resulting from oil and gas exploration, development, and production, and the RRC had jurisdiction over oil and gas waste. With respect to water quality, TCEQ sets water quality standards, and RRC enforces standards related to discharges and storm water resulting from oil and gas activities. TCEQ had jurisdiction over other water issues. For example, any surface water diverted for use in hydraulic fracturing must obtain water rights through the TCEQ. Groundwater rights are obtained through courts and the State Legislature and managed either under the rule of capture, through individual land owners, or by Groundwater Conservation Districts (Hydraulic Fracturing Frequently Asked Questions, http://www.rrc.state.tx.us/about/faqs/hydraulicfracturing.php).

Regulation in Colorado. The Colorado Oil and Gas Conservation Commission is the regulating body in Colorado for all oil and gas and is housed in the Department of Natural

Resources.[10] Initially the mission of the COGCC was to promote the oil and gas industry and to prevent waste of oil and gas resources. Over time, the mission was modified to include the protection of public health, safety, and welfare and the environment (Pasternak, 1999). The Commission's regulatory authority includes the application process and approval for permitting and drill site selection; the planning, site preparation, extraction, clean-up, and surface recovery processes; environmental, health, and public safety requirements; and the required (consultations) or reactive (complaints and hearings) communication between the operator, land owner, mineral owner, downstream water users, the Colorado Department of Public Health and Environment, and the Colorado Division of Wildlife (COGCC Rule 201).

In 2008, the COGCC completed a major overhaul of its oil and gas regulations to accommodate process changes related to and concerns of hydraulic fracturing and horizontal drilling. The COGCC rules specific to hydraulic fracturing include: "Rule 205 inventory chemicals; Rule 317 Well casing and cementing; Cement bond logs; Rule 317B setbacks and precautions near surface waters and tributaries that are sources of public drinking water; Rule 341 monitor pressures during stimulation; Rule 608 Special requirements for CBM wells; Rules 903 & 904 pit permitting, lining, monitoring, & secondary containment; and Rule 906 requires Commission, CDPHE and the landowner of any spill that threatens to impact any water of the state" (Hydraulic Fracturing Information, 2012).

The Colorado Division of Water Resources (DWR) is responsible for surface and groundwater use and consumption. Operators must maneuver through the water use program

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[10] In 1951, the Colorado General Assembly enacted the Oil and Gas Conservation Act and created the Colorado Oil and Gas Conservation Commission (COGCC) to carry out the provisions of the Act. The COGGC does not regulate exploration and extraction activity on Indian trust lands and minerals or the Southern Ute Indian tribe within the exterior boundaries of the Southern Indian Reservation.

administered by the DWR to lease or purchase water rights. Under certain conditions, the

Colorado Division of Wildlife (CDW) must be consulted in the development of plans for

multiple or individual well location assessments. Further, the Colorado Department of Public

Health and Environment (CDPHE) is involved in the permit-to-drill application process

when a Local Government Designee (LGD) requests their participation, when the operator

seeks a variance to specific rules related to the protection of public health, safety, welfare, or

the environment, or when the operator requests to increase well density (306.d.1.A.ii and

306.d.1.B). The Water Quality Control Division (WQCD) within the CDPHE is responsible

for the permitting of discharges to surface waters (Stronger, 2011). The COGCC has a

Memorandum of Agreement with the WQCD that gives the COGCC "reporting and initial

oversight responsibilities" to field inspectors, which include spill and discharges associated

with hydraulic fracturing (Stronger, 2011).

Differences between Colorado and Texas. While local regulatory issues appear

similar, a major difference between the two states is in the role of local governments as

regulators for local-level issues. In Texas, state-level regulators do not have jurisdiction over

roads, leases, pipeline easements, royalty payments, setback distances between the well and

other buildings or natural features, or nuisance issues, such as traffic, noise, odors, (RCC

website, n.d.). Rather, municipal governments in Texas have the authority over these issues.

As such, many cities have developed or amended their ordinances regarding the exploration

and production of oil and gas to include these issues (Barnett Shale Energy Education

Council, n.d.). In Colorado, on the other hand, local authority is limited to areas outside of

drilling operations like road use and building permits. Nuisance issues such as noise, dust,

and odors, and the issue of setback distances are regulated by Colorado's state regulatory

body, the COGCC. The variation in local authority provides a setting to test hypotheses with respect to policy actor's regulatory preference.

In Colorado, debates over local and state regulatory control over oil and gas development date back to the 1980s and have led to multiple lawsuits between state and local governments. Local governments have placed moratoriums on drilling and attempted to use their land-use and zoning authority to dictate where drilling could take place (Gallaher, 2015). State government representatives and the oil and gas industry argue the state has pre-emptive rights when it comes to oil and gas development: it is in the states' interest and therefore local governments cannot intervene. One arc of Colorado's local control debates peaked in 2014 when interest groups for local regulations petitioned for multiple state-level ballot initiatives aimed at changing the state's constitution to allow for more local control over the industry (Richardson, 2014; Hostetter, 2014). At this time, Governor John Hickenlooper stepped into the fray to negotiate a compromise. A task force to investigate local control was created, and the ballot initiatives and current lawsuits were dropped as a result (The State of Colorado, 2014). Texas has had some similar responses to local attempts to increase their regulatory purview over development. However, the moratoriums set by Texas local governments have been short-lived (Flower Mound) and, not until after this research was completed, and a ban on fracking-related oil and gas development was set in Denton, TX. This ban was quickly overturned by a state lawsuit (Baker, 2015). Immediately following the overturned local ban, state officials attempted to cut off any future local action through by proposing a bill to make any attempt at local bans on hydraulic fracturing s illegal (Baker, 2015).

Methods

<u>Population and Sampling</u>

A team of researchers, including the author, collected survey data used in this paper, as part of a larger project that encompassed Texas and Colorado. In this effort, we conducted two sequential cross-sectional surveys in Colorado and Texas, in 2012 and 2013, respectively. We targeted policy actors involved in the statewide oil and gas subsystems in Colorado and Texas. Policy actors, in contrast to the general population, defined as individuals who are professionally affiliated with an organization, involved in the policy area, and dedicate at least some time to influence, either directly or indirectly, the politics of the subsystem (Sabatier, 1988; Baumgartner & Leech, 2001).[11] We identified policy actors using a modified snowball sampling method. We began by identifying policy actors through internet searches of government documents, such as participant lists in fracking-related rule making and legislative hearings. Next, we expanded the policy actor list by searching on-line newspaper reports and documents published the policy actors we previously identified for additional names or organizations. Finally, we interviewed a subset the policy actors and asked them who should be included in the study. Through this process, we checked for biases in the search method by examining the organizational affiliation of the policy actors we identified. Our goal was to have a range of policy actors from the oil and gas industry, environmental groups, local, state, and federal governments, and the scientific community. We adjusted our search criteria to ensure our final policy actor list represented those different organizational affiliations. These methods reduced the possibility that our population sample

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[11] An individual who submits an official comment on a policy debate, participates in a protest, or votes on a law related to a policy topic is not necessarily considered a policy actor. In the ACF, policy actors are differentiated from other citizens by the time they devote to an issue and the extent they specialize in the issue. Policy actors are differentiated from one another by attributes such as beliefs and resources and by behaviors.

had coverage error, or the omission of key policy actors involved in hydraulic fracturing within each state (Singleton & Straits, 2010). Non-probability sampling, such as this, is appropriate when there is not a pre-made list, or other documentation, from which to sample or to create a sampling frame (Singleton & Straits, 2010).

In total, we identified 398 policy actors in Colorado and 324 policy actors in Texas. Given the sample population size, we sent each policy actor an online survey (Singleton & Straits, 2010). Each survey was created and distributed through Qualtircs, an online survey tool. We gave each respondent three reminders to complete the survey after the initial request. We received a survey response from 142 of the 398 policy actors in Colorado (a 35.7% response rate) and survey responses from 78 of the 324 policy actors in Texas (a 24% survey response rate). The lower response rate in Texas limits the generalizability of the results from this survey.

<u>Variable Operationalization</u>

The next section describes how I operationalized the key concepts used to test this paper's two hypotheses from survey data of policy actors in Texas and Colorado.

Secondary belief - preferred level of government (Dependent Variable for H1 and H2). To measure secondary beliefs, I used a survey question that asked "If you were to select only one level of government to regulate the following issues related to shale development, which you would prefer, if any?" Response categories include "no regulation", "local government"; "state government", or "federal government." [12] The issues included in this paper are public nuisance issues, setback distances, air emissions monitoring, and water

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[12] Texas survey included "municipal government" and "county government." However, the Colorado survey only included 'local government'. Therefore, I combined the "municipal" and "county" government preference from the Texas survey into a single "local government" category.

quality monitoring. Each answer is considered a secondary belief and was evaluated

separately in a multi-nominal regression model. A policy actor's preference for which level

of government should regulate a specific issue is considered a secondary belief because it is

narrow in scope with respect to the subsystem, and more easily measured (Sabatier &

Weible, 2007).

I include four issues in this research that have distinguishably different externalities.

The issues of water quality and air emissions are considered issues with broader externalities.

During the 2011-2012 chemical disclosure rule makings in both Colorado and Texas, policy

actors who were against fracking argued that fracking fluids could contaminate the water

table if a well-casing failed, or surface waters if a spill occurred. With respect to air

emissions, policy actors as early as 2008 in Colorado were concerned that oil and gas

operations were decreasing regional air quality through the release of volatile organic

compounds (CDPHE, 2012; Dunn, 2013). The issues of setback distances and nuisance

issues are considered to have more localized externalities. The nuisance issues were clarified

in the survey to mean dust, noise, and light from the well-site. Nuisance issues logically will

only affect individuals who are near a specific well. Similarly, the issue of setbacks is

considered a localized issue for the fact that the concern is if an accident occurs at a specific

well, the local proximity is at risk for being damaged. While there may be differences in how

one interprets the scope of these issues, I present the results of the preference for level of

government models by pairs related to how I have categorized the issue's externalities: water

and air issues are presented together and nuisance and setback issues are presented together.

Deep core belief – attitude toward government (Independent Variable for H1).

To measure the respondent deep core belief about government, the survey asked two questions from cultural cognition theory about their general attitudes toward government involvement in daily life (Kahan et al., 2007; Gastil et al., 2016). First, "the government should put limits on the choices individual can make so they do not get in the way of what is good for society". Second, "the government should do more to advance society's goals, even if that means limiting the freedom and choices of individuals". Respondents provided their answer on a four-point Likert scale: -2 = Strongly Disagree, -1 = Moderately Disagree, 1 = Moderately Agree, 2 = Strongly Agree.

These two questions measure respondents' levels of individualism vs collectivism (Kahan et al., 2007). Individualism and collectivism are two extremes on a scale measuring an individuals' belief on how much choice a person should have in making decision vs. how much governments should intervene to aid in achieving cooperation (Gastil et al., 2016). This research uses agreement to these two questions to indicate that the respondent believes individuals should have less freedom of choice and governments should have a greater role in influencing individual decisions.

Iterated Principal Component Factor analysis with Varimax rotation was used to combine the two scores and create a score reflecting the respondents' general attitude toward governmental intervention. A negative score indicates the respondent believes governments should have less influence over citizens' decision making, and a positive score indicates the respondent believes government should have more influence over citizens' decision.[13]

Policy Core Belief: Policy change preference (Independent Variable for H2).

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[13] Factor analysis resulted in a single factor, with eigenvalue 1.33 and each variable factor loading with a 0.877 after rotation. The factor ranged from -1.12 to 1.69. See Table 2 in Chapter 2 Appendix.

Next, the survey asked about a general policy preference toward the fracking in

relationship to the status quo. The survey asked "Please indicate what comes closest to your

current position in relation to unconventional shale development that uses hydraulic

fracturing. It should be.... "stopped", "limited", "continued at the current rate" "expanded

moderately", or "expanded extensively". I combined the respondents who stated "stopped" or

"limited" into a single group "stop/limit". I kept respondents who stated that fracking should

"continue at current rate" separate. Finally, I combined respondents who stated fracking

should "expand moderately" or "expand extensively" into an "expand" group.

Reflecting the ACF's belief system, I categorize the respondent's position on fracking

as a policy core belief (Sabatier, 1988, pg. 145, Table 1; Sabatier, 1998; Sabatier & Weible,

2007; Jenkins-Smith, 1994; Jenkins-Smith, Nohrstedt, Weible, & Sabatier, 2014; Weible,

Sabatier, & McQueen, 2009). The respondent's position on fracking aligns with the

definition of policy core beliefs as it is: Subsystem wide in scope; highly salient as it is a

fundamental policy position related to the substantive topic; at the level of abstraction of this

preference is low enough to be focused on a topic, but remains general in that it is referring

to a broad range of activities; and related to a policy that if changed, it would be considered a

major policy change (i.e., if the current policies that allow fracking were changed to stop

fracking).[14]

Opponents of oil and gas development viewed both the regulations and state

regulators as pro-development. Therefore, the *stop or limit* group was considered to represent

those policy actors who were against the status quo given that the national legal and

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[14] Note: It is also possible to categorize the respondent's position on fracking as a policy core policy preference. Policy core policy preferences are derived from policy core beliefs and are a normative position "that project[s] an image of how the policy subsystem ought to be" (Sabatier & Weible, 2007, pg. 195).

regulatory framework allowed fracking and the practice had been expanding throughout the time of the survey. The *continue at current rate* group is the status quo group.

The status quo in the fracking debates varies by state because of the variation in how states regulate fracking. Nuances in state regulatory structures are described next.

Control Variables. Two control variables were used: the state and the organization type of the respondent. Designating the subsystem from which respondent came from, either Colorado or Texas, provided this paper with the ability to compare between issues that are currently regulated at the state vs. the local government. At the time of this research, state-level agencies were the primary developers and administrators of fracking-related oil and gas development rules and regulations. However, Colorado and Texas differed on two local level issues: setback distances and nuisance issues. In Texas, municipalities controlled regulations over these issues. In Colorado, the state agencies controlled regulations over these issues.

It is possible that other differences between the states could affect the strength of the arguments made using this variable. For example, institutional structures, such as legal standing may impact regulator preference (Jones, 2001). From the venue shopping literature, policy actors may choose the venue that has the legal standing, or legal ability, to make policy (Holyoke, Brown, & Henig, 2012) or the venue that is already active in addressing the issue (Mahoney & Baumgartner, 2009).

Additionally, six organization types are included: environmental groups, oil and gas industry groups, federal government representatives, state government representatives, local government representatives, and other. Other includes groups such as academics and consultants and the media.

<u>Model Selection and Analysis Techniques</u>

A multinomial logit model in STATA is used to test the relative influence of each variable on the regulatory preference of the respondents for specific issues associated with fracking. Marginal effects, a postestimation analysis, is then used to estimate the overall effect of each independent variable, and interaction effects of independent variables, on regulator preference and test the paper's hypotheses.

The multinomial logit equation for a policy actor's preferred regulator is as follows:

Policy actor's preferred regulator model: Preferred level of government to regulate the issue$_i$ = Governmental attitude (H1) + Policy preference (H2) + State (Control) + Organizational type (Control).[15]

Multinomial regression is an appropriate selection for modeling nonlinear systems with two or more categorical dependent variables (McFadden, 1999). Multinomial analysis is similar to a bivariate model (e.g., a logistic regression) in that the coefficients in the model outputs describe the effect on one outcome of the dependent variable with respect to another outcome. However, because multinomial models have more than two outcome choices, a base outcome option is selected by the user, and the coefficients for each independent variable represents a relative probability of selecting the output option of interest, with respect to the base outcome option. But, the probability of one outcome is also impacted by the change in probability of the other outcomes. Therefore, because of the number of equations involved in a multinomial regression, the interpretation is multi-layered. Because of these the interrelationship of the coefficients and exponentiated coefficients in

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[15] STATA code: mlogit issue$_i$ c.gov_attitude i.policy_preference i.state i.org_type, base(3) rrr. Variable names are shortened and 'If' statements to eliminate duplicate cases in the dataset are omitted for simplicity.

multinomial regression models, Rodriguez (2017) asserts "to reach conclusions about actual probabilities [of coefficients] we need to calculate continuous or discrete marginal effects". Further, Williams (2012) notes the postestimation tool of marginal effects provide information on the "practical significance of the findings" and moves researchers' discussions beyond sign and statistical significance.

A marginal effects analysis is a postestimation tool for regression models and particularly helpful for interpreting the effects of independent variables in multinomial regression (Williams, 2012; Rodriguez, 2017). Predictive margins, or marginal effects, provides the effect of the independent variable on the categorical outcome and whether the effect is statistically significant.[16] Marginal effects can be used to interpret continuous and categorical independent variables, but it should be noted that the interpretation of results is more straight forward for categorical independent variables (Williams, 2017a, 2017b; Royston, 2013). For categorical independent variables, the marginal effects analysis describes the discrete change in the predicted probability of a specific outcome, given the IV is $= 1$ and other variables are held constant. For continuous independent variables, the marginal effect is the instantaneous rate of change and is not always interpreted as the effect of a one-unit increase of the IV on the DV (Williams, 2017a). Therefore, different marginal effects operations are considered in this research based on the nature of the independent variables for each hypothesis. Marginal effects are displayed graphically to provide more intuitive information on the effect of each variable on the probability of a specific outcomes (Jann, 2013).

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[16] Predicting margins allows the user to fix a variable's value and maintain the other covariates in the model, getting a predicted value of the dependent variable, and then averaging the predicted value (Becketti, 2003). This method is preferred for multinomial models as interpreting coefficients for multinomial models is difficult as they are discussed as relative probabilities (Rodríguez, 2017).

Analysis and Results

First, this paper presents the general results of the four full models and then describes the results related to Hypothesis 1 and then Hypothesis 2. Lastly, exploratory analysis with the control variables are presented.[17] The full models, presented below in Figure 3.1 and Figure 3.2, show the marginal effects (dydx) of each variable on the predicted outcomes of for local, state, or federal regulator preference.[18] Figure 3.1 shows the marginal effects for the localized issue models: setback distances and nuisance issues. Figure 3.2 shows the marginal effects the broader issue models: for air emissions and water quality. Each figure shows three columns – one for each potential outcome of the dependent variable – local government, state government, and federal government. All models show the marginal effects of each variable with 90% confidence intervals - which is a visual indicator for statistical significance at a p-value of 0.90 or better.[19] To interpret the categorical variables, use the first variable in each group of categorical variables as the comparison variable. For example, the marginal effect of the policy preference of "continue" is in comparison to the policy preference of "stop/limit". The marginal effect of the categorical variable is the change in probability that the respondent would choose the level of government when compared to the comparison value. The marginal effect of the continuous independent variable, governmental attitude, is the instantaneous rate of change of the independent variable on the dependent variable. (Williams, 2017a).

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[17] Descriptive statistics of the models' variables are presented in Appendix A. Note that "no regulation" was an option, but only three respondents indicated they desired no regulation for the issue of setbacks, two respondents for the issues of nuisance issues and air emissions and only one respondent for the issue of water quality. Therefore, the "no regulation" response was not included in the output options.
[18] Model used Average Marginal Effects (Williams, 2011).
[19] Appendix A, Chapter 2 Table 4provides the model results in tabular format with the exponentiated coefficients (relative risk ratios) and the exact p-values.
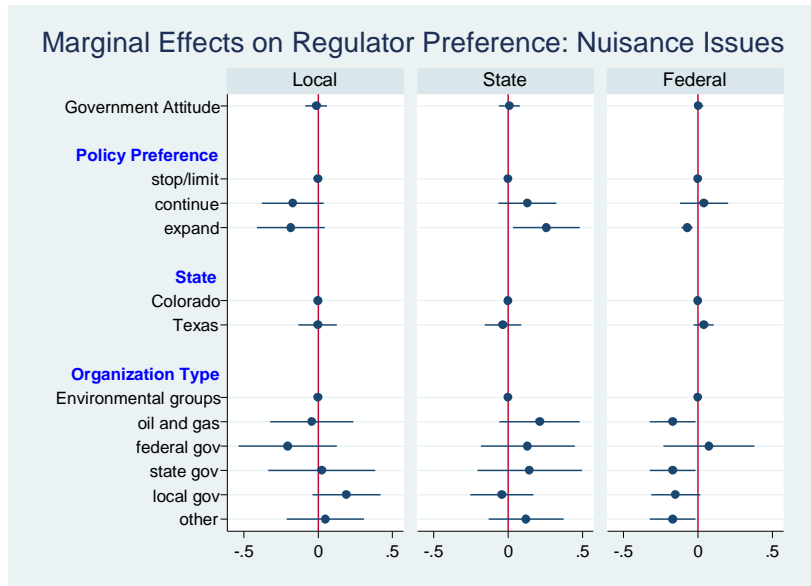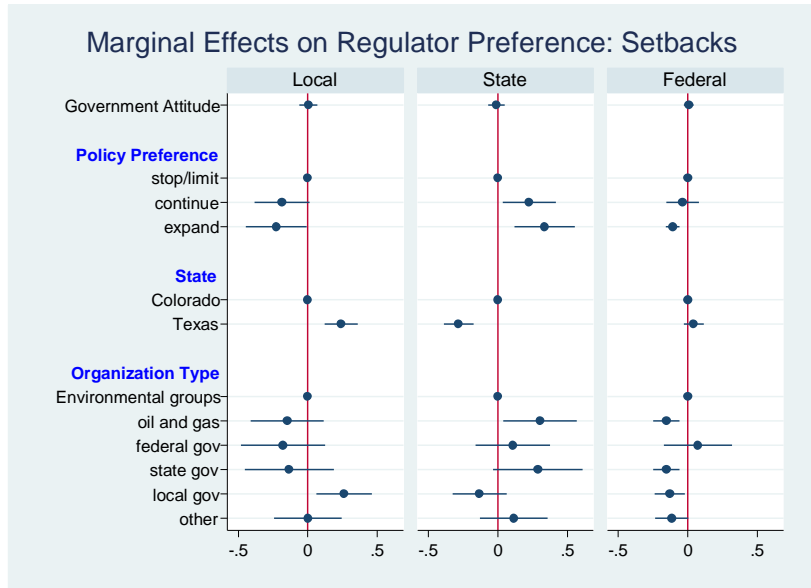
Marginal Effects on Regulator Preference: Setbacks

Marginal Effects on Regulator Preference: Nuisance Issues

Note: 90% confidence levels shown. For each category of categorical variables, Policy Preference, State, and Organization Type, the first variable listed is the comparison variable, stop/limit, Colorado, and Environmental groups, respectively. See Appendix for full model tables with relative risk ratios.

Figure 3.1. Marginal effects (dydx) of Multinomial Regression Model: Setbacks and Nuisance Issues.
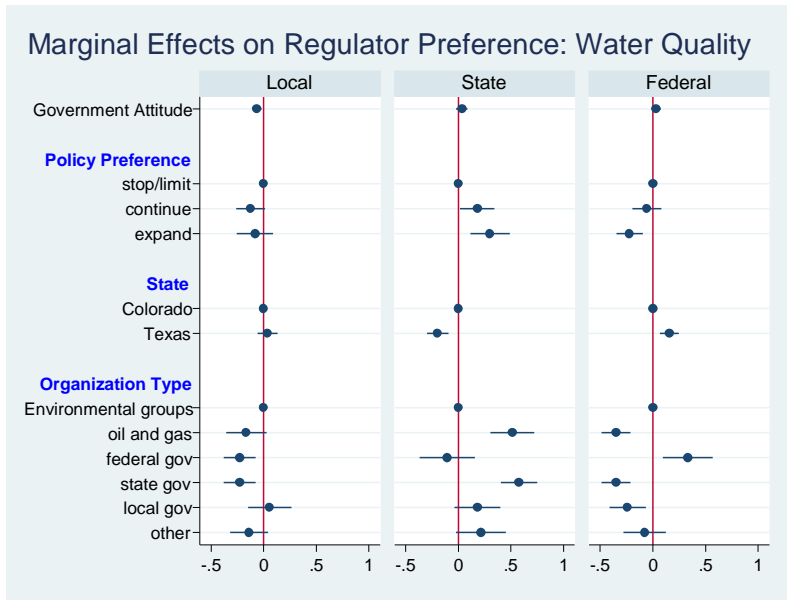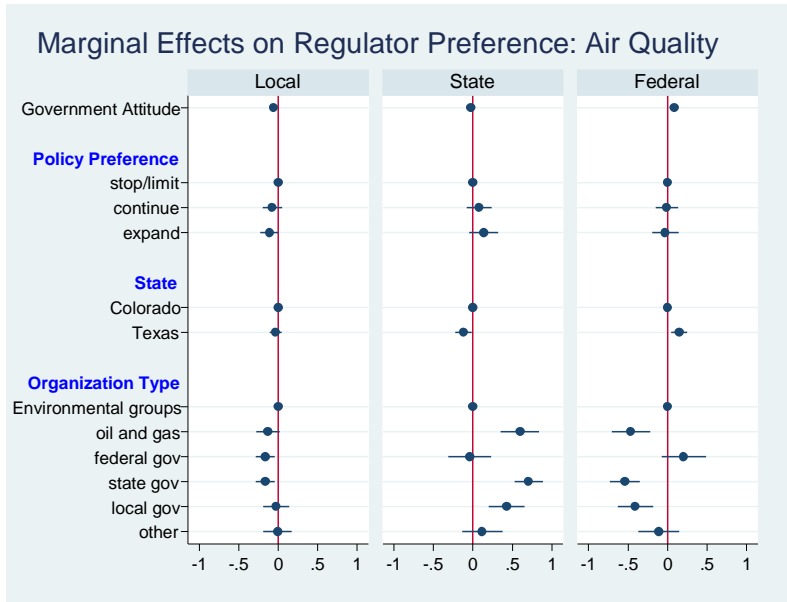
Marginal Effects on Regulator Preference: Air Quality

Marginal Effects on Regulator Preference: Water Quality

Note: 90% confidence levels shown. For each category of categorical variables, Policy Preference, State, and Organization Type, the first variable listed is the comparison variable, stop/limit, Colorado, and Environmental groups, respectively. See Appendix for full model tables with relative risk ratios and exact p-values.

Figure 3.2. Marginal effects (dydx) of Multinomial Regression Model: Air emission and Water quality.

Governmental attitude. For the issues of nuisance and setbacks, results show that respondents' government attitude has no effect on which level of government they prefer to regulate (Figure 3.1). For the issues of air emissions and water quality, however, results show that respondents' government attitude has a significant effect on the respondent's preference for local and federal regulators (Figure 3.2). These differences are examined in-depth in the Hypothesis 1 section.

Policy Preference. For the issues of nuisance and setbacks, the results show that respondents who wish for fracking to continue or to expand are less likely to prefer local regulators and more likely to prefer state regulators, when compared to the stop/limit group (Figure 3.1). Those who wish for fracking to expand are less likely to prefer federal regulators when compared to the stop/limit group.[20]

For air emissions and water quality issues, the continue and expand groups are less likely to prefer local and federal regulators and more likely to prefer state regulators, when compared to the stop/limit group (Figure 3.2). The differences are more pronounced and statistically significant for the issue of water quality. These differences are examined in-depth in the Hypothesis 2 section.

State. For nuisance and setback issues, respondents form Texas are statistically more likely to prefer local regulators and less likely to prefer state regulators for setbacks than those from Colorado. For air emissions and water *quality* respondents form Texas are statistically less likely to prefer state regulators and more likely to prefer federal regulators

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[20] The stop/limit group was used as the baseline group for the overall models. Given that the 'status quo' depends on the state, the comparison between status quo is only provided for H2.

than Coloradoans. These relationships are considered further in below in the section on Hypothesis 2.

Organization type. For nuisance and setback issues, Oil and gas industry respondents are more likely to prefer state level regulators and less likely to prefer local or federal level regulators than the environmental groups. The differences between governmental and other organization types with the base group vary between the issue of setbacks and nuisance issues. Statistically significant differences are primarily found in the preference for local or federal level regulators. For air emissions and water quality, environmental groups generally less likely to prefer state regulators and more likely to prefer federal regulators than the other organization types. The only exception is federal government representatives are more likely to prefer federal regulators than the environmental groups for water quality issues.

<u>Hypothesis 1</u>

Recall, Hypothesis 1 is: *Policy actors who believe governments should be involved less in daily life (deep core belief) will prefer lower levels of government to regulate issues (secondary belief). Policy actors who believe governments should be involved more in daily life will prefer higher levels of government to regulate issues.*

To test Hypothesis 1, this paper uses the average marginal effects of a respondent's attitude toward government on their preferred level of government to regulate an issue.[21] Figure 3 shows the instantaneous rates of change of governmental attitude on the preference for local and federal regulator for air quality, water quality, nuisance issues, and setback distances (Williams, 2017a & 2017b).[22, 23] The marginal effect (dydx) value summarizes how a "change in the response is related to a change in the covariate" (Williams, 2017a, p. 4). The independent variable of interest, government attitude, is continuous from -1.2 to 1.7. The further the government value is from zero, the greater the effect of the covariate on the predicted outcome. If we assume a linear relationship throughout values of the governmental attitude we can interpret the results as such (Figure 3.3). For the issue of air emissions, the results show that a one-unit increase in governmental attitude is associated with a 0.082 (8 percentage points) increase in the probability of preferring federal regulator. Therefore, for the issue of air emissions, respondent who prefer more governmental intervention are more likely to prefer federal regulators. Further, for the issue of air emissions, a one-unit increase in governmental attitude, is associated with a 0.055 (5.5 percentage points) in a respondent's

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[21] See Appendix A, Chapter 2 Table 1 and Table 4 for more detail on respondent's preferred regulator for each issue and the tabular data on instantaneous rate of change of governmental attitude on preference for a specific regulator.

[22] STATA code: "*margins, dydx (gov_attitude) pr(out(local_regulator))*" and "*margins, dydx (gov_attitude) pr(out(federal_regulator))*."

[23] See Appendix A, Table 4 for the marginal effects of government attitude at representative values.

likelihood to prefer local government regulators. Both effects are statistically significant. For the issue of water quality, the results are similar to air quality. However, the effect of government attitude is only statistically significant on a respondent's likelihood to prefer local government regulators.

For the small-scale issues of nuisance issues and setbacks distances, the results show that the effect of respondent's deep core belief – attitude toward government – on their secondary belief – their preference over which level of government should regulate – is negligible and not statistically significant.

Overall, these results indicate that the effect of a respondent's attitude toward government on regulator preference varies by issue type. The results partially align with the hypothesis that policy actors who believe governments should be involved less in daily life prefer lower levels of government to regulate oil and gas issues.
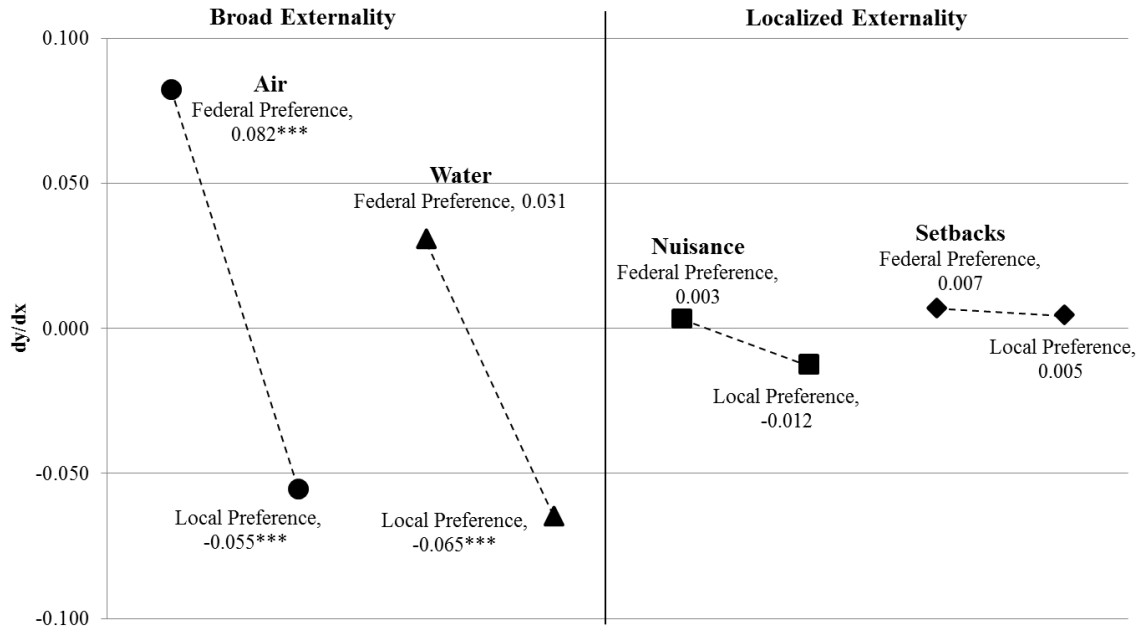
*P-value * <0.10, ** <0.05, ***, <0.01.*

Figure 3.3. The instantaneous rate of change of governmental attitude on local and federal regulator preference for issues with broad and localized externalities.

<u>Hypothesis 2</u>

Recall, Hypothesis 2 is: *Policy actors whose policy core beliefs do not align with the status quo are more likely to prefer regulators at levels of government that are different than where they are currently administered.*

To test Hypothesis 2, this paper examines the issues with localized and broad externalities separately. Recall that setbacks and nuisance issues were regulated at the state level of government in Colorado and at the local level of government in Texas, and air and water quality issuers were regulated at the state in both Colorado and Texas. Therefore, the status quo is different for issues with localized externalities, by state. For those from Texas, the expectation is respondents who are against the status quo – those who desire fracking to be stopped/limited – will be less likely to prefer local regulators than respondents who are for the status quo – those who desire fracking to continue at its current rate or to expand. For those from Colorado, the expectation is respondents who are against the status quo will be less likely to prefer state regulators than respondents who are for the status quo. For the issues in this paper with broader externalities, there is no difference in who currently regulates between Colorado and Texas. Therefore, the expectation is individuals who are against the status quo will be less likely to prefer state regulators than individuals who are for the status quo.

For each pair of issues, this paper completed two analyses: First, the marginal effects of policy preference on the probability of regulator preference. Second, the marginal effects controlling for state.

Marginal effects of policy preference for Issues with localized externalities:

Setbacks and Nuisance issues. Figure 3.4 shows the marginal effects of all respondents'
policy preference toward fracking on their preferred level of government to regulate the
issues of setbacks and nuisances. Each series in the figure represents a preferred level of
government to regulate (local, state, or federal). The Y-axis represents the respondent's
probability of selecting the level of government. The X-axis represents the respondent'
policy preference categories (stop/limit, continue, expand).

For the issue of setbacks, the results show respondents who desire fracking to be
stopped or limited have a probability of 0.61 to prefer local regulators, 0.21 to prefer federal
regulators, and 0.18 to prefer state regulators. Conversely, individuals who desire fracking to
continue at its current rate have a probability of 0.56 to prefer state regulators, 0.41 to prefer
local regulators, and 0.04 to prefer federal regulators. Finally, results in Figure 3.4 show
individuals who desire fracking to expand have a probability of 0.76 to prefer state
regulators, 0.25 to prefer local regulators, below 0.00 to prefer federal regulators.

The trends are similar for nuisance issues: as respondents' policy preference related to
fracking moves from stop or limit, to continue, then to expand, their probability to prefer
state regulators increases from 0.21 to 0.57. A notable difference is that individuals whose
policy preference is for fracking to continue at the current rate prefer local regulation
(Pr(local regulation) = 0.53) more than state regulation (0.42). In for both local issues, the
probability for preferring federal regulators across all groups does not go above 0.21 and
moves toward 0 as policy preference changes from stop/limit to expand.

