

ABSTRACT

Title of Dissertation: DISPROPORTIONALITY, DISCOURSE, AND
 THE DEBATE OVER COAL-FIRED POWER

Anya M. Galli Robertson,
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Dissertation directed by: Professor Dana R. Fisher,
 Department of Sociology

Following Freudenburg’s framework of the “double diversion,” this dissertation aims to understand environmental inequality as the product of two interrelated processes: (1) inequality in the generation of environmental harm, or “disproportionality,” and (2) inequality in the ability to shape discussions about environmental harm through discourse, or “privileged accounts.” I employ a mixed-methods approach in order to assess both disproportionality and discursive power in the debate over coal-fired power in the United States. First, I analyze emissions data at the facility and parent company levels to assess whether a minority of producers is disproportionately responsible for the majority of CO₂ generated in the sector. Results indicate that inequality in the generation of emissions is more extreme at the parent company level than at the facility level, with only three companies responsible for the worst 25% of emissions in 2015. Second, I analyze qualitative data from in-depth interviews (n=209) with policy elites at the federal level and in the state of

Ohio to identify the dominant narratives and discourse coalitions that shaped the debate over coal-fired power surrounding the 2016 election. I identify the “legitimizing discourses” used in support of coal-fired power, then compare these “privileged accounts” to anti-coal counterframes. Discourse analysis findings illustrate how pro-coal interests shifted their discursive strategies to adapt to changing policy contexts, as well as the shortcomings of the anti-coal narratives that sought to shift the discourse toward environmental interests. Finally, to understand the connections between patterns of disproportionality, I explore how the “extreme emitters” identified in quantitative analysis appear within interview data. Together, these analyses illustrate the influence of privileged accounts over the debate, definition, and response to persistent environmental problems.

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AND THE DEBATE OVER COAL-FIRED POWER

by

Anya M. Galli Robertson

Dissertation submitted to the Faculty of the Graduate School of the
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Advisory Committee:

Professor Dana R. Fisher, Chair
Associate Professor Isabella Alcañiz
Professor James Gimpel, Dean's Representative
Professor Andrew Jorgenson
Associate Professor Rashawn Ray
Professor Reeve Vanneman

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Dedication

This dissertation is dedicated in memory of William R. Freudenburg, whose legacy I hope to continue and whose students have been my most influential teachers.

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Chapter 1: Introduction

Questions of environmental problems have been central to environmental sociology since the field formed in the 1970s. Most of this literature has focused on environmental problems and injustices, rather than environmental privilege. Whereas the research on environmental problems serves an important role in identifying patterns of inequality, documenting injustice, and mobilizing community and policy responses, the research on environmental privilege informs broader questions about the socially structured drivers of unequal patterns of environmental harm. This dissertation engages with a foundational framework for research on environmental privilege: Freudenburg's concept of the "double diversion." This approach to understanding environmental inequality connects ecological impacts to discursive power by exploring how disproportionate generation of industrial pollution (or "privileged access") is upheld by "privileged accounts," or the discursive mechanisms that industry interests use to shape how policy actors and the public think and communicate about environmental problems (2005).

This project synthesizes multiple strands of sociological inquiry to understand the connections between the distribution of environmental harm and the discursive parameters of environmental debates. I begin this chapter by introducing Freudenburg's work on the double diversion, situating it within a brief overview of the core theoretical perspectives of environmental sociology. Then, I contextualize the research on disproportionality within the broader literature on environmental justice and environmental inequality. Following the framework of the double diversion, I then discuss the theoretical foundations of Freudenburg's notion of privileged accounts, which

draws on theories of legitimation and hegemonic discourse. I conclude this chapter with an overview of each of the following sections of the dissertation.

Sociological Perspectives on Environmental Privilege

This dissertation is grounded within the theoretical framework of the double diversion, which considers two interlocking mechanisms of environmental privilege: “privileged access” to natural resources and the ability avoid the consequences of environmental harm, and the “privileged accounts” by which elites create and control narratives that justify environmental inequality (Freudenburg 2005, 2006). As privileged access (or the “first diversion”) occurs through structural, economic and institutional processes, privileged accounts (or the “second diversion”) provide legitimacy for powerful industries by manipulating culture, discourse, and the “commonsense” assumptions of everyday life (Freudenburg 2005:89–90). In other words, while the first addresses the question of “how does environmental inequality come to pass?” the second explores the question of “how is environmental inequality maintained?” (Davidson and Grant 2012:70).

The double diversion framework responds to debates within environmental sociology over the relationship between industry and the environment by analyzing environmental impacts and accounting for the institutional and discursive complexities of environmental debates. The foundational theories of environmental sociology tend to focus on the conflict between economic development and environmental quality (Arrow et al. 1995; Dietz, Rosa, and York 2007; Foster 1992; O’Connor 1992; York, Rosa, and Dietz 2003). This literature discusses environmental protection as antithetical to the

interests of private industry and unlikely to be embraced by the capitalist state (Catton 1980; Gould, Pellow, and Schnaiberg 2004; Schnaiberg 1980). For example, Ecological Marxism focuses on the structure of capital accumulation, arguing that capitalism relies on the exploitation of natural and labor and raising questions about how waste and other “end of pipe” environmental problems influence the organization of production (Clark and York 2005). Alternatively, the Human Ecology perspective contends that there is an inherent tension between economic growth and the ecological limits within which societies expand (Catton 1980; Schnaiberg and Gould 1994; York et al. 2003).

Alternatively, some researchers have documented the emergence of an environmental state in response to environmental risks and crises (e.g. Fisher and Freudenburg 2004; Frank, Hironaka, and Schofer 2000). Scholars embracing the Ecological Modernization perspective have proposed that not only is environmental protection politically and economically viable in industrialized countries, it is also beneficial to national economic prosperity (Mol and Spaargaren 1993; Sonnenfeld and Mol 2002; Spaargaren and Mol 1992). However, discussions of the environmental state have been characterized by debate rather than consensus, with researchers documenting conflicting evidence about the existence of an effective environmental state (Bonds and Downey 2012; Dietz and Rosa 1997; Jorgenson 2009; York and Rosa 2003).

Scholars have documented a range of cases in which the environmental state has failed to uphold its responsibility to protect the environment, often due to material interests and industry influence in environmental politics (Buttel 2000; Frank et al. 2000; Stedman, Patriquin, and Parkins 2012). For example, Fisher (2006) builds on the concept of the “conjoint constitution” of natural resources and society (Freudenburg, Frickel, and

Gramling 1995) to argue that the natural resource dependence of nation-states shapes policymaking around climate and the environment. Failures of the environmental state also occur more directly via the influence of industrial interest groups, political contributions, and corporate lobbying (Burstein and Linton 2002; Chubb 1983; Heinz et al. 1993; Pellow 2001). Moreover, regulatory agencies are prone to “capture” by industry interests, either overtly through the over-involvement of industry actors (Mintz 2005; Singleton 2000), or more covertly through a process of “bureaucratic slippage” in which agencies maintain political and public legitimacy “while still taking tangible actions in favor of an organized clientele” (Freudenburg and Gramling 1994:215)

Freudenburg envisioned the double diversion as moving beyond this divide over the inherent conflict or compatibility between economic prosperity and environmental protection (2006). The first diversion posits that rather than all economic growth contributing to environmental degradation, the activities of a few privileged actors account for the majority of environmental harm. The second diversion eschews sweeping generalizations about the relationship between industry and the environment, instead emphasizing the specific mechanisms by which industries exert political influence and evade regulation, a process that contributes to the persistence of environmental inequality. Rather than writing off or embracing industry as a whole, the double diversion suggests that environmental inequality can be better understood and addressed by focusing on the “egregious emitters” most responsible for environmental harm (Kennedy, Krahn, and Krogman 2014) and the “legitimizing discourses” upon which environmental privilege relies (Freudenburg and Alario 2007; Sodero and Stoddart 2015).

Environmental Inequality

Failure to protect the environment, regulate polluters, and respond to environmental crises has far-reaching implications, especially given the tendency for environmental harms to exacerbate existing social inequalities. Social scientists have provided extensive empirical evidence of environmental injustice, finding that the effects of industrial pollution disproportionately burden poor and non-white communities (e.g. Bullard 1990; Bullard 1994; Bullard 1993; Mohai and Bryant 1992; Downey 1998; Brulle and Pellow 2006; Mohai and Saha 2007; Mohai and Saha 2015; Sze and London 2008; Pellow and Nyseth Brehm 2013; Mele 2016 Roberts and Toffolon-Wiess 2001). At the local level, researchers have shown that low income and minority communities are more likely to be exposed to high concentrations of toxic emissions (Collins 2011; Collins, Munoz, and JaJa 2016; Miranda et al. 2011; Mohai, Pellow, and Roberts 2009), and that these communities have a disproportionately high rate of health problems associated with exposure to airborne toxins and particulate matter (Ash and Boyce 2011; Gilbert and Chakraborty 2011). Coming from a more global perspective, researchers have found that the impacts of climate change compound existing social inequalities in tandem with a variety of other global economic, social, and political processes (Boyce 1994; Parks and Roberts 2010; Roberts and Parks 2009). However, the diffuse nature of climate change can also obscure variance among the groups responsible for the generation of harm, the communities most vulnerable to impacts, and the policy actors capable of mitigation and adaptation (Parks and Roberts 2006).

Although the majority of the environmental justice literature focuses on disenfranchised communities, a smaller body of research has explored the other side

environmental inequality, interrogating the privileges and powers associated with the production of environmental harm (e.g. Norgaard 2012; Pellow 2000, 2001). This notion is at the core of notion of privileged access, which Freudenburg defines as “the socially structured and strikingly disproportionate patterns that characterize human access to the environment, both in terms of benefitting from the ‘goods’ (resources and rights) and in terms of avoiding ‘bads’ (wastes and responsibilities)” (2005:90). By making visible the privileges that make up the foundation upon which environmental injustice is perpetuated, this approach takes a deeper look at the dialectical relationship between industry and the environment.

Research on environmental disproportionality “emphasizes that human contributions to environmental degradation are not normally or randomly distributed, but arrayed in a way that may be strongly skewed” based on social or biophysical factors (Nowak, Bowen, and Cabot 2006:156). Contrary to the common assumption that extreme cases, or “outliers,” should be excluded from empirical analysis, this approach considers the question of “when do outliers become the tail that wags the distribution” (Freudenburg 2006). In other words, when do extreme cases wield so much influence within a distribution that they should be the focus of analysis, rather than the exception to the rule? To answer this question, studies of disproportionality often use the Gini coefficient (Dorfman 1979) – a well-known indicator of within-group inequality – rather than measures of central tendency (Berry 2007).

Following Freudenburg’s 2005 study, researchers have documented evidence of disproportionality across a variety of industries and sectors in the U.S., showing that a small group of facilities produce the majority of total emissions within their respective

industries, landscapes, or communities (Freudenburg et al. 2009; Collins 2011; Matthews 2011; Collins et al. 2016). This approach has also been used to measure within-group environmental inequality in a variety of cases, including disaster response (Freudenburg et al. 2009), pollution in headwater regions (Armstrong et al. 2012), runoff from animal feeding operations (Cabot and Nowak 2005), and emissions from industrial parent companies (Prechel and Istvan 2016). A small number of studies, which I discuss in detail in chapter 3, have examined disproportionality in the generation of emissions from electricity generation at the global and domestic levels (Boyce and Pastor 2013; Jorgenson, Longhofer, and Grant 2016; Kennedy et al. 2014).

Studies coming from the disproportionality perspective contribute to the broader field of research on environmental injustice by linking inequality in exposure to inequality in the production of environmental harm. For example, Greenberg finds evidence of such patterns in his study of coal impoundments in rural Appalachia, showing that communities near the largest impoundments in the region also have higher levels of poverty and unemployment (2016). In a study of U.S. industrial sectors, Collins and her colleagues combine data on air toxics with Census data on race and class to show that pollution is not only disproportionate in terms of where it is produced (polluter disproportionality), but also in terms of impacts on low income and nonwhite communities (exposure disproportionality), a combination they call ‘double disproportionality’ (2016; see also Collins 2011). In introducing their work, they write “explication of the disproportionality perspective is an important step toward shedding light on potentially overlooked dynamics regarding *how* environmental domination of the powerless by the powerful happens” (2016:4).