SETBACKS

NUISANCE
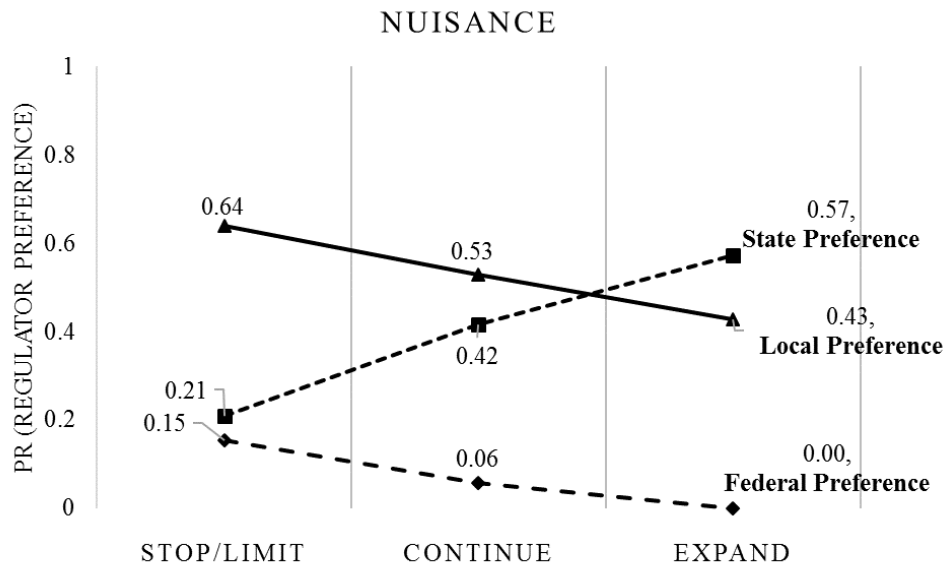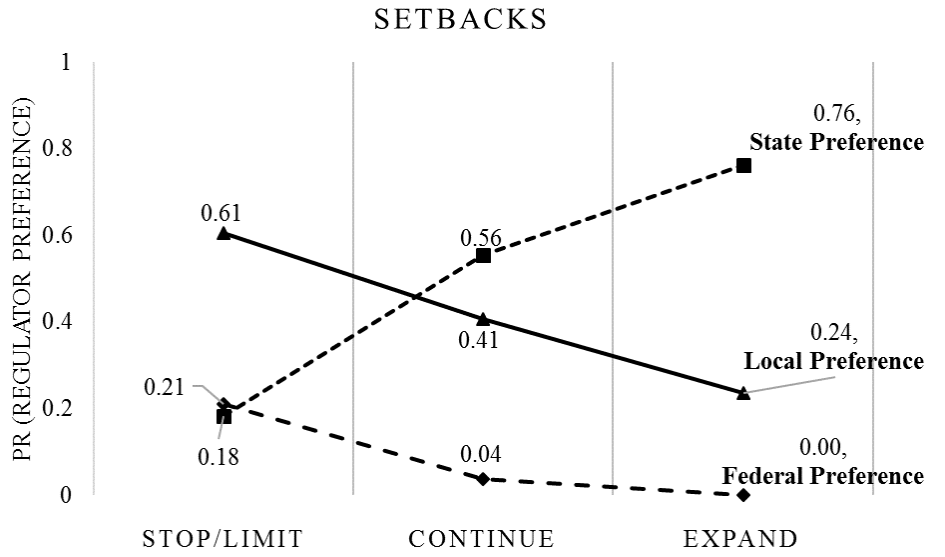
Figure 3.4. Marginal effect of policy preference on regulator preference for localized issues.[24]

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[24] Margins over policy preference for different outcomes: margins, over(policy_preference) pr(out(2)) level(90); margins, over(policy_preference) pr(out(3)) level(90); margins, over(policy_preference) pr(out(4)) level(90).

Marginal effects of policy preference between states for localized issues. Figure

3.5, shows the difference in respondents' preference for local, state, and federal regulators for

setbacks and nuisance issues between those from Colorado and Texas. See Appendix A

Table 5-12 for the differences between state marginal effects and their significance. For

setbacks, the results show respondents from Texas are more likely to prefer local regulators

than respondents for Colorado. However, respondents in both states who desire fracking to

be stopped or limited are more likely to prefer local regulators than policy actors who desire

fracking to continue or expand. Additionally, respondents from both states are more likely to

prefer the state to regulate the issue if they desire fracking to continue or expand, than if the

respondent desires fracking to be stopped/limited. While the results do show a significant

difference between respondents from Texas and Colorado, the results do not support

Hypothesis 2. For nuisance issues, there is no difference between respondents from Colorado

and Texas in their preferred level of government for regulation. The results show similar

trends with respect to a respondent's preference for local and state regulator: respondent who

desire fracking to be stopped/limited are more likely to prefer local regulators and less likely

to prefer state regulates than respondents who desire fracking to continue or expand.

While these results support Hypothesis 2 for respondents from Colorado, the general

trends imply respondents who area against the status quo are generally against state-level

regulation and those who are for fracking are generally for state-level regulation. Finally,

given the ubiquitous low preference for federal regulators for local issues, and high

preference for local regulators implies some directionality to the regulator preference based

on the nature of the issue, rather than which level of government currently regulates the

issues.
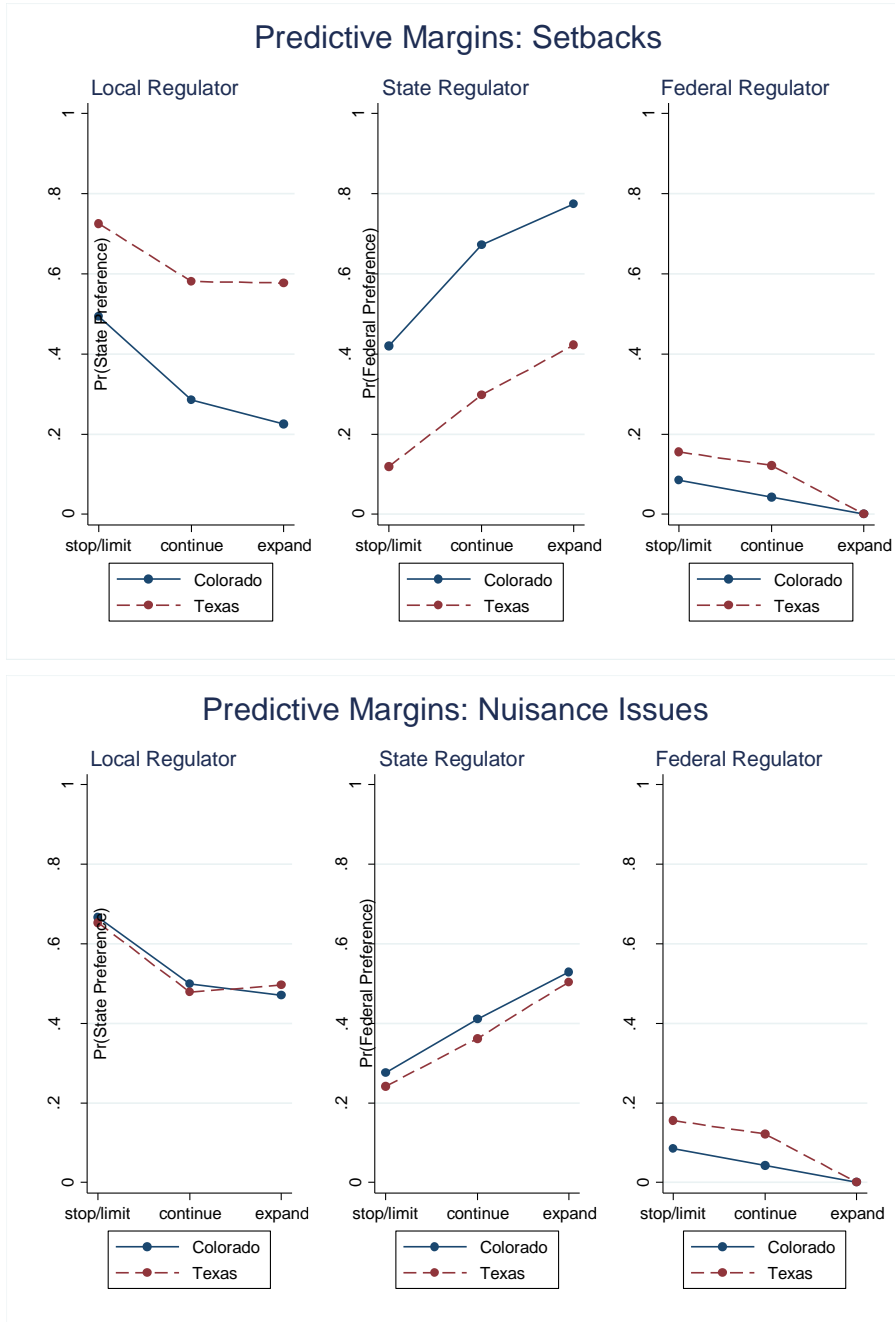
Figure 3.5. Marginal effect of policy preference, by state, on regulator preference for localized issues.

Marginal effects of policy preference for issues with broad externalities: Air and water quality. Figure 3.6 shows the marginal effects of policy preference on regulator preference. The preferences for who regulates are similar across both issues: respondents who desire fracking to be stopped or limited also prefer federal regulators over state or local regulators. Additionally, results show respondents who desire fracking to continue or expand also prefer state regulators over federal or local regulators. For example, for the issue of air emissions, the respondents' probability for preferring state regulators moves from 0.29 if they desire fracking to stop or be limited, to 0.70 if they desire fracking to continue, and to 0.86 if they desire fracking to expand. Given that both issues are regulated at the state in Colorado and Texas, these results align with Hypothesis 2. Further, the relatively higher preference for federal regulators to local regulators for these shows a similar directionality in the preferred alternative regulator for issues with broad externalities as seen with the localized issues.

AIR QUALITY

0.86, **State Preference**

0.70

0.53

0.29

0.22

0.18

0.07

0.11, **Federal Preference**

0.04, **Local Preference**

PR (REGULATOR PREFERENCE)

STOP/LIMIT   CONTINUE   EXPAND

WATER QUALITY

0.90, **State Preference**

0.72

0.47

0.31

0.19

0.22

0.09

0.09, **Local Preference**

0.02, **Federal Preference**

PR (REGULATOR PREFERENCE)

STOP/LIMIT   CONTINUE   EXPAND
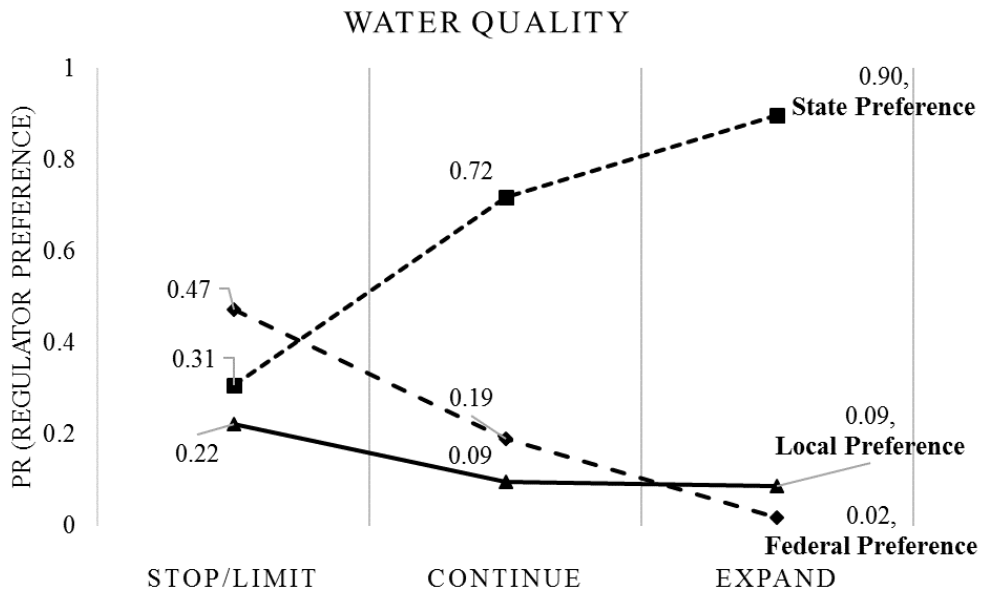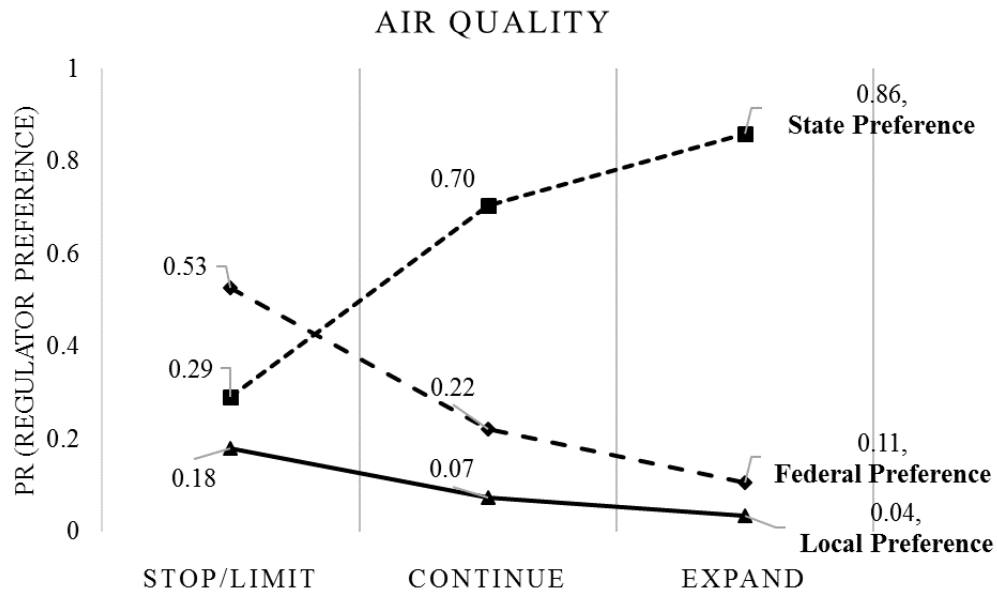
Figure 3.6. Marginal effect on regulator preference for air and water quality over policy preference.

Marginal effects of policy preference between states. Figure 3.7 shows the marginal effect of the state on the respondent's regulator preference for broader issues of air and water quality. For both air and water quality issues, results show significant differences between respondents from Colorado and Texas in the probability of preferring state and federal regulators and no difference between Colorado and Texas respondents on their preference for local-level regulators. Given the regulations for air and water quality are both held at the state in Colorado and Texas, there is no theoretical expectation or explanation for this difference.

Respondents from Colorado are more likely to prefer state regulators than local or federal regulators across all policy preference categories for both air and water quality issues. Even though the Coloradoan respondents who desire fracking to be stopped/limited are less likely to prefer state regulators than those who desire fracking to be continued or expanded, these results to do not align with Hypothesis 2. Indeed, the shape of the curve between across the local, state, and federal marginal plots for the stop/limit group should be either U-shaped or a diagonal line, showing either the probability to prefer local or federal regulator to be greater than the probability to prefer state regulators. Texan respondents, however, show the hypothesized preference profile based on their policy core belief of whether fracking should be stopped/limited, continued, or expanded and the status quo of state-level regulators. Texan respondents who wish fracking to be stopped/limited are most likely to prefer federal regulators and least likely to prefer local regulators for both air and water quality issues. Texan respondents who wish fracking to continue or expand are more likely to prefer state-level regulators over local and federal regulators for the issue of water quality, and more likely to prefer state-level regulators than local level regulators, and equally likely to prefer federal regulators for air quality issues.

Overall, the results of the marginal effects analysis for the two broader and localized issues by state give mixed support for Hypothesis 2 – that those who are against the status quo would be less likely to choose the level of government who currently regulates the issue. The nuances observed in the marginal effects plots on preferred regulator between localized and broader issues, and those between states, indicate the nature of the issue and the relationship between pro and anti-status quo to regulators is a potential driver for preference.
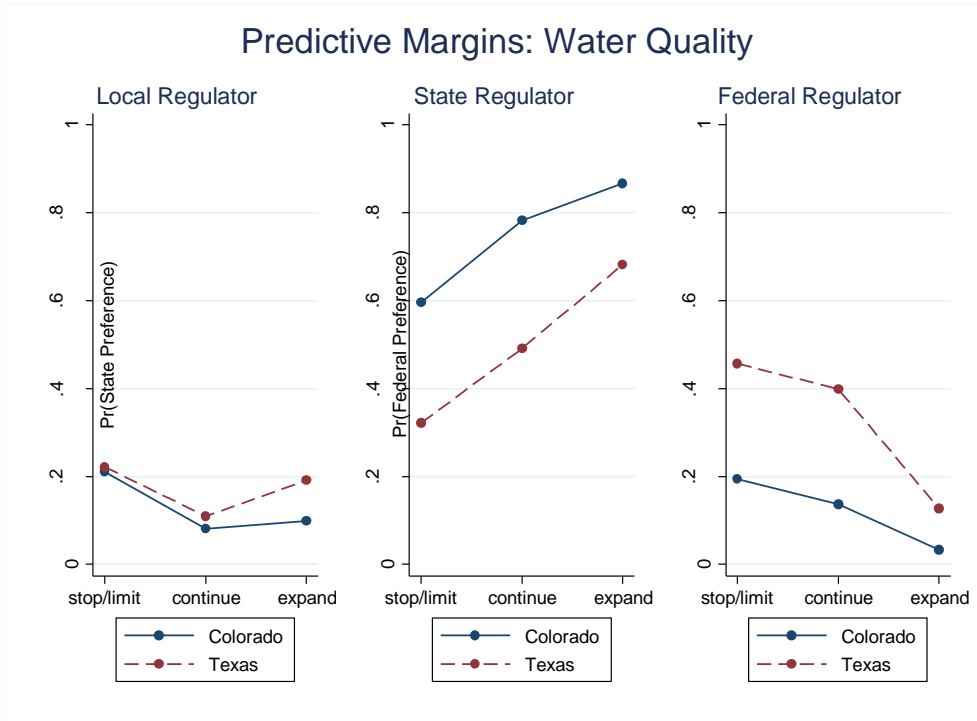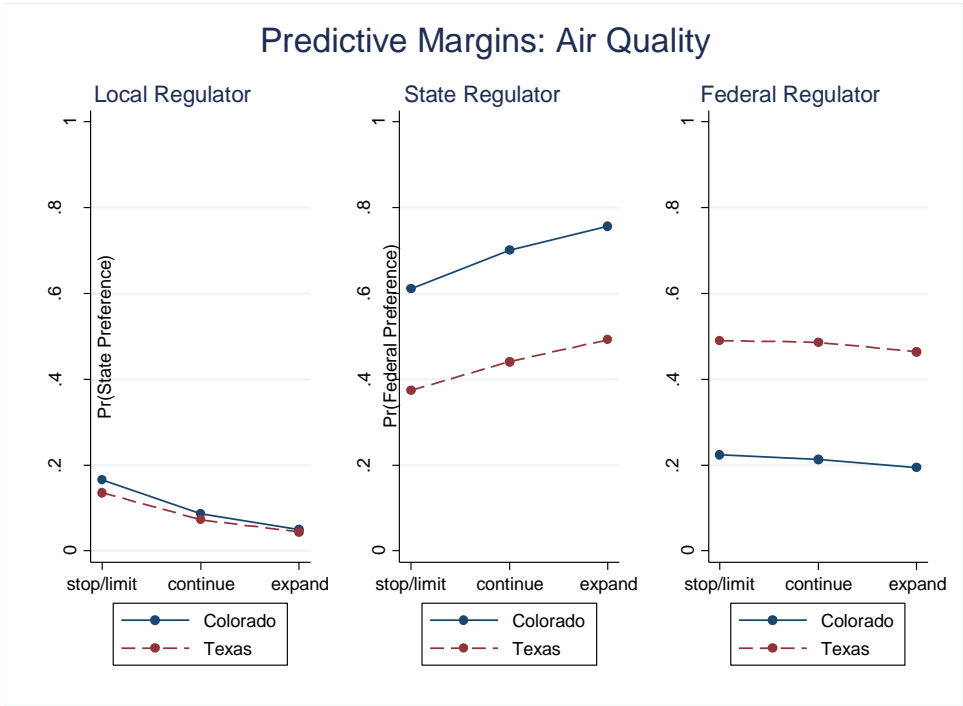
Figure 3.7. Marginal effect on regulator preference for air and water quality issues; state and policy preference interaction.

<u>Interaction of Deep Core and Policy Core Beliefs on Secondary Beliefs</u>

The nuances identified in the results indicate this paper's hypotheses did not anticipate the policy status quo correctly. Results indicate a policy actor's policy core belief – their preference toward fracking – affects their secondary belief – their preference for which level of government should regulate, but it is not explained by which level of government currently regulates. Returning to the ACF's hierarchical belief system, the final analysis examines the interaction between a deep core belief (government attitude) and a policy core belief (preference related to fracking policy) on a secondary belief (regulator preference) for each issue.

Figure 3.8 and Figure 3.9 show the marginal effects of government attitude and policy preference on regulator preference for local issues. Figure 3.10, and Figure 3.11 show the marginal effects of government attitude and policy preference on regulator preference for broad issues. For localized issues, the effect of deep core beliefs (indicated by the slope of each line) on the probability of preferring a specific regulator is insignificant. The driving factor for regulator preference is the policy core belief of policy preference. For broad issues, deep core beliefs play a strong mediating role. For example, examining the issue of air emissions, the probability of an individual who desired fracking to be stopped to prefer local regulators is 0.4 when their government attitude score is -1.5 (desiring less government involvement) and nearly 0 when their government attitude score is 2 (desiring more government involvement). Similarly, the probability of an individual who desired fracking to be stopped to prefer federal regulators is ~0.22 when their government attitude score is -1.5 and over 0.70 when their government attitude score is 2.
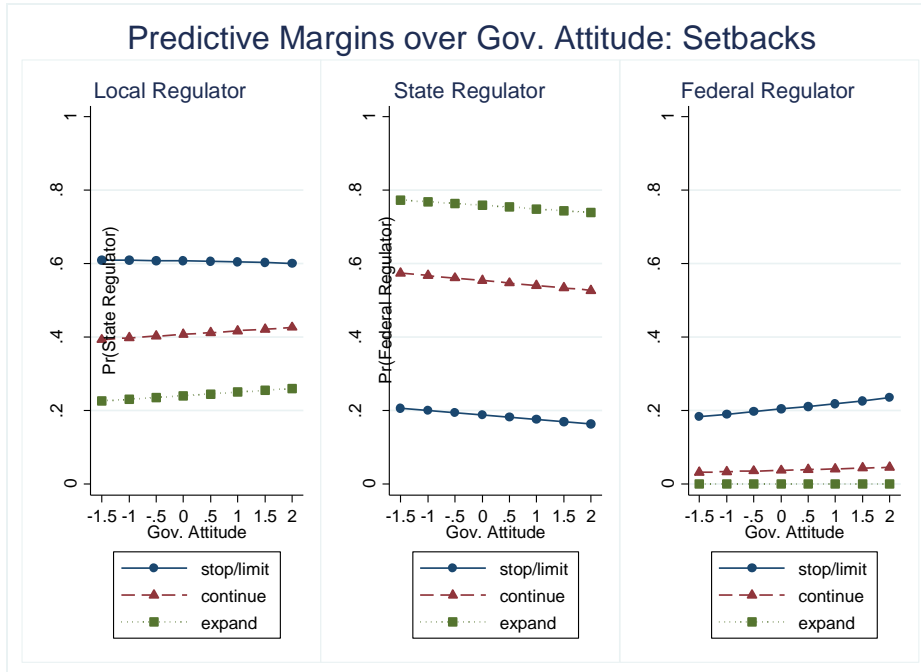
Figure 3.8. Marginal effect of government attitude and policy preference on regulator preference for setbacks and nuisance issues.
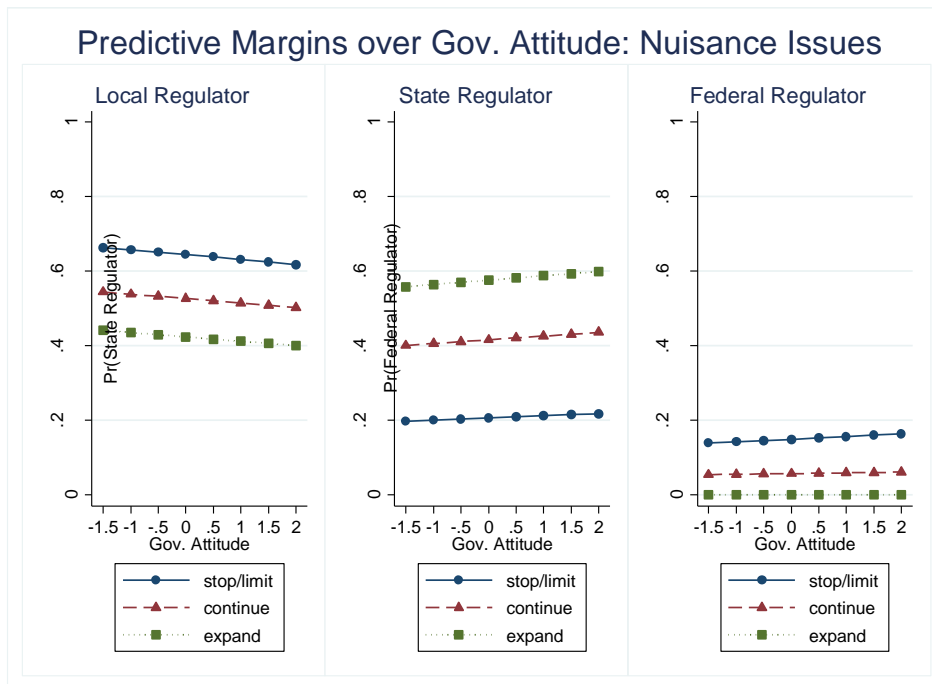
Figure 3.9. Marginal effect of government attitude and policy preference on regulator preference for setbacks and nuisance issues.
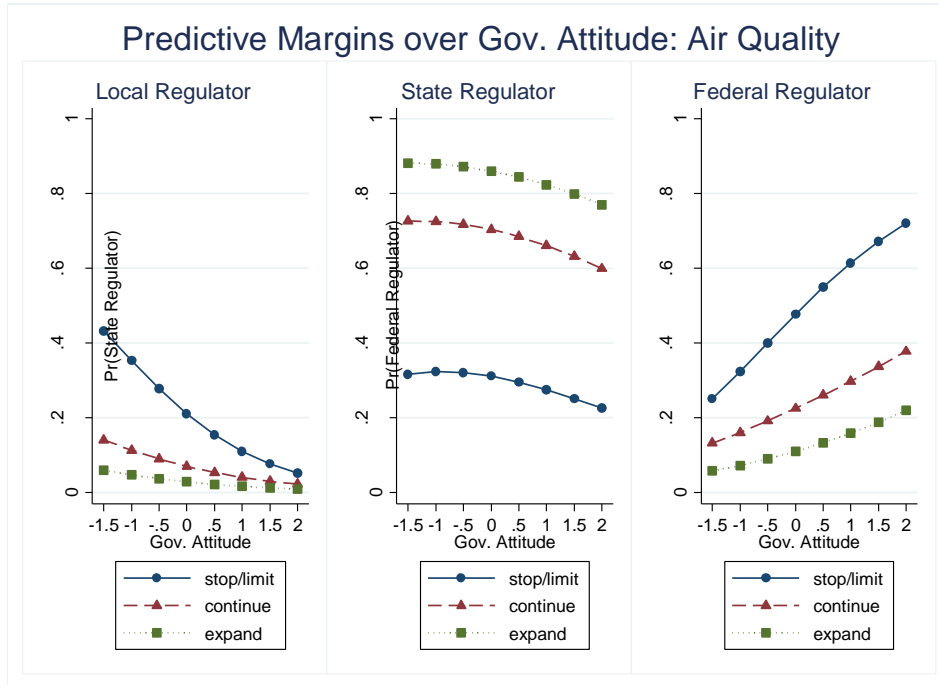
Figure 3.10. Marginal effect of government attitude and policy preference on regulator preference for air emissions and water quality.
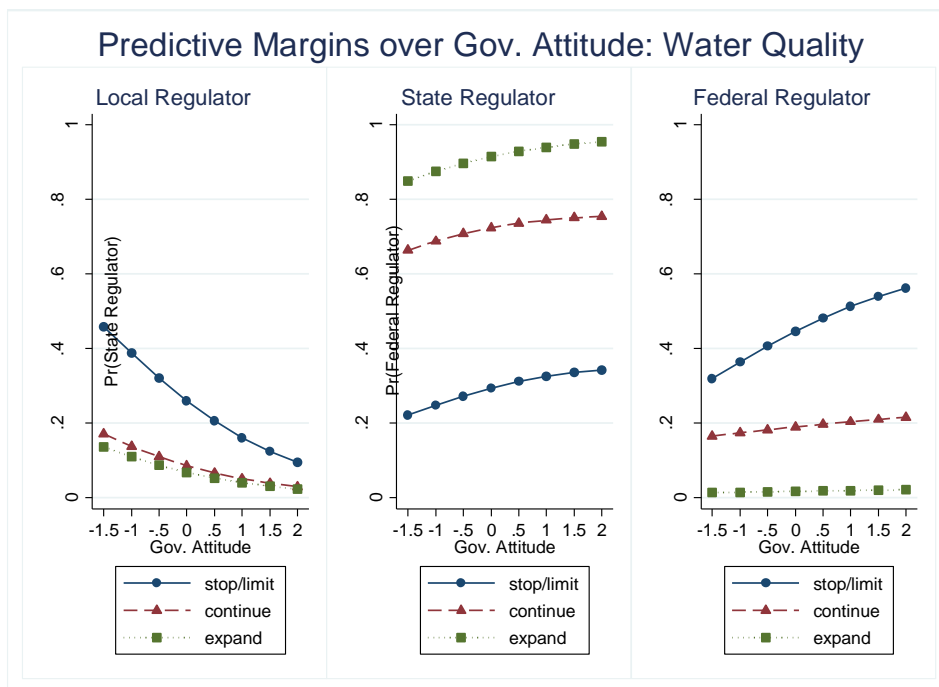
Figure 3.11. Marginal effect of government attitude and policy preference on regulator preference for air emissions and water quality.

Conclusion

The analyses in this paper show no single variable explains an individual's preference for which level of government should regulate fracking-development related issues. Overall, the analysis did not completely confirm either Hypothesis 1 or Hypothesis 2 (Table 3.2). While the results of the broader issue models gave support to the paper's two hypotheses, the models predicting regulatory preference for localized issues did not. However, the alignment of the results of the models predicting regulatory preference for broader issues with respect to Hypothesis 2 – how the status quo affects an individual's regulatory preference - is likely due to the respondent's general view of state, local, and federal regulators, rather than which regulatory body currently regulates specific issues. Indeed, in Colorado and Texas at the time of this research the state regulatory bodies were supportive of oil and gas operations. This general view of state-level regulators is seen in the results of each model and is consistent regardless of the post estimation effects. Figures 3.5 through 3.11 shows individuals are more likely to prefer state level regulators across all issues if they have the policy preference that fracking continue or expand. The figures also show individuals are less likely to prefer state level regulators if they have the policy preference for fracking to be stopped or limited.

The results also show the policy core beliefs more consistently constrain secondary beliefs than deep core beliefs. An individual's deep core beliefs have no effect on regulator preference for localized issues, but they have a significant influence on regulator preference when issues have broader externalities. The respondents' policy core belief on whether fracking should be stopped/limited, continued, or expanded had the most significant effect on the respondent's secondary belief of their preferred level of government to regulate an issue. Of the four issues examined in this research, the respondent's stance on fracking significantly

impacted their preferred level of governmental regulator. However, results show the

relationship of the respondent's policy core belief and the status quo – as measured by which

level of government currently regulates the issue – is not supported. While results indicate

respondents who desire fracking to be stopped or limited also prefer local-level regulators,

the results also indicate they maintain this preference regardless of whether the issue is

currently regulated by the state or local governments. Additionally, while the regulatory

structure had the expected effect on preference for who regulates a localized issue of setbacks

– more preference for local regulators – it did not on nuisance issues. This may be that the

Rule 800 in Colorado allows local governments to exempt themselves from the state rules

related to nuisance issues – but the rule does not allow them to create their own rules, like in

Texas.

Table 3.2. Results Summary.

Hypotheses	Localized Issues	Broader Issues
Hypothesis 1: Policy actors who believe governments should be involved less in daily life prefer lower levels of government to regulate oil and gas issues.	Not Supported	Supported
Hypothesis 2: Policy actors whose beliefs do not align with the status quo are more likely to prefer regulators at levels of government that are different than where they are currently administered.	Limited support	Supported

Discussion and Limitations

This research shows an individual's ideology, policy preference, and political context impact an individual's preferred regulator for different issues related to hydraulic fracturing-based oil and gas development. Additionally, this research shows the affect that these factors have on an individual's preference for who should regulate varies depending on the nature of the issue in question. While these findings fit well with the ACF (i.e., several beliefs and strategies shape the preferences of a policy actor) additional theory is needed to explain the variation observed in the models on an individual's preference for regulator.

The interaction effect of deep core and policy core beliefs on secondary beliefs observed in this research is worth exploring further. Why, for example, is the effect of a deep core belief (i.e., an individual's attitude toward government involvement in daily live) on the secondary belief (i.e., preferred regulator) so strong for issues with broader externalities (Figure 3.9), but the effect of deep core beliefs evaporates for issues with localized externalities (Figure 3.10)? Indeed, a dynamic in the ACF that needs further theory building is how the myriad of an individual's beliefs translate down the hierarchy and eventually manifest into policy goals on which the individual acts (Weible, Sabatier, & Lubell, 2004). In an early evaluation of the ACF, Jenkins-Smith and Sabatier (1994) "jettisoned" the idea that "*abstract* beliefs constrain specific ones" (p. 196), but they maintain beliefs continue to be hierarchical in nature. Weible, Sabatier, and Lubell (2004) provide empirical evidence that higher level beliefs inform lower level beliefs, but they found the line of influence between core and secondary beliefs may neither be direct nor include policy core beliefs. The results of this research provide additional empirical evidence for the linkage between higher and lower-level beliefs, but also the limits of deep core beliefs on secondary. Focusing on the

nature of the issue, such as the level of abstraction of the issue, may offer some explanation. For example, air and water issues are broad and individuals may interpret those issues in a number of ways and so their deep core beliefs help them develop their preference for who regulates. But the setback distances and nuisance issues are very tangible, so deep core beliefs are not needed as a heuristic in choosing their preference, and so their policy core belief has more influence influential in their preference of who should regulate.

Another observation to consider further is why those who desire fracking to expand consistently prefer state regulators and those who prefer fracking to be stopped or limited prefer either local or federal regulators. One potential explanation for the relative preference for or against state regulators found in the political conflict and venue shopping literature is the presence of iron triangles and captured regulators. For example, across all four issues, respondents who desired fracking to be stopped or limited were the least likely to prefer state regulators and respondents who desired fracking to be expanded were most likely to prefer state regulators. This relative likelihood to prefer state regulators was consistent across the policy core belief related to fracking, regardless of the respondents' deep core belief (i.e. their attitude toward government) or if they were in the Colorado or Texas subsystem. Given that state regulators were considered by interest groups to be sympathetic to oil and gas development, this may impact the preference for who regulates across all issues. A similar response is identified in the venue shopping literature: interest groups will seek out venues who are sympathetic to their cause (Pralle, 2003; Holyoke et al., 2012; Constantelos, 2010) and avoid venues where opponents are present (Hall & Daerdorff, 2006; Hojnacki & Kimball, 1998; Ley & Weber, 2015). However, this does not explain another dynamic on display in the analysis: those who wish for an expansion of fracking have even more

preference for state regulators than those who desire for continuation of fracking at its current rate. This research considered both to be on the side of 'the status quo', but the results show that there is need to develop hypotheses related to the direction of change, rather than simply change/no change.

Leaving state preference aside, a final observation of note is that the respondents' preference for who regulates appears to have some directionality (i.e., individuals prefer local regulators for the localized and federal regulators for broader issues), indicating other significant factors exist. A more nuanced hypothesis is needed to address the directionality of regulator preference. For example, hypotheses that take the nature of the good, or issue in this case, into account. Respondent's may be examining the issue from a more practical or strategic level, such as the policy actor's view on a governing body's ability to address a problem. In this sense, the nature of the issue is driving which level of government is more efficient at its governance an individual's beliefs are affecting the cost on their preference (North, 1984; North, 1990).

As Buchanan and Tullock (1962) described the optimal size of government, they saw issues with larger externalities better handled by larger or higher-levels of governments. Conversely, issues with smaller externalities are better handled by smaller governments. Buchanan and Tullock's (1962) argument is buttressed by Butler and Macey (1996) and they named the idea "the matching principle". Also in the 1960s, the idea of polycentricity arose through observation of how metropolitan areas have found solutions to multi-scale issues (V. Ostrom, Teibout, & Warren, 1961). V. Ostrom et al. (1961) argued a polycentric, or multi-level and overlapping, governance system is a necessity to manage events with a range of scales of positive or negative externalities. Otherwise, when a public agency's boundary of

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control does not match the boundary of the event they lose their ability to regulate effectively (V. Ostrom et al., 1961, p. 835). Research on common pool resources provides empirical evidence of the importance of matching the governing boundaries to the resource and its users (E. Ostrom, 1990). Larger common-pool resources are a challenge to manage with small scale, self-governing appropriators because of a mismatch in governance and resource boundaries (E. Ostrom, 2005, 283). Therefore, a policy actor who is practically, or efficiently minded for solving problems, may prefer local governments regulating smaller-scale issues related to oil and gas development, and state or federal levels of government for regulating larger-scale items. But then, their attitudes toward government or a specific regulator mediate that belief, driving some at extreme ends elsewhere. Given that this research only examined four specific issues, further research is needed in this area to confirm or deny the results.

These alternative interpretations highlight some of the limitations of this study. For example, the inability of the theories used to explain and incorporate how the policy actor's views of local, state, and federal regulators in the paper's hypotheses or building a stronger connection between the nature of the good and the policy actor's preferred regulator. And more practically, the paper's focus on only four issues limits the generalizability of the findings. However, as with most limitations and unanswered questions, they also guide the direction of future research. As such, future work should include a broader range of issues with clear attributes, such as size of externality, incorporate theories on how prevailing institutional arrangements affect choice, and finally theories on how broader strategies of dominant and minority coalitions may play into their preference for who should regulate an issue. Indeed, one would expect different results in subsystems defined by a substantive topic that is not as contentious as fracking.

CHAPTER III

POLICY ACTORS' VENUE SHOPPING PATTERNS DURING NEW YORK'S

FRACKING DEBATES

Introduction: Venue Shopping

No other strategic decision may be as critical for a policy actor during a contentious debate than where to debate the policy issue. Contentious policy debates involve multiple strategic decisions and actions made by policy actors (e.g., interest groups, governmental representatives, scientists, or the media). Strategic decisions include choosing with whom to ally, how to leverage focusing events, how to develop issue frames and narratives, which policy solutions to propose, and where to debate an issue. The decision of where to hold a policy debate, defined as venue shopping, is a specific tactic used by policy actors to expand or contain political conflict (Baumgartner & Jones, 1993; Schattschneider, 1975; Sabatier & Jenkins-Smith, 1993; Pralle 2003).[25] Venue shopping also partially determines which governmental decision makers are active in addressing a policy issue, and to whom policy actors will advocate for their policy preferences. Indeed, policy actors select a venue, in-part, based on the decision makers associated with the venue (Holyoke, Brown, & Henig, 2012; Weber & Ley, 2015). Venue selection is a component of opening a new venue to a current policy issue, which is a mechanism for policy change (Kubler, 2001; Norhstedt, 2011). Finally, venue shopping requires the use of a policy actor's limited resources, and so contains inherent risk because in every policy debate, there is a winner, and there is a loser.

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[25] In this research, the term venue is limited to only governmental venues. In the broadest use of the word, venues could include media and other public outlets for policy debates.

One reason policy actors venue shop is to expand political conflict. When a policy actor engages new set of governmental decision makers, they draw fresh attention to an issue (Baumgartner & Jones, 1991; Schattschneider, 1975). To affect such an expansion, policy actors may re-frame a policy issue, find specific aspects of the issue that can be addressed by a different venue, or choose a venue that is sympathetic to their point of view and problem definitions (Baumgartner & Jones, 1993). When policy actors find a sympathetic set of decision makers at a new venue, they can more easily break the established policy images or iron triangles (Baumgartner & Jones, 1993). Indeed, as part of a conflict expansion strategy, venue shoppers intentionally increase the attention paid to a policy issue. Once decision makers and the public turn their attention to an issue, a positive feedback loop, further increasing attention to the issue. Scholars show, increased attention is a necessary condition for major policy change (Baumgartner & Jones 1993; Schattschneider, 1975).

Another reason policy actors venue shop is to contain conflict. Policy actors will select venues with decision makers at venues who are supportive of the status quo to contain a political conflict. They may achieve a similar effect by lobbying to keep debates within venues previously involved in the policy issue (Pralle, 2003). By maintaining the traditional venues involved in an issue, policy actors can minimize new attention to the issue. This maintains current policy images and can block the very policy change efforts described above (Pralle, 2003). Venue shopping is therefore both a possible strategy used by policy actors to either instigate or oppose policy change through what scholars describe as overcoming or engaging institutional friction (Baumgartner & Jones, 1993; Baumgartner & Jones, 2005; Weible, Heikkila, deLeon, & Sabatier, 2012; Moe, 2015). As Papillon's (2011) study of multi-level venue shopping shows, venue shopping can affect the very institutional

arrangements that create friction or other path dependencies faced by policy actors engaged in contentious policy debates.

Despite the effect venue shopping can have on policy debate outcomes, not every policy actor engages in venue shopping (Buffardi et al., 2015). This is because it is a costly endeavor. Policy actors must acquire and use resources – such as attention, time, money, and political connections and capital – to engage a venue to advocate their policy position (Sabatier & Weible, 2007).

Given the cost and the potential impact venue shopping may have on the outcomes of contentious policy debates, policy scholars can learn about strategic policy actor behavior by examining a venue shopper's choices. Indeed, scholarship on venue shopping is experiencing a reemergence with calls for, and development of, new theoretical models and quantitative models for such reasons (e.g., Ley & Weber, 2015; Constantelos, 2010; Holyoke et al., 2012; Ley, 2016; Beyers & Kerremans, 2012). However, this research limits our understanding of policy actor strategic behavior in two ways. First, the above scholars do not include the range of policy actors involved in policy debates; rather they focus on a single interest group (e.g Holyoke et al., 2012; Ley, 2016; Buffardi et al., 2015; Beyers & Kerreman, 2012; Constantelos, 2010).[26] Second, the vertical or multi-level venue shopping research designs are complex and include venues in multiple states or the nation as a whole, which draws theoretical focus away from the venue-policy actor-relationship and onto institutional features affecting policy actor behavior (e.g., Beyers & Kerreman, 2010; Constantelos, 2010). Further, while the work is intended to examine how large institutional features affects

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[26] Holyoke et al. (2012), for example, surveyed charter schools in three states boards. Ley's (2016) case study focused on industry groups in Oregon. Buffardi et al. (2015) examined nonprofits in Seattle. Beyers and Kerreman's (2012) studied NGOs, business organization, and labor associations in the European Union. Constantelos (2010) studied trade, business, or professional associations in Ontario, CA and Michigan, USA.

the openness of venues, other institutional arrangements may exist (e.g., norms) that could affect political strategies like venue shopping decisions. Our understanding of policy actor behavior and venue selection can benefit from research that is designed isolate the inquiry more closely policy actors and how their perception of the policy venue.

This paper builds on the venue shopping literature by applying the Advocacy Coalition Framework (ACF) to examine the venue choices of policy actor. Not only does the ACF provide theoretical guidance on key policy actor attributes affecting their actions, but its theoretical and analytical tools address the two limitations in venue shopping research. First, venue shopping research typically focusses only on interest groups, while the ACF's advocacy coalition includes all policy actors involved in venue shopping. Second, venue shopping research often examines patterns across state and national boundaries. This research uses the ACF's subsystem to set analytical boundaries around a single state. This boundary simplifies the institutional features that could affect the study of venue choices, but still includes venues at multiple levels and branches of government (Sabatier, 1988). The research uses survey data from policy actors involved in New York's statewide fracking policy debates, and develops separate ordered logistic regression models to test two classic venue shopping questions

1. What factors influence the total number of venues shopped by a policy actor and;

2. How does a policy actor's perception of a policy-making venue affect their shopping frequency at that venue?

The remainder of the paper will first outline the theoretical underpinning of the research through a review of ACF. Then, the paper develops the hypotheses for each research

question using insights from venue shopping literature and the ACF. Following the hypotheses section, the paper describes the research setting - New York's oil and gas policy subsystem. Next, the paper operationalizes each variable and explains the regression models used for each research question. Next, the paper describes the results of the two models. The paper concludes with a discussion of the results and a reflection on the venue shopping literature.

Theoretical Foundations

The Advocacy Coalition Framework (ACF)

Two constructs within the ACF are central to its theories of policy change and policy actor behavior in contentious contexts: the policy subsystem and the advocacy coalition. A policy subsystem is defined by a geographic area, a policy topic, and the policy actors within the geographical area involved in that topic. The policy subsystem construct simplifies analyses of complex policy process because it allows an analyst to define internal versus external influences on the policy subsystem and who qualifies as a policy actor. By focusing on a policy subsystem, scholars can identify and perhaps include multiple governmental decision-making forums. This is an improvement on typical venue shopping research that looks at a targeted venue or limited set of venues. In this research, the subsystem boundary is drawn around a single state. Therefore, the analysis includes decision-making venues at local and state levels of government and across each branch of government. This provides horizontal and vertical variation in venues and reduces the larger institutional features (e.g.,

different state or national rules on lobbying) which could complicate the analysis on venue shopping decisions.[27]

The ACF identifies a second construct: the advocacy coalitions. These advocacy coalitions operate within subsystems. This construct of the ACF simplifies analyses at the subsystem level of analysis. The advocacy coalition construct recognizes the multitude of policy actors involved in policy change (e.g., interest groups, the scientific community, and the media, and individuals from all levels of government). However, it does not require the researcher to identify or examine each policy actor. The ACF uses the boundedly rational individual, and insights of group behavior from the policy network theory to inform the advocacy coalition concept (Sabatier, 1988; Sabatier & Weible, 2007). The ACF assumes that individuals use their beliefs as heuristics to simplify their understanding of new information and decision-making. As such, an individual's beliefs drive problem definitions and policy goals, and help determine who is an ally or adversary within a policy debate (Sabatier, 1988). Further, to overcome individual physical and cognitive limits, policy actors form coalitions to share resources and coordinate political activities to influence policy decisions. An advocacy coalition is therefore a broad network of policy actors with similar policy goals, who choose to act collectively to increase their ability to influence decision makers.

With respect to venue selection, the ACF posits that advocacy coalitions strategically engage 'governing sovereigns' to ensure their decisions align with the coalition's beliefs

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[27] The ACF does not provide guidance on differentiating between available venues. Sabatier (1988) discusses how multiple venues exist, but because debates move from one venue to another over time, using the subsystem as the unit of analysis captures this movement without getting in to the details. The importance of different venues and the activities around venue selection and engagement are acknowledged as important (Sabatier & Jenkins-Smith, 1993 chapter 10).

(Sabatier, 1988). Although the term 'governing sovereign' is used to describe the targets of advocacy coalitions, the implication is that policy actors in the coalitions aim to influence a set of decision makers who operate within one or more venues. The ACF neither describes nor explains the advocacy coalition's selection process between one governing sovereign and another. However, contemporary ACF research has highlighted the importance of such a selection process (Nohrstedt, 2011).[28] Therefore, this research applies theories that are compatible with the ACF to develop hypotheses to explain the policy actor's choice to engage with governmental venues. Specifically, venue shopping-related ideas from the Punctuated Equilibrium Theory (Baumgartner & Jones, 1993) and other related venue shopping scholarship (Pralle, 2004; Holyoke, Brown, & Henig, 2012; Constantelos, 2010) are applied to build hypotheses on the venue choices of policy actors. In all, the ACF assists this research on the strategic activity of venue shopping by setting up an analytical frame that includes all policy actors and defines the subsystem boundaries, but traditional venue shopping theories are needed to develop specific hypotheses related to its research questions.

Hypotheses Development

Research Question 1: What factors influence the total number of venues shopped by a policy actor?

One way to achieve policy change is through political conflict expansion, which occurs when policy actors draw more people (i.e., decision makers, the public, interest groups, etc.) into the debate (Schattschneider, 1975). One way policy actors achieve conflict expansion is through venue shopping. When policy actor's venue shop for this purpose, they strategically select decision makers who they believe will agree with their side of a political

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[28] Nohrstedt (2011) found major policy change occurred after a new policy venue opened to the debate as a result of actions of the minority coalition members.

conflict (Baumgartner & Jones, 1993). Once a set of decision makers' attention is on an issue, a positive-feedback cycle of information and attention can be initiated. This facilitates the spread of the policy issue to other policy making venues (Baumgartner & Jones, 1993).

A subset of venue shopping scholarship in US and Europe describes and explains differences in horizontal or vertical venue shopping activity. Horizontal activity includes movement between venues in different branches or domains of government within the same level of government (Holyoke, Brown, & Henig, 2012). Vertical or multi-level venue shopping activity includes movement between venues in different levels of government (Princen & Kerremans, 2008; Beyers & Kerremans, 2012; Holyoke, Brown, & Henig, 2012; Constantelos, 1996, 2007, 2010). In research on vertical and horizontal venue shopping, scholars have defined greater levels of shopping activity by the total count of venues shopped (Beyers & Kerremans, 2012) or number of levels contacted by an interest group (Constantelos, 2010). In short, scholars quantify the level shopping through counting the total venues shopped. As such, this research examines factors that influence the total venues shopped by a policy actor. Specifically, the research will include resources, policy actor type, and if the policy actor's view of current policies related to policy topic of interest.

Resources. The ACF identifies a broad range of resources including finances, leadership, access to authority, access to scientific and technical information, and mobilizable supporters (Sabatier & Weible, 2007; Weible 2007). The weight or relative importance of each of these influences is yet to be determined (Jenkins-Smith, Nohrstedt, Weible, & Sabatier, 2014; Nohrstedt, 2011). However, the venue shopping literature theorizes that resources affect a policy actor's ability to venue shop (McQuide, 2010; Pralle, 2003;

Constantelos, 2010; Holyoke et al., 2010). Therefore, the first hypothesis related to total venues shopped is:

Hypothesis 1: Policy actors with more resources will shop more venues than those with fewer resources.

Although both theory and select studies show a positive relationship between a high resource level and increased venue shopping activity, this hypothesis is of continued interest because some empirical studies of venue shopping activity downplay the effect of available resources. For example, "the level of resources" explanation provided little explanatory power when examining interest group activity in multi-level venue shopping settings (Constatnelos, 2010; Beyers & Kerremans, 2012).

Policy actor type. The tendency of a policy actor to engage in political activity may depend on their organization type. For example, scientists may produce information related to a policy issue and, therefore, be appropriately considered as policy actors within the subsystem, but scientists may not engage with decision makers in the same way or frequency as interest groups. Likewise, governmental representatives at one level of government, or branch, may testify or advocate their preferences to another governmental decision-making body, but have constraints on when or how they can act. Indeed, interest groups, by definition, advocate for policies to align with their positions (Baumgartner & Leech, 1998). Therefore, the expectation of this paper is that interest groups will have a greater amount of shopping activity than other policy actors identified in the policy subsystem.

Hypothesis 2: Policy actors associated with interest groups will shop venues than policy actors associated with non-interest groups.

Beliefs of the policy actors. Policy actors are belief-motivated individuals, in that they seek to see their beliefs translated into policies through political activities, such as engagement with governmental decision makers (Sabatier, 1988). Therefore, if a policy actor determines the status quo policies do not align with their views, they are motivated to expend resources and advocate for change. Conversely, if a policy actor's beliefs align with the status quo policies, they may be less motivated to seek change. As venue shopping theory posits, an individual seeking change will attempt to expand the political conflict to facilitate policy change in their favor (Baumgartner & Jones, 1993; Pralle, 2006; Pralle, 2003). Therefore:

Hypothesis 3: Policy actors whose beliefs deviate from the status quo will shop more venues than policy actors whose beliefs align with the status quo.

Control Variable: Organizational Focus. An organization's mission impacts its venue selection (Constantelos, 2004; 2010). While Constantelos (2004; 2010) found interest groups shopping outside of their stated focus or mandated jurisdictions, the logic remains sound that an organization created to influence a particular level of policymaking would shop at that level more frequently than others would. For example, if an organization's mission is to advocate a policy issue within a specific state within the United States, their organizational focus would be the state-level. Alternatively, if the organization's mission describes local activity and community building as their preferred mode to address a policy issue, then their organizational focus would be local. Depending on the context policy debate, organizations focused at one level of government may be more involved than others may. While no expectation is set in this research, the organizational focus is included as a control variable.

Research Question 2: How does a policy actor's perception of a policy-making venue affect their shopping frequency at that venue?

Another arm of venue shopping literature explains why a policy actor chooses one venue, or one type of venue, over another. For example, Buffardi, Pekkanen, & Smith (2015) identify three types of venues differentiated by the branch, the domain, and the level of government.[29] Others examine the frequency that interest groups shop at a specific level of government (Constantelos, 2010), or the frequency of shopping within a set of venues of interest (Beyers & Kerremans, 2012), or the likelihood of shopping a venue (Holyoke et al., 2012). The second focus of this paper is to explain policy actors' specific shopping choices among the venues available within a subsystem.

Political scientists' inquiries into venue shopping over the past two and half decades provide a large knowledge base on policy actor venue selection. Theory and empirical studies of venue shopping identify many factors or attributes that affect a policy actor's venue selection. I categorize these into four groups. First, factors external to venue; second, factors directly associated with the venue or the decision makers in the venue; third, factors that describe the relationship between the venue shopper and the venue; and fourth, factors internal to the policy actor.

Factors external to venue. Pralle (2003) argues that whether the venue has jurisdiction or a policy topic may impact a venue shopper's choice. Other scholars find the

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[29] While Buffardi, Pekkanen, and Smith (2015) provide three types of venues based on branch, domain, and level, one should note that these types may not be distinguishable if a data-set does not include elected officials who are also part of the executive branch. Their dataset included: "mayor or County Executive, City or County Council, Department of Neighborhoods, other city government unit, other state government unit, Republican Party, Democratic Party, State Legislator, U.S. Congress member, federal government, or president" (page 7-8). Each of these were then "classified… into three types of venues: (i) branch of government: executive, legislative; (ii) domain type: bureaucracy, elected officials, political party; and (iii) level of government: local, state, federal" (page 8).

presence of a policy actor's allies in a venue will increase or and the presence of opponents may decrease the likelihood that policy engages that venue (Hall & Deardoff, 2006; Hojnacki 1998; Hojnacki & Kimball, 1998). Related to the previous finding, recent scholarship argues that the relative strength between competing interest groups will affect venue selection (Ley, 2016; Ley & Weber, 2015).[30]

Factors directly associated with the venue or the decision makers in the venue. Holyoke, Brown, and Henig (2012) argue that the policy preferences of the decision makers within each venue, and how the policy actor views those preferences, will affect a policy actor's choice. Similarly, Weber and Ley (2015) argue policy actors will choose venues where the venue's decision makers are more receptiveness the policy actor's problem definition. Finally, policy actors are more likely to shop venues that are currently involved in their policy topic (Holyoke et al., 2012; Mahoney & Baumgartner, 2008).

Factors that describe the relationship between the venue shopper and the venue. Policy actors are less likely to select a venue when the actor suspects the associated decision makers have a bias or preference for the policy actor's competitor (Hall & Daerdroff, 2006; Hojnacki, 1997; Hojnacki & Kimbal, 1998; Ley & Weber, 2015). On the other hand, policy actors are more likely to select venues when the policy actor expects the decision makers have policy preferences that align with the policy actor's policy preferences (Pralle, 2003; Holyoke, Brown, & Henig, 2012; Constantelos, 2010; Wright, 1992). Finally, policy actors are more likely to select venues that they believe to have more power or authority over the policy topic of interest to the policy actor (Constantelos, 2010).

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[30] Interest group competition, as an explanatory factor, is more commonly examined when considering why an interest group becomes involved in an issue and which issues they choose to engage in (Baumgartner & Leech, 2001).

Factors internal to the policy actor. A policy actor's goals and organizational mission affect which venue they select (Pralle, 2003; Constantelos, 2010). For example, an interest group with a state level mission will shop state level decision makers more than local or federal decision makers. A policy actor's resources and skill will also affect their venue shopping decisions (Holyoke, Brown & Henig, 2012; McKay, 2011; McQuide 2010; Ley and Weber, 2015; Ley, 2016; Pierson 2000; 2004). Some venues, such as courts take larger amounts of resources and specific skill sets, that may not be required at an administrative body's rule making hearings.

This paper focuses on the factors internal to the shopper and the relationship between shopper and venue. Specifically, the paper examines the effect of the perceived influence of the venue by the shopper and the perceived agreement of the shopper with the venue's decision makers on shopping propensity.

Relative influence. A basic argument in the venue shopping literature is that venue selection is a strategic choice made by policy actors to maximize their use of limited resources for advocacy (Mazey & Richardson, 2001; Pralle, 2003, p. 249). One way policy actors reduce the risk of advocating at the wrong venue is choosing a venue they believe to have direct influence over their issue of interest. The influence of a venue may either be due to its jurisdiction or institutional claim to the policy topic (Jones, 2001; Pralle, 2003). A policy actor may also believe the venue has influence because the venue is already active in pursing the policy actor's policy issue (Holyoke, Brown, & Henig 2012; Mahoney & Baumgartner, 2009). In addition to a venue's influence, the constellation of venues available to the policy actor must be considered. Constantelos (2010) argues that a policy actor's venue

selection at a specific venue is not only based on how important they believe the venue is, but also how important the venue is when compared to the other available venues. Thus:

Hypothesis 4: Policy actors are more likely to shop venues that they perceive to have more influence in the subsystem than venues they perceive to have less influence in the subsystem.

Relative agreement. Each policy venue is prone to a particular policy image or images related to a policy topic (Baumgartner & Jones, 1991). A policy image is a set of beliefs and values that influences how the decision makers define a problem or approach solutions. In the context of policy change, policy actors can expand the policy conflict by taking their new policy ideas to a venue that is open to their policy image (Baumgartner & Jones, 1991).[31] Alternatively, policy actors can contain a political by keeping policy debates at venues where the decision makers agree with the current policies. This research applies Constantelos' (2010) logic that relative influence matters in venue selection to the argument that policy actors are more likely to select a venue that has decision makers that the policy actor agrees with. Therefore,

Hypothesis 5: Policy actors are more likely to shop venues with decision makers that the policy actor agrees with more, when compared to decision makers in other venues in the subsystem.

Control Variables: Resources. Just as resources enable policy actors to increase the number of venues they shop, resources affect a policy actor's shopping frequency at any given venue (Walker, 1983; Beyers & Kerremans, 2007). While no expectation is made for

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[31] The policy image arguments of PET align with the ACF's view of belief-driven policy. As noted above, policy actors by the ACF's definition include decision makers within the venue and advocates external to the venue.

any specific venues, resources are included as a control variable in this paper's venue selection model.

Control Variables: Other Venue Shopping Activity. Policy actors may shop multiple venues within a subsystem. While there is existing research that suggests a policy actor's choice for one venue influences their other venue shopping selections (e.g., ecology of games (Lubell, Henry, & McCoy, 2010), this paper does not emphasize that work. However, this model of venue shopping this paper uses does include control variables to indicate where else the policy actor.

Control Variable: Organizational focus. (See above)

Table 1 below summarizes the paper's two research questions and the hypotheses associated with each research question.

Table 1: RQ and Hypotheses

Research Questions	Hypotheses
RQ1*: What factors influence the total number of venues shopped by a policy actor?	**Hypothesis 1:** *Policy actors with more resources will shop more venues than those with fewer resources.*
	Hypothesis 2: *Policy actors associated with interest groups will shop venues than policy actors associated with non-interest groups.*
	Hypothesis 3 *Policy actors whose beliefs deviate from the status quo will shop more venues than policy actors whose beliefs align with the status quo.*
RQ2. How does a policy actor's perception of a policy-making venue affect their shopping frequency at that venue?	**Hypothesis 4:** *Policy actors are more likely to shop venues that they perceive to have more influence in the subsystem than venues they perceive to have less influence in the subsystem.*
	Hypothesis 5: *Policy actors are more likely to shop venues with decision makers that the policy actor agrees with more, when compared to decision makers in other venues in the subsystem.*

Research Setting

This paper's research is set within the state of New York in 2013 and focusses on the fracking-related policy debates occurring at the state, county, and municipal levels of government. Further, this research includes the policy actors involved in the policy debates related to fracking debates. These dimensions define the New York fracking policy subsystem (Sabatier, 1988). By drawing the subsystem boundaries in just such a way, this research has two empirical advantages over other quantitative models that examine shopping patterns across state or national boundaries.

First, the state-level subsystem holds constant those institutional features commonly hypothesized in the venue shopping literature as influential on multi-venue choice (e.g., Constantelos, 2010; Holyoke et al., 2012; Beyers & Kerremans, 2012). This nuance allows for an empirical focus on policy actor attributes and simpler quantitative models (e.g., ordered logit models vs. multi-variate logit models with fixed and random effects in Holyoke et al. (2010)). Second, all policy actors are involved, allowing for an examination of shopping patterns of interest groups and policy actors, such as governmental officials and scientists, who are commonly left out of venue shopping studies (Holyoke et al., 2012; Ley, 2016; Buffardi et al., 2015; Beyers & Kerreman, 2012; Constantelos, 2010).[32] A third advantage of this research setting is that it was completed during the time of a *de facto* statewide moratorium on fracking. Because of this, day-to-day regulatory issues and rule makings related to oil and gas development had stalled and the political focus turned toward

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[32] Holyoke and colleagues (2012), for example, surveyed charter schools in three states boards. Ley's (2016) case study focused on industry groups in Oregon. Buffardi et al. (2015) examined nonprofits in Seattle. Beyers and Kerreman's (2012) studied NGOs, business organization, and labor associations in the European Union. Constantelos (2010) studied trade, business, or professional associations in Ontario, CA and Michigan, USA.

the state-level rule development for hydraulic fracturing and to what extent hydraulic fracturing should be allowed within the state of New York.

Indeed, policy actors had been active in affecting the outcome of the moratorium since its inception in 2008. In 2008, Governor David Paterson, in response to the technological advances in oil and gas extraction commonly described as "fracking", instructed the New York Department of Environmental Conservation (DEC) to update the general environmental impact statement (GEIS) to address new technologies for oil and gas extraction. Then during the updating process, New York state representatives voted to place a moratorium on fracking. While Governor Paterson ultimately vetoed the bill, he issued an executive order stating that no permits-to-drill would be issued until the supplemental general environmental impact statement (SGEIS) was completed (Brown, 2011; NYDEC, 2011). In 2011, Governor Andrew Cuomo continued the moratorium (Brown, 2011). While the moratorium remained in effect until 2014, in June 2012 Governor Cuomo floated a plan to lift the high-volume hydraulic fracturing ban in communities that support the techniques that are in the counties of Broome, Chemung, Chenango, Steuben and Tioga (Hakim, 2012).

Also during this time, policy actors contested fracking policy in venues across multiple branches and levels of government. For example, the DEC received over 260,000 public comments on the SGEIS drafts. Further, local governments across the southern regions of the state passed fracking bans and moratoriums (Meyer 2012; Brown, 2011). According to Fracktracker.org, between August 2011 and September 2013, the number of fracking moratoria and bans increased from 23 to 160 (Fracktracker website), indicating an active and growing grassroots anti-fracking movement. In response, pro-fracking groups were suing the local jurisdictions at local (Gottlieb, 2012; Meyer, 2012) and state courts

(Brush, 2013).[33] The policy debates occurring at multiple levels of government, and across different branches of governments, give this research a variety of venue shopping activity to examine.

Methods

A team of researchers, including the author, collected survey data used in this paper as part of a larger project that encompassed New York, Texas, and Colorado. We conducted a survey of policy actors in the New York fracking subsystem in the fall of 2013. Given that there was no list of policy actors, we defined the sampling frame using the ACF's definition of a policy actor. We identified policy actors through internet searches of government documents, such as participant lists in rule making and legislative hearings associated with the moratorium and fracking-related oil and gas in New York. In total, we identified 379 individuals and sent them an electronic survey. After the initial invitation to participate, we sent two follow-up reminders. We received 129 individual surveys, a participation rate of 34%.

The survey included questions used to operationalize most of the independent and both dependent variables for this paper. I collected secondary data to identify and operationalize policy actor attributes, such as organization type and mission. The following

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[33] There are also inter-state interests in the issue, such as the Delaware River Basin Commission. The Commission is an agreement between New York, Pennsylvania, New Jersey and Delaware and the Federal government which regulates the dispersion of water from Cannonsville, Neversink and Pepacton reservoirs to New York City, New Jersey, and other downstream users ("New York's Role in the Delaware River Basin Commission (DRBC)", 2012). Through their authority over water dispersions in the basin, the commission has some decision making capability over whether or not to allow hydraulic fracturing to occur in their bounds, and banned natural gas drilling in 2009 (Erickson & Ansteotter, 2011). The Commission has since proposed revised regulations that would lift the moratorium and allow hydraulic fracturing in the basin (Erick & Ansteotter, 2011). However, the state authorities involved in the commission do not agree and so the commission's proposed regulations have not been accepted and fracking in the basin is still not allowed (Darragh, 2012).

section describes the operationalization of each variable, beginning with variables associated with RQ1and ending with variables associated with RQ2.

<u>Operationalizing Variables for RQ 1: What factors influence the total number of venues shopped by a policy actor?</u>

To operationalize the dependent, independent and control variables for Research Question 1, I used survey data and secondary data.

Total Venues Shopped (Dependent Variable for H1, H2, and H3). To measure the dependent variable, total venues shopped by a policy actor, I used a survey question that asked respondents to identify the frequency at which they targeted a policymaking venue to achieve their political and policy goals related fracking. The survey question asked respondents to identify the frequency that they shopped multiple venues in New York (Appendix A, Figure 1). I recoded their responses so that Never translated to "did not shop = 0" and Yearly, Monthly, or Weekly translated to "did shop = 1". I then set the total number of venues shopped for each respondent. The range of total venues shopped was from zero to seven. [34]

Resources (Independent Variable for H1). I use a survey question with a battery of resources to develop the average resource capacity of the survey respondents. The survey asked the respondent to provide the capacity their organization had to mobilize financial resources for lobbying, financial resources for paying staff, support from members of the organization, support from the public, or support from government officials. Their responses

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[34] An alternative shopping breadth DV was calculated using Never and Yearly = "did not shop = 0" and Monthly and Weekly as "did shop = 1". While this did change the distribution of total number of venues shopped and the magnitude of the effect of each coefficient, there was change in which coefficients were significant. See Appendix B Table 9 for the full results of the alternative model.

were enumerated as follows: Not Applicable = 0, No Capacity = 0, Limited Capacity = 1, Moderate Capacity = 2, Substantial Capacity= 3. I calculated the average score over all resource types to create a continuous resource capacity score

Organization Type (Independent Variable for H2). To measure organization type I collected secondary data to identify whether the organization the respondent represented was an interest group or not. I used Baumgartner & Leech's (1998) definition of interest groups: "…not only membership organizations but also advocacy organizations that do not accept members, businesses, and any other organization or institution that makes policy-related appeals to the government" (Baumgartner & Leech, 1998, p. xxii).[35] If the organizations did not align with this definition, typically governmental, scientific, or consulting groups, I labeled them as non-interest group.

Beliefs (Independent Variable for H3). To measure beliefs, I used a survey question that asked "For the United States, please indicate what comes closest to your current position in relation to shale gas development that uses hydraulic fracturing. It should be: Stopped, Limited, Continued at Current Rate, Expanded Moderately, or Expanded Extensively." I combined the respondents who stated "stopped" or "limited" into a single group. I kept respondents who stated that fracking should "continue at current rate" separate. Finally, I combined respondents who stated fracking should "expand moderately" or "expand extensively" into an "expand" group. I consider the "stop or limit" and "expand" to represent those policy actors who were against the status quo. However, I kept the "stop or limit" and "expand" groups separate because the national legal and regulatory frameworks allowed fracking and the industry was expanding under the current conditions. One could argue that

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[35] Many respondents were legal representatives of various groups and their organization type was coded to match the organization the respondent represented.

an "expand" stance is nothing more than a desire for the status quo for an expanding industry to continue.

Organizational Focus (Control Variable). To determine the organizational focus of the respondents I followed Constantelos (2010) and collected their organization's mission statements. I categorized each organization's mission statement to determine whether the organization's focus was on local-level, state-level, or national-level advocacy.[36] If the organization was not a traditional advocacy organization, such as an oil and gas operator, I determined their focus based on the breadth of the organization's operations and office location. For example, some oil companies drill exclusively in New York, while other companies drill nationally. I categorized these two types of actors with a state-level focus and national-level focus, respectively.

Model for Research Question 1. To test the hypotheses related to the total venues shopped, I used an ordered logistic regression using the odds-ratio operation. The equation is as follows:

Model 1: (DV) number of venues shopped = (H1) Average Resources of Respondent's org + (H2) Interest Group Organization type + (H3) Belief + (C1) Organizational focus

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[36] Some difficulties with organizations such as Earthworks: a national organization that works at the grassroots level. In this case specifically, the author chose the largest organization level described. Earthworks' organizational focus, for example, was coded as a national-level focus

Operationalizing Variables for RQ 2: How does a policy actor's perception of a policy-making venue affect their shopping frequency at that venue?

To operationalize the dependent, independent and control variables for Research Question 2, What factors explain the propensity to venue shop specific venues available within a subsystem, I used three additional survey questions.