Building on previous studies that have documented within-sector inequality in industrial emissions, this dissertation asks the following questions about patterns of privileged access: (1) is there evidence of disproportionality in the generation of CO₂ emissions in the coal-fired electric utility industry? and (2) if observed, how do patterns of disproportionality differ between the facility and parent company levels?

Hegemonic Discourse

In cases of environmental inequality, the “privilege of explanation – or the ability to define and speak about environmental problems – is often afforded to the same actors who enjoy privileged access to natural resources (Davidson and Grant 2012).

Freudenburg’s second diversion posits that “privileged access is made possible in significant part through a socially constructed diversion of attention through largely unchallenged or ‘privileged’ accounts,” the primary function of which is the “diversion of attention, largely through the taken-for-granted but generally erroneous assumption that the environmental harm ‘must’ be for the benefit of us all” (2006:20,3). This focus on discourse – defined by Hajer as “a specific ensemble of ideas, concepts, and categorizations that is produced, reproduced, and transformed in a particular set of practices and through which meaning is given to physical and social realities” (1995:61) – gives insight into the processes by which patterns of environmental inequality persist over time.

Building on Gramsci’s discussions of cultural hegemony (1971) as an ideological project that develops and propagates “commonsense” assumptions, the notion of privileged accounts considers how hegemonic discourse serves as a tool by which

environmentally harmful industries maintain their legitimacy and positions of power (Freudenburg and Gramling 1993). Freudenburg emphasizes that debates over environmental risk occur in the context of a specific set of “embedded” power relations (Foucault 1971) within which some narratives are emphasized to the degree that they are taken for granted, and thus, remain unchallenged (see also Beck 1999; Foucault 1980; Kuhn 1962; Norgaard 1992). The concept of privileged accounts is also based on the notion that powerful industries use ideology to manufacture “quiescence” (Gaventa 1982) and maintain legitimacy by averting questions or challenges to the status quo (Habermas 1970, 1975). Freudenburg writes,

patterns of privileged access are widely *assumed or expected* to be economically ‘necessary’ – for jobs, for incomes, or for the economically irreplaceable products that are thought to result – but [...] the very fact that these assumptions are so rarely questioned, despite clear evidence that they are wrong, may actually indicate that they are key components of the way in which the unequal distribution of resources comes to be seen as legitimate (2005:89).

Within the environmental sociology literature, the notion of privileged accounts can be situated within what Hajer calls a “discourse-analytical approach,” which considers how environmental conflicts are discursively created through the recognition, definition, and politicization of environmental problems (Hajer 2002). This method of understanding environmental conflicts is rooted in the recognition that all actors, regardless of their policy positions, are involved in what Hall calls the “politics of signification” (1982). In his comparative study of the policy response to acid rain in the Netherlands and the United Kingdom, Hajer writes, “environmental politics is only partially a matter of whether or not to act, it has increasingly become a conflict of interpretation in which a

complex set of actors can be seen to participate in a debate in which the terms of environmental discourse are set” (1995:15).

Privileged accounts operate via multiple channels of influence (Freudenburg and Alario 2007). First, interest groups and political elites may prevent challenges through processes of “agenda setting” (Bachrach and Baratz 1970). Researchers have documented a variety of cases in which industrial interest groups have attempted to control the flow of information about environmental harms in order to exert influence over policy debates, regulatory enforcement, and community mobilization (e.g. Freudenburg and Pastor 1992; McSpirt et al. 2005). Moreover, large industries and corporate interests enjoy the privileges of what Greene calls “money/speech,” which creates access to institutions and media outlets that is unavailable to smaller and less financially powerful organizations (2007). Such access is an invaluable tool, as elite control of media accounts serves as both a preventative measure – if the question cannot be raised than it cannot create a conflict – and as a process of discursive production – if the debate takes place on the terms of those in power, opposing narratives will remain subordinate (Adorno 1991; Herman and Chomsky 1988; Horkheimer 1972).

The links between political power, corporate funding, and anti-environmental narratives are well-documented in Brulle’s work on the climate counter-movement, an extension of the conservative movement that seeks to defeat climate policies through the work of think tanks funded by well-known conservative funders (Brulle 2013; Brulle and Jenkins 2005; see also Dunlap and McCright 2010; McCright and Dunlap 2003). Think tanks, and the elite-funded foundations behind them, are a central channel through which industry interests influence political will and public support for government policy

(Bonds 2016). As these well-funded organizations work to set policy agendas and shape public perceptions of political issues, they simultaneously identify potential challenges to their interests and develop solutions that reflect the priorities of their funders (Domhoff 2009, 2014). In her extensive study of conservative opposition to environmental regulation in the US, for example, Layzer finds that a network of foundations, think tanks, and lobbying groups associated with the broader conservative movement supported the production and dissemination of anti-regulations narratives (Layzer 2012a).

When elites are not able to set the agenda – often the case in debates over environmental crises – they may resort to practices that have more to do with what Lukes has called the “third dimension” of power, or the shaping of public preferences and concern through ideology rather than direct influence (Lukes 1974). From this perspective, the power of political elites has just as much to do with *whether* a problem is discussed (agenda setting), as it does with *how* that problem is discussed (hegemonic discourse). As Freudenburg and Alario write, “the key reasons why inequalities are accepted as legitimate [...] may have to do, not just with efforts to construct affirmative beliefs in the legitimacy of a given set of inequalities, but also with an emphasis on nearly anything else – and perhaps most importantly, by raising questions about the legitimacy of others” (2007:164). Scholars have documented how industry interests engage in ideological efforts to delegitimize environmental issues (McCright and Dunlap 2003; McCright and Dunlap 2011), control media accounts of environmental risks (Dispensa and Brulle 2003), and influence public opinion through public relations campaigns (O’Connor et al. 2002).

Many of the previous studies of privileged accounts have focused on “diversionary reframing,” a behind-the-scenes practice that diverts attention away from uncomfortable questions and reframes the debate in terms that benefit industrial interests (Freudenburg and Alario 2007; Freudenburg and Gramling 1994a; Freudenburg, Gramling, and Davidson 2008). In their study of political rhetoric about Vietnam War protesters, Beamish and colleagues find that politicians redirected the discourse away from the problem of the war and toward the discourse of “supporting the troops” (Beamish, Molotch, and Flacks 1995). By labeling protesters as anti-troop, elites drew on patriotic ideology in order to avoid criticism and maintain the legitimacy of the war. The authors note several conventions that contributed to the efficacy of this narrative: (1) media outlets tend to display polarization, rather than agreement; (2) elites enjoy unfettered “access to tell their story,” and (3) oversimplified media representations of the debate allowed unsupported claims to “pass in the media as sensible discourse (1995:355). This practice of shifting blame to opponents is also documented by Sodero and Soddart in their recent work on public and private discourse around tourism and oil industry expansion, in which they explain: “blaming shifts questions about legitimacy and competency from one social actor or organization to others. Rather than responding to questions about an organization’s own practices, representatives divert attention to a real or constructed opponent” (2015:60)

Two themes are especially prominent among the “legitimizing discourses” that serve industry interests in environmental conflicts (Freudenburg and Gramling 1994b). First, interest groups may question the legitimacy of scientific research and findings as a method of preventing or evading regulation. As Freudenburg, Gramling, and Davidson

write, “the ways in which organized interests frame scientific work may well be just as important as are the “real” quality of the scientific work and the status of the scientists involved in doing the work in question” (2008:4). This “asymmetry of scientific challenge” subjects environmental science to a barrage of criticism while amplifying narratives that support industry interests (Freudenburg and Youn 1999). As McCright and Dunlap show, anti-science narratives are especially prominent in the debate over climate policies, through which the climate denialism movement has levied a broad range of challenges to the scientific consensus on global warming (McCright and Dunlap 2011).

Second, economic arguments tend to dominate discussions of the alleged necessity of environmental harm. For example, Matthews shows that industry groups attempt to naturalize environmental and economic inequality by focusing on the idea of a trade-off between national employment and environmental protection, despite the fact that there is no empirical basis for this argument (2011; see also Repetto 1995). In their institutional history of the oil industry in the US, Gramling and Freudenburg explore how claims about domestic energy independence and the need for job creation made way for continued environmental degradation on the part of a small number of companies, diverting attention away from the “real winners in the game” (2012:69–70). Similarly, in their study of policy decisions related to land leases for coal mining, Shearer and colleagues find that discussions of looming energy crisis and the need for domestic energy production were used to justify “the concentration of benefits of energy development among a privileged few in the name of national energy and economic security” (2013:59).

To understand the content and function of privileged accounts in the debate over coal-fired power, and to assess whether the structure of environmental discourse differs across policy contexts and settings, this dissertation asks the following questions: (1) what were the dominant narratives used in favor of coal-fired power around the 2016 election and how were these narratives connected? (2) what were the most prevalent anti-coal counterframes used in opposition to coal-fired power during this time? and (3) how did the discursive structure of this debate differ between the national and subnational levels before and after the election?

Coal-Fired Power in the U.S.: Emissions and Environmental Conflict

In his comprehensive study of industrial pollution in the U.S., Freudenburg identified electric power generation as one of just a few economic industries that was responsible for most of the industrial pollution in the U.S. (2005). Coal-fired electric utilities have produced the majority of U.S. electricity since the mid-20th century. In 2015, coal-fired utilities accounted for about one-third of all power produced for public use and burned more than two thirds of all of the coal consumed in the country that year (EIA 2016c). The sector also produced nearly three-quarters of the carbon dioxide (CO₂) emissions generated by the electric power industry that year (EIA 2016g), making it the largest industrial contributor to U.S. CO₂ emissions, one of the main greenhouse gases (Boden, Marland, and Andres 2015). Although record numbers of coal-fired power plants have closed in the past decade, largely due to the influx of inexpensive and readily available natural gas within U.S. energy markets, it remains likely that coal-fired power plants will

continue to provide a generous portion of utility-scale electricity generation for decades to come. Despite the dominance of this industry, research on environmental disproportionality has only recently begun to attend to inequality in the generation of CO₂ emissions from coal-fired power (e.g. Jorgenson et al. 2016; Prechel and Istvan 2016).

Although federal pollution reduction measures implemented under the Clean Air Act and the more recent Mercury and Air Toxics Standards have reduced emissions of toxic pollutants and particulate matter from coal plants (EPA 1970, 1990, 2015), federal efforts to regulate greenhouse gas emissions have been largely unsuccessful (Center for Climate and Energy Solutions 2017a). The centrality of coal to the campaign rhetoric leading up to the 2016 election and federal actions during the first year of Trump Administration have cemented the privileged position of the coal-fired power industry within U.S. environmental politics, even in the face of economic pressure due to shifting market conditions. Researchers have addressed what has been dubbed the “coal problem” – U.S. reliance on coal-fired power despite strong scientific evidence of its negative impact on the environment and public health – from a variety of policy-based perspectives (see e.g. Crenson 1971; Goodell 2007; Higginbotham et al. 2010; Levy, Wilson, and Zwack 2007; Mullen 2007; Shover, Clelland, and Lynxweiler 1983; Wilson et al. 2012). However, few studies have considered how discourse has shaped the structure and outcomes (or lack thereof) of policy debates over coal (but see Gaventa 1982; Schneider et al. 2016). As Hajer argues, discourse analysis illuminates “the social and cognitive basis of the way in which problems are constructed” and adds “essential insights to our understandings of contemporary environmental politics” that can complement the findings of institutional analyses (Hajer 1995:15,263).