Venue Shopping (Dependent Variable for H4 and H5). To measure venue shopping frequency, I followed examples from the venue shopping literature (Baumgartner & Leech, 1998, pg. 34; Holyoke et al., 2012; Buffardi, Pekkanen, & Smith, 2015). I used a survey question which asked, "Please indicate how frequently you target the following organizations to achieve your political and policy goals related to shale gas development that uses hydraulic fracturing in New York." Frequency options include "Never" = 0, "Yearly" = 1, "Monthly" = 2, and "Weekly" = 3. The survey included six venues: local courts, state courts, local government, state agencies, state legislature (either assembly or senate), and the New York Governor's office. I used the response for each venue in separate ordered logit models

Relative influence (Independent variable for H4). To measure the influence of a venue, I used a survey question, which asked the respondents to rate each venue. The question asked, "Since 2008, how influential have the following organizations been in politics and policy about shale gas development that uses high-volume hydraulic fracturing in New York?" Response options included "Not influential at all" = 0, "Somewhat influential" = 1, and "Extremely Influential" = 2.[37] Next, I calculated relative influence by ranking each

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[37] Two state agencies and the two legislative chambers were included in the influence survey question. To align influence scores with the venue shopping dependent variables, each respective pair was combined by taking the

respondent's influence score for each venue (i.e., Local Government, Local Court, State Court, NY Governor's office, NY State Agencies, and NY State Legislature) in ascending order. I used an ascending rank so that the venue with the highest perceived influence had the largest rank. For example, if a respondent ranked the State Court as "Extremely Influential" = 2 and the other five venues as "Somewhat Influential" = 1, then State Court would rank 6 and all others as 1. By setting up the relative perceived influence variables so that the highest influence was the largest rank, I could align the direction of the variable with the direction of the hypothesis.

Relative agreement (Independent Variable for H5). To measure a policy actor's agreement with decision makers at a policy making venues I used a survey question that asked: "To what extent do you currently disagree or agree with the following organizations' positions on shale gas development that uses high-volume hydraulic fracturing in New York?" Response options included "Strongly disagree" = -2, "Disagree" = -1, "Neither agree nor disagree" = 0, "Agree" = 1, and "Strongly agree" = 2. I used the same ranking calculation as I used to determine relative influence to determine the respondent's relative agreement with each venue.[38]

Resources and Organizational focus (Control Variables). *Same as above.*

To test the impact of each variable on a respondent's venue shopping frequency, I used an ordered logistic model for each venue. The equation is as follows:

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maximum influence found within each pair, creating a "NY State Agency" and "NY State legislature" influence score.

[38] Two state agencies and the two legislative chambers were included in the agreement survey question. To align agreement scores with the venue shopping dependent variables, each respective pair was combined by taking the maximum agreement found within each pair, creating a "NY State Agency" and "NY State legislature" agreement score.

Model 2: (DV) Frequency of venue shopping at a specific venue = (H4) Relative agreement with the venue + (H5) Relative perceived influence of the venue + (C1) Average resource capacity + (C2) Shopping patterns at other venues + (C3) Organizational focus

Analysis and Results

Analysis RQ1: What factors influence the likelihood to increase the total venues shopped within a policy subsystem?

Table 3 below provides the regression outputs for the total venues shopped. The outputs shown are odds-ratios with Z-statistics in parentheses and the level of significance indicated by the *s. The far-left model is the base model. The base model included only a single dependent variable: the average resources of a policy actor. The full model, on the far-right, included a dummy variable for whether the policy actor was associated with an interest group or not, dummy variables for the whether the policy actor was associated with a group with a local, state, or national focus, and dummy variables for the policy core belief of the policy actor. See Tables 1 through Table 5 in Appendix B for full descriptive statistics related to research question 1.

Table 3. Ordered logit results for total venues shopped, showing odds-ratio.

	Total venues shopped: *Resources only*	Total venues shopped: *Org Type added*	Total venues shopped: *Org Focus added*	Total venues shopped: *Full Model*
Average Resources	3.670***	3.739***	3.370***	3.316***
	(5.06)	(5.09)	(4.46)	(4.25)
Non-Interest group	Comparison group for Interest Group			
Interest Group		1.335	1.917*	2.129*
		(0.81)	(1.70)	(1.94)
Local Focus	Comparison group for Organizational Focus			
State Focus			0.279***	0.300***
			(-3.12)	(-2.89)
National Focus			0.463	0.526
			(-1.25)	(-1.04)
Belief: Stop/Limit fracking	Comparison group for Position on Fracking			
Belief: Continue fracking at current rate				0.213**
				(-2.24)
Belief: Expand fracking				0.406**
				(-2.27)
Observations	108	108	108	107
Pseudo R-square	0.0676	0.0693	0.0947	0.1168
Chi^2 p-value	0.0000	0.0000	0.0000	0.0000

*Odds-ratios shown; Z-statistic in parentheses; * p<0.10, ** p<0.05, *** p<0.01.*

Discussion of Results of Analysis of RQ1

As one can see in Table 3, the *Full Model's* overall explanatory power is limited (Pseudo R-square = 0.1168). However, the model does provide information on the relative effects of policy actor resources, organizational type, organizational focus, and the beliefs on the number of policy venues shopped within a subsystem.[39]

With respect to *Hypothesis 1 – Policy actors with more resources will shop more venues than those with fewer resources* – the results provide support. As seen in the *Full-Model*, there is a positive relationship between resources and the number of venues shopped. Further, for a one-unit increase in average resources, the odds that the respondent shops the greatest number of venues (i.e., shopping 7 venues) versus the combined lower number of venues (i.e., shopping six, five, four, three, two, one, or zero venues) is 3.316 times greater, given all other variables in the model are constant. This result aligns with expectations set by the ACF as well as the wider venue shopping literature. Previous studies have offered mixed results. For example, Beyers and Kerreman (2012) found no positive impact of resources on multilevel shopping in Europe (measured in total venues shopped), compared to Holyoke et al. (2012) who found a positive relationship between resources and total venues shopped across three states in the U.S. This result empirically supports the importance of resources as a deciding factor regarding whether a policy actor shops multiple venues.

With respect to *Hypothesis 2 – Policy actors associated with interest groups will shop venues than policy actors associated with non-interest groups* – the results also provide support. Interest groups venue shop more than non-interest groups (e.g., governmental representatives, academics, or consultants). To interpret the categorical variables, the odds-

[39] The same model was run using simple OLS, considering the number of venues shopped as a continuous variable, with similar relationships between the IVs and DV, and with an adjusted R-square of 0.1634.

ratio of the variable is described with respect to the comparison group for that variable. Therefore, in the *Full Model,* respondents associated with interest groups are 2.129 times more likely to shop the greatest number of venues versus the combined lower count of venues, given all other variables in the model held constant. These results support the general venue shopping literature. The results also justify the inclusion of non-interest group policy actor shopping activity. In other words, interest group representatives are more likely to shop more broadly, but they are not the only policy actors engaged in venue shopping within a subsystem.

Next, with respect to *Hypothesis 3 – Policy actors whose beliefs deviate from the status quo will shop more venues than policy actors whose beliefs align with the status quo –* the results offer support. The model shows respondents in the "stop or limit" shopped more venues than respondents in the "continue" group and more than respondents in the "expand" group. Results in the *Full Model* column show the "continue" group's odds of a shopping a greater number of venues is 0.213 times lower than the "stop or limit" group. Similarly, for the *expand* group, the odds of shopping a greater number of venues is 0.406 times lower than the *stop or limit* group. This result aligns with the venue shopping literature.

Given that at the national level the industry was expanding, I view the desire to "expand" and "continue" fracking as aligned with the status quo. However, in New York in 2013, during the survey, the moratorium was in place and other research on this data shows very few survey respondents were happy with the moratorium (Heikkila et al., 2014; Weible & Heikkila, 2016).

Finally, the control variables show that policy actors from organizations with a state-level focus are likely to shop fewer venues than those from organizations with a local-level

focus. However, there was no difference in the number of venues shopped between the respondents from locally focused organizations and those from nationally focused organizations. These results support the venue shopping literature. They also empirically support the reports of a mobilized anti-fracking, grassroots movement in New York. Indeed, Mufson (2014) argues that local-level anti-fracking efforts contributed to the eventual decision to ban fracking in New York, in 2014.

<u>Analysis RQ 2: How does a policy actor's perception of a policy-making venue affect their shopping frequency at that venue?</u>

Table 4 below provides the regression outputs for shopping frequency models for all six venues. A separate column shows the outputs for each venue. The outputs shown are odds-ratios with Z-statistics in parentheses and the level of significance indicated by the *s. Each venue shopping frequency model accounts for between 32% and 64% of the overall variability in shopping frequency. Each model has an overall significance with a p-value less than 0.0001 (Table 4). See Tables 6 in Appendix B for full descriptive statistics related to research question 2.

Table 4. Ordered logit outputs explaining frequency of shopping at specific venues in New York.

	State Court	Local Court	Local Gov.	State Legislature	State Agency	NY Governor's Office
Rank of Influence of DV	1.121	10.65***	1.272	0.923	0.924	1.273
	(0.36)	(3.14)	(1.44)	(-0.34)	(-0.47)	(1.55)
Rank of Agree w/ DV	1.071	0.353**	1.275	1.272	0.717**	1.051
	(0.26)	(-2.31)	(1.56)	(1.42)	(-2.09)	(0.20)
Average Resources	3.984**	1.484	1.442	1.012	0.877	1.334
	(2.53)	(0.59)	(1.04)	(0.03)	(-0.32)	(0.71)
shop state court		90.68***	0.856	2.034	2.053	0.413
		(4.36)	(-0.28)	(1.12)	(1.14)	(-1.41)
shop local court	23.96***		2.522*	0.55	1.065	2.211
	(4.69)		(1.72)	(-0.92)	(0.10)	(1.35)
shop local government	1.284	3.309*		3.670***	1.031	0.685
	(0.54)	(1.81)		(3.41)	(0.08)	(-1.10)
shop state legislature	1.347	0.436	8.463***		11.71***	9.254***
	(0.38)	(-0.71)	(4.15)		(4.16)	(3.89)
shop state agencies	2.562	4.119	1.259	8.444***		9.289***
	(1.18)	(1.20)	(0.48)	(3.83)		(4.12)
shop NY Gov.'s office	0.394	1.12	0.577	7.705***	7.718***	
	(-1.39)	-0.17	(-1.32)	-3.97	-4.04	
Local Focus	Comparison Group for Organizational Focus					
State Focus	0.62	0.118*	0.361*	2.965*	1.269	0.379*
	(-0.66)	(-1.87)	(-1.87)	(1.66)	(0.39)	(-1.68)
National Focus	1.053	0.352	0.467	1.031	1.737	0.623
	(0.06)	(-0.85)	(-1.11)	(0.03)	(0.61)	(-0.58)
Observations	100	97	97	100	102	102
Pseudo R-squared	0.5014	0.6423	0.3251	0.6177	0.5898	0.5368
chi2 p-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

*Odds-Ratio, Z-statistic in parentheses. * p<0.10, ** p<0.05, *** p<0.01.*

Discussion of Results of Analysis of RQ2

With respect to Hypothesis 4 – *Policy actors are more likely to shop venues that they perceive to have more influence in the subsystem than venues they perceive to have less influence in the subsystem* – the models, overall, do not provide support. These results therefore run counter to the venue shopping literature and previous venue shopping frequency model results (Constantelos, 2010).

The perceived relative influence of the venue was only significant in the shopping frequency model of local courts. In the case of the local courts, for a one-unit increase in the rank of relative influence, the odds of shopping more frequently increased by 10.5 times, given all other variables in the model are held constant. The reason for this could be that court cases are expensive and risky to policy actors, as the outcomes set legal precedent for future policy debates. The descriptive statistics of shopping frequencies (Appendix C) show local court venue shopping was the least common: only 20% of respondents shopped the local courts at a frequency of yearly or more frequent, compared to an average of 61% of respondents shopping at least yearly at all other venues (Appendix B, Table 7). Further, local courts had the lowest average perceived influence score at 0.96 (where a 0 is "not influential at all", 0 is "somewhat influential" and 2 is "extremely influential). In addition, as of late 2013, the time of this research's survey, local fracking bans and moratoriums in New York were a relatively new policy approach for those opposing fracking. For example according maps generated by Fracktracker.org, Figure A and Figure B, the number of municipal fracking moratoria and bans increased from 23 to 160 between August 2011 and September 2013 (See Appendix B, Table 8).

Figure A. Map of local level anti-fracking actions, New York, 2013.
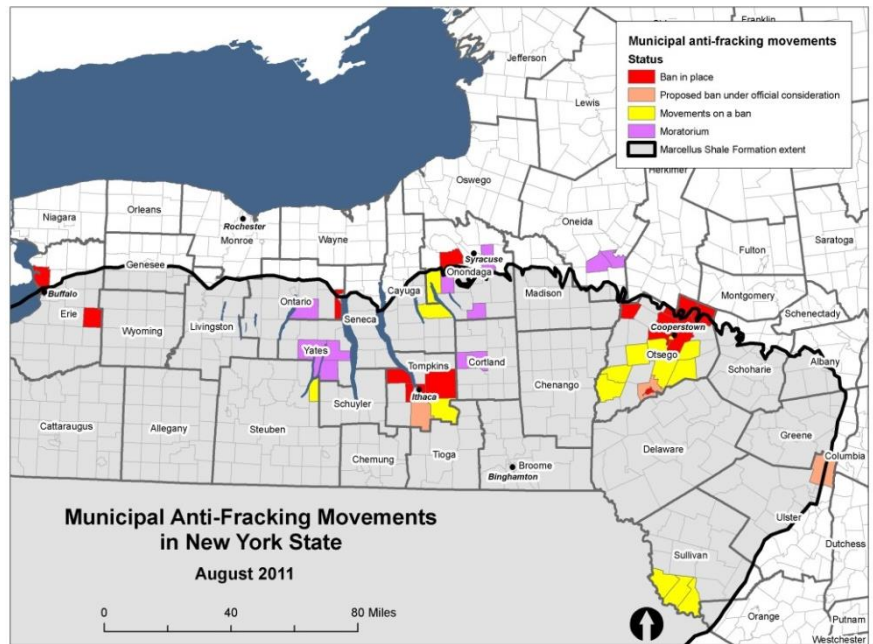
Source: Karen Edelstein, www.fracktracker.org

Figure B. Map of local level anti-fracking actions, New York, 2013
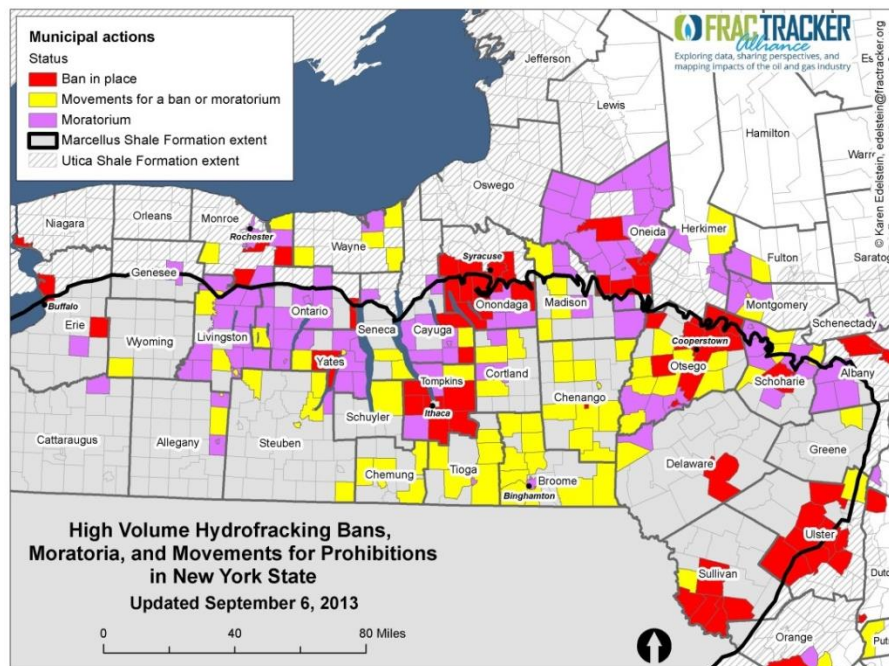
Source: Karen Edelstein, www.fracktracker.org

The use of local courts to challenge the local anti-fracking decisions could have been lagging the municipal decisions as other policy actors developed a case and made the decision to challenge the local bans or moratoriums in court. Further, in 2012, two of the first court cases challenging local bans were decided in favor of the local governments (Gottlieb, 2012). Therefore, taking local policy decisions to local courts was a new, risky, and arguably expensive proposition. Only those who felt the courts had the influence to change the anti-fracking policy may have decided to engage this venue. While the perceived influence of state courts did not correlate with higher shopping frequency, the amount of resources a respondent had was positively and significantly associated with shopping the courts.

In comparison, there was no significant relationship found between shopping and relative perceived influence for all other venues in the study. The descriptive statistics in Appendix B, Table 7 show the venues with the highest perceived influence score, The New York Governor's office and State agencies (scored 1.6 and 1.4, respectively, where 2 is "extremely influential"), were also among the most frequently shopped venues. Approximately 73 and 72% of participants stated they shopped the NY Governor's office and State agencies at least once per year. Respondents had similar shopping frequency at the state legislature and local government, but the average perceived influence for these venues were only 1.13 and 1.23, respectively. An alternate explanation could be that the non-court state-level venues were the established policy makers in NY for oil and gas development. For example, in 1963, New York lawmakers enacted legislation to regulate oil and gas development (Stronger, 1994). In addition, the Department of Environmental Conservation (DEC), and the Division of Mineral Resources within the DEC, has the authority to promulgate rules related to oil and gas development. The rules codified by regulators in the

1970s remained in effect through the 1990s (Stronger, 1994). By 1992, state-level regulations had even addressed a version of hydraulic fracturing (NYDEC, 2011). Therefore, it is likely that policy actors involved in the fracking subsystem engaged with the state-level venues, because state-level venues controlled the substantive policies related to oil and gas.

With respect to Hypothesis 5 – *Policy actors are more likely to shop venues with decision makers that the policy actor agrees with more, when compared to decision makers in other venues in the subsystem* – the models provide limited support. Results show a respondent's relative agreement with the decision makers at a venue is significant in two of the six venue shopping frequency models: the local courts and the state agencies. However, the agreement score and shopping frequency at these two venues correlated in the opposite direction than that hypothesized. Rather than survey respondents shopping more frequently at venues where they agree with the decision makers, the results show they shop less frequently. As seen in the local court model in Table 4, the odds of a respondent shopping the local courts is 0.352 times lower for each unit increase in the respondent's rank of relative agreement with the local courts. These results are counter to expectations set by the literature (Holyoke et al., 2010; Constantelos, 2010). One explanation for this result is that individuals go to court to argue against an action. In other words, only policy actors who wish reverse or cease a current decision or activity go to courts. Therefore, policy actors engage courts regardless of how much they agree with judges. If we look at the other significant variables in the local court model, we see policy actors who engaged the local courts were locally active, also engage in other courts, and believe that local courts are influential. These factors seem to explain involvement more, while the agreement with the venue is more of a descriptive condition.

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Further, as seen in the state agency model in Table 4, the odds of a respondent shopping the state agencies is 0.717 times lower for each unit increase in the respondent's rank of relative agreement with the decision makers at the state agencies. Similarly, while the relationship was not statistically significant, Appendix B Table 7 shows the lowest average agreement is associated with the most commonly shopped venue: the NY Governor's office.

One potential explanation for this unexpected outcome is that during the moratorium, policy actors were dissatisfied with the state agencies while the agencies developed new fracking-related polices. This could have been the case especially for the DEC as it grappled with the new supplemental general environmental impact statement (SGEIS), offered the public proposals for review, and responded to hearings and public comments. Policy actors may engage with these venues because they disagreed with the policies that the agencies were proposing in order to affect change.

Policy scholars identified a similar phenomenon in Colorado during the 2011-2012 fracking chemical disclosure rule-making process (Heikkila et al., 2014). During the chemical disclosure rule making process, both industry and environmental interest groups developed a negative view of the chemical disclosure rule by the Colorado Oil and Gas Conservation Commission (COGCC), Colorado's oil and gas regulating agency. However, each group's feeling about the disclosure rule improved after the process was finalized (Heikkila et al., 2014). The negative views of policy actors may have been why they were advocating at the COGCC. At the time, the policy actors had an instantaneous disagreement with the status quo (i.e., the draft policy), and so were motivated to affect change in that policy document. As shown in the case of the state agencies and the courts show, further

research is needed to understand how agreement with the venue impacts a policy actor's shopping at that venue.

Turning attention to the control variables in Table 2, the average resources of the respondent were only significant in explaining the shopping frequency at the state courts: for a one-unit increase in average resources, the odds of shopping the state courts more frequently increases by 3.98, given that all other variables are held constant. This could signal that state courts are expensive and only those with enough resources can make use of this option, regardless of whether the respondents believed the venue was influential, or whether or not they agree with the venue. In the other five models, resources did not impact the frequency of shopping at specific venues, a result which aligns with previous empirical models examining shopping propensity at individual venues (Constantelos, 2010).

The variables with the most consistent influence on a respondent's shopping frequency were the respondent's organizational focus, and their other shopping decisions. With respect to *organizational focus*, results show survey respondents who were associated with organizations with a state level focus were 0.118 times less likely than respondents associated with a local focus to shop local courts, 0.361 times less likely to shop local governments, and 0.379 times less likely to shop the NY Governor's office. Respondents associated with organizations with state-level focuses were 2.945 times more likely to shop the State Legislature than respondents associated with organizations with a local focus. These results offer support to the idea that an organization's mission impacts where they focus their advocacy resources (Constantelos, 2010).

The set of variables displaying the most influence regarding shopping frequency in venue is an actor's shopping frequencies in other venues. For example, as seen in the state

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court shopping model in Table 4, if a respondent shopped at the local courts, then they were 23.92 times more likely to shop the state court more frequently, given all other variables in the model are held constant. This indicates that those who shop one court system are more likely to shop the other court system. A connection such as this may be due to the court system appeals process. For example, Norse Energy Company took their case against the Town of Dryden, NY to the New York State of Court of Appeals after failing at lower courts (Brush, 2013).

When all six models are examined together, additional shopping patterns emerge. Not only are the respondents who shop one kind of court more likely to shop the other kind of court more frequently, but those who shop one state-level venue also are more likely to shop other state-level venues more frequently. There is cross-over shopping too. Respondents who shopped local governments also shopped local courts and state legislature more frequently. Given these venue shopping patterns and the mostly independent nature of venue shopping frequency to a respondent's view of that venue's influence or their level of agreement with that venue, this research indicates there are other forces driving shopping choices. The relationships seen in shopping patterns could be the result of what Holyoke et al. (2012) describe as "preference alignment shaped by institutional structure" (pg. 11) or the network relationships developed within policy subsystems that lend to the creation of an ecology of games (Lubell et al., 2010).

Coupling the idea that policy making in New York's oil and gas subsystem is established at the state level non-court venues and the idea that policy actors may develop a set of skills or resources to engage in a specific venue or set of similar venues (i.e. venues with similar the rules of engagement, information sharing, personal relationships, etc.) could

explain both the results of the venue shopping frequency models in Table 4 and the distribution of shopping frequency seen in Appendix B Table 7. In this scenario, because most fracking-related policy making in New York took place at stat level non-court venues, individuals may acknowledge the influence of those venues, and, on average, shop at them most frequently, but the influence is not the driving force. Rather, the match up of the respondent's skills and goals with the venue driving the frequency they shop specific venues.

This paper's overall results are summarized in Table 5 below. Each research question and hypothesis is listed and the outcome based on their corresponding model.

Table 5: RQs and Hypotheses.

Research Questions	Hypotheses	Outcome
RQ1*:* What factors influence the total number of venues shopped by a policy actor?	**Hypothesis 1:** *Policy actors with more resources will shop more venues than those with fewer resources.*	**Supported**
	Hypothesis 2: *Policy actors associated with interest groups will shop venues than policy actors associated with non-interest groups.*	**Supported**
	Hypothesis 3 *Policy actors whose beliefs deviate from the status quo will shop more venues than policy actors whose beliefs align with the status quo.*	**Supported**
RQ2. How does a policy actor's perception of a policy-making venue affect their shopping frequency at that venue?	**Hypothesis 4:** *Policy actors are more likely to shop venues that they perceive to have more influence in the subsystem than venues they perceive to have less influence in the subsystem.*	**Not supported**
	Hypothesis 5: *Policy actors are more likely to shop venues with decision makers that the policy actor agrees with more, when compared to decision makers in other venues in the subsystem.*	**Not supported**

Conclusions and Limitations

The Advocacy Coalition Framework is a proven tool for examining policy actor behavior in contentious politics. This research shows that analyzing venue shopping patterns through the lens of the ACF enables research on policy actor behavior related to the specific act of venue shopping. Specifically, the AFC's subsystem construct adds to the venue shopping literature in three ways. First ACF's subsystem includes a broader range of policy actors than previously included in venue shopping models (e.g., Holyoke et al., 2012; Ley, 2016; Buffardi et al., 2015; Beyers & Kerreman, 2012; Constantelos, 2010) Indeed, the ACF's definition of a policy actor is more inclusive than the most general interest group definitions (Baumgartner & Leech, 1998). The broad policy actor frame provided by the ACF improves the generalizability of this paper's findings. Second, the way this research drew the subsystem boundary at the state-level eliminates institutional differences often present in other venue shopping models (e.g., Beyers & Kerreman, 2010; Constantelos, 2010) while maintaining venues at multiple levels of government and branches of government. Third, as defined by the ACF, the subsystem includes all venues within a boundary. Therefore, more venues are included in the study than typical venue shopping research.

While a strength of the research is that it included many venues within New York, however a limitation of this research is that the survey was not consistent in its question that asked respondents to indicate which venues they shopped. For example, the survey asked respondents to indicate the frequency they shopped categories of venues, like local governments, and it asked about specific venues, like the DEC and New York Department of

Health. Therefore, frequency models may be more representative for some venue types and less representative for others.

This research has other limitations. Because the research used the ACF's policy actor view of policy change, the individual shopping models include the *perceived* level of influence of a venue and perceived agreement with decision makers in policy making venues. Indeed, previous studies of this nature collected metrics to identify the alignment between policy actors and venues with respect to specific policy issues. While policy actor perception of agreement should account for alignment, this study is obviously reliant on survey respondent's accurate and complete responses. Next, the shopping frequency models did not include venue level attributes or factors external venue. For example, venue-level rules that may inhibit or promote a policy actor's ability to shop that venue, or the presence and strength of opponents at a venue. These design features may decrease the generalizability of the findings to venue shopping scenarios in multi-national settings, or out venue-level institutional features affect policy actor behavior.

The results of this paper show that the ACF's logic that connects a policy actor's resources and beliefs to their political activities informs the venue shopping literature in two ways. First, this paper's model of total venues shopped provides empirical evidence that a policy actor's resources increase their ability to shop more venues within a subsystem. Other scholars' empirical results do not always find a policy actor's resources affect the total number of venues the policy actor shops (e.g., Beyers & Kerreman, 2012; Holyoke et al., 2012). The difference in the results between this paper and the other models could be in how resources were quantified, the types of resources included in the model, or difference in the research institutional features included in the different models. More research should

investigate the circumstances under which a policy actor's resources affect their ability to shop more or fewer venues. Second, the results of this paper's model of total venues shopped show that a policy actor's view of the status quo affects how active they are within a subsystem. These results support Baumgartner and Jones' (1993) and Pralles' (2003 & 2006) arguments that policy actors dissatisfied with the status quo will seek out new venues to affect policy change. As this paper's model of total venue's shopped shows, the policy actors who wanted fracking to continue or expand also shopped fewer venues.

The ACF's policy actor-centric view and focus on policy actor beliefs was less applicable for explaining the frequency that a policy actor shops a venue. Indeed, in this paper's six individual shopping frequency models, the policy actor's view of the venue, with few exceptions, did not explain their shopping frequency at that venue. However, this paper's individual venue shopping frequency models inform the venue shopping literature. First, the respondent's organizational focus clearly affects their venue shopping decisions. The findings in this paper provide additional support to Constantelos' (2010) findings that interest groups follow their mission with respect to which decision makers they choose to lobby.

Lastly, the results of the individual shopping frequency models show policy actor's shopping patterns in one venue informs the shopping patterns in other venues. This finding suggests institutional arrangements (e.g. rules of engagement), the skills needed to engage the venue, and the network associations of policy actors may be more influential in individual venue selection than previously thought. Previous venue shopping research indicates a policy actor's skills may affect their shopping decisions (Holyoke, Brown & Henig, 2012; McKay, 2011; McQuide 2010; Ley & Weber, 2015; Ley, 2016; Pierson 2000;

2004). Rules or skills required could increase costs to engage with specific venues or subsets of venues.

Shopping patterns are of theoretical interest and an area ripe for future research (Lubell et al., 2010; Holyoke et al., 2012; Ley & Weber, 2015; Ley, 2016). To-date empirical venue shopping models have failed to highlight the network relationships of policy actors. Indeed, Holyoke et al. (2012) noted this very limitation in their discussion of shopping propensity and a feature of their researcher design. A next step of this research is to examine the network-like venue shopping relationships of policy actors within the subsystem and how venues may group along meaningful institutional characteristics beyond their vertical or horizontal location federalist system. One way to do this is to combine the six individual models into a single multi-variate model. A multi-level multinomial model would improve on some of the limitations of the separate models in this research. For example, the total number of observations would increase and allow additional control variables. In addition, a multi-level multinomial model could include a variable to quantify the network patterns that the six individual models suggest.

CHAPTER IV

COMPARING THE BELIEFS OF LOCAL GOVERNMENTAL POLICY ACTORS TO THEIR INTEREST GROUP ALLIES

Introduction: Local Governments as Policy Actors

Local governments are increasingly involved and influential in higher-level policy making (Gamkhar & Pickerill, 2012). The most obvious way local governments influence higher-level policy making is through their local policy decisions and programs that address policy issues of interest to higher levels of government. Examples include local governmental policy making on the issues of climate change (Lutsey & Sperling, 2008; Feiock, Francis, & Kassekert, 2010), smoking laws (Shipan & Volden, 2006), and same-sex marriage (Haider-Markel, 2001). A strong body of research within the federalism literature describes how local government (e.g., municipal or county governments) decisions are made (Dahl, 1961), including explanation of internal decision making processes (Tiebout, 1956; Feiock, 2002; 2004), and external influences on local governmental decisions (Berke & French, 1994; Frug & Baron, 2013; Peterson, 1981). In addition, policy scholars illustrate how local-level decisions impact decisions in other jurisdiction (e.g., Shipan & Volden, 2006; Gamkhar & Pickerill, 2012) and how local-level decisions heighten the broader policy debate (Riverstone-Newell, 2013). Riverstone-Newell (2012) argues the sway of local decisions are amplified when higher levels of government depend on local governments for service provision. Another way local governments affect higher-level policy is through their involvement in the policy process as a policy advocate. Policy process research on regional, state, and national environmental policy issues shows local governmental representatives are active policy advocates alongside other stakeholders and interest groups working to influence

policy change (e.g., Sabatier, 1988; Sabatier & Jenkins-Smith, 1994; Weible, 2006; Koontz et al., 2004; Blomquist, Schlager & Heikkila, 2004; Scholz & Stiftel, 2005). However, less is known about how local governmental representatives compare to other advocates within these broad policy debates.

This chapter applies the Advocacy Coalition Framework (ACF) to unpack the policy advocacy role of local governments in debates that span beyond their jurisdiction and compare them to other advocates in the same policy debates. Specifically, this chapter explores how policy actors associated with local governments compare to other groups of policy actors with respect to their beliefs. This chapter uses insights from the ACF to build an expectation that policy actors associated with local governments will have more moderate beliefs than policy actors associated with interest groups, even when they belong to the same coalition (Jenkins-Smith & Claire, 1993; Nohrstedt, 2005; Nohrstedt, 2010).

The research question of how local governmental representatives compare to other policy actors in a statewide debate is explored in the context of Colorado's hydraulic fracturing-based oil and gas development policy subsystem (referred to Colorado's fracking subsystem from here on out) in 2013. Within the Colorado's fracking subsystem, policy actors were divided into two opposing coalitions. One coalition was pro-fracking and the other coalition was anti-fracking (Pierce, 2013; Heikkila et al., 2014; Weible & Heikkila, 2016). The coalitions were made up of representatives from the oil and gas industry, mineral owners, environmental and citizen led anti-fracking groups, the media, scientists, and municipal, county, and state governments (Weible & Heikkila, 2016; Heikkila et al., 2013). Environmental groups, oil and gas industry groups, and local governments made up the three largest groups in the debates (Heikkila et al., 2013). Further, local governments

representatives were present in both the pro and anti-fracking coalitions (Weible & Heikkila, 2016; Heikkila et al., 2013). As such, Colorado's fracking subsystem offers an opportunity to examine how local governments compare to advocate groups who they do and do not align with respect to their policy beliefs on fracking.

The remainder of this paper outlines the theoretical backing of the research through a review of the ACF and then develops hypotheses related to how local governmental policy actor's beliefs differ from policy actors associated with advocacy groups. The paper then describes Colorado's fracking subsystem in detail. Next, the paper operationalizes its key variables, and then describes the analyses and results of how local governmental policy actors' beliefs compare to other advocate groups' beliefs. The paper concludes with a discussion of the results and a reflection on the contributions to the literature and the paper's limitations.

Theoretical arguments and Hypothesis Development

<u>The Advocacy Coalition Framework (ACF)</u>

Since the ACF's inception in the 1980s by Paul Sabatier and his early work with Hank Jenkins-Smith, they and other scholars have refined the ACF's theories and concepts to describe the policy process through the actions of advocacy coalitions in a policy subsystem. One result of these scholars' theory building and hypothesis testing is a set of attributes used to compare policy actors within the subsystem. This research uses one of those attributes, beliefs, to compare local government representatives to other advocates within the Colorado fracking subsystem. Other concepts from the ACF that are relevant to this research include the policy subsystem, policy actors, and advocacy coalitions. Each of these concepts are described next.

Policy Subsystem. The policy subsystem provides boundaries for ACF analyses. Sabatier (1988) recognized that the study of the policy process needed to move beyond the focus on single policy events and decision makers at a single venue. A policy subsystem enables this shift in many ways. First, the subsystem view of the policy process acknowledges all policy actors engaged policy change related to a specific topic, not just interest groups. For example, the ACF identifies scientists, interest groups, news media, and decision makers at all levels of government as policy actors in the subsystem. In addition to a policy topic and the policy actors engaged in policy debates on the policy topic, the policy subsystem is defined by a geographic region (Sabatier, 1988). While a researcher studying the policy process could vary the geographic scope of the subsystem to change the level of granularity of their analysis of the processes within, researchers who apply the ACF typically choose to bound the subsystem by national, regional, or state boundaries. Finally, within the geographic region, multiple policy making venues are included. However, the ACF's logic does not differentiate between the policy making venues within a subsystem.

Policy Actors and Advocacy Coalitions. Policy actors within a subsystem are individuals, usually professionally affiliated with an organization, involved in the policy area and dedicating at least some time to influencing either directly or indirectly the politics of the subsystem. In contrast, an individual who submits an official comment on a policy debate, participates in a protest, or votes on a law related to a policy topic is not necessarily considered a policy actor. The ACF differentiates policy actors within a subsystem from other citizens by the time they devote to an issue and the extent they specialize in the issue.

Within a policy subsystem, policy actors form one or more advocacy coalitions. An advocacy coalition is a group of policy actors within a policy subsystem who share common

policy goals, coordinate the use of their resources, and collaborate on activities to achieve those policy goals. Additionally, and building on the model of the boundedly rational actor (Simon, 1957), the ACF theorizes that policy actors are motivated to form coalitions with other policy actors to overcome individual cognitive and physical limitations on information processing and resource utilization (Sabatier & Weible, 2007). Policy actors improve their chances of successfully influencing policy decisions when they act collectively in coalitions.

The nature of interactions between advocacy coalitions within a subsystem ranges from cooperative to conflicting (Weible, 2008). In policy subsystems with a contentious substantive topic there are typically two or three conflicting coalitions (Weible, Sabatier, & McQueen, 2009), but can range between one and five (Weible, Sabatier, & McQueen, 2009). In contentious subsystems, the coalition that maintains political control over policy decisions over extended periods of time is considered a dominant coalition and acts to keep the status quo or supports policy change that is congruent with their beliefs. When there is a dominant coalition, the opposition, possibly mobilized in one or more the minority coalitions, seeks policy change to affect the status quo in ways that is congruent with their beliefs (Sabatier & Jenkins-Smith 1993; Nohrstedt, 2010). Minority coalitions often seek allies from outside the subsystem or take policy debates to alternative venues than where debates are traditionally held in the subsystem (Fritschler, 1983; Baumgartner & Jones, 1993; Browne 1990; Worsham, 1997).

Hypothesis Development

Beliefs. A key attribute of individual policy actors, and a foundational element of the ACF, is the policy actor's belief system. The ACF categorizes beliefs using a three-tiered hierarchical belief system. Deep core beliefs are at the base of the hierarchy, followed by

policy core beliefs, and secondary beliefs are at the top of the hierarchy. Deep core beliefs are analogous to an individual's basic world views and values. Deep core beliefs are considered constant and are not related to specific policy topics. Policy core beliefs are thought to be subsystem-wide and define policy priorities such as whose welfare matters most in the subsystem, the role of government, problem identification and the seriousness of the problem at the subsystem level, and preferred policy solutions to the problem (Sabatier & Weible, 2007; Jenkins-Smith, Nohrstedt, Weible, & Sabatier, 2014). Policy core beliefs are considered difficult to change but may shift over long periods of time of a decade or more (Sabatier, 1998). Secondary beliefs are not subsystem-wide beliefs and are typically associated with preference for a policy tool or "seriousness and cause of a problem in a specific locale" (Sabatier & Weible, 2007, p. 196). Secondary beliefs are the most malleable of the three belief types, yet still resistant to change. Overall, individual beliefs guide problem perceptions and policy preferences, moderate information processing, and act as a cognitive heuristic to identify potential allies. Research about policy actor beliefs shows the policy preferences that divide and combine policy advocates into coalitions are based on their policy core beliefs, called policy core policy preferences, rather than on their secondary beliefs (Zafonte & Sabatier 1998; Sabatier & Weible, 2007).

While actors coalesce into advocacy coalitions based on shared policy preferences, variation in policy preferences and goals exist between members of the same advocacy coalition. The variation in beliefs among coalition members has been attributed to both the differences in their individual beliefs (Sabatier, 1988; Weible, 2006; Nohrstedt, 2010) and to the individual's organizational affiliation (Jenkins-Smith & Claire, 1993; Nohrstedt, 2005; Nohrstedt, 2010). There are endogeneity issues with the organization affiliation argument

(Sabatier, 1988), however there is evidence that an individual may have their beliefs or self-interests coopted by their organization's goals, which then influences their policy preferences. For example, the policy preferences of governmental actors are influenced by their interest for continued public support, and that this interest supersedes their policy core beliefs (Nohrstedt, 2005; 2010).[40]

The hypotheses in this paper build on two ideas. The first idea is that a policy actor's policy preferences are mediated by their organizational affiliation. The second is one of the ACF's original hypotheses, which states: "[w]ithin a coalition, administrative agencies will usually advocate more moderate positions than their interest-group allies" (Sabatier, 1998, p. 106). These two ideas are applied in this paper to test whether policy actors affiliated with local governments have distinguishably different policy preferences than their interest group allies. I argue that both local governments and interest groups represent their constituents, however the constituents of local governments have a wider range of values on a specific policy topic than the members of a specialized interest group aimed directly at that topic. Therefore, to address this paper's research question "How do policy actors affiliated with local governments compare to policy actors affiliated with other organizations with respect to

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[40] Another possible contributor to variation in coalition members' policy goals and policy preferences is self-interest. The choice to focus on beliefs or self-interest was a difficult one as Sabatier developed the ACF. He wrestled with self-interest and beliefs as two potential constructs to explain individual policy preferences and goals. Eventually he chose to focus on policy actor beliefs over their self-interest because he felt beliefs were more "inclusive and verifiable" than self-interest (Sabatier, 1988, p. 142). Furthermore, Sabatier recognized organization affiliation as a potential influence, via self-interest, but also identified the endogeneity issue between organizational affiliation, self-interest and beliefs (i.e., were views of an individual due to organizational interests, or did they choose an organization because their beliefs aligned with the mission of an organization). Despite his arguments to use beliefs to explain an individual's policy preferences, a few ACF scholars have focused on self-interest as an additional individual level influence. Studies of policy actors in the Swedish nuclear subsystem found the policy preferences of policy actors from governmental organizations are led by their self-interest for continued public support and that their self-interest superseded policy core beliefs when formulating policy preferences (Nohrstedt, 2005; Nohrstedt, 2010).

their policy core beliefs?" this research modifies the ACF's original hypothesis related to administrative agencies to be:

H1: *Local government policy actors will have more moderate beliefs than advocates affiliated with interest groups.*

And, with coalition membership considered, the expectation is:

H2: *Within a coalition, local government policy actors will have more moderate beliefs than their interest group allies.*

Research Setting

In Colorado, fracking-related oil and gas development debates emerged in the early 2000s following the improvement and combination of horizontal drilling and hydraulic fracturing techniques. With these developments, and the discovery of new oil and gas deposits, oil and gas operations drew closer to urban populations not previously accustomed to the activity. At the same time, questions related to the environmental and public safety of fracking-related development increased the public's interest and debates across the state began to question if the practice should continue. Those for fracking-related development argued the economic and energy security benefits of development, while those against development stated that the health and safety concerns outweighed the benefits. Colorado's oil and gas regulatory body, the Colorado Oil and Gas Conservation Commission (COGCC) began receiving numerous complaints and concerns related to the new activity. In response, in 2007, the General Assembly passed a law requiring the COGCC promulgate new rules to reconsider impacts to the environment and public health, safety, and welfare (Neslin, 2008). Then, as the national attention turned toward the chemicals used in fracking (Fisk, 2013),

Colorado's state level debates followed suite (Heikkila et al., 2014). Through the chemical disclosure debates, many of the same issues related to economic benefits and environmental and public health degradation were espoused (Heikkila et al., 2014).

Previous research on Colorado's fracking subsystem shows a wide variety of policy actors in the state-level debates (Heikkila et al., 2013; Weible & Heikkila, 2016). When grouped by organizational affiliation, the majority of policy actors were either representatives from the oil and gas industry, environmental or citizen led groups, or local governments (Heikkila et al., 2013). Local governments were actively engaged alongside other interest groups in the law and rule-making processes (COGCC website showing county or municipal involvement since 1995; Committee on Oil and Gas meeting minutes from 1999; COGCC rulemaking 2008, 2012, 2013).

Further, these groups are divided along a normative position that either supports or opposes fracking-related development (Pierce, 2013; Weible & Heikkila, 2016). With respect to local governments, there were some for, and some against, fracking-related development (Heikkila et al., 2013). For example, the city of Longmont, Fort Collins, Lafayette, and Boulder County, each passed or considered moratoriums or bans related to oil and gas development (news articles for Greeley, Fort Collins, Boulder, Lafayette; In 2012 Longmont and in 2013 the City of Fort Collins, Boulder, and Broomfield all approved moratoriums and the city of Lafayette made hydraulic fracturing illegal). In response, the Colorado Oil and Gas Association (COGA) and/or the COGCC have filed lawsuits against many of these local decisions. Local governments also worked with oil and gas operators to overcome issues and maintain production within their borders (e.g., using Memorandums of Understanding to create specific regulations between an operator and the municipality or county (Wilson,

2012). For example, the town of Erie, CO spent created an MOU with two specific operators that had regulations that went beyond state law, but was limited in scope to the co-signed operators (Dunnahoe, 2013).

As such, Colorado's fracking subsystem offers an opportunity to examine how local governments compare to interest groups with whom they do and do not align with respect to their beliefs on fracking.

Methods

<u>Population and Sampling</u>

A team of researchers, including the author, collected data for this paper through a cross-sectional on-line survey of policy actors in the fracking-related oil and gas development policy subsystem in Colorado in 2013. In this effort, we used a non-probability sampling strategy because as a pre-made list of policy actors did not exist from which to create a sampling frame (Singleton & Straits, 2010). Therefore, we used the ACF's definition of a policy actor as the operational definition for sampling strategy. We then employed a modified snowball to identify the sample population of policy actors in Colorado's fracking subsystem.

We began the modified snowball sample with internet searches and newspaper reviews to identify salient state-level oil and gas development policy debates related to fracking in Colorado. From these debates, we identified a seed list of policy actors based on the individuals and organizations who provided official comments or testimonies, or those listed as official stakeholders in state-level debates. Next, we reviewed online newspaper reports and documents published by the policy actors in the seed list to identify other policy actors. Finally, we interviewed a subset of the identified policy actors and asked them who

should be included in the study. To reduce risk of bias in our sampling methodology we identified the organizational affiliation of each policy actors and checked for over sampling within a given sector (e.g., the oil and gas industry, anti-fracking groups, governmental affiliates, scientists, etc.). We adjusted our search criteria to ensure a representative sample from the different organizational affiliations. The methods we sued reduced the possibility of coverage error (Singleton & Straits, 2010). Our efforts identified a list of 398 policy actors in Colorado's fracking subsystem. We sent each an on-line survey: 142 policy actors responded to the survey, a response rate of 35.7%.

The survey included questions used to operationalize the independent and dependent variables for this paper

Operationalization

Organizational groups (IV for H1 and H2). I used a survey question to identify the respondent's organizational affiliation. The survey asked each respondent to select organization types they most closely represented. In the analysis, I combined 'industry and professional associations' and 'oil and gas service providers' into *the oil and gas industry group*. I combined 'environmental and conservation organizations' and 'organized citizen groups' into the *environmental group*. I combined 'agriculture' 'real estate and homebuilders' categories into an 'other' group. News media survey recipients did not respond to the survey and were removed from the study. Finally, I kept local, state, and federal government respondents in separate groups.[41]

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[41] The local government group included municipal, county, water district, and local governmental association groups. Only four of thirty-nine local government respondents represented local governmental associations. See Appendix C Table 1 for breakdown of respondents by organization affiliation.

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Policy Preference: Policy Core Belief and Coalition membership (DV for H1 and

H2). To measure the first policy core belief, I used a single survey question, which asked

respondents to "Please indicate what comes closest to your current position in relation to

natural gas development that uses hydraulic fracturing. It should be...*Stopped*; *Limited*;

C*ontinued at the current rate*; *Expanded moderately*; or *Expanded extensively*". This position

is considered policy core policy preference, as it is a "normative belief normative beliefs that

project an image of how the policy subsystem ought to be" (Sabatier & Weible, 2007, pg.

195). For the Hypothesis 1, the policy position is scored based on stop = 1, limit = 2,

continue at current rate = 3, expand moderately = 4, and expand extensively = 5.

For Hypothesis 2, I transformed the policy position response into a dichotomous

variable where stop or limit = 0 and continue, expand moderately, and expand extensively =

1. I follow previous research by Pierce (2013) who identified two coalitions that aligned with

this division. I establish policy actors are *anti-fracking* if they stated hydraulic fracturing

should be stopped or limited and are *pro-fracking* if they stated hydraulic fracturing should

be continued at its current rate, expanded moderately, or expanded extensively.[42]

Problem Perception – additional policy core beliefs (DV for H2). The second

measure of a policy actor's policy core beliefs used in this paper to compare respondents

associated with local governments to respondents associated with advocacy groups is their

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[42] Pierce's (2013) study utilized the same data set used in this study. Pierce used 12 problem perceptions
questions and the fracking policy preference question to identify policy coalitions within Colorado's oil and gas
policy subsystem. Pierce (2013) estimated coalition membership using a cluster analysis of Manhattan distances
between individual survey respondents based on 2 scores: one score used the respondent's fracking policy
preference score and a composite of 12 problem perception scores. His analysis found two coalitions: an anti-
fracking and pro-fracking coalition. I only use the policy preference question to identify coalitions for two
reasons. First this paper uses twenty problem perception questions, rather than the 12 problem perception
questions included in Pierce's (2013) coalition analysis. These eight additional questions have potential to be
viewed differently by local governments than other group affiliations and may skew the Manhattan distance
scores. Second, of the 133 policy actors in Pierce's coalition analysis, only two were not placed into the *pro
fracking* or *anti fracking* coalition that aligned with their policy preference score.

problem perceptions related to the substantive topic of the subsystem (Jenkins-Smith &

Sabatier, 1994). The survey asked respondents to "*Please indicate the extent to which the*

following issues are current problems related to natural gas development that uses hydraulic

fracturing" for 20 issues. The respondents indicated the severity of the problem on a 5-point

Likert scale from not a problem = 1, minor problem = 2, moderate problem = 3, serious

problem = 4, to severe problem = 5. The survey included issues related to environmental

impacts of fracking-based oil and gas development, the state of current regulatory structure,

regulator competency, competition over resources, and the public's opinion of the industry.

The numerated value of each of the respondent's problem perceptions is their problem

perception score for the specific issue.

Analysis and Results

<u>Hypothesis 1: Local government policy actors will have more moderate beliefs than advocates affiliated with interest groups.</u>

This paper uses multiple methods to compare the beliefs of local governmental policy actors to policy actors associated with other advocate groups. First, an Analysis of Variance (ANOVA) with a post-hoc Fisher-Hayter pairwise comparison of the survey respondent's policy position score is used to determine which groups of respondents have statistically different policy core beliefs.

Results in Table 4.2 below show, the mean policy position scores of respondents associated with local governments are statistically different than the mean policy position scores of respondents associated with environmental and oil and gas industry groups. Further, the results show that the policy position scores of local governmental respondents (mean of 3.08) are more moderate than the policy position scores of respondents associated with environmental (mean 1.64) or oil and gas industry groups (mean 3.87). These results support Hypothesis 1.[43]

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[43] Within the local government category, four respondents were associated with local government association groups. Of these four respondents, two held the position that fracking should continue and two held the position that fracking should be limited. These positions are within the average positions of respondents associated with a single local government entity (i.e. a municipality or county). See Appendix C Table 1 for descriptive statistics for each policy actor group by their policy preference score and Appendix C Table 2 for ANOVA results and Appendix C Table 3 Fisher-Hayter pairwise comparison results.

Table 4.2. Pairwise comparison of fracking policy position scores using Fisher-Hayter method.

Group 1 (mean score)	vs	Group 2 (mean score)	Difference	FH-Test
Local Gov. (3.08)	vs	Oil and Gas (3.87)	0.79	6.05*
Local Gov. (3.08)	vs	Environmental groups (1.64)	1.43	9.98*
Local Gov. (3.08)	vs	Fed Gov. (2.77)	0.31	1.66
Local Gov. (3.08)	vs	State Gov. (3.18)	0.10	0.53
Local Gov. (3.08)	vs	Academics (3.33)	0.26	1.20

Note: stop = 1, limit = 2, continue at current rate = 3, expand moderately = 4, and expand extensively = 5. The complete results of the Fisher-Hayter pairwise analysis is found in Appendix C Table 3.

Next, the paper uses correspondence analysis (CA) to compare the fracking policy positions of respondents when grouped by their organizational affiliation. Figure 1 below shows the results of the CA. In Figure 1, the respondent's fracking policy position is denoted by the dots and their organizational affiliation is denoted by the triangles. The total inertia of the model is 0.71, meaning 71% of the variation in policy position is accounted for by the model. Ninety-six percent of the model's inertia is explained along two dimensions. The results show respondents with more extreme positions are associated with interest groups and respondents with moderate positions are associated with governments. For example, respondents associated with environmental groups cluster around the policy position to "stop/limit" fracking and respondents associated with oil and gas industry groups cluster around the policy position to "expand moderately" and "expand extensively." See Appendix C Table 4.

Finally, respondents associated with governments cluster around the "continue" policy position. The CA results corroborate the Fisher-Hayter pairwise analysis and visualizes the similarities and differences in policy core beliefs between the local governments and advocacy groups (Figure 1). These analyses support H1 that policy actors associated with local governments will have more moderate beliefs than those from interest groups.
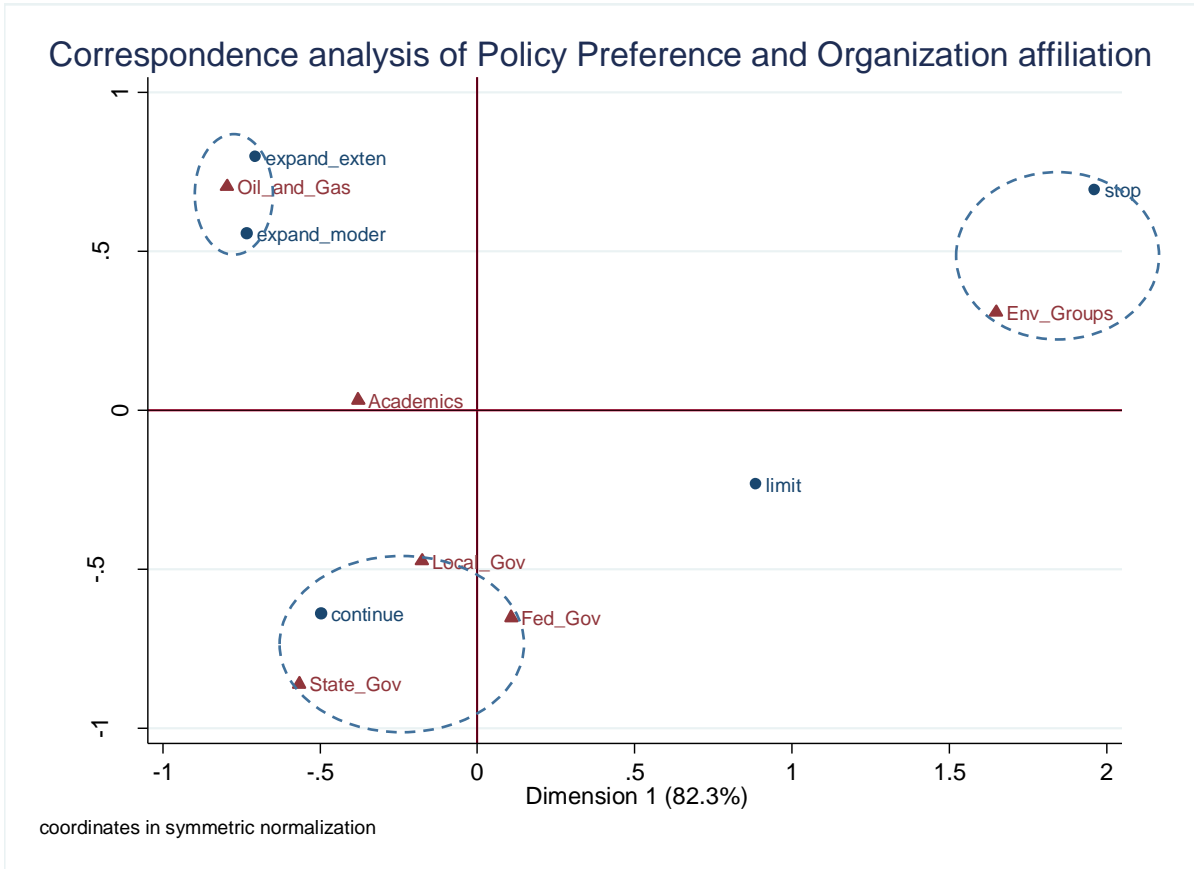
Figure 1. Correspondence Analysis of Policy Position and Organization affiliation.

Hypothesis 2: Within a coalition, local government policy actors will have more moderate beliefs than their interest group allies.

To test Hypothesis 2, respondents affiliated with local governments were separated into pro-fracking and anti-fracking coalitions using the methods described above using their policy position response to fracking. The local governmental respondents who stated they desired fracking to be stopped or limited were placed in the anti-fracking coalition, while those who responded that they desired fracking to continue at its current rate or to expand were placed in the pro-fracking coalition. Table 3 below shows the number of respondents from each organizational affiliation who desire fracking to be stopped/limited or continued/expanded. Twelve of the thirty-nine local government respondents indicated they desired fracking to be stopped or limited, placing them into the anti-fracking coalition, and aligned with environmental respondents. Twenty-seven of the thirty-nine local government respondents indicated they desired fracking to be continued or expended, placing them into the pro-fracking coalition, and aligned with the oil and gas industry respondents.[44]

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[44] One individual from industry noted they were for 'limiting' oil and gas to keep prices high and improve their individual benefits. State and Federal government, and academic respondents were split to varying degrees into the two coalitions.

Table 3. Coalitions based on respondent's fracking policy position.

Organization Affiliation	Fracking policy position		Total
	Stop/Limit	Continue/Expand	
Federal Government	5	8	13
State Government	1	10	11
Local Government	12	27	39
Academics and consultants	2	7	9
Oil and gas groups	1	38	39
Environmental groups	28	0	28

With the local governmental respondents divided into pro and anti-fracking coalitions, this paper compares the beliefs of local government respondents to their interest group allies across two policy core beliefs: their fracking policy position and their problem perceptions.

Figure 2 shows the mean policy position scores of all respondents by their organizational affiliation and with local governments separated into their coalitions. Results show, regardless of coalition, respondents associated with local governments have less extreme policy preferences than the respondents associated with their expected interest groups allies.
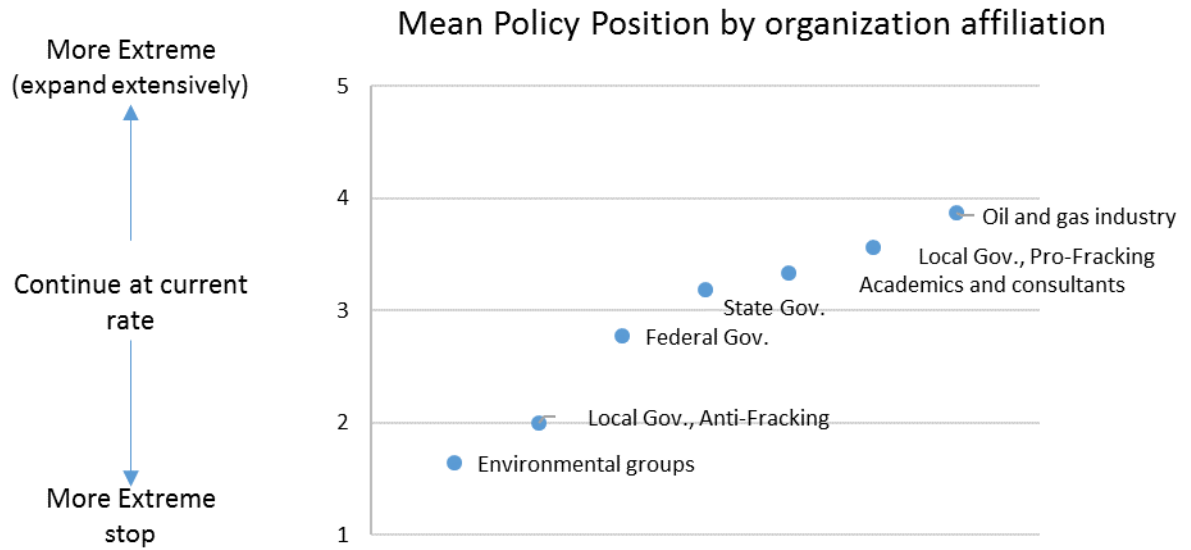
Figure 2. Mean policy position score by organization affiliation, with local government split between pro and anti-fracking coalitions.

Next, this paper compares the extremeness of problem perceptions – a second policy core belief – of respondent associated with local governments and their interest group allies. To do so, first, this paper measures the mean problem perception scores of the local government policy actors separated by their pro and anti-fracking positions and the scores of their interest group allies, for each of the 20 issues. Then, each average score is normalized by subtracting that group's average problem perception score from the moderate score of 3. For example, if respondents associated with environmental groups indicated, on average, that the issue of *Contamination of ground and surface water supplies from chemicals in hydraulic fracturing fluids* was between a "severe" and "serious" problem and their average problem perception score was 4.2, then their normalized score would be 4.2 - 3 = 1.2. The average normalized problem perception scores of respondents associated with local governments were compared to their interest group allies. Second, the statistical significance of the difference in mean problem perception between local governmental respondents and their allies is tested using an analysis of variance (ANOVA) with a Bonferroni pairwise post hoc.

Results find, policy actors from environmental groups were more extreme in 17 of the 20 issues than respondents associated with local government who had anti-fracking positions, but only *one* of those differences – contamination of ground and surface water supplies from fracking – was statistically significant at a p-value < 0.10. Similarly, the respondents from the oil and gas industry were more extreme in 16 of the 20 issues than respondents associated with local governments with pro-fracking positions, but only *two* of those differences – ineffective monitoring by the state and the influence of the oil and gas industry over state government – were statistically significant at a p-value < 0.10. See the Appendix C Table 5 for full results.

The pairwise comparison (Table 4) provides additional information when the significant differences in mean problem perception scores are compared across all group types. First, the analysis shows that policy actors from environmental groups and oil and gas industry groups are the most different: they have statistically different problem perception scores for 90% of the issues. Second, the analysis shows policy actors from local governments have greater differences when compared to their interest group opponents, than when compared to the local government respondents in the opposite coalition. The *pro-fracking* local government policy actors differ from the environmental policy actors on 85% of the issues, and differ with the industry policy actors on 10% of issues. The *anti-fracking* local government policy actors differ from the oil and gas industry policy actors on 70% of the issues, and differ with the environmental policy actors on 5% of the issues. The *pro-fracking* and *anti-fracking* local government policy actors differ on 70% (14/20) of the issues. A closer examination of the six common problems shows many of those which all local government respondents agreed were local-level issues (Table 5).[45]

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[45] The Oil and Gas and the Environmental/Citizen groups had similar problem perceptions on two issues: A patchwork of local regulations on hydraulic fracturing and Inadequate or incomplete communication by the oil and gas industry about the risks, benefits and effects of hydraulic fracturing to the public.

Table 4. Percent of significantly different problem perception scores between groups, at a 0.10 level of significance.

Affiliation	Env. groups	Oil and Gas	Local Gov. *Pro*	Local Gov. *Anti*	State Gov.	Federal Gov.	Academics/ consultants
Environmental groups	-	90%	85%	5%	80%	60%	65%
Oil & gas groups	90%	-	10%	70%	5%	50%	25%
Local Gov. *Pro-fracking*	85%	10%	-	70%	0%	15%	5%
Local Gov. *Anti-fracking*	5%	70%	70%	-	40%	10%	30%
State Government	80%	5%	0%	40%	-	10%	5%
Federal Government	60%	50%	15%	10%	10%	-	0%
Academics & consultants	65%	25%	5%	30%	5%	0%	-

Table 5. Similar problem perceptions between Pro and Anti-Fracking Local Government respondents.

1.	Scare tactics and demonizing of the oil and gas industry by opponents of fracking.
2.	A patchwork of local regulations on hydraulic fracturing.
3.	Boom-and-bust economic cycles from natural gas development.
4.	Public distrust of the oil and gas industry.
5.	Conflict between mineral rights and property rights owners.
6.	Burdens on local gov. services from temporary employees for well-site operations.

Overall, the comparison of means and their extremeness provides mixed results for Hypothesis 2. While the policy actors from interest groups had an average problem perception score that was more extreme than the policy actors from local governments, there was rarely a statistical difference between the two scores. However, when the difference in scores is viewed across all groups, there are more differences between the policy actors from interest groups than between the policy actors from local governments, indicating the pro-fracking and anti-fracking local government groups may lay somewhere in-between the environmental and oil and gas industry groups, on the whole.

Problem perception scores: deductive and inductive clustering. Next, the paper uses two cluster analyses to identify patterns in the 20 problem perception scores of local government respondents and their interest group allies that pairwise comparisons may not have found. First, this paper uses a deductive approach by assuming respondents will fall into a pro or anti fracking coalition and setting the K-means Cluster analysis to have a 2-cluster solution. Second, this paper uses an indicative clustering approach by allowing the K-means analysis to determine an optimal number of clusters.

The 2-cluster K-means analysis shows not all respondents associated with local governments with anti-fracking and pro-fracking positions fall into the expected clusters. As seen in Table 6 below, three of the twelve anti-fracking local government respondents clustered under the "pro" cluster, while two of the 24 pro-fracking local government respondents clustered under "anti" cluster. Only one industry group respondent landed in the unexpected cluster and all environmental group respondents clustered as expected.[46]

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[46] Hierarchical 2-cluster solution using the same 20 problem perception scores show similar results

The K-means optimal solution found 3-clusters. Shown in Table 7 below, half or more of respondents associated with pro-fracking local governments and anti-fracking local governments fell into a 'neutral' cluster. Similarly, over half of the respondents from other non-interest group respondents fell into the neutral cluster. The 3-cluster K-means analysis also shows over 90% of the environmental and oil & gas groups are in their expected anti and pro-fracking clusters.

The cluster analyses provide a clearer picture of how the different groups perceive issues associated with fracking-related oil and gas development and evidence for Hypothesis 2. Indeed, local government groups have less extreme problem perceptions than their interest group allies.

Table 6. Two-Cluster solution of problem perception by organization affiliation.

Affiliation	K-means Cluster Analysis (Count of cases in each)		Total
	Cluster1 (Anti)	**Cluster2 (Pro)**	**Total**
Local Gov. *Anti-fracking*	9	**3**	12
Local Gov. *Pro-fracking*	**2**	22	24
Environment groups	28	0	28
Oil & gas groups	1	37	38
State Government	1	7	8
Federal Government	6	5	11
Academic & consultants	3	8	11
Total	50	82	132

Table 7. Three-Cluster solution of problem perception by organization affiliation.

Affiliation	K-means Cluster (Count of cases in each)			Total Cases
	Cluster 1 (Anti)	**Cluster 2 (neutral)**	**Cluster 3 (Pro)**	**Total Cases**
Local Gov. *Anti-fracking*	6	**6**	0	12
Local Gov. *Pro-fracking*	0	**10**	14	24
Environment groups	**27**	1	0	28
Oil & gas groups	0	3	**35**	38
Federal Government	1	7	3	11
State Government	0	3	5	8
Academic & consultants	2	6	3	11

Conclusions and Limitations

This paper's analysis of policy actor beliefs in Colorado's hydraulic fracturing subsystem provides insight into how the beliefs of local governmental policy actors compare to the beliefs of policy actors associated with interest groups. Overall, the analysis shows policy actors affiliated with interest groups and those affiliated with governments have meaningful differences in two policy core beliefs - their normative policy core policy preference related to a position on fracking and their policy core beliefs related to the nature of the problems of fracking. In addition, the results of the comparison of policy position means, the correspondence analysis of policy positions by organizational affiliation, and the K-means cluster analysis of problem definitions show respondents affiliated with local governments have less extreme policy core beliefs than respondents affiliated with interest groups. These results add to the ACF by testing an expansion of the ACF's hypotheses that policy actors in administrative roles will advocate for more moderate policy positions than policy actors associated with interest groups. Specifically, the results confirm Hypothesis 1 that local governments have more moderate policy core beliefs than interest groups. Indeed, all governmental policy actors clustered around the 'continue at current rate' policy position while the interest group policy actors were associated with the two extreme positions: to expand fracking extensively or to stop fracking.

The K-means 3-cluster solution of the 20 problem perception scores shows nearly half of all local government respondents – regardless of their pro or anti-fracking policy position - load onto a cluster that their expected ally interest group counterparts do not. These results support Hypothesis 2 that local governments have more moderate beliefs than their interest group allies.

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The results of this paper also support previous arguments made within AFC studies that organizational affiliations may coopt beliefs (Sabatier, 1988) and organizational affiliation may contribute to variation of beliefs among coalition members (Jenkins-Smith & Claire, 1993). More pointedly, these results align with the idea that policy actors from governmental organizations are influenced by their interest for continued public support and that this interest superseded their policy core beliefs (Nohrstedt, 2005; Nohrstedt, 2010).[47] This paper does now, however, test the influence of organizational affiliation on beliefs, only shows an association. While the argument is made that the governmental and interest group policy actors in this survey represent their constituents and so may reflect those beliefs, another argument could be made that the individuals self-selected into roles where they could practice their moderate or extreme beliefs.

This paper has other inherent limitations due to the targeted population, data collection method used, and analyses selected. With respect to the targeted population, policy actors are a difficult population to study because no list exists from which to create a sampling frame. While snowball sampling is appropriate for identifying populations such as this (Singleton & Straits, 2010), the sampling method may not have been exhaustive and some actors may have been excluded. To reduce the risk of underrepresenting key policy

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[47] A competing contributor to variation in coalition members' policy goals and policy preferences is self-interest. The choice to focus on beliefs or self-interest was a difficult one as Sabatier developed the ACF. He wrestled with self-interest and beliefs as two potential constructs to explain individual policy preferences and goals. Eventually he chose to focus on policy actor beliefs over their self-interest because he felt beliefs were more "inclusive and verifiable" than self-interest (Sabatier, 1988, p. 142). Furthermore, Sabatier recognized organization affiliation as a potential influence, via self-interest, but also identified the endogeneity issue between organizational affiliation, self-interest and beliefs (i.e., were views of an individual due to organizational interests, or did they choose an organization because their beliefs aligned with the mission of an organization). Despite his arguments to use beliefs to explain an individual's policy preferences, a few ACF scholars have focused on self-interest as an additional individual level influence. Studies of policy actors in the Swedish nuclear subsystem found the policy preferences of policy actors from governmental organizations are led by their self-interest for continued public support and that their self-interest superseded policy core beliefs when formulating policy preferences (Nohrstedt, 2005; Nohrstedt, 2010).

actors or groups of policy actors, public testimony documents of recent hydraulic fracturing

policy debates were used to identify and then interview key policy actors from industry,

government, and the industry. Next, data were collected through online surveys, which may

have reduced the potential for responses. Some individuals identified did not have a valid

email address publicly available. For the most salient policy actors, efforts were made to

contact them through the postal service. For those policy actors with a valid email address,

the request to participate in the study could have been filtered to the targeted policy actors'

junk mail. In other cases, the targeted policy actor may have had technical difficulties in

completing the survey.