The 2016 U.S. election took place during a period of intense debate over climate regulations and coal-fired power in the US. At the same time, the market share for coal-fired power had been in decline due to the influx of inexpensive natural gas, leading to the closure of many existing coal-fired generation facilities. While pro-coal interests framed these closures as exacerbated by excessive federal regulations during the Obama Administration (Kidd 2017), opponents of the industry capitalized on the closures as victories in their efforts to move “beyond coal” (Sierra Club 2016). Overall, the debate over coal-fired power around the 2016 election provides a rich case through which to explore the production and maintenance of pro-industry discourse and the framing efforts of environmental interests as they seek to unseat a politically powerful industry. Although this project is inherently political in nature, my goal is not to suggest policy solutions or weigh in on the debate, but to contribute to sociological understandings of persistence of environmental inequality and the influence of industry within U.S. environmental politics.

As a mixed-methods, comparative study of the double diversion, this project offers a unique contribution to the research on environmental inequality and environmental politics in the US. Although there is evidence of both privileged access and privileged accounts within the small but growing body of research on the double diversion, few studies analyze both mechanisms of environmental privilege. Rather, researchers taking a quantitative approach tend only to focus on the first diversion (but see Greenberg 2016; Matthews 2011), while those taking a qualitative approach tend to focus on the second. Moreover, most studies have focused on either privileged access *or*

privileged accounts, with few scholars analyzing both sides of the framework outlined by Freudenburg in 2005.

Summary of the Dissertation

Accordingly, this dissertation employs a mixed-methods approach to apply the framework of the double diversion to the case of the coal-fired power industry in the US. I focus my analysis on the years leading up to and including the 2016 election, as well as on the discursive shifts that took place in tandem with changes in policy contexts at the federal and state levels in the months following the election. In the next chapter, I provide an overview of the case and methods of this project. I begin with a history of coal-fired power in U.S. energy markets and a discussion of recent policy debates over coal-fired power. Throughout this discussion, I provide justification for my selection of Ohio as a state-level case. I discuss the research design of this project in the second portion of chapter 2, focusing on the importance of mixed-methods research for understanding the double diversion. Then, I provide an overview of the quantitative and qualitative methodologies employed in the following chapters.

In following with the double diversion framework, I divide the empirical chapters of this project by their focus on the first diversion, followed by the second. In chapter 3, I focus on the environmental impacts of coal-fired power by analyzing emissions data from coal-fired power plants in the U.S. to measure inequality at the facility and parent company levels. I assess environmental inequality in terms of disproportionality, or the ability of privileged individuals and firms to benefit from disproportionate access to natural resources and the environment while passing on the environmental costs of that

access to others, by identifying a small number of producers that generate higher levels of emissions compared to their counterparts.

The second stage of my analysis, presented in chapters 4 and 5, builds on the literature dedicated to understanding the mechanisms that enable disproportionate patterns of pollution by assessing the discursive practices that enable privileged actors to evade regulation and continue with “business as usual” (e.g. Davidson and Grant 2012; Freudenburg 2005, 2006; Freudenburg et al. 2009). I analyze data from in-depth interviews with policy actors working on climate and energy issues to understand how discourse supports, or seeks to unseat, industrial environmental privilege. I begin chapter 4 with an overview of the themes of privileged accounts identified within the literature on environmental discourse. Then, I present the results from my analysis of interview data to understand the structure and function of the central narratives used in support of coal-fired power. I compare these narratives and discourse coalitions across federal and state-level interviews conducted before and after the 2016 election. The analyses presented in chapter 5 compare the pro-coal narratives identified in the previous chapter to anti-coal counterframes. I begin chapter 5 by discussing the connections between the literature on environmental discourse and the social movements literature on framing processes and discursive opportunity structures (e.g. Ferree 2003; McCammon et al. 2007; Snow and Benford 1988), which explores how movement actors engage in the production of counter-hegemonic discourse. The findings presented in this chapter shed light on the dialectical nature of pro- and anti-coal discourse and the influence of industry-driven narratives in cases of environmental conflict.

Whereas the quantitative findings presented in chapter 3 establish evidence of disproportionality in the generation of environmental harm, the qualitative findings presented in the subsequent chapters offer insight into the discursive practices that allow such patterns of environmental inequality to persist. In the final chapter of this dissertation, I summarize the findings of my analysis of emissions and interview data and assess the connections between “extreme emitter” companies identified in chapter 3 and the pro-coal and anti-coal narrative identified in chapters 4 and 5. I conclude by discussing the links between the results of quantitative and qualitative analyses and an overview of the broader theoretical contributions of this work to the field of environmental sociology.

Chapter 2: Assessing the Double Diversion

Coal-fired power has been the backbone of U.S. energy production for the past century (Harris 2006). Coal plants have also emitted more carbon dioxide (CO₂) than any other domestic source, in addition to a wide range of toxic pollutants (Ackerman and Sundquist 2008; Boyce and Pastor 2013). Although research across academic disciplines has documented the negative impacts of coal-sourced emissions on public health, the environment, and the global climate, efforts to regulate power plant CO₂ emissions in the U.S. have been notably unsuccessful (Fisher 2013; Keeler 2007; Lutsey and Sperling 2008). At the same time, the coal industry faces declining market shares and rising competition from natural gas (Walton 2016). Despite these shifting market conditions, the industry continues to wield substantial influence within debates over climate and energy policy. As evidenced by the campaign rhetoric of the 2016 U.S. election and the regulatory rollbacks that have taken place during the first year of the Trump Administration, the debate over coal-fired power remains highly relevant in contemporary environmental politics in the U.S. (Popovich, Albeck-Ripka, and Pierre-Louis 2018).

I suggest that a full assessment of the “double diversion” in the case of the debate over coal-fired power requires both empirical analysis of environmental impacts as a measure of the “first diversion” and interpretive analysis of the discourse surrounding the environmental problem at hand as a measure of “second diversion” (Freudenburg 2005). To-date, researchers have engaged in both types of analysis as separate endeavors, using *either* quantitative (Collins et al. 2016; e.g. Greenberg 2016; Matthews 2011) *or*

qualitative (e.g. Freudenburg et al. 2009; Sodero and Stoddart 2015) methods, but have yet to conduct mixed-methods studies that address both environmental impacts and environmental discourse. In this project, I employ a mixed-methods approach to analyze both disproportionality and discourse in the case of the U.S. coal-fired power industry. The quantitative analysis presented in chapter 3 assesses emissions inequality among coal-fired power plants and the parent companies, identifying “extreme emitters” among each group. The qualitative analysis presented in chapters 4 and 5 details the structure and function of the discursive strategies that sustain patterns of environmental inequality and industrial environmental privilege.

This chapter begins with an introduction to the history, regulation, and debate over coal-fired electricity generation in the US. First, I provide a general history of coal-fired power in U.S. energy markets and describe the current challenges facing this industry. I also discuss the problem of CO₂ emissions from coal-fired electricity generation and the corresponding debates over regulations aimed at reducing the environmental and climate impacts. Then, I describe the state of Ohio as a specific subnational case where the debate over coal-fired power is especially relevant. The second section of this chapter provides an overview of the mixed-methods approach of the project and details the methodologies employed in each of the subsequent chapters.

Case: The U.S. Coal-Fired Electric Utility Sector

This dissertation focuses on one portion of the U.S. coal industry: coal-fired electric utilities. As defined by the U.S. Energy Information Administration (EIA), the electric

utility¹ sector is made up of “privately and publicly owned establishments that generate, transmit, distribute, or sell electricity primarily for use by the public” (EIA 2018). Regulated electric utilities (also known as vertically-integrated utilities) became the primary source of consumer electricity in the U.S. in the 1930s, providing the power plants, transmission lines, and distribution systems necessary to power homes and businesses across the country (Chadwick 2012). The 1978 Public Utilities Regulatory Policies Act opened electricity markets to privatization, allowing non-utilities to sell electricity. In the 1990s, the federal government passed additional policies opening access to power lines to limit the monopoly of the vertically-integrated utilities over electricity transmission (Rosenbaum 2015). Today, the U.S. electric grid is a complex system made up of independent grid operators (namely California and Texas), regional Independent System Operators, and other smaller regional and municipal entities within which a small number of large corporations continue to produce, transmit, and distribute the majority of electricity (Gilstrap, Amin, and Decoria-Souza 2015).

Coal consumption for energy is closely aligned with the history of industrialization and electrification in the US. Until recently, coal-fired electric utilities were the largest contributors to the U.S. electric grid, a dominant position they had occupied since the early 20th Century (EIA 2012). Consumption of coal doubled every decade between 1850 and 1890, providing over 70% of all energy in 1900, largely via

¹ Electric utilities are distinct from facilities that generate power for industrial or private use. Individual utilities may be corporations, individuals, government agencies, or other legal entities. This category includes investor-owned utilities, municipal, state, and federal utilities, and rural electric cooperatives.

coal stoves in homes and large boilers in industrial facilities (Freese 2003:137). Coal fueled the electrification of households across the country in the early decades of the 20th Century with the expansion of steam turbine-powered central power stations and high capacity transmission systems (Harris 2006). In the decades that followed, coal accounted for the largest share of electricity generation in the US, generating between 45% and 58% of total electricity between 1950 and 2010 (EIA 2016h).

Since the late 2000s, coal use in the electric utility sector has declined as natural gas has become cheaper and more readily available due to hydraulic fracturing technology. In general, natural gas has been embraced as a more climate-friendly fuel source, as it has much lower carbon emissions than coal (EIA 2016b). In 2015, coal and natural gas contributed equally—33% each—to the energy mix in the U.S. (EIA 2016i). 2016 was the first year in which natural gas, which came in at 34% of utility-scale generation, surpassed generation from coal, which made up 30% of generation (EIA 2017a). No longer using the cheapest fuel source, coal-fired power plants have faced economic uncertainty that has led to an escalation in facility closures (EIA 2016f). In 2015, coal made up 80% of retired electric generation capacity in the nation (EIA 2016d).

Despite these recent declines, coal remains as an essential fuel source in U.S. electricity markets. In particular, coal continues to serve as the primary fuel source for the power plants that serve as base load electric generation² (EIA 2018; Kern 2015). The

² The EIA defines a base load plant as “a plant, usually housing high-efficiency steam-electric units, which is normally operated to take all or part of the minimum load of a system, and which consequently produces electricity at an essentially constant rate and runs continuously. These units are operated to maximize system mechanical and thermal efficiency and minimize system operating costs” (2018).

electric utility industry also continues to account for the majority of coal consumption nationwide: for example, the 256 coal-fired electric utilities in operation in 2015 burned 68% of the coal consumed in the U.S. that year (EIA 2016c, 2016e). The sector also serves as a source of domestic employment, both directly through jobs in generation, transmission, and distribution, and indirectly by creating demand for coal production through a variety of industries including mining, transport, and processing. According to a U.S. Department of Energy report, 86,000 workers³ were employed by the coal-fired electric power generation sector in 2016 (2017).

Coal is more carbon-intensive than other fuel sources used for electricity generation.⁴ Coal has accounted for the majority of CO₂ emissions from the electric utility sector. In 2015, coal-fired electric utilities generated 1,480 million metric tons of CO₂ (EIA 2016j) – about 70% of all CO₂ emissions from electricity generation that year (EPA 2016b). These coal-based emissions made up about 27% of total national CO₂ emissions in 2015 (EPA 2018). The impacts of CO₂ emissions from coal-fired power plants on climate change are well-documented, with leading climate organizations calling for reductions in the burning of coal as a central component of climate change reduction strategies (Greenpeace 2016; Natural Resources Defense Council 2016; Sierra Club 2016; Union of Concerned Scientists 2016). Moreover, coal combustion for electricity generation produces a multitude of hazardous air pollutants in addition to CO₂ including

³ Although this number is higher than the total workers employed in the natural gas generation sector (52,000 workers), it is 12% lower than the prior year and less than wind (102,000 workers) or solar (374,000 workers) generation (U.S. Department of Energy 2017).

⁴ <https://www.eia.gov/tools/faqs/faq.php?id=73&t=11> (accessed 2/24/2018).

particulate matter, nitrogen oxides, and sulfur oxides, all of which are documented as having negative impacts on public and environmental health (Lockwood 2012; Sajwan et al. 2006). Although these “co-pollutants” have decreased to a certain degree due to technological advances and environmental regulations, further declines in these toxic emissions are considered to be “co-benefits” of CO₂ reduction measures (Boyce and Pastor 2013).

Emissions from the electric power sector declined by over 20% between 2005 and 2015, largely as a result of the shift from coal to natural gas during that time (Center for Climate and Energy Solutions 2017b). In 2016, carbon emissions from the transportation sector surpassed emissions levels from the electric power for the first time since the 1970s (EIA 2017c). However, a recent study by Greiner and colleagues suggests that the replacement of coal with natural gas may not lead to an overall reduction in CO₂ emissions from coal consumption due to the “displacement paradox,” which “suggests that the forces driving the expansion of production are also effective at generating consumption to such an extent that new technologies and resources are used to satisfy new, rather than previously existing, industrial and consumer demands” (Greiner, York, and McGee 2018:53). Thus, it may be premature to assume that the problems associated with coal emissions will be solved entirely by market forces.

Federal Climate Policy and the Debate Over Emissions Regulations

Coal policy in the U.S. is characterized by its complexity, embedded within what Rosenbaum calls a “matrix of political, technological, environmental, and economic

issues not easily or quickly resolved into a coherent policy framework” (2015:93). This project focuses on the most recent topic of political debate related to coal-fired power: environmental regulations aimed at the reduction of CO₂ emissions from power plants. This debate grapples with questions of technological capacity, environmental protection, and economic impacts while simultaneously serving as a touchstone of partisan polarization in the years surrounding the 2016 election.

Federal pollution reduction measures implemented under the Clean Air Act (enacted in 1970 to control air pollution and amended in 1990 to increase government authority over the control of air toxics) and the more recent Mercury and Air Toxics rule have greatly reduced emissions of toxic pollutants and particulate matter from coal-fired power plants (EPA 1990, 1970, 2015). Federal efforts to regulate greenhouse gas emissions have been less successful, with the U.S. Congress failing to enact every proposed climate change policy that has been debated (Center for Climate and Energy Solutions 2017a). Most recently, the Obama Administration implemented several executive actions in its efforts reduce CO₂ emissions from power plants. Most notably, President Barack Obama released a memorandum on CO₂ and co-pollutant emissions (The White House 2013) and directed the EPA to develop the Clean Power Plan, which would have reduced CO₂ emissions from power plants by way of an Executive Order (EPA 2014a). In the formal announcement of the Clean Power Plan in 2015, President Obama called it the proposed regulation “the single most important step America has even taken in the fight against global climate change” (The White House 2015). Although the plan was hailed by environmental advocates as a positive step toward meaningful federal action on climate change, it was also met with swift opposition from states (27 of

which signed a letter announcing their opposition to the plan based on claims of federal overreach) along with a broad coalition of business and industry interests (Harvard Law Review 2016). After a contentious process of legal filings, the Supreme Court placed a stay on the implementation of the regulation in 2016 pending the resolution of legal challenges (Denniston 2016).

The debate over the future of coal-fired power and federal emissions regulations was a central topic during the campaign for the 2016 presidential election. Both the Democratic and Republican platforms included strong positions on the Clean Power Plan (Wallach 2015). Hillary Clinton's campaign platform included a laundry list of actions to address climate change, the first of which was a promise that "as president, Hillary will defend, implement, and extend smart pollution and efficiency standards, including the Clean Power Plan [...] that are already helping clean our air, save families money, and fight climate change" (Clinton 2016). Meanwhile, Donald Trump made the repeal of the Clean Power Plan a major campaign promise, building on decades of Republican opposition to environmental regulations (Harvey 2016). As Mehling and Vihma explain, Trump's narrative of environmental regulations as "strangling" American economic growth was a reactionary iteration of Regan-era rhetoric that imposed its criticisms on "Democrats and liberal elites, who, according to the populist narrative, do not care about workers and jobs, but are instead preoccupied with cultural identities, equality, and other ideological concerns" (2017:8).

The election of Donald Trump as 45th President of the United States, won in part due to coal country votes in swing states (Meko, Lu, and Gamio 2016), signaled a broader victory for fossil fuel interests in their efforts to evade regulation. Conservative

efforts to undermine environmental policy have existed since the environmental movement began in the 1960s. In the past decade, these campaigns, which are funded in part by fossil fuel interests, have made the environmental administrative state a central focus of critique (Bomberg 2017; Layzer 2012b). As Hejny notes, whereas the Republican platform of the 1970s and 1980s involved called for reductions in regulations, it did not raise questions about the inherent value of environmental protection (2018). In 1992, the party shifted toward a more “aggressive counter-narrative to environmentalism” that included attacks on environmental science and pitted environmental regulations against employment, economic advancement, and private property rights (Hejny 2018:10). A decade later, Republican critiques shifted from environmentalism broadly to the specific structure of the environmental state under the Obama Administration: this critique included a shift from support for regulation through market mechanisms to outright rejection of all federal regulatory efforts, a campaign to “rein in the EPA,” and a proliferation of narratives about Obama’s “war on coal” and “job-killing regulations” (Hejny 2018). The 2016 Republican platform, which aligned with the anti-environmental promises of the Trump campaign, took this narrative and ran with it, describing environmental policy under the Obama Administration as “an avalanche of regulation that wrecks our economy and yields minimal environmental benefits” (Republican party of the United States 2016).

In the first 100 days of the Trump Administration, more than 23 environmental rules were rolled back as part of Trump’s “commitment to reducing regulatory burden” (The White House 2017b). These actions included the withdrawal of guidance for federal agencies to include greenhouse gas emissions in environmental reviews and an order for

the “immediate re-evaluation” of the Clean Power plan (Popovich and Schlossberg 2017). The appointment of at least 16 fossil fuel insiders to major regulatory agencies is further proof of the close ties between energy industry interests and the Trump Administration (Bomberg 2017). The most notable connections to the coal industry are two Trump appointees to the EPA: Andrew Wheeler, former aide to Republican Senator James Inhofe (known for his opposition to climate science) and a lobbyist for coal mining company Murray Energy, was appointed as deputy administrator at the EPA (Friedman 2017), and Christian Palich, the former president of the Ohio Coal Association, was appointed to a legislative affairs position in the Agency (Sheehan Perkins 2017).

Although the ties between coal industry interests and the Executive Branch are especially evident in the early actions of the Trump Administration, this industry has been a powerful actor in debates over federal environmental regulations for nearly a century (Freese 2003). Since the 1970s, debates over the environmental impacts and regulation of emissions from coal-fired power have dominated federal coal policy, with large coal producers, trade associations, coal-producing states, environmental organizations, and federal agencies all weighing in (Rosenbaum 2015). The coal industry has sought to influence policy outcomes through direct participation as well as political contributions and lobbying efforts (see e.g. Ackerman 1981; Nelson 1983; Fisher 2006; Goodell 2007). Further, the industry itself plays a central role in collecting and disseminating the technical and environmental data that is at the core of decision-making related to environmental policies (Vietor 1980). Although mining interests have been the most visible industry actors in recent policy debates, electric utilities have played a quieter, but equally influential, role. For example, the Utility Air Regulatory Group – “a

not-for profit association of individual generating companies and national trade associations” including the largest coal-fired electric utilities in the country (American Electric Power, Southern Company, Duke Energy, and Dominion Resources, to name a few) – was a leading opponent in litigation against the Clean Power Plan (Kasper 2016). Given that the coal-fired electric utility industry is a major player in environmental debates and political campaigns, in-depth analysis of the political influence of this industry is relevant to understanding the socially-structured processes that uphold patterns of environmental inequality. However, the research on the political power of the coal industry has been largely focused on the extraction side of the industry and has yet to devote significant attention to coal-fired electric utilities (Schneider et al. 2016; Stamper et al. 2012; but see Wilson et al. 2012).

Coal-Fired Power in Ohio

This project assesses the debate over coal-fired power, using the state of Ohio as a comparative case in contrast to the federal policy debates described above. Ohio is an especially good site for analyzing the debate over coal-fired power for several reasons. First, Ohio has a long history of coal production and has been among the top 10-15 coal-extracting states since the 1950s. In 2015, the state was 12th among U.S. states for coal production, extracting more than 17,000 short tons of coal (a 23% decrease from the previous year) (EIA 2016a). Although mining is less common in the state today than it was in previous years or decades, the notion of Ohio as a “coal state” has continuing resonance for politicians and voters, especially in the southeast region of the state (Young

and Kanick 2016). Despite the prevalence of discourse about coal jobs in the state, only 2,309 workers in the state were employed in surface and subsurface coal mining in 2015, a drop of 21% from the previous year (Kowalski 2017). Second, coal is especially central to the generation of electric power in Ohio. For example, in 2015 the state was 4th in coal consumption among U.S. states (EIA 2016a), with 58% of all electricity generated coming from coal as a fuel source (EIA 2017e). Third, Ohio has experienced a massive influx of natural gas extraction, with gas production nearly 19 times greater in 2016 than in 2011 (EIA 2017d). In large part due to the availability of low cost natural gas in the Ohio, coal-fired power plant retirements in the state have been especially common in recent years: in 2015, more than 15% of the state's total coal-fired generation capacity was retired, making Ohio the state with the highest level of retired capacity that year (EIA 2016d; Shavel 2015).

Perhaps due to these characteristics of Ohio's energy endowment, several contentious energy policy debates have taken place in the state in recent years. First, the State of Ohio was one of the 27 states to challenge the Clean Power Plan (Harvard Law Review 2016), with the Director of the Ohio EPA testifying against the regulation before the U.S. House of Representatives in September, 2015 (Butler 2015). Second, there was substantial debate over the state's Renewable Portfolio Standards (RPS), which had been passed into law in 2008 (Ohio Senate 2008). Initially, the standards required that 12.5% of the electricity sold by utilities or other electric service providers in the state be generated from renewable sources by 2027. The standards were met with substantial backlash from Republican lawmakers, and in June 2014, Governor John Kasich (R) signed SB 310, which put a two year freeze on the standards while lawmakers studied the

economic impacts of the policy (Mufson and Hamburger 2014; Ohio Senate 2014). With the freeze set to expire in January 2016, policy actors on both sides of the debate were especially active during the intervening years. Third, the two largest utilities in the state – American Electric Power⁵ and FirstEnergy⁶ – both filed power purchase agreements at the Public Utilities Commission of Ohio in an effort to seek ratepayer subsidization for uneconomic coal-fired power plants. These cases led to a highly polarized debate between environmental organizations, utilities and energy companies, and consumer watchdog groups over the regulatory structure of the state’s electricity market (Bade 2015). Finally, Ohio was a swing state in the 2016 election, which led to the proliferation of political discourse in the state. The centrality of coal to the state’s electricity markets and the prevalence of policy debates over the policies discussed above make Ohio unique among the other swing states identified in the 2016 election season (Mahtesian 2016).⁷

Methods: Empirical and Interpretive Analysis of the Double Diversion

As discussed in the introduction to this dissertation, Freudenburg’s framework of the double diversion articulates a compelling link between environmental inequality and broader processes of discursive power and legitimation (2005, 2006). Although Freudenburg is thorough in his description of the methods and data sources by which he

⁵ <https://www.puco.ohio.gov/be-informed/consumer-topics/aep-ohio-power-purchase-agreement-rider/> (Accessed 12 February 2018).

⁶ <https://www.puco.ohio.gov/be-informed/consumer-topics/firstenergy-s-electric-security-plan/> (Accessed 12 February 2018).