With respect to the analysis, advocacy coalitions were identified through a single

policy core policy preference, their preference for fracking in general, rather than a series of

policy core beliefs (Pierce, 2013) or more traditional methods of using policy core beliefs

and a measure of coordination (Sabatier & Jenkins-Smith, 1993). By only using the policy

core policy preference to ascertain membership, pro-fracking and anti-fracking coalitions

may have been confounded. This, in turn, could have inflated the cross-over of local

governmental policy actors identified in the cluster analyses of problem perceptions. For

example, this paper's cluster analysis of 20 problem perception questions – defined as policy

core beliefs by the ACF (Sabatier & Weible, 2007) – found the policy actors grouped

differently than when their fracking preference was used. In comparison Pierce (2013), who

used the same dataset, identified two coalitions using the policy core policy preference and a

logical selection of 12 of the 20 problem perception questions used in this paper's analysis.

When only the 12 problem perception questions were used as part of the coalition

identification, there was no cross-over of policy actors based on their preference to either

stop/limit or continue/expand fracking. In other words, all policy actors who wished fracking to be stopped/limited fell into the anti-fracking coalition, while all policy actors who wished fracking to continue/expand fell into the pro-fracking coalition.

This leads to a question: which policy core beliefs does one choose to appropriately identify coalitions? Following the ACF, part of the answer is the substantive topic that the researcher uses to identify the topic. As the pairwise analysis found, local governmental policy actors with different policy core policy preferences for fracking share problem perceptions towards the more localized issues. This finding provides insight into why, under certain circumstances, policy actors who are normally opposed in a policy debate, find themselves aligning in other scenarios. Had a different policy core policy preference question been posed, the local government respondents may have landed in different coalitions. For example, if the normative question posed was "*Should local governments have more control over fracking?*", there may be a shift in which groups are in opposition than when the question is "*Should fracking continue*"? But, if a different policy core policy preference, or different deep core belief is at stake, then perhaps the subsystem in question is also different.

Substantively, this analysis contributes to our understanding of the Colorado oil and gas policy subsystem. Scholars have described similarities and differences between the policy actors within Colorado's subsystem (Heikkila et al., 2013; Pierce, 2013) and compared policy actors in Colorado's subsystem to policy actors in other state-level subsystems (Weible & Heikkila, 2016). This paper provides information on how policy actors associated local governments fit into the policy debates alongside interest groups. The paper shows that some policy actors affiliated with local governments align with the oil and gas industry interests while other local governmental policy actors align with environmental

interests. But, local governmental policy actors – regardless of their fracking policy stance – share commonalities as a group. The analyses show that when specific fracking-related problems are asked local governmental actors may act together, rather than with the oil and gas industry or environmental groups.

CHAPTER V

COMPARING THE RESOURCES, NETWORKS, AND POLITICAL ACTIVITIES OF LOCAL GOVERNMENTAL POLICY ACTORS TO THEIR INTEREST GROUP ALLIES

Introduction: Local Governments as Policy Actors

Local governments are an active group of policy actors in policy processes that go beyond their jurisdictions. Local governments (i.e., municipal or county governments) create policy that affect broader policies and they engage in political advocacy in broad policy debates. Research on the topic of local governmental influence in state and federal policy focusses on two areas. First, the research examines how local governments address broad policy topics through local policy making (e.g., Lutsey & Sperling, 2008; Feiock, Francis, & Kassekert, 2010; Shipan & Volden, 2006; Haider-Markel, 2001). Second, the research examines how local policy decisions influence state or federal policy making (e.g., Shipan & Volden, 2006; Ghamkar & Pickerill, 2012; Riverstone-Newell, 2013). However, less is known about how local governments behave in the policy processes outside of their jurisdiction. Policy process research shows local governmental representatives are active policy advocates alongside other advocate groups working to influence policy change (e.g., Sabatier, 1988; Jenkins-Smith & Sabatier, 1994; Weible 2006; Koontz et al., 2004; Blomquist, Schlager & Heikkila, 2004; Scholz & Stiftel, 2005; Heikkila et al., 2014). But, there is little discussion in this research with respect to how local governmental advocates and other advocate groups within the debate compare in their advocacy behaviors and ability to engage in the policy process.

Given that local governments and traditional advocacy groups, such as interest groups, have distinct differences in rules related to their expenditures and actions, and, outside of a policy debate, their primary goals are likely different, this research expects their behavior in the policy process would be different too. To test this expectation this paper uses attributes identified by the Advocacy Coalition Framework (ACF) to examine coalitions of policy actors in contentious policy debates. The ACF is not only built to examine policy actor behavior within policy debates, but also to examine the capacity of competing coalitions to engage in the policy process with the goal of affecting policy change. Indeed, the ACF is a proven tool for conducting stakeholder analyses (Weible, 2006; Elgin & Weible, 2013). The ACF provides this paper with two direct measures to compare local governmental representatives to other policy advocates: resources and political activities. The ACF argues that resources provide advocacy coalitions with capacity to engage in policy debates (Sabatier & Weible, 2007; Howlett, 2009; Elgin & Weible, 2013).[48] Political activities are the result of a coalition's strategic decision making on how to best use those resources to affect policy change (Sabatier, 1988).

The ACF provides this paper with a third way to compare local governmental representatives to other policy advocates: political networks. The ACF highlights the importance of the relationships between policy actors. Certainly, an advocacy coalition is a network of individual policy actors who coalesce to coordinate activities aimed at achieving

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[48] Nohrstedt (2011) also shows some resources are more important than others. Nohrstedt's (2011) is notable in his modeling work to develop and test original propositions that a coalition's available resources and actions (in this case shifting policy venues) were the mechanisms by which an external event, the World Trade Center attacks on 9/11, provoked policy change in Sweden's intelligence subsystem. The analysis revealed that the external event did indeed shift resources and cause new venues to open in the Swedish subsystem, but found only the venue shift was related to policy change. The insignificant finding related to resources also highlights another argument: some resources are more important than others and should be weighted (Tsebelis, 1995, p. 301; Nohrstedt, 2011, p. 480).

a policy goal. In some cases, the relationships a policy actor or coalition has is considered a specific type of resource as it provides potential political connections or ability to mobilize the public (Weible, 2006; Sabatier & Weible, 2007; Weible 2007). For example, if a coalition has more governmental connections, it may have more sway in a specific policy decision. Indeed, the network of a policy actor can influence their relative influence within a coalition (Peters, 1998; Olsson, 2011). This paper examines both the size of the network and the specific network connections of local governmental representatives to other advocates within a policy debate.

Due to the lack of research that compares local governments to other advocacy groups, this work is exploratory. The paper builds expectations that the resources for advocacy, political activities, and networks, of policy actors associated local governments will be distinct from policy actors from other advocacy groups through insights provided by the ACF and from organizational and public management theories.[49]

The paper follows the ACF's analytical guidelines to first define a policy subsystem from which to identify and examine the policy actors within a policy debate. As such, this paper uses Colorado's fracking-related oil and gas development policy subsystem in 2013 to examine how local governmental representatives compare to other policy actors in a statewide debate. Within the fracking subsystem, policy actors were divided into two opposing coalitions based their policy beliefs about fracking. Those who wanted fracking stopped or limited comprised the "anti" coalition. Those that want it continued or expanded comprised the "pro" coalition (Pierce, 2013; Heikkila et al., 2014; Weible & Heikkila, 2016). The policy actors in the fracking subsystem utilized a range of resources for advocacy,

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[49] The idea that policy actors may cluster along organizational boundaries is also explored within the ACF literature (Jenkins-Smith & Claire, 1993; Nohrstedt, 2005; Nohrstedt, 2010)

engaged in a variety of political activities, and interacted with different groups to achieve their policy goals (Heikkila et al., 2014; Weible & Heikkila, 2016). Finally, representatives from environmental organizations, the oil and gas industry, and local governments made up the three largest groups in the fracking subsystem (Heikkila et al., 2013). Therefore, Colorado's fracking subsystem provides a research setting to test for differences between local governments and advocacy actors in a contentious statewide policy debate.

The remainder of this paper outlines the theoretical backing of the research through a review of the ACF and then develops the expectation that policy actors associated with local government and those associated with other advocacy groups will differ with respect to their resources for advocacy, political activities, and political networks. Then the paper describes the research setting, Colorado's fracking subsystem. Next, variables are operationalized and analyses used for each policy actor attribute and output are explained, followed by a description of the results. The paper concludes with a discussion of the results and a reflection on the contributions to the literature and limitations of the study.

Theoretical Arguments and Expectations

The Advocacy Coalition Framework (ACF)

The ACF provides this paper with a set of concepts to compare local government representatives to other advocates within a subsystem. Concepts from the ACF relevant to this research include the policy subsystem, policy actors and their beliefs, advocacy coalitions, resources, political activities, and networks.

In the ACF, the primary unit of observation for studying policy processes and the differences between policy actors is the policy subsystem. The policy subsystem is defined by three attributes. A geographic region, a substantive topic, and the individuals involved in the topic (Sabatier, 1988). While the analyst could vary the geographic scope of the subsystem to change the level of granularity of analysis of the processes within, typical ACF studies examine subsystems bound by national, regional, or state boundaries.

The individuals involved in the policy process within the subsystem are called policy actors. Policy actors can be scientists, interest group representatives, part of the news media, and decision makers from all levels of government. Policy actors are usually professionally affiliated with an organization, involved in the policy area and dedicating at least some time to influencing either directly or indirectly the politics of the subsystem. In the ACF, policy actors are differentiated from other citizens by the time they devote to an issue and the extent they specialize in the issue.

Within a policy subsystem, policy actors form one or more advocacy coalitions. The ACF theorizes that policy actors are motivated to form coalitions with other policy actors to overcome individual cognitive and physical limitations on information processing and resource utilization (Sabatier & Weible, 2007). An advocacy coalition is a group of policy

actors who share similar policy core beliefs, including policy goals related to a substantive

topic. To achieve their shared policy goas, policy actors in coalitions coordinate the use of

their individual and pooled resources and strategically engage in political activities within the

policy subsystem.[50]

<u>Expectations</u>

Resources. The ACF identifies an advocacy coalition's resources as important

variables to consider when investigating the coalition's role in a subsystem. Resources give

coalitions capacity to plan and act on different strategies (Sabatier & Weible, 2007) and to

process and share information (Howlett, 2009; Elgin & Weible, 2013). When two or more

coalitions are engaged in a political debate, resources are used to influence policy outcomes

(Jenkins-Smith, 1988). Resources for political activity include finances, leadership, access to

authority, access to scientific and technical information, and the ability to mobilizable

supporter (Sabatier & Weible, 2007; Weible 2007). The ACF sees a coalition's resources as

an aggregation of its policy actor-members, but does not set expectations for how resources

may vary between coalitions or policy actors.

Resource-based theory, or the resource based view of the firm (Penrose, 1959;

Wenderfelt, 1984), proposes that an organization's resources are key to gaining and

sustaining competitive advantage in the market it operates (Barney, 2001; Barney, 2002;

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[50] The nature of interactions between advocacy coalitions within a subsystem ranges from cooperative to conflicting (Weible, 2008). In policy subsystems with a contentious substantive topic there are typically two or three conflicting coalitions (Weible, Sabatier, & McQueen, 2009), but can range between one and five (Weible, Sabatier, & McQueen, 2009). In contentious subsystems, a dominant coalition is the coalition that maintains political control over policy decisions over extended periods and acts to keep the status. When there is a dominant coalition, the opposition, possibly mobilized in one or more the minority coalitions, seeks policy change to affect the status quo in ways that is congruent with their beliefs (Sabatier & Jenkins-Smith 1993; Norhstedt, 2010). Minority coalitions often seek allies from outside the subsystem or take policy debates to alternative venues than where debates are traditionally held in the subsystem (Zafonte & Sabatier, 1998 citing Fritschler (1983), Baumgartner & Jones (1993), Browne (1990), and Worsham (1997)).

Barney & Arikan, 2006). A major assumption of resource-based theory is that organizations

in competition have heterogeneous bundles of resources (Barney, 1991). If we apply this

assumption to competition within a policy debate, it supports the expectation that different

advocacy groups may have unique bundles of resources.

Furthermore, a common variant on the definition of resources within resource-based

theory is the distinction between resources and capabilities to use the resource (Harrison et

al., 2001; Makadok, 2001). While this distinction is not held by all organization strategy

scholars (Barney et al., 2014), the division between resources and capability is helpful when

discussing how different organization types may have distinct differences in the resources

available for political advocacy. For example, local governments and advocacy organizations

may have equal amounts of financial resources, but the groups may have different limitations

(Mosely, 2010), or incentives (Tiebout, 1956), on how those resources are used for political

activities related to a specific policy topic.[51] Therefore, the resource-based view of the firm

not only highlights resource variation at the organization level of analysis, but acknowledges

the constraints on how resources are used for advocacy varies across organizational type.[52]

The preceding argument leads to the general suggestion that organizations develop a

unique set of resources that are beneficial for their context and interest. Given that non-

governmental organizations are, for the most part, not in competition with local governments

for resources, and that local governments may have different resources than interest groups.

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[51] Mosely (2010) found certain resources correlated with advocacy. However, the research also discusses potential discrepancies in resources between nonprofit and other organizations. For example, funding streams, organizational size, and legal constraints may explain why small nonprofits do not join in political advocacy activities

[52] Heterogeneity of resources could be viewed at the organizational level of analysis. However, this work follows Sabatier's (1988) argument that this level of analysis is too complicated as there are too many individual organizations in a policy subsystem, and it would not provide insights into the research question, which is focused on policy actors associated with local governments versus interest groups.

Therefore, the expectation is: *Resources of policy actors associated with local governments will be similar to each other, and different than the resources of policy actors associated with interest groups.*[53]

Networks. The connections between policy actors are an important facet of political advocacy and improve a policy actor's engagement in the policy process. The ACF argues individual policy actors collaborate and coalesce into coalitions, in part, to overcome limitations resulting from policy actors' boundedly rational nature (Sabatier, 1988; Sabatier & Weible, 2007). Through collaboration, policy actors may pool their resources for advocacy and therefore increase their ability to engage in parallel processing and activities (Sabatier, 1998; Sabatier & Weible, 2007). Logically, the larger the network of policy actors, the greater their ability is to engage in the policy process. This paper examines the size of the network of local governmental policy actors and other policy advocates.

In addition to network size, the specific groups or individuals that a policy actor collaborates with also matters. For example, the ACF identifies the presence of governmental decision makers within and advocacy coalition as type of resource coalitions have for achieving political goals (Weible, 2006; Sabatier & Pelkey 1987). Weible (2006) notes that for this reason, dominant coalitions are more likely to have coalition members in position of

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[53] RTD also can be used to show that organizations will create a new environment as they start to compete for resources needed for policy change – this new environment could be considered the subsystem. While RTD originally focused on profit-maximizing market-based organizations, nonprofit and governmental sectors are not excluded from the environments and interdependencies described in the theory. Indeed, any organization that shares a need and competes for the same vital resource will become part of the environment, or social context, described by RTD. Therefore, when an organization seeks to influence a particular policy, they enter into a new competition, driven by the mutual interest to control the decision makers and their policy outputs. Organizations may enter the political process to either influence how resources they want are distributed (as seen through RTD) or to instill their beliefs in the policy decision (as seen through the ACF). Regardless, and using the language of RDT, organizations also create a need for resources to influence the policy process and so they must create a new environment, or social context, driven by the need for specific resources to carry out political activities and implement political strategies to achieve the organizational goals with respect to the policy change.

authority than minority coalitions. These findings resound with Olsson's (2011) and Peter's (1998) findings that there can be smaller networks of policy actors within advocacy coalitions, and these networks can affect the relative influence of the policy actor within their coalition. Therefore, this paper examines the network patterns within coalitions.

Resource Dependence Theory (RDT) sets up an expectation that local governments may have different networks than other advocacy groups. RTD proposes organizations are dependent on their environment (i.e., external sources) for vital resources used to pursue their organizational interests (Pfeffer & Salancik, 1978). Pfeffer and Salancik (2003) explain that their original premise for RDT was to understand an organization's behavior one must look beyond the beliefs of the organization's leaders and toward the environment in which the leaders operate. The environment, or network, in RDT is made of the organizations that hold and compete for vital resources or may control the distribution of resources through policy. In RTD, the organizations that make up a network are often interdependent on each other for resources and they act to increase their power over the source of the resource, thereby overcoming a specific dependence on other organizations (Pfeffer & Salancik, 2003).[54] RTD implies that it is not the type of resource, but its source that brings organizations into an interdependent relationship. Therefore, two organizations that do not have competing interests will not share the same environment, or network.

Additionally, ACF and policy networks scholars argue policy actors will collaborate more with those who they share beliefs (Sabatier, 1988; Henry, Lubell, & McCoy, 2011; Elgin & Weible, 2013). While the ACF argues that actors coalesce into advocacy coalitions

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[54] The methods identified by RTD to overcome dependence are essentially strategies that change the relationship between the mutually dependent organizations in the environment. RTD separates the strategies into mergers and acquisitions, long-term contracts, or by engaging in politics and the policy process to influence the regulatory structure guiding the resource allocation.

based on shared policy preferences, variation in policy preferences and goals exist between members of the same advocacy coalition. This variation has been attributed to both the differences in their individual beliefs (Sabatier, 1988; Weible, 2006; Nohrstedt, 2010) and to the individual's organizational affiliation (Jenkins-Smith & Claire, 1993; Nohrstedt, 2005; Nohrstedt, 2010). There are endogeneity issues with the organization affiliation argument (Sabatier, 1988), however there is evidence that an individual may have their beliefs or self-interests coopted by their organization's goals, which then influences their policy preferences. For example, the policy preferences of governmental actors are influenced by their interest for continued public support, and that this interest supersedes their policy core beliefs (Nohrstedt, 2005; 2010).[55]

This paper uses the setup above to justify examining the network size and network pattern of policy actors within coalitions. No expectations are developed for how the size of the network will compare across policy actors associated with local governments and interest groups. This chapter uses RTD's argument that an organization's pursuit for resources generates their networks, and the argument that individuals collaborate with those who they share similar beliefs to develop the argument that local governments have different policy networks than advocacy groups. Indeed, it is plausible that the primary network local

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[55] A competing contributor to variation in coalition members' policy goals and policy preferences is self-interest. The choice to focus on beliefs or self-interest was a difficult one as Sabatier developed the ACF. He wrestled with self-interest and beliefs as two potential constructs to explain individual policy preferences and goals. Eventually he chose to focus on policy actor beliefs over their self-interest because he felt beliefs were more "inclusive and verifiable" than self-interest (Sabatier, 1988, p. 142). Furthermore, Sabatier recognized organization affiliation as a potential influence, via self-interest, but also identified the endogeneity issue between organizational affiliation, self-interest and beliefs (i.e., were views of an individual due to organizational interests, or did they choose an organization because their beliefs aligned with the mission of an organization). Despite his arguments to use beliefs to explain an individual's policy preferences, a few ACF scholars have focused on self-interest as an additional individual level influence. Studies of policy actors in the Swedish nuclear subsystem found the policy preferences of policy actors from governmental organizations are led by their self-interest for continued public support and that their self-interest superseded policy core beliefs when formulating policy preferences (Nohrstedt, 2005; Nohrstedt, 2010).

governments and other advocacy groups is not the policy subsystem and so their resources may come from independent sources. Further, given the varied goals and interests of local governments and interest groups, it is expected they have some dissimilar beliefs. Therefore, the expectation is: *Regardless of coalition membership, the network pattern of policy actors associated with local governments will be similar to each other and different than the network patterns of policy actors associated with interest groups.*

Political Activities. This paper uses previous research that examines mechanisms for change (Weible, Pierce, & Heikkila 2013), that identifies specific political activities rather than broad strategies as the way policy actors engage in the policy process. If strategies are a plan or method for achieving a goal, then political activities can be thought of as the discrete actions of political advocates use to implement a political strategy.

Public management scholars note different organization types may have unique sets of the constraints on the activities they carry out due to institutional arrangements (Rainey & Bozeman, 2000; Rosenbloom, 2015) and/or their organizational mission (Holyoke, Brown, & Henig, 2012). Governments, for example may not participate in political advocacy unless their constituents are calling for their action. Furthermore, a local government official may avoid an agenda item because they are legally bound through state laws or city charters (Frug & Barron, 2007). Conversely, local governments may engage in particular types of actions because it is a requirement or they have legal standing to do so. Because local governments can implement policy, they may engage more frequently in political activities like town hall meetings or public hearings than other organization types. In a similar vein, other organizations may be influenced or bound by their mission (Holyoke, Brown, & Henig, 2012). For instance, a nonprofit that sees itself as community organizer may be more likely

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to arrange protest than a nonprofit whose mission is political advocacy and spends its time in law-making forums. Therefore, this research expects the *activities of policy actors associated with local governments to be similar to each other and different than the activities of policy actors associated with interest groups.*

In summary, this paper's research question "How do policy actors associated with local governments compare to policy actors associated with interest groups?" and expectations regarding resources, networks, and activities, are presented in Table 1.

Table 1. Research question and expectations for each policy actor attribute.

Research Question	Attribute	Expectations
How do policy actors associated with local governments compare to policy actors associated with interest groups?	Resources	E1: Resources of policy actors associated with local governments will be similar to each other, and different than the resources of policy actors associated with interest groups.
	Network Size	*No expectation*
	Network Pattern	E2: Regardless of coalition membership, the network pattern of policy actors associated with local governments will be similar to each other and different than the network patterns of policy actors associated with interest groups.
	Political activities	E3: Activities of policy actors associated with local governments will be similar to each other and different than the activities of policy actors associated with interest groups.

Research Setting

In Colorado, the fracking-related oil and gas development debates emerged in the early 2000s following the improvement and combination of horizontal drilling and hydraulic fracturing techniques. With these developments, and the discovery of new oil and gas deposits, oil and gas operations drew closer to urban populations not previously accustomed to the activity. At the same time, questions related to the environmental and public safety of fracking-related development increased the public's interest and debates across the state began to question if the practice should continue. Those for fracking-related development argued the economic and energy security benefits of development, while those against development stated that the health and safety concerns outweighed the benefits. Colorado's oil and gas regulatory body, the Colorado Oil and Gas Conservation Commission (COGCC) began receiving numerous complaints and concerns related to the new activity. In response, in 2007, the General Assembly passed a law requiring the COGCC promulgate new rules to reconsider impacts to the environment and public health, safety, and welfare (Neslin, 2008). Then, as the national attention turned toward the chemicals used in fracking (Fisk, 2013), Colorado's state level debates followed suite (Heikkila et al., 2014). Through the chemical disclosure debates, many of the same issues related to economic benefits and environmental and public health degradation were espoused (Heikkila et al., 2014).

Previous research on Colorado's fracking subsystem shows a wide variety of policy actors in the state-level debates, with varying resources, conducting a variety of political activities, and coordinating with different groups (Heikkila et al., 2013; Weible & Heikkila, 2016). When grouped by organizational affiliation, the majority of policy actors associated with representatives from the oil and gas industry, environmental or citizen led groups, or

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local governments (Heikkila et al., 2013). The policy actors can also be divided along a normative position that either supports or opposes fracking-related development (Pierce, 2013; Weible & Heikkila, 2016). With respect to local governments, there were some for, and some against, fracking-related development (Heikkila et al., 2013; Gallaher, 2015; Wilson, 2012; Dunnahoe, 2013 UOGR magazine). With these variations, similarities and differences can be compared between local governments and other interest groups, and between local governments in opposing coalitions.

Methods

Population and Sampling

  The data for this study were collected by a team of researchers (including this author) through a cross-sectional on-line survey of policy actors in the fracking-related oil and gas development policy subsystems in Colorado in 2013. We used a non-probability sampling strategy because a pre-made list, or other documentation, of policy actors did not exist from which to create a sampling frame (Singleton & Straits, 2010). We used the ACF's definition of a policy actor as our operational definition. We then used a modified snowball sampling method to identify the sample population.

  We began our modified snowball sampling method with internet searches and newspaper reviews to identify salient state-level oil and gas development policy debates related to fracking. The policy actors we identified in this search acted as our seed list. Next, we reviewed on-line newspaper reports and documents published by the policy actors on our list to identify other policy actors. Finally, we interviewed a subset of the policy actors and asked who should be included in the study. We categorized policy actors by their organizational affiliation (e.g., industry, environmental group, media, and scientists) to assess

if our methods resulted in any bias toward one group type or another. We adjusted our search criteria as needed to insure our sample included representation from different organizational affiliations. The methods we used reduced the possibility of coverage error, or the omission of policy actors involved in fracking in Colorado (Singleton & Straits, 2010). These efforts created a list of 398 policy actors. 142 of 398 policy actors responded, a 35.7% response rate.

Operationalization

In the next section I describe how I operationalized the key variables used to examine each expectation of this paper.

Organizational groups (IV for E1, E2, E3). I used a survey questions that asked each respondent to select organization types they most closely represented to create organizational affiliation groups. In the analysis, 'industry and professional associations' and 'oil and gas service providers' were combined into *the oil and gas industry group*. The 'environmental and conservation organizations' and 'organized citizen groups' were combined into the *environmental group*. The 'agriculture' 'real estate and homebuilders' categories were combined with 'other'. News media survey recipients did not respond to the survey and were removed from the study. Local, state, and federal government respondents were kept separate.

Resources (Exploratory DV for E1; Control variable for E2 and E3). I measured respondent's resources using a survey question that asked respondents to give the capacity their organization had to mobilize a list of different resources for advocacy. Responses were given on a 4-point Likert scale where 0 = *No capacity, 1 = Limited capacity, 2 = Moderate capacity, and 3 = Substantial capacity*.

RTD argues resources may be "either possessed or controlled" (Barney, Corte, Sciarelli, & Airken, 2012 (in Dagnino (ed), 2012)) by an organization. In other words, some resources are internalized by the organization (Lee, Lee & Pennings, 2001) leaving other resources external to the organization. Therefore, this paper followed Weible, Pierce, & Heikkila's (2013) factor analysis approach to identify internal and external resources. The survey included internal resources (e.g., effective leadership, financial resources) and external resources (e.g., access to elected public officials or government officials, and support from the public).[56] Once the two factors were identified, I calculated an average internal and external resource scores using the respondent's value for each resource, which loaded under the respective factor. See the Appendix D Table 1 for the individual resource scores and factor loadings.

Networks (Exploratory DV for E2). I used the same question to operationalize network size and network pattern. A survey questions asked respondents to indicate which of 12 organizations they collaborated or engaged with to achieve their goals related to fracking. The groups included governmental agencies or organizations, various advocacy groups, the media, and academics. A 'yes' indicated the organization was part of the policy actor's network. I used the total number of 'yes' responses to as the respondent's network size. I determined the network pattern using the 'yes' responses to create a set of organizations that each respondent collaborated with.

Political Activities (Exploratory DV for E3, control for E2). Political activities were operationalized by a set of questions asking about the frequency that the respondent's

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[56] This paper used Principal Component factor analysis with Varimax rotation, a confirmatory factor analysis (Harrington, 2009). The analysis gave a two-factor load, which aligned with the internal/external resource distinction and a Cronbachs's alpha greater than 0.60.

organization has recently engaged in different political activities to achieve its oil and gas policy objectives. Political activities included: posting information or advocating online; communicating with the news media; forming and maintaining a coalition with allies; formal complaining to regulatory commissions; lobbying elected officials; participating in public meetings; generating and disseminating research reports; taking legal action; organizing or participating in public protests; and testifying at public hearings.

The ten political activities questions were reduced into two average scores using a Principal Component factor analysis with Varimax rotation. Factor 1, or primary political activities, includes *participating in public meetings*, *forming and maintaining coalitions, lobbying elected officials, testifying at public hearings, and communicating with news media.* Activities associated with Factor 2, or secondary political activities, include *posting information or advocating online, generating and disseminating research and reports, formal complaining to regulatory commissions, taking legal action, and organizing or participating in public protests.*[57] Political activity scores were calculated using the average frequency score for each political activities that loaded under the two factors. The average frequency for the activities that loaded under Factor 1 were nearly double that of activities that loaded under Factor 2 (see appendix). Therefore, Factor 1 is described as *Primary Activity Level* and Factor 2 is described as *Secondary Activity Level.* See Appendix D Table 2.

Policy preference: Policy core belief and coalition membership (Control Variable for E2 and E3). A policy actor's policy preference for fracking was based on a single question: "Please indicate what comes closest to your current position in relation to natural gas development that uses hydraulic fracturing. It should be...*Stopped*; *Limited*;

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[57] Factor 1 has a Cronbach's Alpha of 0.880 and Factor 2 has a Cronbach's Alpha of 0.798.

Continued at the current rate; *Expanded moderately*; or *Expanded extensively*". This

preference is considered policy core policy preference, as it is a "normative belief normative

beliefs that project an image of how the policy subsystem ought to be" (Sabatier & Weible,

2007, pg. 195). The policy preference response was transformed into a dichotomous variable

following previous identification of two coalitions from these response: an *anti-fracking*

stance was determined for those who stated hydraulic fracturing should be stopped or limited.

A *pro-fracking* stance was determined for those who stated hydraulic fracturing should be

continued at its current rate, expanded moderately, or expanded extensively (Pierce, 2013).[58]

Years involved (Control Variable for E2 and E3). A demographic question, years

involved in the subsystem, is used as a control variable for the activity and network

comparison. The more years of involvement, a policy actor would have had more time to

make connections and potentially more knowledge of or better access to resources.

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[58] A recent study utilizing this data set used problem perceptions and policy preference as a way to identify
policy coalitions within Colorado's oil and gas policy subsystem (Pierce, 2013). Pierce (2013) estimated
coalition membership using a cluster analysis of Manhattan distances between individual survey respondents
based on 2 scores: one score used the respondent's overall policy preference and the other used a composite
problem perception score from 12 survey questions. As a result, two coalitions emerged: an anti-fracking and
pro-fracking coalition. A review of Pierce's (2013) coalition membership analysis shows only two of 133
respondents were placed a coalition that did not align with their position on hydraulic fracturing.

Analysis and Results

<u>Resources</u>

  To test the expectation that resource types will vary across organization types, the internal and external resource scores are compared between policy actors from local governments and organization type using an ANOVA with a Fisher-Hayter pairwise comparison's post-hoc analysis. Table 2 below shows the mean scores of internal and external resources by group affiliation and a designation as to whether the difference between local governments and each other organization type is significant at a p-value < 0.10. For external resources, results show no differences between local governments and the other organization types. For internal resources, local governments had fewer internal resources than oil and gas, environmental, and academic groups. No differences were found between local governments and other groups.[59]

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[59] See the Appendix D Table 3a and 3b for the full results of the ANOVA and Fisher-Hayter pairwise comparison for external resources. See Appendix D Table 4a and 4b for the full results of the ANOVA and Fisher-Hayter pairwise comparison for internal resources.

Table 2. ANOVA comparison of external and internal resources between local governments and other organization types.

Affiliation	External Resources		Internal Resources	
	Mean	Std. dev	Mean	Std. dev
Local Government (comparison)	1.69	0.64	1.36	0.65
Oil & gas industry	1.67	0.51	1.91*	0.67
Environmental groups	1.92	0.47	1.83*	0.66
Federal Government	1.47	0.48	1.67	0.61
State Government	1.67	0.61	1.69	0.62
Academics & consultants	1.19	0.63	2.03*	0.86
Overall resources	1.67	0.58	1.71	0.7

$* p<0.10, ** p<0.05, *** p<0.01$

<u>Political Activities</u>

This research used two linear regression models to test whether policy actors from similar organization types conduct similar activities and policy actors from different organization types conduct dissimilar activities. Given that organization type is a categorical variable, local government was excluded from the model so that the differences in coefficients for organization type were in comparison to local governments. A separate model was run for each activity type (e.g., primary and secondary activities).

Political activity level$_i$ = Organization Type + Internal Resources + External Resources + Years Involved + Position on Fracking.

Primary activities model. Figure 1 displays the marginal effects of each variable on a policy actor's primary activity level, at a 90 % confidence interval. The results show policy actors associated with oil & gas and environmental groups engage in more primary political activities than those associated with local governments. Internal and external resources are both positively associated with greater amounts of primary political activities. The number of years involved and a policy actor's position on fracking had no significant relationship to their primary political activity levels. *Secondary activities model.* Figure 2 displays the marginal effects of each variable on secondary activity level, at a 90 % confidence interval. Only policy actors associated with environmental groups conduct statistically significant higher secondary political activity level than those from local governments. Internal resources had a positive and significant relationship on secondary political activity levels. Years involved and position on fracking had no significant relationship with secondary political activity levels. See Appendix D Table 5 through Table 7.
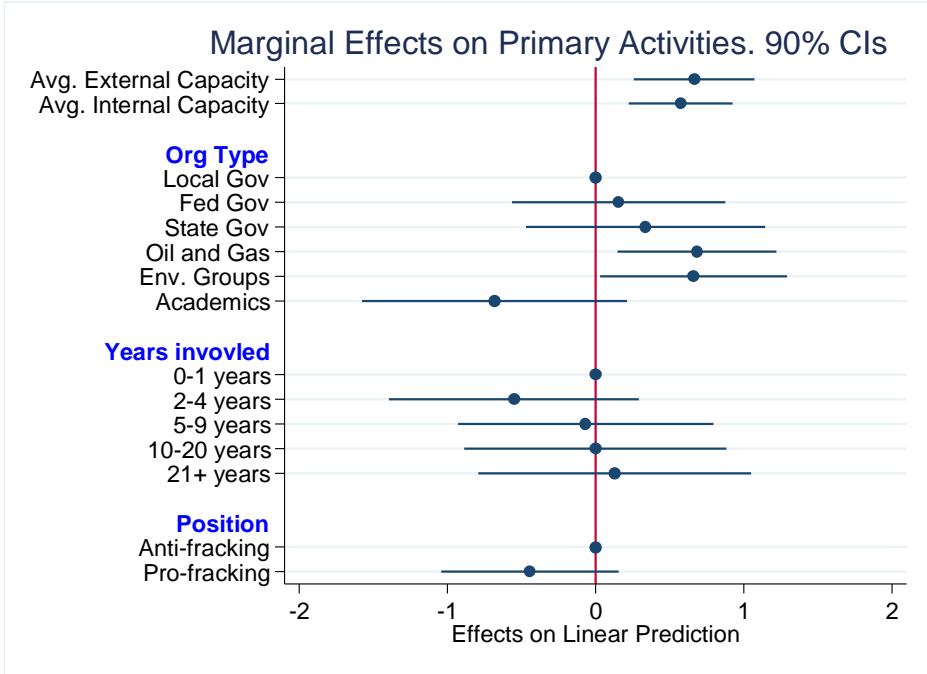
Figure 1. Marginal effects on primary activities with 90% confidence intervals.
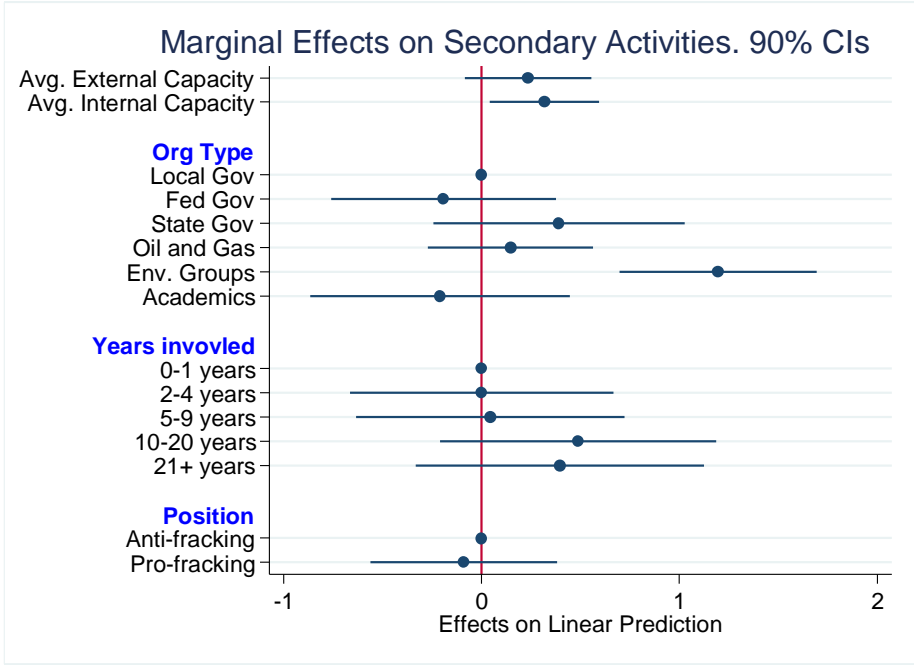
Figure 2. Marginal effects on secondary activities with 90% confidence intervals.