⁷ I reached this conclusion by comparing per capita coal consumption and coal production rates for each “battleground state” using the values reported in the 2015 EIA Annual Coal Report.

identifies patterns of disproportionality in industrial pollution, he provides limited qualitative detail about the structure and function of privileged accounts. Most of the studies that build on the double diversion framework have taken a similar approach, using quantitative methods to address questions about the first diversion (environmental inequality), at times testing questions about the validity of privileged accounts (the second diversion) using quantitative methods (e.g. Collins 2011; Collins et al. 2016; Greenberg 2016; Matthews 2011). A few studies have assessed the second diversion using qualitative methods, analyzing policy documents, media coverage, and qualitative interviews to understand the role of industry-driven discourse in the legitimation of environmental inequality (e.g. Shearer et al. 2013; Sodero and Stoddart 2015). To-date, researchers have yet to engage in mixed-methods analysis of both sides of the double diversion. Truly comprehensive assessment of environmental problems requires analysis of both environmental outcomes and the socially-structured processes that create those problems (Freudenburg 2005; Hajer 1995). This project uses mixed data-collection⁸ and mixed data-analysis⁹ to assess the interrelated problems of the production and persistence of environmental inequality (Small 2010).

⁸ “Mixed data-collection” refers to studies “based on at least two kinds of data (such as field notes and administrative records) or two means of collecting them (such as interviewing and controlled experiments)” (Small 2010:60).

⁹ “Mixed data-analysis” refers to studies that “regardless of the number of data sources, either employ more than one analytical technique or cross techniques and types of data” (Small 2010:60).

Assessing the “First Diversion:” Disproportionality Analysis

The quantitative portion of this project – reported in detail in chapter 3 – evaluates disproportionality in the generation of CO₂ emissions from coal-fired electric utilities in the US. Although previous research on disproportionality has studied industries that produce highly toxic pollution, researchers have yet to assess within-sector inequality in the generation of emissions from coal-fired power (but see Jorgenson et al. 2016; Prechel and Istvan 2016). Using public datasets from the U.S. Environmental Protection Agency (EPA) and U.S. Energy Information Administration (EIA), I analyze CO₂ emissions from coal-fired power plants in the U.S. between 2010 and 2015. I classify facilities and parent companies based on their level of relative responsibility for CO₂ emissions as compared to other power plants in the same sector. I draw on research on the production of environmental inequality, focusing on methods used in previous studies of disproportionality and industrial pollution: Gini coefficients and proportion of contribution to total emissions. Rather than assessing overall emissions rates, this analysis explores facility-level CO₂ emissions in proportion to total emissions in the sector as a way of identifying those facilities and parent companies with the highest impact on the environment and climate. A full description of the data, variables, and methods used in this analysis is provided in the text of chapter 3.

Assessing the “Second Diversion:” Interviews and Discourse Analysis

In the qualitative portion of this project, I explore the discursive elements of the debate over coal-fired power through analysis of qualitative interviews conducted with energy

policy actors at the federal level and in the state of Ohio before and after the 2016 U.S. presidential election. This debate provides an opportunity to understand more fully the mechanisms that underlie the economic dominance and political power of the companies that own coal-fired power plants. I analyze the specific strategies and framing practices corporations employ in the face of changes in regulatory, political, and economic conditions (Chapter 4), as well as the ways that policy actors respond to such narratives within these shifting contexts (Chapter 5). To understand the full extent of the debate over coal-fired power, and to provide a means of comparison between the content and structure of the debates taking place at the national and subnational levels, I compare data collected through open-ended, semi-structured interviews with policy actors working on energy and climate issues at the national level to interviews with policy actors working in Ohio. As described previously Ohio is a state where the debate over coal-fired power is especially contentious. I also compare data from interviews conducted before and after the 2016 presidential election.

The Climate Constituencies Project

The interview data for this project were collected through the Climate Constituencies Project (CCP).¹⁰ Directed by Dr. Dana R. Fisher, the CCP is a study of climate and energy policy networks around the 2016 U.S. presidential election conducted through the University of Maryland Program for Society and the Environment and funded by the

¹⁰ For more information on the Climate Constituencies Project see the project website at <http://www.cse.umd.edu/the-climate-constituencies-project.html>

MacArthur Foundation.¹¹ The CCP methodology includes discourse network analysis of public policy documents and media coverage related to climate and energy, as well as qualitative analysis of data from interviews with central policy actors at the federal level and in four specific states.¹² The qualitative data for this project come from interviews conducted by the CCP research team at the federal level and in the state of Ohio.¹³ The CCP research team was made up of Dr. Fisher and five graduate research assistants, including myself. For federal interviews, the labor was divided equally among members of the research team, with each researcher conducting outreach and data collection for approximately one-sixth of interviews in the pre- and post-election periods. I was the lead researcher for the Ohio sample, for which I conducted all sampling and outreach for the pre- and post-election rounds of interviewing. I conducted or was present for approximately 80% of all Ohio interviews, with about 20% conducted by other members of the research team.

In this study, as well as in the CCP, organizations are the units of analysis and interviews examine the perspectives of organizational representatives rather than the opinions of individual citizens. Previous studies have also used this approach as a method of measuring sustained participation in policy networks (Fisher et al. 2018; Fisher, Waggle, and Leifeld 2013; Jasny, Waggle, and Fisher 2015). As such, this project uses

¹¹ MacArthur Foundation grant #G-1604-150842 and #G16-1609-151514-CLS

¹² CCP states were Florida, Nevada, North Carolina, and Ohio as chosen by the MacArthur Foundation. Each state had notable policy debates around climate and clean energy preceding the 2016 election. It is also of note that these states were swing states.

¹³ Interviews were conducted in accordance with the requirements of the University of Maryland Institutional Review Board (Protocol # 878998-2).

the term *policy actors* to refer to the range of organizations, groups, and entities involved in climate and clean energy policy debates at the federal level and in the state of Ohio. These groups include businesses and business associations, U.S. and state congressional offices, environmental organizations, NGOs and think tanks, U.S. Government offices and agencies, sub-national agencies and legislative offices, and scientific research institutions and universities. In creating the sample populations for interviews, the research team aggregated individual representatives based on their organizational affiliations. For example, the Sierra Club is a policy actor, and any individuals participating on behalf of the Sierra Club are listed as representatives of the organization, rather than as additional policy actors in the sample. I describe sampling procedures in detail in the sections that follow.

The federal and Ohio interview samples are divided into two periods: pre-election post-election. The pre-election samples are based on policy activity during the years leading up to the height of the campaigns for the 2016 election with all interviews conducted during the summer of 2016 in the lead-up to the presidential election. The samples for post-election interviews are based on policy participation preceding the election, with all interviews conducted during the spring of 2017, beginning after the first 100 days of the Trump Administration. By creating the interview samples using indicators of previous policy participation, this approach focuses on those policy actors that were most active in relevant debates over climate and energy policy in the periods immediately preceding data collection. As described below, the specific sampling methods and periods for the federal and Ohio datasets differ due to variations in political context, prominent policy debates, and availability of policy documents.

Federal Interview Sampling

The federal interview sample is based on three publicly available sources indicating participation in federal climate and energy policy. First, the research team drew from archives of congressional hearings to compile a list of the most active organizations and individuals in federal level climate and energy policy debates. Previous studies of climate politics in the U.S. have used Congressional hearings as a source of data that are representative of a range of perspectives from across the political spectrum (see e.g. Fisher et al. 2013; Liu, Lindquist, and Vedlitz 2011; Mccright and Dunlap 2003). We assembled the pre-election sample from transcripts of hearings from the two preceding sessions of Congress: the 112th (January 2011-January 2013) and 113th (January 2013-January 2015). For the post-election sample, we again drew from a list of participants from the two previous sessions of Congress – the 113th and the 114th (January 2015-January 2017). This design allowed for some consistency, given the centrality of participation in the 113th Congress, while also capturing changes in policy participation across the two samples through the inclusion of the 112th and 114th Congresses. We used the U.S. GPO FDSys search engine¹⁴ to access an online archive of transcripts from congressional hearings using the search terms: “climate change,” “global warming,” “greenhouse gases,” “coal,” and “Clean Power Plan.” We then cross-checked these search results with two additional lists of congressional hearings, finding no additional hearings related to climate and energy issues. We also reviewed the content of each

¹⁴ <https://www.gpo.gov/fdsys/search/advanced/advsearchpage.action> (Accessed 7 February 2018).

hearing to ensure that it was relevant to the topic of climate change or energy policy.¹⁵ Next, we cleaned the transcripts to include only formal testimonies submitted for the record.¹⁶ The final collections of testimonies were as follows: 112th Congress – 86 testimonies across 13 hearings; 113th Congress – 196 testimonies across 196 hearings; 114th Congress – 664 testimonies across 194 hearings.

We coded all relevant testimonies from the 112th, 113th, and 114th Congresses for individual speakers, organizational affiliations, and organization types. This coding process yielded a complete list of all policy actors participating in hearings at the federal level. To this list, we added all registered climate lobbyists from the House¹⁷ and Senate¹⁸ Lobbyist Disclosure Act databases (January 2011-January 2015 for the pre-election sample and January 2015-January 2017 for the post-election sample). We also included all domestic, non-state policy actors listed as participants at the 2015 Paris Climate Conference (COP-21) in both samples.¹⁹ To create the final pre-election and post-election samples of federal policy actors, we selected actors based on their inclusion across the three arenas, weighting congressional testimonies so that multiple appearances before Congress indicated increased participation, with all actors who appeared at least three times included in the final samples.

¹⁵ Nomination and confirmation hearings were excluded, as were appropriations or budget hearings. We also excluded hearings that focused on unrelated topics but mentioned one of the search terms in passing.

¹⁶ We include formal testimonies but exclude opening remarks, statements from question-and-answer portions of hearings, and statements or interruptions from Members of Congress that were not formally submitted to the record.

¹⁷ <http://disclosures.house.gov/ld/ldsearch.aspx> (Accessed 20 June 2017).

¹⁸ <https://soprweb.senate.gov/index.cfm?event=selectfields> (Accessed 20 June 2017).

¹⁹ <http://unfccc.int/resource/docs/2015/cop21/eng/inf03p01.pdf> (Accessed 20 June 2017).

Table 2.1 (see page 45) presents the final federal sample and response rates for this project. The pre-election federal sample included 89 policy actors²⁰ and the post-election sample included 108 policy actors.²¹ These organizations, offices, and groups represent the core of political elites that have the most influence within federal policy arenas. Although this sample is not generalizable to the entire population of policy actors, it represents the most central and influential actors within climate and energy policy debates. There is some overlap between the pre- and post-election samples, representing policy actors that were active in both sampling periods: 36% of the post-election sample (39 policy actors) were also in the sample for the pre-election period. In other cases, policy actors that were not active in the sampling period for the post-election interviews dropped out of the sample and new policy actors emerged based on the shifting political landscape and increased policy participation.

Ohio Interview Sampling

In contrast to the federal sample, the Ohio sample is based on both policy participation (legislative hearings and utilities commission hearings) and newspaper coverage of climate and energy issues. Because there were fewer hearings related to climate and

²⁰ The federal pre-election sample for this project does not include three additional actors from the CCP sample that were added based on other sampling procedures (Fisher et al., forthcoming).

²¹ The federal post-election sample includes an additional policy actor that was not willing to participate in the CCP protocol but agreed to discuss the coal-related questions for my dissertation research. I conducted this interview using a limited interview protocol in accordance with all other procedures as required by the Institutional Review Board protocol for the CCP.

energy policy at the state level, the project’s methodology included media coverage for state-level interview samples as a method of increasing the coverage of the sample to include a range of policy actors that was comparable to the federal-level. To begin, the research team compiled a list of individuals and organizations participating in the major climate and clean energy debates in the state during the baseline period (June 2013 to mid-August 2015) and pre-election period (mid-August 2015 to November 2016). These debates took place in two arenas: the state legislature and the Public Utilities Commission of Ohio (PUCO). As has been previously noted, the state’s Renewable Portfolio Standard (RPS)²² was put on hold for years 2016 and 2017 by a “freeze” bill, which led to extensive debate in the legislature.²³ Any organizations or offices that submitted materials for the record or testified in legislative hearings related to the debate over the RPS within the two sampling periods described above were included in the sampling frame. Because there is no comprehensive archive of the hearings that take place in the Ohio legislature, hearings were selected based on targeted searches of legislative committee websites and hearings calendars. In some cases, hearings transcripts were available online. For transcripts that were not readily available, we obtained copies through an academic account with the Hannah News Service, which provides coverage and archiving of legislative activities in Ohio.²⁴ For the pre-election sample, which is based on policy participation in the baseline sampling period, we collected speaker lists from 24 hearing transcripts related to the RPS debate. We collected 67 hearing transcripts

²² <http://codes.ohio.gov/orc/4928.64> (Accessed 7 February 2018).

²³ <http://www.lsc.ohio.gov/analyses130/s0310-rh-130.pdf> (Accessed 7 February 2018).

²⁴ <http://www.hannahnews.com/states/ohio/> (Accessed 7 February 2018).

for the post-election sample (based on policy participation in the pre-election period). For the pre-election sample, we also include policy actors that submitted materials or gave testimony (38 documents in total) before the Energy Mandates Study Committee, which was established by SB 210 to assess the economic impacts of the Ohio RPS.²⁵ In addition, the PUCO heard two cases during the baseline period related to the reregulation of electricity markets brought by the two largest utilities running coal-fired generators in the state: American Electric Power²⁶ and FirstEnergy²⁷. The dataset includes all policy actors that gave or submitted testimony at the PUCO hearings related to these high-profile rate cases. In total, 399 documents from the PUCO docket were included in the pre-election sample and 151 documents were included in the post-election sample.

In addition to policy participation, the Ohio sample is also based on an analysis of newspaper coverage of climate and energy issues. Media data were collected using the Nexis database for articles published in the three top-circulating newspapers in Ohio (the Plain Dealer, the Columbus Dispatch, and the Cincinnati Enquirer) during both study periods. Search terms, which were applied to the lead paragraph of articles using the Nexis advanced search function, were derived based on the relevant policy debates discussed during preliminary interviews. These terms included: “climate change,” “global warming,” “greenhouse gases,” “Clean Power Plan,” “energy efficiency,” “renewable

²⁵ <http://emsc.legislature.ohio.gov/testimony> and <http://emsc.legislature.ohio.gov/additional-testimony> (Accessed 7 February 2018).

²⁶ <http://www.puco.ohio.gov/be-informed/consumer-topics/aep-ohio-s-electric-security-plan/> (Accessed 7 February 2018).

²⁷ <http://www.puco.ohio.gov/puco/index.cfm/be-informed/consumer-topics/firstenergy-s-electric-security-plan/> (Accessed 7 February 2018).

portfolio standards,” “renewable energy,” “net metering,” and “coal.” After the initial rounds of data cleaning, which removed articles using search terms that were not germane to the topic of energy or climate,²⁸ this search returned 687 articles for the first baseline search period (policy actors added to pre-election sample) and 291 articles for second pre-election search period (policy actors added to post-election sample). The research team worked together to code each article individually to identify the policy actors mentioned indirectly or quoted in the pre- and post-election periods.

To identify the most central policy actors, the final Ohio sample includes representatives of organizations or groups mentioned at least twice across the three sampling categories (legislative documents, PUCO documents, and newspaper articles).²⁹ For example, an organization that contributed to a hearing at the State House as well as a PUCO hearing would be included in the sample, as would a group that contributed to a legislative hearing and was also mentioned in a newspaper article. This sampling method yielded a total of 66 policy actors for the pre-election Ohio sample and 73 policy actors for the post-election sample. Table 2.1 lists these samples and reports response rates.

²⁸ The most common phrases that returned articles in the initial search that were not relevant to the study were the colloquialism “canary in the coal mine” and references to a Columbus, OH restaurant called “Natalie’s Coal-Fired Pizza,” which hosts community events and music performances.

²⁹ The CCP sample for Ohio also used Twitter mentions as an additional method of identifying central policy actors. As this dissertation does not engage with social media in other parts of the study, I have excluded these actors from the sample of respondents discussed in this analysis.

Outreach and Participation

After the samples of policy actors were finalized, members of the research team began the outreach process. We conducted outreach for pre-election interviews during May of 2016 and began post-election outreach in April 2017. For each stage, we began by contacting the most active individual representatives of each of the organizational actors in the final samples via email, using contact information provided in policy documents, websites, and other publicly available sources. When contact information was not readily available, we reached out to organization offices and staff to obtain email addresses and introductions. In cases where we did not make contact with respondents after sending two follow-up emails, we made a final attempt at recruitment via phone. When the original respondents were no longer associated with the organizations in the sample, or when primary respondents were not available for interviews, we substituted other organizational representatives as participants (for example, if the President of a corporation was not available to participate, we reached out to the Chief of Sustainability for an interview). This approach is consistent with the policy network approach taken in previous research on policy actors (Jasny et al. 2015) and aligns with the project's focus on organizational, rather than individual, policy perspectives.

Overall, interview participants represent the wide range of policy actors that were most active in the debate over climate and energy policy at the federal level and in the state of Ohio. The sampling methods described above allowed the research team to identify policy actors based on their centrality to the policy debate, rather than by their professional titles. As such, the interview respondents for this project are not only policymakers, but also business owners and trade association leaders, lobbyists,

university scientists, NGO and think tank representatives, and environmental advocates. In total, this dissertation analyzes data from of 209 interviews conducted through the Climate Constituencies Project. Table 2.1 details the sample sizes and response rates for the federal and Ohio interview samples for pre- and post-election study periods.

Table 2.1 –Federal and Ohio interview samples by study period

	Federal		Ohio		Total
	2016	2017	2016	2017	
Sample Size	89	107	66	73	335
Total Interviews	54	64	48	43	209
Response Rate	60.7%	59.8%	72.7%	58.9%	62.4%

At the federal level, the response rate was relatively stable over the pre- and post-election study periods at around 60 percent. For the Ohio interviews, the response rate dropped by over ten percent between the pre- and post-election periods. This decline can be attributed to several factors. First, the CCP research team encountered more hesitance from policy actors when asked to participate in interviews (even off-the-record) during the political climate following the 2016 election. Second, whereas the CCP team conducted the pre-election Ohio interviews during a legislative recess, when policy actors tend to have more free time, data collection for post-election interviews took place during an especially busy portion of the state legislative session. Overall, the response rates reported above are similar to those reported by other recent studies of policy elites in the U.S. (Heaney 2006; Lewis 2006).

In addition to the data sources reported above, I also analyzed the policy documents and newspaper articles used to create the interview samples to classify policy

actors based on their public positions on coal-fired power. Before coding interview data, I reviewed the sampling documents and coded each policy actor in the sample as either “pro-coal” (having made statements in support of coal-fired power), “anti-coal” (having made statements arguing against the burning of coal for electricity), or “neutral” (either lacking statements on the subject of coal or making general statements that did not take a side in the debate). In cases where sampling documents were ambiguous, I cross-checked policy positions by searching organizational websites. Overall, about half of the policy actors interviewed for the CCP took public positions in opposition to coal-fired power. Pro-coal positions were more prevalent among participants in pre-election interviews at both the federal and state levels, while fuel-neutral positions were more common in the post-election interview samples. Table 2.2 describes the public positions of policy actors with regard to coal-fired power.

Table 2.3 – Coal policy positions of interview respondents by level and study period

	Federal		Ohio		Total
	2016	2017	2016	2017	
Pro-Coal Positions	30%	28%	29%	19%	27%
Anti-Coal Positions	52%	44%	54%	51%	50%
Fuel-Neutral Positions	18%	28%	17%	30%	23%

Interview Methodology

This project engages with all interview data related to the topic of coal from the federal and Ohio interviews collected as part of the CCP. All interviews were conducted in accordance with University of Maryland policies on Human Subjects research (IRB Protocol #878998). Interviews followed an open-ended, semi structured format (Lofland

and Lofland 1995; Weiss 1995). This methodology allows for interviews to proceed as detailed conversations, rather than scripted sets of questions and answers. The research team developed a general interview protocol of questions related to climate and energy policy, which was used as a guide for conversation during the interviews. This process allowed us to ask the same questions of each respondent while also developing rapport and adapting to each respondents' policy expertise. The federal and Ohio protocols were developed based on relevant climate and energy policy debates and the theoretical questions of the project more broadly. In addition to the CCP protocol questions, members of the research team asked two coal-specific interview questions that I designed for the purposes of this dissertation project. For pre-election interviews, researchers asked respondents "*what is the role of the coal industry in climate and energy politics?*" and "*how have/how will emissions regulations impact the coal industry?*" In the post-election period, I revised these questions to align with changes in policy contexts, with interviewers asking, "*what is the future for coal in the U.S., both in the short term and in the long term?*" and "*how does the outcome of the 2016 election impact the coal industry?*"

When possible, we conducted interviews in-person in respondents' offices or in public meeting places such as coffee shops or restaurants. When it was not possible to schedule an in-person interview (usually due to scheduling or geographic constraints) we conducted interviews over the phone. In total, about half of all interviews were in-person and about half took place by phone. Interviews lasted between 20 minutes and two hours, with the average interview lasting just under one hour, and were recorded digitally. All recordings were transcribed for later analysis using a professional transcription service.

Interview Analysis

For this dissertation project, I analyzed the responses to the coal-specific questions included in the pre- and post-election interview protocols, as well as all additional discussion of coal that arose elsewhere in interviews as respondents expressed their organizations' perspectives on climate and energy policy issues. I conducted all analysis for this project independently. First, I coded all interview data by hand, using a theoretically-derived set of themes and allowing for emergent topics during the coding process. Then, I used the Provalis Research qualitative data analysis software QDA Miner 5 (2017) to refine the analytical coding. I divided each theme from the first round into more specific codes under the broader categories of "pro-coal" and "anti-coal" statements, using the content of respondents' statements and the surrounding context of each interview for purposes of categorization. After completing this coding process, I cross-checked the policy positions derived from coding of policy and media documents during the sampling process (see table 2.2) with the codes associated with each interview, reviewing any cases where pro-coal codes were applied to anti-coal respondents, or vice versa, to ensure that coding was entirely accurate. Table 2.3 reports the theoretical themes and the associated codes that fall under each category. I describe these codes in detail in chapters 4 and 5.

To protect the identities of the policy representatives who participated in interviews in accordance with the requirements of the University of Maryland policies on Human Subjects Research, I provide general affiliations as context for quotations, but do not identify individual respondents or organizations by name or other distinguishing information. I have edited the quotations included in the qualitative chapters of this

project for clarity, removing repeated words and extraneous content such as “like,” “you know,” and “um.” Otherwise, quotations are reported exactly as spoken by interview participants.

Table 2.3: Coding scheme for qualitative interview analysis

<i>Round 1: Hand coding</i>	<i>Round 2: Qualitative analysis using QDA Miner 5</i>	
Theoretical Themes	Pro-Coal Codes	Anti-Coal Codes
<i>Climate /Environment</i>	Climate Denial No Climate Impact Clean Coal	Climate Change Public Health Air Toxics
<i>Economy</i>	Affordable Energy Coal Economy Loss of Jobs	Coal is Expensive Economic Progress Community Transition Coal Jobs Myth
<i>Energy</i>	Reliable Energy	Coal is Outdated
<i>International</i>	International Threat	International Progress
<i>Regulations</i>	Opposition to Regulations	Support for Regulations

Chapter 3: Extreme Emitters in the Coal-Fired Power Sector

As described in Chapter 1, patterns of environmental inequality can be understood both in terms of their impacts on the natural and social worlds and in terms of their socially-structured causes. Freudenburg's concept of the "double diversion" provides a theoretical framework with which to approach cases of environmental inequality from these two perspectives, linking measures of inequality in the generation of environmental harm to broader inequalities in the social distribution of political and discursive power (2005, 2006). In this chapter, I analyze quantitative data to provide evidence of Freudenburg's "first diversion," which describes the ability of industrial producers to generate environmental harms while avoiding the consequences of those harms. My work assesses disproportionality in the generation of CO₂ emissions among facilities and parent companies in U.S. coal-fired power industry, which has been understudied in the disproportionality literature to-date (but see Jorgenson et al. 2016).