Analysis of which groups the local governmental and other advocacy group respondents most commonly collaborated with show variation across advocacy groups. On average, the most common group respondents indicated that they collaborated with was the state government. This result is expected given the fracking policy debates centered on Colorado's state regulatory agency, the COGCC. However, within advocacy group types, the most common collaborators varied. For example, local government respondents noted they collaborated most often with other local governments, then the state, and then industry associations. Local governments collaborated least often with the federal government, scientist, and real estate groups. Environmental advocacy groups collaborated with other environmental groups most often, followed by state, local, and federal governments, respectively. Environmental respondents indicated they collaborated least often with industry groups and real estate groups. See Table 3 below for the ranking of each advocacy group's collaboration patterns.

Table 3. The rank of most often collaborator by advocacy group.

	Advocacy Group					
Collaborator	Local Government	State Government	Federal Government	Oil and Gas Industry	Environment /Citizen Groups	Academics & consultants
Local Gov.	1	3	8	4	3	8
State Gov.	2	1	2	3	5	3
Reg. Gov.	4	3	5	7	6	8
Federal Gov.	10	8	1	5	8	6
Oil & Gas Industry	3	3	5	2	12	3
Industry Associations	4	1	4	1	10	2
Env. Groups	6	3	2	6	1	3
Citizen Groups	7	8	10	12	2	10
Scientists	12	3	5	8	4	1
Media	8	11	8	9	7	6
Agriculture	9	10	11	10	9	11
Real Estate	11	11	12	11	11	11

Note. 1 = most common collaborator, 12 = least common collaborator. The most common collaborator for each advocacy group is highlighted in grey.

Network size. A linear regression model was used examine the network size of policy actors across organization types. Organization type is the dependent variable of interest, while resources, years involved, and the policy actor's position on fracking are included as controls.

Network size = Organization Type + Internal Resource Capacity + External Resource Capacity + Years Involved + Position on Fracking.

Results show that policy actors associated with federal government, state government, and oil and gas groups have statistically larger networks – nearly two more average connections – than policy actors associated with local governments, at a p-value <0.10, all else being equal (Figure 3). No difference in network size was observed between policy actors associated with environmental groups, academics, and local governments. Additionally, internal and external resource capacity have significant and positive effects on network size at a p-value <0.10. No differences in network size were observed with respect to the number of years a policy actor was involved in fracking issues, or their position on fracking. See Appendix D Table 8.
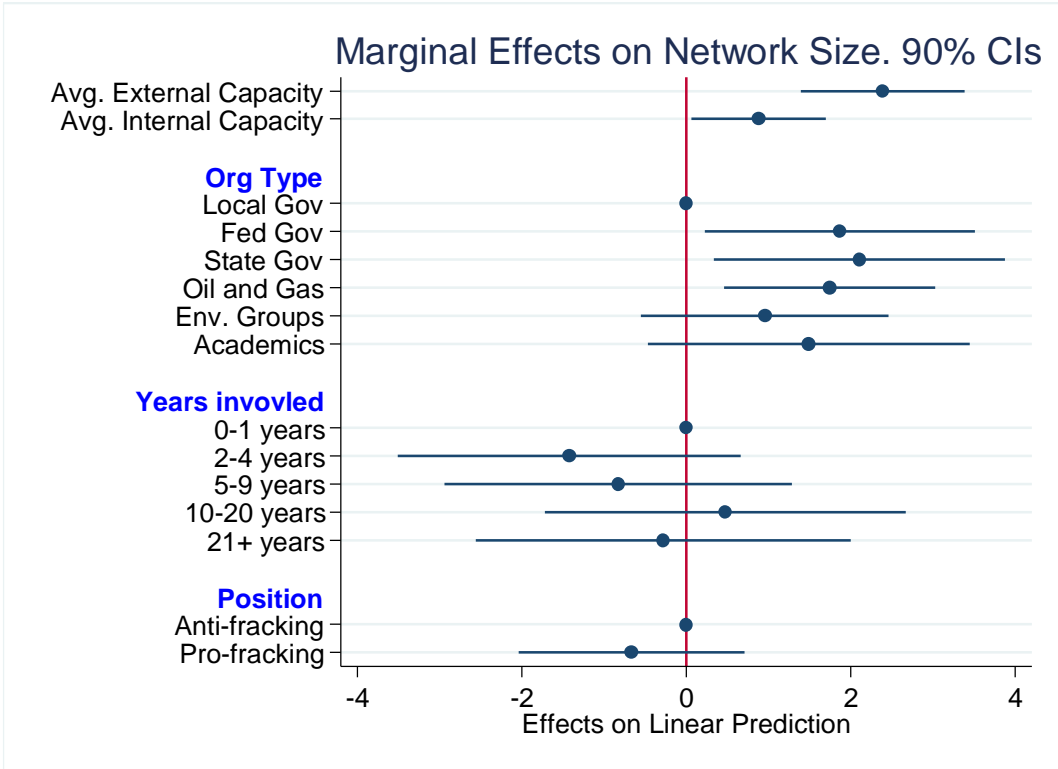
Figure 3. Marginal effects on network size with 90% confidence intervals.

Network pattern. This paper used a multiple correspondence analysis (MCA) to compare the network patterns of local governmental advocates to other policy advocate groups (Benzecri 1973; Greenacre, 1984; 1993).[60] MCA is a method used to examine patterns among multiple categorical variables, and is considered a type of factor analysis (Abdi & Valentin, 2007; Beh & Lombardo, 2014). Beh and Lombardo (2014) argue MCA is a useful tool for analyzing survey data because it allows the researcher to examine the association from a number of questions with categorical responses (pg. 388). MCA results provide a number of dimensions to explain the variation in the model's variables. Each dimension is similar to the factors in a factor analysis. In this paper, the MCA analysis was based on the respondent's 12 yes/no collaboration answers in the survey, and the respondent's organizational affiliation. The number of years a respondent indicated they were involved in fracking was supplied as a passive, supplementary variable. In MCA, supplementary variables do not affect the model, but they are shown in the model outputs (Stata, n.d). The correspondence analysis follows a previous ACF study by Zafonte and Sabatier (1998), which examined collaboration patterns of different organization types (called classes in their research) in the San Francisco Bay-Delta subsystem.

Prior to the analysis, the local government respondents were split into two sub-groups based on their policy preference toward fracking. Local government respondents who desired fracking to continue or expand were placed into pro-fracking group; those who desired fracking to be stopped or limited were placed into an anti-fracking group. Given that the environmental advocates align with the anti-fracking group and the oil and gas industry

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[60] Correspondence analysis is appropriate for multivariate analyses with nominal data and is considered an "extension of principal component analysis" (Abdi & Bera, 2014). As such, it is an appropriate technique to cluster individual respondents by their organizational affiliation and collaboration choices.

advocates align with the pro-fracking group, the sub-groups of local government policy actors allow this research to explore the expectation that ***regardless of coalition membership***, *the policy network of policy actors associated with local governments will be similar to each other and different than the network of policy actors associated with interest groups.*

Prior to describing the details, consider an MCA where the variables included in the model had no patterns, or zero dimensions (i.e., factors) along which to explain the variation in the variables. In this hypothetical case, all points would fall onto a singular point. In MCA, proximity between points signifies a relationship (Beh & Lombardo, 2014, pg. 394). Therefore, in the hypothetical case where all points were located together, they would be considered identical. This example's conclusion would be that, given the variables included, no relationship is found. However, if the points were divided along one more dimensions, it would signify an underlying pattern exists. In these cases, the proximity would indicate the relationship between points, and the location along the dimension would illustrate the underlying factor corresponding to the points. MCA also provides the weight of each dimension for the model's explained variation (i.e., the principal inertia) by providing the percent of the model's variation explained by each dimension. This paper's MCA of network patterns, found the variables were explained by three dimensions (Beh & Lombardo, 2014, pg. 127-128). The MCA visually displays how the variables are spread along each dimension factor. Therefore, to describe the results, each dimension is treated like a factor and the percent of explanation of each dimension is used to put the stratification across the dimensions into perspective.

The MCA gave a principal inertia of 0.12 and found 85% of the variation was explained over 3 dimensions.[61] Dimension 1 explains 69% of the model's inertia, Dimension 2 explains 11% of the model's inertia, and Dimension 3, explains 4% of the model's inertia. Figure 4 displays clustering along Dimension 1 and 2. Figure 5 displays the clustering along Dimensions 1 and 3.

Figure 4 shows policy actors associated with oil and gas, federal government, and environmental groups are more likely to answer 'yes' to the collaboration question, meaning they collaborate with more groups. Conversely policy actors associated with academics, *pro-fracking* local governments and *anti-fracking* local-governments are more likely to answer 'no' to the collaboration question. The yes/no questions appear to drive Dimension 1 and are accounting for most explanatory power of the model. These results, in comparison to the network size regression results (Figure 3), partially align in that the local government groups in the MCA are closer to the 'no' answers than industry, federal, and state groups. However, environmental groups are further to left of the x-axis than the state government, and further away from the local government groups along Dimension 1, which does not align with the results of the regression analysis in Figure 3, above.

Along Dimension 2 in Figure 4, the policy actors from oil and gas, *pro-fracking* local government and federal government groups group together above the x-axis, while policy actors from environmental and *anti-fracking* local governments below the x-axis. The number of years involved runs along the y-axis in the appropriate order (e.g., 0-1 years at the lowest point on the y-axis and 21+ years at the highest place on the y-axis). This result

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[61] Principal inertia is the total amount of variation explained by the model. See Appendix D Table 10a and 10b.

indicates that Dimension 2 is associated with the number of years a policy actor is involved in the subsystem.

Figure 5 shows clustering along Dimension 1 and 3. *Pro-fracking* local governments and *anti-fracking* local governments cluster near along Dimension 3 – they are both located below the x-axis and to the right of the y-axis. The oil and gas, environmental groups, and state government cluster near one another near the center of the axes. Overall the analysis shows some of the network pattern of policy actors is associated with their organizational type, and transcends divisions based on their policy preference toward fracking. This supports the network pattern hypothesis.

Overall, the MCA analysis shows that the respondents collaboration answers (e.g., 'yes' or 'no' answers) account for most their clustering patterns and observed along Dimension 1. This clustering pattern is most easily observed when Dimension 1 and 2 are viewed. Additionally, results show that along Dimension 2, the two local government groups in closer proximity to their interest group allies. For example, *pro-fracking* local government respondents are closer to the oil and gas respondents than the other anti-fracking local government respondents. However, when the 3-dimensional space is examined along Dimension 3, the results show the two local government groups are near while the other advocate groups (oil and gas, environmental groups) are in close proximity to each other in a separate location in the 3-diemnsional space.

Figure 4. Multiple Correspondence Analysis: Dimension 1 and 2.

Figure 5. Multiple Correspondence Analysis: Dimension 1 and 3.
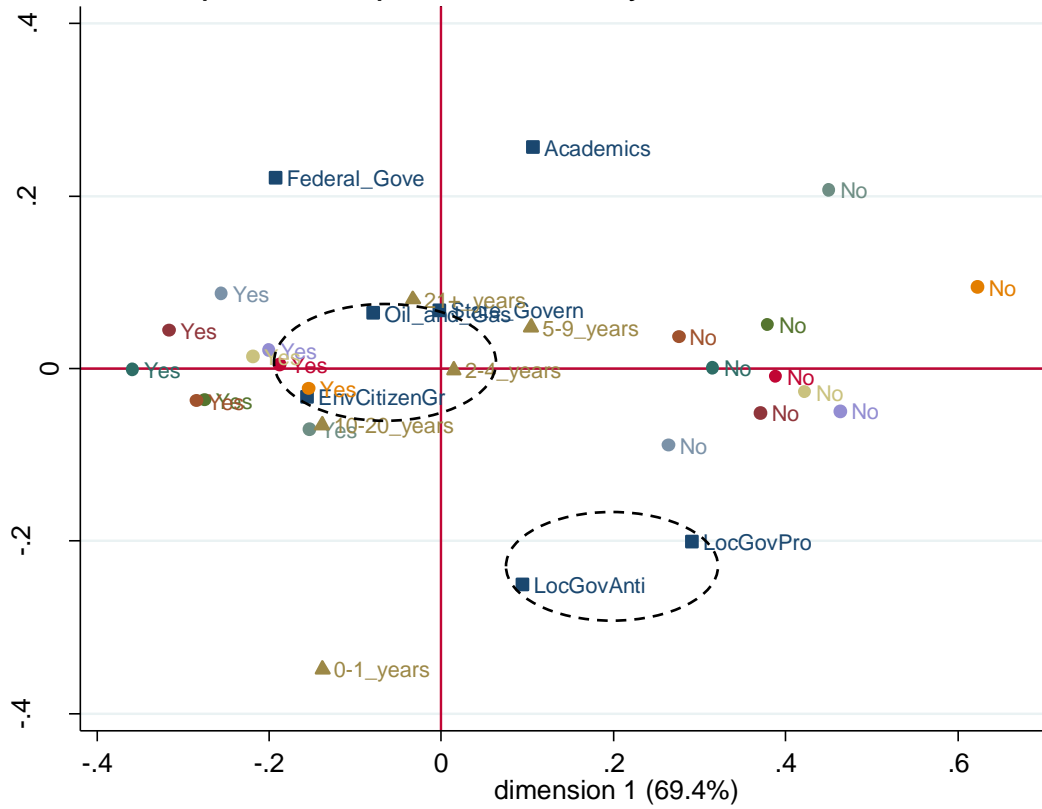
supplementary (passive) variable: years
coordinates in principal normalization

Conclusions and Limitations

The analysis of policy actors in Colorado's fracking subsystem provides insight into how local governmental policy actors compare to policy actors associated with interest groups. Overall, results indicate local government policy actors play an active and somewhat niche role in statewide fracking debates. They engage in fewer primary political activities than industry and environmental interest groups in the state, and fewer secondary activities than environmental interest groups in the state. Additionally, local government policy actors have similar levels of external resources, but fewer internal resources for political activity than interest group policy actors. Local government policy actors also have smaller networks than interest group policy actors. Of course, the level of activity of local governmental policy actors may have changed since the survey. For example, conflict over local authority continued to increase after 2013 (Gallaher, 2015). In 2013 and 2014, despite legal threats from Governor John Hickenlooper and legal action from industry and the COGCC, some local governments in Colorado continued to push for more control (Rochat, 2013; Antonacci, 2014; Hirji, 2014; CBSDenver, 2013). Even though Governor Hickenlooper called a truce between the state, industry groups, and local governments by creating a task force in 2014 to examine the local control issue, local control bills continue to surface (The State of Colorado, 2014; Bunch, 2016). While no comparison is made between the time period in this study and those events since, this paper's results are limited to the time period examined.

Finally, the networks of local government policy actors are influenced by their organization type and their position on fracking. For example, along one dimension in the multiple correspondence analysis, policy actors associated with *pro-fracking* local governments and industry groups have similar networks, while policy actors associated with

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anti-fracking local governments and environmental groups have similar networks. Then,

along another dimension, the policy actors associated with *pro-fracking* and *anti-fracking*

local governments clustered near each other, while the environmental and industry policy

actors clustered separately. Table 3 below summarizes the results with respect to how policy

actors associated with local governments compare to policy actors from interest groups.

Table 3. Outcomes related to the resources and network expectations.

Attribute	Expectation	Outcome
Resources	E1: Resources of policy actors associated with local governments will be similar to each other, and different than the resources of policy actors associated with interest groups.	**Partial Support** *External resources*: No differences observed between policy actors associated with interest groups and local governments. *Internal resources:* Policy actors associated with interest groups have more internal resources than those associated with local governments.
Network Size	*No expectation*	Policy actors associated with oil and gas groups have larger networks than those from local governments.
Policy Network	E2: Regardless of coalition membership, the policy network of policy actors associated with local governments will be similar to each other and different than the network of policy actors associated with interest groups.	**Partially Support** Over 85% of the variation in a policy actor's network is explained along three dimensions. *Dimension 1*: Policy actors associated with interest groups and the federal government are more likely to say "yes" they collaborate with other groups than policy actors associated with local government, state government, and academics group. *Dimension 2:* Policy actors associated with *pro-fracking* local governments have different collaboration patterns than policy actors associated with *anti-fracking* local governments, and are in the direction of their interest group allies. Policy actors associated with environmental groups have substantially distinct collaboration patterns from other groups. Differences along Dimension 2 are associated with years involved in the subsystem. *Dimension 3*: Policy actors associated with local governments (both *pro-fracking* and *anti-fracking*) cluster, and policy actors from interest groups (both environmental and industry) cluster.
Political activities	E3: Activities of policy actors associated with local governments will be similar to each other and different than the activities of policy actors associated with interest groups.	**Partial Support** *Primary activities*: Policy actors associated with interest groups engage in more primary activities than those associated with local governments. *Secondary activities*: Policy actors associated with environmental groups engage in more secondary activities than those associated with local governments.

In addition to the potential changes in local government activity since the time of this research, this paper has inherent limitations due to the targeted population, data collection method used, and similarities between the measures of resources and networks. With respect to the targeted population, policy actors are a difficult population to study because no list exists from which to create a sampling frame. While snowball sampling is appropriate for identifying populations such as this (Singleton & Straits, 2010), the sampling method may not have been exhaustive and some actors may have been excluded. To reduce the risk of underrepresenting key policy actors or groups of policy actors, public testimony documents of recent hydraulic fracturing policy debates were used to identify and then interview key policy actors from industry, government, and the industry. Next, data were collected through online surveys, which may have reduced the potential for responses. Some individuals identified did not have a valid email address publicly available. For the most salient policy actors, efforts were made to contact them through the postal service. For those policy actors with a valid email address, the request to participate in the study could have been filtered to the targeted policy actors' junk mail. In other cases, the targeted policy actor may have had technical difficulties in completing the survey.

With respect to measurement issues, careful consideration should be taken when reviewing the results of the network size model and the external resource capacity variable. Three of the six external resource questions related to access to specific groups (media, elective political officials, and government officials) and the network collaboration question asked if policy actors collaborated with government officials (including elected officials) from federal, state, regional, or local governments, and from the media. The similarities could lead to an endogenous relationship within the OLS model on network size. The issue is

partially mitigated by the composite resource score through the factor analysis, which reduces the effect of the specific questions. Further, this research did not attempt to draw conclusions of network size based external resource capacity. These issues do carry over to the correspondence analysis of collaboration patterns, which are used to test hypothesis three, that regardless of coalition, similarities in networks will exist across all local governmental policy actors.

Overall, these results add to the ACF by showing the attributes used to distinguish between coalitions can be used to compare policy actors associated with groups within coalitions. The research also shows the limits of the ACF and the utility of using applicable theories within the framework to build the more nuanced expectations between policy actors within subsystem and coalition. Further, the results build on the argument that organization type is a meaningful differentiator between policy actors (Jenkins-Smith & Claire, 1993; Nohrstedt, 2005; Nohrstedt, 2010), and that those differences transcend coalition memberships. Indeed, this research does not bring a new idea that variation among coalition members exists, but it does highlight that policy actors may play unique roles within the subsystem. Future research should continue to identify policy actor attributes (organizational affiliation, network patterns, resources, activities) and link those to attributes that signify who is more central to both subsystem activity and political influence (Gais & Walker, 1991).

Substantively, this research contributes to our understanding of the Colorado fracking policy subsystem. Scholars have described similarities and differences between the policy actors within the Colorado subsystem (Heikkila et al., 2013; Pierce, 2013), to policy actors in other state-level subsystems (Weible & Heikkila, 2016), and the drivers of the fracking policy conflict in Colorado (Heikkila & Weible, 2017). This paper provides more

information on the role of local governments within these debates and how they compare to

interest groups with respect to resources, activities, and networks. Indeed, the most in-depth

local-level research is focused on the legal authority of local governments (Minor, 2014).

Here we see local governmental actors not in the role of a policy maker, but also in the role

of a policy advocate.

CHAPTER VI

CONCLUSIONS

This dissertation examined policy actor beliefs and behaviors in contentious policy debates. Table 1 summarizes each chapter's research questions, hypotheses, and results. Overall, the results were mixed. In some areas, this research confirmed its hypotheses, while in others, the identified patterns and tested hypotheses yielded unexpected results. However, both the types of results provide insight into policy process theories on policy actor beliefs and behavior, and give direction for future research.

Summary of work

Chapter 2 examined how beliefs that are higher on an individual's belief hierarchy affect beliefs lower on their belief-hierarchy in Colorado and Texas' state-wide policy subsystems. Chapter 2 asked *How do a policy actor's deep and policy core beliefs translate into their secondary beliefs?* In this chapter, a policy actor's deep core belief – how involved should government be in daily life – and a policy core belief – the degree to which fracking should continue – were evaluated for their effect on the policy actor's secondary belief – which level of government should regulate four specific issues related to fracking. Two hypotheses were posed. First, policy actors who believe government should be involved less in daily life would prefer lower levels of government to regulate specific fracking-related issues. Second, policy actors whose beliefs do not align with the policy status quo (i.e. those who wish fracking to be stopped or limited) would choose the levels of government who are *not* currently regulating the fracking-related issue as their preferred regulator.

Results from the chapter's four policy actor belief models provided mixed support for the hypotheses. For example, the models related to broader issues of air and water quality, showed the expected relationship posed in Hypothesis 1, that those who believe government should be more involved in daily life also desired higher levels of government to regulate the issues and those who believe government should not be involved in daily life preferred local regulators. However, for localized issues of nuisance issues from the well-site operations and how far a well should be setback from other structures or features, the policy actor's attitude toward government in daily life had no impact on which level of government they preferred as regulator. The results also gave mixed support for Hypothesis 2. The results of the two localized issue models showed no difference in preferred regulators between those in Colorado and Texas even though these two states regulate localized issues at different levels of government. Further, even though the results of the two broader issue models were in alignment with the hypothesized expectation, the general trends seen across all four models indicate the current regulatory body currently for a specific issue is not the primary factor to consider. Rather, the four models' results indicate a policy actor's preferred level of government is likely due to the respondent's general view of state, local, and federal regulators, and the nature of the issue.

Chapter 3 examined the strategic behavior of venue shopping of policy actors in New York's fracking state-wide subsystem. Within this chapter two questions were asked. First, *What factors influence the total number of venues a policy actor shops?* Three hypotheses from the venue shopping literature were posed related to this question. First, policy actors with more resources will shop more than those with fewer resources. Second, policy actors associated with interest groups will shop more than non-interest group policy actors. Third,

policy actors who desire policy change will shop more than those who do not desire policy change. A single ordered-logit regression model was developed to simultaneously test the three hypotheses. The model's results supported each hypothesis.

The second research question in Chapter 3 was *What factors explain specific venue shopping choices of a policy actor?* Two hypotheses from the venue shopping literature were tested within this research question. First, policy actors are more likely to shop venues they perceive to be more influential in the substantive issue. Second, Policy actors are more likely to shop venues with decision makers the policy actors agree with and policy actors are less likely to shop venues with decision makers the policy actors disagree with. An ordered logistic regression model of venue shopping was developed and tested across six venues within the New York statewide fracking policy subsystem. Results from the six models did not support the hypotheses. However, the results showed significant relationships between the organizational focus of the respondent's organization (i.e. local, state, or national focus) and, when looking across all six models, the results show policy actor's shopping patterns in one venue informs their shopping patterns in other venues.

Chapter 4 and 5 both focused on the local governmental policy actors in Colorado's state-wide fracking policy subsystem. Chapter 4 asked, *How do policy actors associated with local governments compare to other groups of policy actors with respect to their beliefs*? Results indicate local governmental policy actors have i) more moderate beliefs than policy actors associated with interest groups and ii) they have more moderate beliefs than their allies. These results were in line with the chapter's hypotheses. Chapter 5 asked, *How do policy actors associated with local governments compare to other groups of policy actors with respect to their resources for advocacy, political activities, and networks among*

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different policy actors in the subsystem? Chapter 5 developed three expectations: policy actors associated with local governments will be similar to other policy actors associated with local governments with respect to their resources, activities, and networks, but different from policy actors associated with interest groups. The results showed partial support for each expectation. Results indicated local governmental and interest group policy actors (i.e. oil and gas industry and environmental groups) had no differences with respect to their external resources, but significant differences were seen between these two policy actor groups with respect to their internal resources. Similarly, local governmental policy actors and interest groups engaged in significantly levels of primary political activities, but only environmental interest groups engaged in different levels of secondary political activities. Finally, a multiple correspondence analysis gave a 3-dimension result and differences between local governmental policy actors and interest groups were only seen along one dimension.

Table 1. Research Summary.

Questions and Hypotheses	Results	
Ch. 2: How do a policy actor's deep and policy core beliefs translate into their secondary beliefs?		
	Localized Issues	Broader Issues
Hypothesis 1: Policy actors who believe governments should be involved less in daily life prefer lower levels of government to regulate oil and gas issues.	No Support	Support
Hypothesis 2: Policy actors whose beliefs do not align with the status quo prefer regulators at levels of government that are different than where they are currently administered.	Partial Support	Partial Support
Ch. 3: What factors influence the total number of venues a policy actor shops?		
Hypothesis 1: Policy actors with more resources shop more than policy actors with fewer resources.	Support	
Hypothesis 2: Policy actors associated with interest groups shop more than policy actors associated with non-interest groups.	Support	
Hypothesis 3: Policy actors who desire policy change shop more than those who do not desire policy change.	Support	
Ch 3: What factors explain specific venue shopping choices of a policy actor?		
Hypothesis 4: Policy actors are more likely to shop venues they perceive to be more influential in the substantive issue.	No Support	
Hypothesis 5: Policy actors are more likely to shop venues with decision makers the policy actors agree with. Policy actors are less likely to shop venues with decision makers the policy actors disagree with.	No Support	
Ch. 4 How do policy actors associated with local governments compare to other groups of policy actors with respect to their beliefs?		
Hypothesis 1: Local governmental policy actors have more moderate beliefs than interest groups.	Support	
Hypothesis 2: Local governmental policy actors have more moderate beliefs than their allies.	Support	
Ch. 5 How do policy actors associated with local governments compare to other groups of policy actors with respect to their resources, networks, and activities?		
Expectation 01: Resources of policy actors associated with local governments will be similar to each other, and different than the resources of policy actors associated with interest groups.	Partial Support	
Expectation 02: Regardless of coalition membership, the network pattern of policy actors associated with local governments will be similar to each other and different than the network patterns of policy actors associated with interest groups.	Partial Support	
Expectation 03: Activities of policy actors associated with local governments will be similar to each other and different than the activities of policy actors associated with interest groups.	Partial Support	

Contributions

This dissertation contributes to the literature in four areas. The first three contributions relate to policy scholars' understanding of policy actor beliefs and behaviors in contentious policy debates. The fourth contribution is substantive and relates to the topic of state-level fracking debates.

First, this dissertation contributes to the ACF's and policy process scholars' understanding of the relationship between a policy actor's deep core, policy core beliefs, and secondary beliefs. Results from Chapter 2 support the ACF's assumption that the beliefs at higher levels of the ACF's hierarchical belief system (i.e. deep core and policy core) inform beliefs at the lowest levels of the hierarchy (i.e. secondary beliefs). However, the results indicate that the magnitude of the effect of deep core and policy core beliefs on secondary belief is not only limited, but changes based on the nature of the policy issue in question.

Indeed, the most unexpected result of Chapter 2 was how the effect of an individual's general attitude toward government (deep core belief) and their preference for whether fracking should be stopped/limited, continued, or expanded (policy core belief) on their preference for who should regulate an issue (secondary belief) changed between issues with broad externalities (i.e. air and water quality) and those with localized externalities (i.e. nuisance issues and setback distances). For example, for the broad issues of air and water quality, the policy actors with the general attitude that government should be more involved in daily life and the policy core belief that fracking should be stopped, were most likely to prefer local government to regulate the issue. In addition, the results indicate that at extreme values of the deep core belief, the deep core belief of an individual overpowers their policy core beliefs and become the main driver on the individual's secondary belief. For example,

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the likelihood to want local regulators for individuals who do not want government involved in daily life did not change even when they held different policy core beliefs related to whether fracking should be stopped/limited, continued, or expanded. Conversely, for issues with more localized externalities, the results show that a policy actor's policy core belief related to fracking is the main driver for their secondary belief of a preference for which level of government should regulates the issue. For example, the likelihood to prefer a local regulator for setback issues changed depending on their preference related to fracking, but not by their attitude toward government involved in daily life. In other words, the nature of the issue, particularly the scope of the issue, mediates how the deep and policy core beliefs affect a secondary belief.

Put more plainly, the results suggest an individual's ideology and their stance on a specific policy issue inform their preference for specific policy details. But, the degree to which ideology and normative policy preferences inform specific policy preferences depends on the nature of the issue in question. The dynamic between the nature of the issue and the individual's beliefs can be used to explain why, for example, issues that divide individuals along political party lines (i.e. republican or democratic) are often broad topics, such as abortion, gay marriage (Hillygus & Shields, 2008) or climate change (Hamilton, 2010). Following the observed relationship between beliefs and the nature of an issue, when an individual develops a specific preference for whom to vote for, and that decision is made in the context of a broad issue, they will draw upon their political ideological or moral beliefs. Rather, when their preference for who to vote for is associated with a more specific issue, like should doctors be able to prescribe marijuana to treat a disease, the individual would be expected to draw upon their policy core belief on the subject of legalizing medical marijuana.

These results could also inform advocacy strategies. For example, if an advocate wanted to promote a specific policy solution from a group with similar general attitudes, they should frame the policy solution in the context of a broad issue that appeals to those attitudes. However, if the population is rather divided on deeply held beliefs, the advocate should frame the policy solution in the context of more localized policy issue. In doing so, the advocate would be more likely to gain support across moralistic or political party lines.

Chapter 4's inquiry into local governmental and interest group beliefs also informs policy scholar understands of policy core beliefs. Results from Chapter 4 shows that policy actors within coalitions have significant differences in their policy core beliefs. Specifically, the results indicate policy actors associated with local governments have more moderate beliefs than their interest group allies. These results supports one of the ACF's original hypotheses that policy actors in administrative roles will advocate for more moderate policy positions than policy actors associated with interest groups. The results also provide support to previous ACF research that finds policy actors from similar organizational affiliations will share similar beliefs (Jenkins-Smith & Claire, 1993; Nohrstedt, 2005; Nohrstedt, 2010). Finally, the results of the K-means cluster analysis with a 3-cluster solution which grpi[ed respondents based 20 problem perceptions, showed respondents affiliated with local government who identified as pro or anti-fracking within the same cluster. Not only does this result show local governmental policy actors are more moderate, it implies that policy actors who are directly opposed to each other with respect to one substantive topic (e.g., the continuation or limitation of fracking), may be allies in another substantive topic (e.g., whether local governments should have more control over an issue).

The second area of contribution is on policy actor behavior. The dissertation contributes to policy scholars' understanding of policy actor behavior in contentious policy debates through the results in Chapter 3 on venue shopping. Specifically, Chapter 3's results contribute to the venue shopping literature by demonstrating that two methodological benefits of the ACF subsystem lens in three ways. The ACF approach 1) reduces the amount of unexplained variation due to institutional features that could affect venue shopping when the policy subsystem boundary is selected to match a state boundary, is 2) inclusive of venues that span vertical and horizontal levels of government and promotes including more venues than typically found in venue shopping research, and is 3) more inclusive of policy actors than typically included in venue shopping research. Within the analytical boundaries set by the ACF, Chapter 3's results show a policy actor with more resources for advocacy and who desires policy change is more likely to shop more venues within a subsystem. Further, the chapter's results show policy actors associated with interest groups have a higher level of engagement in the subsystem. Indeed, those associated with interest groups are more likely to shop a greater number of venues than policy actors associated with other groups, such as local, state, or federal governments, or members of the scientific community.

Chapter 3's second set of venue shopping models demonstrate that a policy actor's venue shopping choices (i.e. how often they engage with a specific venue) within an established policy subsystem, such as New York's fracking policy subsystem, are not driven by the policy actor's attitudes and perceptions toward a specific venue have. Certainly, at the time of this research, New York's state-level regulatory and legislative venues had nearly half a century of making oil and gas-related policy (IOGCC, 1994). Therefore, the large amount of venue shopping observed at state agencies, state legislature, and the Governor's

office may simply acknowledge that the policy games are played at these venues, regardless of whether the policy actor agrees with, or believes the venue to be influential. However, the most significant predictors of whether a policy actor will shop one venue in a subsystem are their other venue shopping patterns. This finding suggests venue level characteristics and the associations or networks of policy actors may be more influential in individual venue selection than previously thought. For example, a lobbyist at the state legislature may not be have the skills or authority to engage a court, even if the individual felt their policy preferences were in perfect alignment with the judge or that the court could affect policy change in the subsystem. Likewise, a lawyer may not have interest or ability to venue shop the state agency. Further, the policy actor venue shopping patterns exhibited in the second set of models shows the differentiation of horizontal and vertical venues may be an obfuscated way to examine the shopping tendencies of policy actors.

Third, this dissertation contributes to policy scholars understanding of local governments as policy advocates in state-level politics (Ch. 4 and 5). Overall, results indicate local government policy actors play an active and somewhat niche role in statewide fracking debates. Results from Chapter 5 show local governments have significant differences in their resources, network size, network pattern, and political activities, when compared to most advocacy groups. Indeed, when local governmental policy actors are compared to policy actors associated with other governments, the academic community, or interest groups, differences in each of these attributes are observed. In the fracking debates in Colorado, local governmental policy actors have fewer internal resources for advocacy than oil and gas industry and environmental policy actors. But local governmental policy actors have similar external resources when compared to all other groups. Local governmental policy actors

engage in fewer primary political activities than policy actors associated with the oil and gas industry and environmental groups. Yet, local governmental policy actors are only less active in their secondary activities than environmental policy actors. Finally, local governmental respondents reported to have a smaller network of collaborators than federal and state governmental respondents and respondents from the oil and gas industry. However, local governmental respondents had similar network sizes as respondents from environmental groups.

The analyses of beliefs, resources, networks, and activities in Chapter 4 and Chapter 5 find variation between local governmental actors and other advocacy groups, and variation among local governmental policy actors. The results from Chapter 4 show the policy core beliefs of the governmental representatives vary. Because of this variation in their beliefs, local governmental policy actors are divided into two competing coalitions. However, when the mean policy core beliefs of policy actors calculated by organization type, the results show the local governmental policy actors have more moderate beliefs than their interest group allies.

The results from Chapter 5's MCA analysis of policy actor networks and the results from Chapter 4's 3-cluster analysis of policy actor beliefs show local governmental policy actors can associate with competing advocacy groups (e.g., pro-fracking or anti-fracking groups), but the local governmental policy actors also share significant similarities as a group in both their beliefs and their networks. These results support the arguments that, in-spite of similar policy core beliefs, policy actors from similar organizations are more similar than their coalition member counterparts, and that those with similar beliefs associate are more

likely to associate with one another (Jenkins-Smith & Claire, 1993; Nohrstedt, 2005; Nohrstedt, 2010; Elgin & Weible, 2013; Henry et al., 2011).

Lastly, this dissertation provides scholars and others interested in the topic of fracking a substantive understanding of how policy actors act within state-level subsystems of Colorado, New York, and Texas. In each state, local governmental representatives engage in the policy process in ways that are like other policy advocates. Indeed, local governments have the capacity to affect policy change beyond their boarders in more ways than generating policy of their own. Local level research shows a rich variety of policy games centered on local level policy making (Gallaher, 2015; fracktracker.org) and non-trivial response by state governments and interest groups (Minor, 2014) and effects on higher level policy making (Mufson, 2014). This research shows local governments also take on the role of the policy advocate. A role that requires further inquiry.

While the differences found in this dissertation related to the beliefs, resources, networks, and political activities provide insight that local governments play a unique role in state-level policy subsystems, it has its limits. The questions answered and the results found in this body of work cannot reflect on whether local governments are a influential group of policy actors in the statewide fracking debates.

Future Research

I see this research expanding in three directions. First, I will expand on the results of six individual venue shopping models in Chapter 3 by exploring the relationship between a policy actor's venue choices. A preliminary factor analysis shows similar results to the combined six venue shopping models: policy actors shop within three basic groups. The results from the six models appear to show a split along courts, state level venues, and elected venues. This indicates there may be factors beyond whether the venue is at a particular level or branch of government. One potential next step is use the aforementioned factor analysis to create 3 dummy variables and assign them to each respondent's venue choice. Then, create a single multi-level multinomial model. This would provide a large N and allow additional exploratory variables and hypotheses to be tested.

Second, I will continue to examine how normative beliefs translate into specific preferences. Further research into secondary beliefs, such as the preference for who should regulate is an area to continue to investigate to inform how beliefs within ACF's belief hierarchy interact. The fracking debates in Colorado and Texas shows how divisive the topic of 'who should regulate' can be, making it align more with the ACF's policy core belief definition (Sabatier & Weible, 2007). However, given that the question of 'who should regulate' can asked in the context of very specific issues, researchers could argue (as I have above) that the preference over which level of government should an issue is a secondary belief (Sabatier & Weible, 2007). Previous research also identifies difficulties in defining policy core and secondary beliefs (Jenkins-Smith et al., 2016). Therefore, further investigation into how a policy actor's beliefs interact with their preference over who should

regulate across issues with varying externalities may assist in improving belief definitions in the ACF.

Third, I will continue to examine the local government's role in higher-level politics. This dissertation's results show local governmental actions are more diverse than the bottom-up federalism literature discusses (Gamkhar & Pickerill, 2012). In addition, the policy process literature will be informed by a better understanding of policy actor groups within the coalition and beyond traditional interest groups. Scholars' inquiries into local governments will certainly have a rich test bed provided the local governments active role in issues such as climate change, immigration laws, and general defiance to current federal actions.

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APPENDIX

APPENDIX A

Descriptive Statistics

Preferred level of government. A comparison of mean regulator score, where 1 = no regulator, 2 = local government, 3 = state government, and 4 = federal government, shows in-general the issues identified as having smaller externalities, have lower preferred level of government scores.

Table 1: Preferred level of government for regulation by issue. Count, mean, and standard deviation shown.

Issue	Preferred Regulator				Mean	S.D.
	No Regulation	Local Gov.	State Gov.	Federal Gov.		
Setbacks	3	98	105	22	2.64	0.67
Nuisances issues	2	121	85	19	2.53	0.66
Monitor water quality	1	31	138	58	3.11	0.63
Monitor air emissions	2	22	135	69	3.19	0.63

Core belief: Governmental ideology.

Table 2: Governmental ideology, or core belief, of policy actors.

Government should put limits on the choices individuals can make so they do not get in the way of what is good for society	The government should do more to advance society's goals, even if that means limiting the freedom and choices of individuals				
	Strongly Disagree	Disagree	Agree	Strongly Agree	Total
Strongly Disagree	39	7	2	1	49
Disagree	13	35	10	0	58
Agree	6	19	38	4	67
Strongly Agree	1	1	4	10	16
Total	59	62	54	15	190

Pearson chi2(9) = 173.92   Pr = 0.000

An iterated principle axes (ipf) Factor analysis with varimax rotation was used to combine the scores for the two government attitude questions. The resulting factor loaded with an initial eigenvalue of 1.32, accounted for 100 percent of the variance, and had a uniqueness of .3405 for each initial variable. A varimax rotation resulted in no change in the single factor solution. The resulting single variable is continuous with a mean of 0 and ranging from -1.12 to 1.69.

Policy change preference. Thirty-eight percent of respondents indicated they prefer fracking to be stopped or limited, 30 percent preferred fracking to continue at the current rate, and 32 percent preferred for fracking to expand. (TABLE Y).

Table 3: Policy change preference for hydraulic fracturing-based oil and gas development by state and for all respondents.

Position	Colorado		Texas		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Stop/Limit	51	35%	34	45%	85	38%
Continue at current rate	47	32%	20	26%	67	30%
Expand	48	33%	22	29%	70	32%
Total	**146**		**76**		**222**	

H1: Tabular data

Table 4. The instantaneous rate of change of governmental attitude on local and federal regulator preference for issues with broad and localized externalities.

Issue	Preference	Externality	dy/dx	Std. Err.	z	P>z	[95% Conf. Interval]	
Air	Federal Preference	Broad	0.082***	0.028	2.97	0.003	0.028	0.137
Air	Local Preference	Broad	-0.055***	0.024	-2.29	0.022	-0.103	-0.008
Water	Federal Preference	Broad	0.031	0.027	1.16	0.244	-0.021	0.083
Water	Local Preference	Broad	-0.065***	0.029	-2.26	0.024	-0.121	-0.009
Nuisance	Federal Preference	Localized	0.003	0.020	0.17	0.863	-0.035	0.042
Nuisance	Local Preference	Localized	-0.012	0.045	-0.28	0.782	-0.100	0.075
Setbacks	Federal Preference	Localized	0.007	0.021	0.33	0.743	-0.035	0.049
Setbacks	Local Preference	Localized	0.005	0.039	0.12	0.904	-0.072	0.081

Margins For Interaction Between Policy Preference And State.

Table 5. Predictive Margins for Setbacks: Interaction between policy preference and State.

Policy Preference with State	Margin	Std. Err.	z	P>z	[90% Conf.	Interval]
Stop_Limit#Colorado	0.4945	0.0915	5.4	0.0000	0.3439	0.6450
Stop_Limit#Texas	0.7254	0.0736	9.86	0.0000	0.6044	0.8463
Continue#Colorado	0.2853	0.0666	4.28	0.0000	0.1757	0.3949
Continue#Texas	0.5808	0.1118	5.19	0.0000	0.3969	0.7647
Expand#Colorado	0.2251	0.0716	3.14	0.0020	0.1073	0.3428
Expand#Texas	0.5773	0.1192	4.84	0.0000	0.3812	0.7735

Table 6. Difference in margins between states (Texas – Colorado): Setbacks

Policy Preference	Difference in Margins (Texas-Colorado)
Stop or limit	0.2309
Continue	0.2955
Expand	0.3523

Table 7. Predictive Margins for Nuisance Issues: Interaction between policy preference and State.

| Policy Preference with State | Predictive Margins (Delta Method) | | | | | |
	Margin	Std. Err.	z	P>z	[90% Conf.	Interval]
1#Colorado	0.6672	0.0857	7.79	0.0000	0.5263	0.8082
1#Texas	0.6532	0.0829	7.88	0.0000	0.5169	0.7895
2#Colorado	0.4999	0.0829	6.03	0.0000	0.3635	0.6363
2#Texas	0.4784	0.1110	4.31	0.0000	0.2959	0.6609
3#Colorado	0.4701	0.0847	5.55	0.0000	0.3308	0.6093
3#Texas	0.4960	0.1115	4.45	0.0000	0.3126	0.6795

Table 8. Difference in margins between states (Texas – Colorado): Nuisance issues.

Policy Preference	Difference in Margins (Texas-Colorado)
Stop or limit	-0.0140
Continue	-0.0215
Expand	0.0259

Table 9. Predictive Margins for Air Emissions: Interaction between policy preference and State

Policy Preference with state	Margin	Std. Err.	z	P>z	[90% Conf.	Interval]
1#Colorado	0.1659	0.0596	2.78	0.0050	0.0679	0.2639
1#Texas	0.1358	0.0632	2.15	0.0320	0.0318	0.2397
2#Colorado	0.0862	0.0458	1.88	0.0600	0.0108	0.1617
2#Texas	0.0728	0.0451	1.61	0.1060	-0.0014	0.1469
3#Colorado	0.0494	0.0370	1.34	0.1820	-0.0114	0.1103
3#Texas	0.0438	0.0376	1.17	0.2440	-0.0180	0.1056

Table 10. Difference in margins between states (Texas – Colorado): Air Emissions.

Policy Preference	Difference in Margins (Texas-Colorado)
Stop or limit	-0.0301
Continue	-0.0135
Expand	-0.0056

Table 11. Predictive Margins for Water Quality: Interaction between policy preference and State

Policy Preference with state	Margin	Std. Err.	z	P>z	[90% Conf.	Interval]
1#Colorado	0.2102	0.0650	3.23	0.0010	0.1033	0.3171
1#Texas	0.2215	0.0792	2.8	0.0050	0.0912	0.3518
2#Colorado	0.0806	0.0414	1.95	0.0520	0.0125	0.1487
2#Texas	0.1097	0.0564	1.95	0.0520	0.0170	0.2025
3#Colorado	0.0990	0.0514	1.93	0.0540	0.0145	0.1835
3#Texas	0.1909	0.0978	1.95	0.0510	0.0301	0.3517

Table 12. Difference in margins between states (Texas − Colorado): Water Quality.

Policy Preference	Difference in Margins (Texas-Colorado)
Stop or limit	0.0113
Continue	0.0291
Expand	0.0919

APPENDIX B

Appendix B includes additional information related to Chapter 3.

Descriptive statistics for RQ1.

Table 1. Summary of Number of Venues Shopped

Number of Venues Shopped	Frequency	Percent
0	21	19.44
1	5	4.63
2	2	1.85
3	13	12.04
4	32	29.63
5	14	12.96
6	14	12.96
7	7	6.48

Table 2. Respondent's Average Resources.

	Obs	Mean	Std. Dev.	Min	Max
Average Resources	152	1	0.867193	0	2.833333

Table 3. Respondent's Organization Type Distribution.

Group Type	**Frequency**	**Percent**
Interest Group	100	65%
Government	40	26%
Academic/Consultant	14	9%
Total	**154**	**100%**

Table 4. Policy preference of respondents toward fracking.

Fracking in the United States should be…	Frequency	Percent
Stopped or Limited	68	54%
Continue at Current Rate	13	10%
Expand Moderately or Extensively	45	36%
Total	**126**	**100%**

Table 5. Organizational Focus of Respondents.

Focus of Organization	Freq.	Percent
Local focus	59	38.8%
State focus	74	49.7%
National focus	19	12.5%
Total	**152**	**100%**

Descriptive statistics for RQ2

Table 6. Venue Shopping Frequency by Respondent Organization Type.

Shopping Frequencies	Federal Gov.	State Agencies	NY Gov.'s Office	State Legislature	State Courts	Local Courts	Local Gov.
Never	54	30	29	31	78	86	34
Yearly	35	35	34	33	21	15	21
Monthly	14	36	34	35	7	4	39
Weekly	7	8	12	10	2	3	15
Total	**110**	**109**	**109**	**109**	**108**	**108**	**109**

Table 7. Percent of respondents who shopped a venue at least once per year., average agreement and average perceived influence.

Venue	Percent shopping at least once per year	Average agreement*	Average perceived influence**
NY Governor's Office	73%	-0.83	1.64
State Agencies	72%	-0.09	1.43
State Legislature	72%	0.14	1.13
Local Government	69%	0.22	1.23
State Courts	28%	0.03	1.26
Local Courts	20%	0.04	0.96

* Agreement ranged from "Strongly disagree" = -2, "Disagree" = -1, "Neither agree nor disagree" = 0, "Agree" = 1, and "Strongly agree" = 2

** Influence ranged from "Not influential at all" = 0, "Somewhat influential" = 1, and "Extremely Influential" = 2.

Local Level Action

Table 8. Number of New York municipalities with a fracking ban or moratorium in 2011 and 2013.

County	2011	2013
Grand Total	23	160
Albany		5
Broome		1
Cayuga		9
Chenago		1
Cortland	1	2
Delaware		2
Dutch		1
Erie	2	3
Fulton		1
Herkimer		5
Livingston		12
Monroe		6
Montgomery		4
Niagra		2
Oneida	2	25
Onondaga	4	13
Ontario	2	13
Orange		2
Ostego	6	12
Schenectady		1
Schohaire		8
Seneca		1
Steuben		1
Sullivan		5
Tioga		1
Tompkins	3	8
Ulster		7
Yates	3	7
Un-identifiable		2

Source: Compiled by the author using information from Fracktracker.org

Alternative Model for RQ1

If "none" and "once a year" were coded as "no shopping" = 0, and "monthly" or "weekly" coded as "shopping" = 1. This breakdown aligns with Holyoke et al. (2012), however their venue options did not include courts. Given that policy actor may only engage in a single court cases and expend large amounts of resources, while others may lobby a legislature at multiple hearings within the same time period, the model included in the results above chose to include 'once a year' as "shopping".

Table 9. Ordered logit results for total venues shopped showing odds-ratio

	Resources	Org Type	Org Focus	Full Model
Average Resources	2.280***	2.349***	2.052***	1.824**
	(3.35)	(3.45)	(2.76)	(2.24)
Interest Group		2.048*	2.452**	3.124***
		(1.95)	(2.25)	(2.72)
Local Focus	Comparison Organizational Focus			
State Focus			0.475*	0.480*
			(-1.80)	(-1.74)
National Focus			1.128	1.429
			(0.20)	(0.59)
Belief: Stop/Limit	Comparison Position on Fracking			
Belief: Continue				0.280**
				(-1.97)
Belief: Expand				0.348**
				(-2.51)
Observations	108	108	108	107
Pseudo R-square	0.0311	0.0413	0.052	0.0741
Chi2 p-value	0.0006	0.0004	0.0006	0.0001

Odds Ratios; Z statistic in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Appendix C includes additional information related to Chapter 4.

Respondent descriptive on policy position and org type

Table 1 shows the average and standard deviation of the fracking policy preference score with the manually separated local government groups. The table is sorted by the mean score, showing the interest groups at the two extreme ends (1 = fracking should be stopped; 5 = fracking should be expanded extensively).

Table 1. Fracking policy preference score by organization affiliation.

Organization affiliation	Mean	Std Dev.	N
Environmental groups	1.64	0.48	28
Local Gov., *Anti-Fracking*	2.00	0.00	12
Federal Gov.	2.77	1.01	13
State Gov.	3.18	0.60	11
Academics and consultants	3.33	1.00	9
Local Gov., *Pro-Fracking*	3.56	0.75	27
Oil and gas industry	3.87	0.80	39
Total	3.00	1.12	139

H1: ANOVA

Table 2. Analysis of variance of policy preference and organization affiliation

Number of obs.	139		R squared	=	0.4826
			Adj R-squared		
Root MSE =	0.8203			=	0.4632

Source	Partial SS	df	MS	F	Prob>F
Model	83.492	5	16.698	24.81	0.000
affiliation	83.492	5	16.698	24.81	0.000
Residual	89.501	133	0.673		
Total	172.99	138	1.254		

H1: Full Fisher-Hayter Table

Table 3 shows the fracking policy preference score comparison for each possible combination of organizational affiliation. Note that beyond local governments having statistically different and more moderate positions than interest groups, federal governments do also. Further, state government respondents had significantly different positions than environmental groups, but no difference when compared to oil and gas industry respondents. Likewise, the academic and consulting group only had statistically different scores when compared to the respondents associated with environmental groups.

Table 3. Pairwise comparison of policy position scores using Fisher-Hayter method.

Group 1	vs	Group 2	Mean 1	Mean 2	Difference	FH-Test
Local Gov	vs	Oil and Gas	3.08	3.87	0.79	6.05*
Local Gov	vs	Env. Groups	3.08	1.64	1.43	9.98*
Local Gov	vs	Fed Gov	3.08	2.77	0.31	1.66
Local Gov	vs	State Gov	3.08	3.18	0.10	0.53
Local Gov	vs	Academics	3.08	3.33	0.26	1.20
Fed Gov	vs	State Gov	2.77	3.18	0.41	1.74
Fed Gov	vs	Oil and Gas	2.77	3.87	1.10	5.94*
Fed Gov	vs	Env. Groups	2.77	1.64	1.13	5.79*
Fed Gov	vs	Academics	2.77	3.33	0.56	2.24
State Gov	vs	Oil and Gas	3.18	3.87	0.69	3.48
State Gov	vs	Env. Groups	3.18	1.64	1.54	7.46*
State Gov	vs	Academics	3.18	3.33	0.15	0.58
Oil and Gas	vs	Env. Groups	3.87	1.64	2.23	15.51*
Oil and Gas	vs	Academics	3.87	3.33	0.54	2.51
Env. Groups	vs	Academics	1.64	3.33	1.69	7.61*

H1: Correspondence Analysis

Table 4. Correspondence analysis of policy preference and organization affiliation

Number of obs	139.0
Pearson chi2(20)	100.0
Prob > chi2	0.0000
Total inertia	0.7196
Number of dim.	2
Expl. inertia (%)	96.5

Dimension	Singular Value	Principal Inertia	Chi2	Percent	Cumulative Percent
dim 1	0.769589	0.592267	82.33	82.31	82.31
dim 2	0.319414	0.1020251	14.18	14.18	96.49
dim 3	0.140443	0.0197242	2.74	2.74	99.23
dim 4	0.074398	0.0055351	0.77	0.77	100
Total		0.7195514	100.02	100	

H2: Difference in Means and Extremism

To determine if the local government *pro-fracking* and *anti-fracking* groups were more or less extreme than their interest group allies – the oil and gas industry and environmental groups, respectively – this paper compared a normalized problem perception scores of each group of respondents. To normalize the score, this paper used the absolute value of the respondent's problem perception score subtracted from the moderate position value (3). If the absolute value of the interest group score was greater than the absolute value of the local government score, a 1 was assigned, indicating the interest group was more extreme.

For example, if respondents associated with environmental groups indicated, on average, that the issue of *Contamination of ground and surface water supplies from chemicals in hydraulic fracturing fluids* was between a "severe" and "serious" problem and their average problem perception score was 4.2. Subtracting the moderate value (3) from the average score would give the environmental group a normalized problem perception of 1.2 (4.2 - 3). And, in this example, the respondents associated with local governments with an *anti-fracking* stance indicated that the same issue was between a "moderate" and "serious" problem, and their average problem perception score was a 3.1. Subtracting the moderate value (3) from and the average score would give anti-fracking local government's normalized problem perception of 0.1 (3.1 - 3). Then, the absolute value of each score is compared showing that the interest group (normalized value 1.2) is more extreme than the local government group (normalized value of 0.1).

Each of the twenty problem perception scores were compared across respondents associated with the local governments in the pro and anti-fracking coalition and respondents

from the respective interest group allies. Then, the Bonferroni analysis was used to determine if the difference in average problem perception scores was significant. Table 5 shows whether the local government and respective interest group score was more extreme and indicates the statistical significance of the difference.

Results show the average score of respondents associated with environmental groups were more extreme in 17 of the 20 issues than the average score of respondents associated with anti-fracking local governments. But, only one of those differences was statistically significant at a p-value < 0.10. Similarly, the average problem perception scores of respondents associated with the oil and gas industry group were more extreme in 16 of the 20 issues than average scores of respondents associated with the pro-fracking local governments, but only two of those differences were statistically significant at a p-value < 0.10.

Table 5. Comparison of mean problem perception scores between local governments and their interest group allies.

Issue Statement	Env. Group more extreme than Local Gov., *Anti*	Industry group more extreme than Local Gov., *Pro*
Misinformation among the general public about the risks, benefits, and effects of hydraulic fracturing.	1	1
Contamination of ground and surface water supplies from chemicals in hydraulic fracturing fluids.	1**	1
A patchwork of local regulations on hydraulic fracturing.	0	1
Conflict between mineral rights and property rights owners.	1	0
Contamination of ground water from methane migration.	1	1
Degradation of air quality from fugitive methane emissions.	1	1
Degradation of air quality from flares, diesel exhaust, and dust from well-site operations.	1	1
Competition for available water supplies from hydraulic fracturing.	1	1
Nuisance to the general public caused by truck traffic, noise, and light from well-site operations.	1	0
Surface degradation and erosion from access roads at well-site operations.	1	1
Public distrust of the oil and gas industry.	0	1
Ineffective monitoring by state regulatory agencies of hydraulic fracturing.	1	1*
Scare tactics and demonizing of the oil and gas industry by opponents of hydraulic fracturing.	1	1
Influence of the oil and gas industry over state administrative and legislative branches.	1	1**
Boom-and-bust economic cycles from natural gas development.	1	1
Burdens on local government services from temporary employees for well-site operations.	1	0
Risks of induced seismic activity caused by hydraulic fracturing.	0	1
Inadequate or incomplete communication by the oil and gas industry about the risks, benefits and effects of hydraulic fracturing to the general public.	1	0
Distribution of biased information against hydraulic fracturing.	1	1
Destruction of public lands by well-site operations, processing facilities, and pipelines	1	1
Total count of interest group being more extreme than local gov.	**17**	**16**

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

APPENDIX D

Appendix D includes additional information related to Chapter 5.

Factor Analyses of Resources

Table 1: Grouping resources into internal and external resource capacity

Resource	Mean	Std. Deviation	External (Factor 1)	Internal (Factor 2)
Access to elected political officials	2.02	0.95	**0.818**	0.104
Access to government officials	2.21	0.85	**0.796**	0.118
Access to media	2.01	0.88	**0.743**	0.272
Access to people with a similar position on hydraulic fracturing	2.31	0.87	**0.720**	0.280
Access to people with a different position on hydraulic fracturing	1.91	0.90	**0.731**	0.185
Support from the general public	1.56	0.86	**0.531**	0.408
Effective leadership in organization	2.13	0.91	0.419	**0.502**
Technical Support to Generate and disseminate information online	1.78	0.91	0.353	**0.713**
Financial resources	1.44	0.90	0.229	**0.700**
Generate and disseminate scientific reports and analysis	1.51	0.96	-0.026	**0.829**

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
Cronbach's Alpha: Factor 1 = 0.875; Factor 2 = 0.733

Table 2: Factor Analysis of Political Activities

Activity	Mean	Std. Deviation	Primary (Factor 1)	Secondary (Factor 2)
Participating in public meetings	2.53	1.44	**0.842**	0.213
Forming and maintaining a coalition with allies	2.49	1.86	**0.800**	0.336
Lobbying elected officials	1.81	1.85	**0.788**	0.215
Testifying at public hearings	1.55	1.42	**0.707**	0.364
Communicating with the news media	2.12	1.78	**0.680**	0.444
Posting information or advocating online	2.10	1.93	0.413	**0.695**
Generating and disseminating research and reports	1.79	1.61	0.362	**0.568**
Formal complaining to regulatory commissions	1.03	1.36	0.259	**0.688**
Taking legal action (e.g., lawsuits)	0.46	0.91	0.259	**0.679**
Organizing or Participating in public protests	0.39	0.89	0.151	**0.809**

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
Cronbach's Alpha: Factor 1 = 0.880; Factor 2 = 0.798

H1: Comparison of Resources

External Resources

Table 3a. ANOVA of External Resources by Organization Affiliation

| Number of obs | 119 | | R-squared | = | 0.1027 |
| Root MSE | 0.558263 | | Adj R-squared = | | 0.063 |

Source	Partial SS	df	MS		F	Prob>F
Model	4.0324308	5	0.80648616		2.59	0.0296
affiliation	4.0324308	5	0.80648616		2.59	0.0296
Residual	35.217335	113	0.31165783			
Total	39.249766	118	0.33262514			

Table 3b. Fisher-Hayter pairwise comparisons of external resources.

Group 1	vs	Group 2	Group 1 Mean	Group 2 Mean	dif	FH-test
Local Gov	vs	Fed Gov	1.69	1.47	0.21	1.61
Local Gov	vs	State Gov	1.69	1.67	0.02	0.13
Local Gov	vs	Oil and Gas Env.	1.69	1.67	0.02	0.20
Local Gov	vs	Groups	1.69	1.92	0.23	2.20
Local Gov	vs	Academics	1.69	1.19	0.50	3.39
Fed Gov	vs	State Gov	1.47	1.67	0.19	1.12
Fed Gov	vs	Oil and Gas Env.	1.47	1.67	0.19	1.46
Fed Gov	vs	Groups	1.47	1.92	0.45	3.19
Fed Gov	vs	Academics	1.47	1.19	0.29	1.65
State Gov	vs	Oil and Gas Env.	1.67	1.67	0.00	0.00
State Gov	vs	Groups	1.67	1.92	0.25	1.63
State Gov	vs	Academics	1.67	1.19	0.48	2.59
Oil and Gas Env.	vs	Groups	1.67	1.92	0.25	2.35
Oil and Gas Env.	vs	Academics	1.67	1.19	0.48	3.23
Groups	vs	Academics	1.92	1.19	0.74	4.74*

*p-value < 0.10, ** p-value < 0.05, *** p-value < 0.01*

Internal Resources

Table 4a. ANOVA of Internal Resources by Organization Affiliation

Number of obs	118	R-squared	=	0.1163
		Adj R-squared		
Root MSE	0.66963		=	0.0768

Source	Partial SS	df	MS	F	Prob>F
Model	6.6075893	5	1.3215179	2.95	0.0154
affiliation	6.6075893	5	1.3215179	2.95	0.0154
Residual	50.22133	112	0.44840473		
Total	56.828919	117	0.48571726		

Table 4b. Fisher-Hayter pairwise comparisons for internal resources.

Group 1	vs	Group 2	Group 1 Mean	Group 2 Mean	dif	FH-test
Local Gov	vs	Fed Gov	1.36	1.67	0.31	1.95
Local Gov	vs	State Gov	1.36	1.69	0.34	1.90
Local Gov	vs	Oil and Gas Env.	1.36	1.91	0.55	4.68*
Local Gov	vs	Groups	1.36	1.83	0.47	3.65*
Local Gov	vs	Academics	1.36	2.03	0.67	3.77*
Fed Gov	vs	State Gov	1.67	1.69	0.03	0.13
Fed Gov	vs	Oil and Gas Env.	1.67	1.91	0.24	1.49
Fed Gov	vs	Groups	1.67	1.83	0.16	0.95
Fed Gov	vs	Academics	1.67	2.03	0.36	1.73
State Gov	vs	Oil and Gas Env.	1.69	1.91	0.21	1.19
State Gov	vs	Groups	1.69	1.83	0.13	0.71
State Gov	vs	Academics Env.	1.69	2.03	0.33	1.49
Oil and Gas	vs	Groups	1.91	1.83	0.08	0.62
Oil and Gas Env.	vs	Academics	1.91	2.03	0.12	0.68
Groups	vs	Academics	1.83	2.03	0.20	1.08

*p-value < 0.10, ** p-value < 0.05, *** p-value < 0.01*

H2: Primary and Secondary Activities

Table 5. OLS analysis of the relationship between organization type and political activities, standard errors in parentheses.

		Primary Activities	Secondary Activities
Org. Type	Local Gov	*Comparison Group*	
	Fed Gov	0.155	-0.192
		(0.430)	(0.340)
	State Gov	0.339	0.391
		(0.490)	(0.380)
	Oil and Gas	0.685**	0.146
		(0.320)	(0.250)
	Env. Groups	0.660*	1.195***
		(0.380)	(0.300)
	Academics	-0.681	-0.21
		(0.540)	(0.390)
Resource Capacity			
External Resource Capacity		0.666***	0.234
		(0.240)	(0.190)
Internal Resource Capacity		0.575***	0.318*
		(0.210)	(0.170)
Years Involved	0-1 years	*Comparison Group*	
	2-4 years	-0.551	0.001
		(0.510)	(0.400)
	5-9 years	-0.066	0.044
		(0.520)	(0.410)
	10-20 years	-0.002	0.487
		(0.530)	(0.420)
	21+ years	0.128	0.397
		(0.550)	(0.440)
Position	Anti-fracking	*Comparison Group*	
	Pro-fracking	-0.444	-0.09
		(0.360)	(0.280)
Constant		0.143	-0.119
		(0.610)	(0.480)
R^2		0.479	0.44

*p<0.10, ** p<0.05, *** p<0.01*

H2: OLS Progression of primary and secondary activities.

Table 6. Primary Activity Regression Progression, standard errors in parentheses.

		Base Model Primary Activities	w/ year Primary Activities	w/ position Primary Activities	full Primary Activities
Capacity					
	Avg. External Capacity	0.657***	0.655***	0.688***	0.666***
		(0.230)	(0.240)	(0.230)	(0.240)
	Avg. Internal Capacity	0.480**	0.567***	0.459**	0.575***
		(0.200)	(0.210)	(0.200)	(0.210)
Org. Type	Local Gov		Comparison	Category	
	Fed Gov	-0.099	-0.017	0.081	0.155
		(0.390)	(0.410)	(0.410)	(0.430)
	State Gov	0.312	0.155	0.354	0.339
		(0.440)	(0.470)	(0.440)	(0.490)
	Oil and Gas	0.769***	0.545*	0.841***	0.685**
		(0.290)	(0.310)	(0.310)	(0.320)
	Env. Groups	0.985***	0.942***	0.878**	0.660*
		(0.300)	(0.300)	(0.370)	(0.380)
	Academics	-0.77	-0.675	-0.775	-0.681
		(0.500)	(0.510)	(0.530)	(0.540)
Years Involved	0-1 years		Comparison	Category	
	2-4 years		-0.541		-0.551
			(0.510)		(0.510)
	5-9 years		-0.145		-0.066
			(0.510)		(0.520)
	10-20 years		0.016		-0.002
			(0.530)		(0.530)
	21+ years		0.063		0.128
			(0.550)		(0.550)
Position	Anti-fracking		Comparison	Category	
	Pro-fracking			-0.171	-0.444
				(0.320)	(0.360)
Constant		-0.215	-0.085	-0.129	0.143
		(0.370)	(0.570)	(0.440)	(0.610)
R-sqr		0.453	0.473	0.453	0.479
dfres		97	89	94	86
BIC		335.1	333.8	332.5	330.2

* p<0.10, , ** p<0.05, *** p<0.01

Table 7. Secondary Activity Regression Progression

		Base Model Secondary Activities b/se	w/ year Secondary Activities b/se	w/position Secondary Activities b/se	full Secondary Activities b/se
Capacity					
	Avg. External Capacity	0.219	0.23	0.233	0.234
		(0.170)	(0.190)	(0.180)	(0.190)
	Avg. Internal Capacity	0.298*	0.318**	0.290*	0.318*
		(0.150)	(0.160)	(0.160)	(0.170)
Org. Type	Local Gov		Comparison Category		
	Fed Gov	-0.185	-0.255	-0.106	-0.192
		(0.300)	(0.320)	(0.320)	(0.340)
	State Gov	0.412	0.356	0.42	0.391
		(0.360)	(0.360)	(0.370)	(0.380)
	Oil and Gas	0.263	0.115	0.272	0.146
		(0.220)	(0.240)	(0.240)	(0.250)
	Env. Groups	1.261***	1.254***	1.253***	1.195***
		(0.230)	(0.230)	(0.290)	(0.300)
	Academics	-0.28	-0.231	-0.252	-0.21
		(0.360)	(0.370)	(0.380)	(0.390)
Years Involved	0-1 years		Comparison Category		
	2-4 years		-0.004		0.001
			(0.390)		(0.400)
	5-9 years		0.032		0.044
			(0.400)		(0.410)
	10-20 years		0.496		0.487
			(0.410)		(0.420)
	21+ years		0.39		0.397
			(0.430)		(0.440)
Position	Anti-fracking		Comparison Category		
	Pro-fracking			-0.013	-0.09
				(0.250)	(0.280)
Constant		-0.004	-0.165	-0.008	-0.119
		(0.280)	(0.440)	(0.340)	(0.480)
R-sqr		0.418	0.448	0.411	0.44
dfres		98	91	95	88
BIC		281.7	287.3	282.7	288.5

* p<0.10, , ** p<0.05, *** p<0.01

Network Size

Table 8. Network Size Regression Progression

	Base Network Size b/se	With Year Network Size b/se	With Capacity Network Size b/se	Full Network Size b/se
Capacity				
Avg. External Capacity			2.493***	2.393***
			(0.59)	(0.60)
Avg. Internal Capacity			0.826*	0.881*
			(0.48)	(0.49)
Org. Type Local Gov		Comparison Category		
Fed Gov	0.658	1.614	1.666*	1.872*
	(1.19)	(1.17)	(0.94)	(0.99)
State Gov	0.508	1.392	1.907*	2.109*
	(1.30)	(1.26)	(1.03)	(1.07)
Oil and Gas	1.572*	1.841**	1.550**	1.744**
	(0.86)	(0.84)	(0.75)	(0.77)
Env. Groups	1.836*	2.234**	1.404*	0.959
	(0.94)	(0.89)	(0.73)	(0.91)
Academics	0.288	0.421	1.073	1.492
	(1.26)	(1.19)	(1.15)	(1.18)
Years Involved 0-1 years		Comparison Category		
2-4 years		-0.161	-1.513	-1.421
		(1.62)	(1.26)	(1.26)
5-9 years		-0.874	-0.895	-0.827
		(1.63)	(1.26)	(1.27)
10-20 years		0.356	0.496	0.478
		(1.70)	(1.32)	(1.32)
21+ years		-0.344	-0.332	-0.28
		(1.77)	(1.36)	(1.37)
Position Anti-fracking		Comparison Category		
Pro-fracking				-0.665
				(0.83)
Constant	5.128***	5.859***	1.047	1.528
	(0.61)	(1.59)	(1.40)	(1.49)
R-square	0.039	0.086	0.411	0.409
Degrees of freedom	138	116	101	98
BIC	817.6	699.3	576.6	570

* $p<0.10$, ** $p<0.05$, *** $p<0.01$

Network pattern MCA

MCA on network pattern

Table 10a

Multiple/Joint correspondence analysis	
Number of obs	126
Total inertia	0.1220
Number of axes	3
Method: Burt/adjusted inertias	

Table 10b

Dimension	Principal inertia	percent	Cumulative percent
dim 1	0.0846201	69.37	69.37
dim 2	0.0138374	11.34	80.71
dim 3	0.0051033	4.18	84.9
dim 4	0.0001577	0.13	85.03
dim 5	0.0000327	0.03	85.05
dim 6	0.0000146	0.01	85.06
Total	0.1219846	100	