Recent studies of inequality in the generation of CO₂ emissions have identified groups of top emitters in a variety of industries (Center for Public Integrity 2016; Griffin 2017; Political Economy Research Institute 2017). At the same time, research on within-sector inequality – what Collins and colleagues (2016) call "polluter disproportionality" – has used measures of relative contribution to emissions to identify small numbers of stationary industrial facilities that are responsible for the majority of environmental harm (Armstrong et al. 2012; Berry 2007; Collins 2011; Collins et al. 2016; Freudenburg 2005; Nowak et al. 2006). A smaller group of researchers have conducted similar analyses of inequality in the generation of CO₂ emissions at both the macro and micro levels (Boyce

and Pastor 2013; Kennedy, Krahn, and Krogman 2014; Jorgenson, Longhofer, and Grant 2016). Although the research on disproportionality has been growing in its breadth and application across a variety of environmental problems, it has yet to consider how the distribution of environmental harm varies between facilities and parent companies.

The public and environmental health consequences of climate change are often far-removed from emissions sources, presenting a challenge for researchers interested in understanding the relationship between the generation of environmental harm and related impacts. Most analyses of greenhouse gases (GHGs) are source-based, focusing on emissions releases at a variety of scales. Cross-national studies, for example, provide insight into the socio-political and economic predictors of GHG emissions (Stretesky and Lynch 2009; Jorgenson et al. 2017). Researchers have documented inequality in the production of the GHG emissions that cause global climate change at a variety of levels, ranging from individual communities to entire continents. Within the industrial sector, it is well known that some facilities and companies produce more emissions than others. Recent research on air toxics and environmental justice, for example, identifies the top 100 U.S. companies responsible for air pollution in 2014 (Political Economy Research Institute 2017). A study by the Center for Public Integrity found that 100 industrial facilities in the U.S. accounted for approximately one third of total industrial GHG emissions in 2014. They find that 22 of these facilities are “super polluters” that also fall in the top 100 for other air toxics emissions (2016). Most comprehensively, the 2017 report of the Carbon Majors Database finds that 25 state and corporate producers across the globe are responsible for more than half of industrial GHG emissions in the last three decades (Griffin 2017). Although such lists are useful for identifying the major

contributors to environmental harm, they do not compare results across units of analysis. Further, they do not standardize their analyses by facility size, efficiency (emissions per unit of production), or each producer's relative responsibility for the generation of environmental harm.

In this chapter, I use two established methods of measuring within-group inequality (Gini coefficients and proportion of contribution to total emissions) to measure inequality within the distribution of CO₂ emissions among coal-fired electric utility facilities and parent companies in the U.S. between 2010 and 2015. Building on previous work on industrial pollution (e.g. Collins et al. 2016; Integrity 2016), I define the facilities and companies that produce the worst 25% of CO₂ emissions each year as *extreme emitters*. I begin with an overview of existing research on parent companies and CO₂ emissions inequality. After describing the data and methods employed in this chapter, I present the results of my analysis of CO₂ emissions at the facility and parent company levels. I then discuss how my findings demonstrate evidence of disproportionality in the coal-fired power industry, especially at the parent company level.

Emissions Disproportionality and Industrial Distributions

Most studies of environmental inequality and large industry have focused on the unequal burden and impacts of industrial pollution on specific groups and communities (e.g. Bullard 1990; Bullard 1994; Bullard 1993; Mohai and Bryant 1992; Downey 1998; Brulle and Pellow 2006; Mohai and Saha 2007; Mohai and Saha 2015; Sze and London

2008; Pellow and Nyseth Brehm 2013; Mele 2016). Grounded in concerns about environmental injustice, especially in terms of public health consequences, this work has been especially effective in making environmental inequality visible and in mobilizing grassroots and policy responses to industrial pollution. However, research that focuses only on environmental problems and policies misses the opportunity to question the privileges that underlie the production of environmental injustice and the processes of environmental decision-making (Taylor 2000; Grant et al. 2010).

To understand the role of environmental privilege in emissions inequality, this chapter takes an alternative approach. Specifically, I analyze inequities within the generation of environmental harm by assessing what Freudenburg and other researchers have called *disproportionality* (2005). Research on disproportionality examines within-group environmental inequality in the production of environmental harm and considers how emissions from a small number of ‘outlier’ producers – or, in Freudenburg’s terms, “the tail that wags the distribution” (2006:13) – can have dramatic effects on ecosystems and communities as a whole (Berry 2007; Nowak et al. 2006). Because measures of total or average emissions do not account for variations among producers, these studies use the Gini coefficient, an accepted measure of inequality within societies, to assess within-group differences in the production of environmental harm (Berry 2007; Freudenburg 2005).

A subset of disproportionality studies have measured inequality in the production of CO₂ emissions. Analyzing emissions data from power plants in 20 countries, Grant and colleagues find that only 5 percent of facilities produce the majority of emissions within their industries (2013). In their cross-national study of power plant CO₂ emissions

in 161 countries, Jorgenson and colleagues find that, while all nations displayed some degree of disproportionality in facility emissions, some countries had especially high levels of within-sector emissions inequality (2016). Regression results show that even after controlling for human drivers of carbon emissions, there is a positive association between total carbon emissions from electricity generation and disproportionate patterns among electricity generating facilities, suggesting that reducing disproportionality in the industry may yield lower emissions overall (Jorgenson et al. 2016). Boyce and Pastor observe that CO₂ emissions are coupled with releases of toxic pollutants from U.S. industrial facilities and that the distribution of these co-pollutants has an unequal impact on racial minorities and the poor (Boyce and Pastor 2013; see also Cushing et al. 2016). Looking at the household level, Kennedy and her colleagues document income disproportionality among household carbon footprints in one city, finding that the carbon footprint of the highest income quintile was more than double that of the lowest income quintile (2014).

Although there is evidence of disproportionality patterns among facilities in the electricity generation industry, the question of inequality within this distribution and how best to identify the actors responsible for such emissions remains largely unanswered. In a study of corporate characteristics and disproportionality in industrial pollution, Prechel and Istvan propose that analyses at the parent company level are essential in understanding the distribution of responsibility for environmental harm, since parent companies hold decision-making authority over individual facilities (2016; see also Prechel 2015). Previous research has documented the association between toxic emissions and a variety of corporate characteristics including political embeddedness,

capital dependence (Prechel and Touche 2014) and a combination of facility and community factors (Grant et al. 2010). Grant and colleagues focus on the size and structure of industrial organizations, finding that large chemical plants emit toxins at a higher rate than smaller plants. Additionally, they find that these disparities are especially pronounced among branch plants (those owned by major firms) rather than independently-owned plants (2002). Researchers have also used public health hazards as a measure of corporate environmental justice performance. Ash and Boyce find that out of the 100 worst polluters in the U.S. the top 10 corporations were especially egregious their impact on minority and low-income communities (2011). Although these analyses are essential in identifying major sources of GHG emissions and the factors that are related to overall emissions, they do not measure differences or inequities that may lie within these groups. Beyond Prechel and Istvan's 2016 study, researchers have yet to measure disproportionality at the parent company or corporate level,

In general, the disproportionality approach suggests the possibility of greatly reducing environmental harm by changing the activities of just a few facilities, rather than an entire sector (Freudenburg 2006; Davidson and Grant 2012). Therefore, instead of focusing on overall emissions rates, this analysis explores facility-level CO₂ emissions in proportion to total emissions in the sector as a way of identifying the facilities and parent companies responsible for the most extreme levels of impact on the environment and climate. I build on previous disproportionality research, focusing on inequities in the generation of CO₂ emissions within the coal-fired electric utility industry at two levels—facilities and parent companies. Like earlier studies by Freudenburg (2005), Berry (2007), Nowak and colleagues (2007), and Collins (2011), among others, I begin by

measuring within-sector inequality for each year using the Gini coefficient. I also analyze each facility's cumulative contribution to total emissions as a method of identifying the producers – which I label *extreme emitters* - that generate the worst 25% of emissions. I then expand this analysis by comparing these two measures of emissions disproportionality across facility and parent company levels.

Case and Data

This chapter focuses on inequality in the generation of CO₂ emissions by facilities and parent companies in the coal-fired electric utility industry. Electricity has been the largest source of GHG emissions at both a global and domestic level (Boden et al. 2015; IEA 2016). CO₂ makes up the majority of GHG emissions from coal-fired power generation in the US, with coal-fired electricity generation accounting for the vast majority (71 percent) of CO₂ emissions generated by the electric power industry (EIA 2016g). Electric utilities are defined by the U.S. Energy Information Administration (EIA) as entities connected to electric distribution facilities that deliver energy to the grid for public use.³⁰ This sector was the largest industrial contributor to U.S. CO₂ emissions between 2010 and 2015. In 2014, for example, coal-fired electric utilities released 1,364 metric tons of CO₂, accounting for 25% of nationwide CO₂ emissions (EIA 2014; 2016f; 2017d; EPA 2016).

³⁰ This category includes investor-owned, municipal, state, and federal utilities, as well as rural cooperatives and accounts for the majority of coal-fired electric generation in the US.

Because the spatial distribution of GHGs is not limited to the areas near their sources, the most common unit of analysis in studies of disproportionality – industrial facilities – has limited applicability to CO₂ emissions. Climate change is a global problem that with consequences for localities far removed from the largest anthropogenic sources of GHG emissions. Although facility-level analysis is an important starting point, the widespread impacts of CO₂ necessitate an analytical approach that goes beyond the site-based study of toxic releases (e.g. Collins 2011; Kennedy et al. 2014) to consider disproportionality in emissions at both the facility and parent company levels. Further, whereas power plants have implemented varying degrees of pollution controls to reduce mercury, nitrogen oxides, sulfur oxides, and particulate matter in accordance with Clean Air Act requirements (EPA 1970, 1990), to-date there is no federal regulation requiring existing power plants to reduce their CO₂ emissions (Center for Climate and Energy Solutions 2018). CO₂ emissions also vary less than other coal emissions for regulatory and technological reasons (EPA 2014b). Due to these variations in regulatory contexts and technological factors, I analyze CO₂ emissions in isolation, rather than combining them with other airborne emissions.

The U.S. coal-fired electric utility sector generates high levels of CO₂ emissions that have significant impacts on the environment and climate and have been the topic of highly contentious policy debates. This combination of environmental consequences and political polarization makes the coal-fired power industry an especially appropriate case for analysis within Freudenburg’s framework of the “double diversion” (Freudenburg 2005). To apply this framework and explore within-sector inequality in the generation of CO₂ emissions in the coal-fired power sector, I analyze data from two sources of publicly

available power plant emissions and facility characteristics data for years 2010-2015: the U.S. Environmental Protection Agency's (EPA) Greenhouse Gas Reporting Program (GHGRP) and the EIA Annual Electric Generator Report (form EIA-860) and Power Plant Operations Report (form EIA-923). The GHGRP records emissions data and other related information from large industrial facilities.³¹ Most of the approximately 8,000 facilities reporting to the GHGRP emit more than 25,000 CO₂ equivalent metric tons of GHGs each year.³² Together, emissions from these facilities make up about 85 percent of total U.S. GHG emissions.³³ Power plants make up the largest number of reporters (around 1500 facilities each year) and the electric utility industry is the largest contributor to total CO₂ emissions³⁴. GHGRP data are available beginning in 2010 and are publicly

³¹ In total, 41 categories of industrial facilities are required to submit data to the GHGRP under 40 CFR Part 98. The majority of these facilities generate in excess of 25,000 metric tons of CO₂ emissions per year. In addition, the rule requires reporting by facilities that have the potential to release this amount of CO₂ through combustion, oxidation, or accidental releases. Agricultural and land-use industries are not required to report.

<https://www.epa.gov/ghgreporting/greenhouse-gas-reporting-program-and-us-inventory-greenhouse-gas-emissions-and-sinks>

³² Fuel combustion emissions from power plants are measured using continuous emission monitoring systems (CEMS). The most common type of CEMS technology extracts a continuous supply of gas from the processing point. This gas is then processed and delivered to a gas analysis system, which records gas concentrations at predetermined intervals. Although some facilities use site-specific fuel composition data to calculate emissions, coal-fired units are generally required to use CEMS. The EPA considers CEMS to be the most accurate method of measuring the quantity of emissions for most fuel types. Technical and analytical requirements for CEMS technologies are included in 40 CFR Part 60 and Part 75.

³³ See <https://www.epa.gov/ghgreporting/greenhouse-gas-reporting-program-and-us-inventory-greenhouse-gas-emissions-and-sinks> for a comparison of the U.S. Greenhouse Gas Inventory program and the U.S. GHGRP (accessed February 2, 2018).

³⁴ Such reports are mandated under Title 40, U.S. Code of Federal Regulations (40 CFR), Protection of the Environment, Part 98—an EPA rule published in 2009 following a congressional mandate to provide a comprehensive record of greenhouse gas sources for use in the development of emissions reduction policies and programs. The program ensures accuracy and consistency of data through a multi-step process involving automated reviews, manual reviews, and pre-/post-submittal data checks.

available through the EPA Envirofacts website, which provides access to EPA data collected across a variety of regulatory programs.³⁵ Using the Greenhouse Gas Customized search tool, I downloaded data reports for electric power generating facilities (NAICS code 22111) for all available years (2010-2015) including the following information: GHGRP identification number, plant name, plant location, annual CO₂ emissions (metric tons), and parent company data (name, location, and percent ownership).

This analysis also includes data collected by the U.S. Energy Information Administration (EIA). An agency within the U.S. Department of Energy, the EIA collects, analyzes, and maintains databases containing a wide array of domestic energy information. The agency conducts routine data reviews to ensure quality and reliability and provides publicly available data through its website. This analysis includes data from two EIA forms —the EIA-860 Annual Electric Generator Report plant file and the EIA-923 Power Plant Operations Report,³⁶ both of which are included in mandatory reporting programs for all power plants that have a total generating capacity of one megawatt or more and are connected to the electric grid.

To organize the data analyzed in this study, I matched the list of existing coal-fired electric utility power plants for each year from the EIA-860 file with the annual

³⁵ <https://www.epa.gov/enviro/greenhouse-gas-customized-search> (Accessed January 5, 2018)

³⁶ Industrial facilities are required to report to the EIA under a variety of Federal initiatives, including the Federal Energy Administration Act of 1974, the Energy Policy Act of 1992, and the Energy Policy Act of 2005. See https://www.eia.gov/about/legislative_timeline.php for more information (accessed March 5, 2018).

facility-level CO₂ emissions data (measured in metric tons) from the GHGRP.³⁷ I merged these data using a crosswalk file to match GHGRP identification numbers with the ORIS identification numbers used by EIA. I include the following data from the EIA-860 plant file: facility name, identification number (ORIS), location data, and fuel type. I also incorporate annual net generation data for each facility from the annual section of the EIA Power Plant Operations Report (EIA-923).

Variables and Measurements

The analyses presented in this chapter compare two measurements of disproportionality – the Gini coefficient and proportion of contribution to total emissions – at the facility and parent company levels of analysis. First, following Freudenburg’s original work (2005, 2006) and subsequent disproportionality studies (e.g. Collins, Munoz, and JaJa 2016; Greenberg 2016; Jorgenson, Longhofer, and Grant 2016; Kennedy, Krahn, and Krogman 2014), I use the *Gini coefficient* to measure the degree of degree of inequality in the generation of CO₂ emissions. This measure of inequality within distributions is most well-known as a measure of inequality in wealth and income and is especially useful in measuring the level of relative inequality at the group, region, or sector levels (Dorfman 1979). Ranging from 0-1, with 0 indicating perfect equality between frequencies and 1

³⁷ Fuel combustion emissions from power plants are measured using continuous emission monitoring systems (CEMS). The most common type of CEMS technology extracts a continuous supply of gas from the processing point and records concentrations at predetermined intervals. The EPA considers CEMS to be the most accurate method of measuring the quantity of emissions for most fuel types (per 40 CFR Part 60 and Part 75).

indicating the highest possible level of inequality, this measure represents the area between the Lorenz curve and the hypothetical line of absolute equality. In the results presented below, a 0 would indicate that each facility or parent company emits the same quantity of CO₂, and a 1 would indicate that a single facility or parent company emits the entirety of CO₂ in the sector (see Boyce and Pastor 2013 for a similar analysis).

Second, as an additional measure of within-sector inequality, I identify *extreme emitters* (defined as plants or companies producing the worst 25% of total annual emissions each year) by calculating the *cumulative proportion of contribution* to total CO₂ emissions and CO₂/MWH net generation for each facility and each parent companies. As in previous disproportionality studies, I use this measure to identify the “outlier” producers responsible for the most extreme levels of emissions in the sector (Freudenburg 2006:13; see also Collins, Munoz, and JaJa 2016; Kennedy, Krahn, and Krogman 2014). In its simplest definition, disproportionality occurs when a minority of producers generate the majority of environment harm: the greater the difference between the percentage of producers and their position in the distribution, the greater the inequality. For example, a finding of one quarter of producers being responsible for the top 25% of emissions would be evidence of perfect equality, whereas if only 5 percent of producers were found to be responsible for the top 25% of emissions it would indicate a high level of distributional unevenness.

This comparison uses the measure of disproportionality (as indicated by either the Gini coefficient or proportional contribution to total emissions) as the dependent variable. I compare these two indicators of disproportionality at two levels: (1) raw CO₂ emissions versus a generation-standardized measure of CO₂ emissions, which make up the first two

independent variables, and (2) the level of analysis – individual facilities versus parent companies – which make up the second set of independent variables. The raw CO₂ emissions (annual metric tons) variable is taken from the GHGRP file for each available year (2010-2015). The standardized variable uses annual net generation as a proxy for facility size. Annual net generation, or the amount of electricity generated after electricity consumed at the facility is subtracted, is calculated in megawatt hours (MWH).³⁸ This variable was created by dividing annual CO₂ by annual net generation to calculate metric tons of CO₂ per MWH of net generation. As documented in Freudenburg’s original analysis of industrial toxic releases, the amount of services produced does not necessarily explain emissions (2005). Therefore, it is important to consider facility output (in this case, the total electricity contributed to the grid) as a size-standardized measurement of emissions (Jorgenson et al. 2017; Jorgenson, Longhofer, and Grant 2016; Grant, Jorgenson, and Longhofer 2013). Further, although raw CO₂ emissions tend to scale with net generation (e.g. the more coal a facility or company burns overall, the higher its emissions), the CO₂/MWH measure captures the carbon efficiency of facilities or companies (e.g. “how much CO₂ is emitted per MWH of electricity generated?”). Individual facilities were the default level of analysis in the EIA and GHGRP datasets.

³⁸ Annual net generation as reported in the EIA-923 form is subject to non-sampling error as a result of nonresponse, response errors, or data collection issues. The EIA estimates that there is a 68 percent chance that the true total or mean is within one relative standard error (RSE - calculated as the square root of the estimated variance, divided by the variable of interest) of the estimated total or mean and a 95 percent chance that it is within two RSEs of the estimate. In cases where net generation for coal-fired power generation is not available, it is estimated using a fixed ratio of 0.97 x gross generation.

<https://www.eia.gov/electricity/monthly/pdf/technotes.pdf>

The GHGRP data also include information about the parent companies, defined as the “highest-level U.S. company(s) with an ownership interest in the reporting entity as of December 31 of the year for which data are being reported.” To create the parent company level of analysis, I began by consolidating the list of parent companies to the what Prechel and Istvan call the “ultimate parent company” level, combining all subsidiaries under their broader corporate owners (2016:509). The parent company category included in the EPA data also includes municipal, state, and federal utilities, as well as rural cooperatives. Then, I multiplied facility CO₂ emissions and net generation by the percent of parent company ownership reported in the GHGRP data. This approach combines the measures from the facilities owned by parent companies to allow for a comparison across the two levels of analysis. For facilities reporting emissions for multiple generators, I combined those data to represent total facility emissions before allocating emissions by parent company ownership percentage. I conducted my analyses for all available years of GHGRP data (2010-2015) using RStudio server, running R 1.0.143 with several additional packages.

Results

In the pages that follow, I present the results of my comparative analysis of disproportionality in the coal-fired power sector. I begin with the facility-level analysis, then present the findings of the same analyses at the parent company level. At each level, I report Gini coefficients (illustrated with Lorenz curves) and identify extreme emitters based on the proportion of contribution to total emissions. I also present maps of the

geographic distributions of super emitter facilities and facilities owned by super emitter parent companies.

Facility Disproportionality

To determine whether the generation of CO₂ emissions is unequally or equally distributed across the study area facilities, I begin by measuring the degree of disproportionality among coal-fired electric generation *facilities* for each year across the two annual emissions variables described above: raw CO₂ (metric tons) and CO₂ efficiency (CO₂/MWH annual net generation). Table 3.1 displays facility-level Gini coefficients and the percent of facilities generating the worst 25% of emissions for each emissions variable, as well as the total number of facilities in the sector for each year (2010-2015).

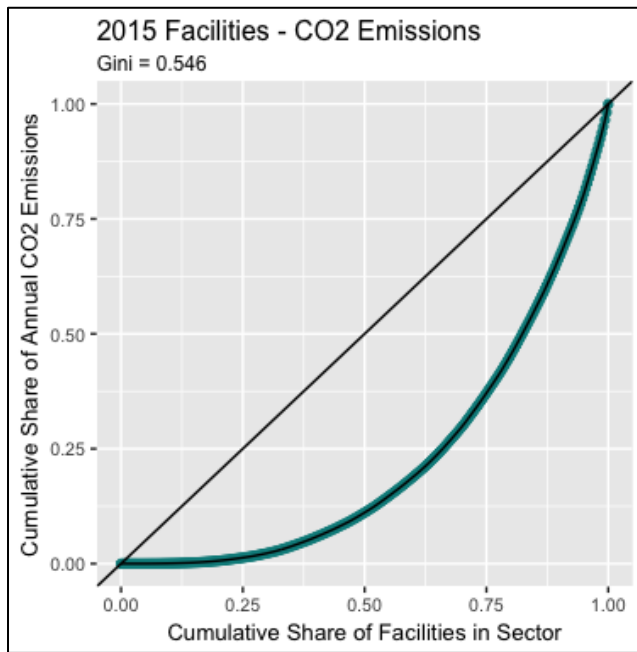
Table 3.1: Facility-level disproportionality measures by year

	<i>Annual CO2 Emissions (metric tons)</i>		<i>Generation standardized emissions (CO2/MWH)</i>		
Year	Gini coefficient	Percent extreme emitters	Gini coefficient	Percent extreme emitters	Total facilities
2010	0.53	6.1%	0.12	16.0%	344
2011	0.54	6.3%	0.11	16.7%	347
2012	0.56	5.8%	0.16	13.6%	345
2013	0.55	6.2%	0.16	14.5%	339
2014	0.54	6.2%	0.18	12.7%	338
2015	0.55	6.1%	0.15	14.5%	330

When analyzing raw CO₂ emissions, Gini coefficients range from 0.53 to 0.54, indicating high levels of distributional unevenness. To restate, this value measures the degree of

inequality in the generation of emissions within the sector. Gini coefficients are fairly stable across all study years. Figure 3.1 presents the Lorenz curve and associated Gini coefficient for facility raw CO₂ emissions in the most recent study year. Lorenz curves for previous study years are very similar, as are the Gini coefficients displayed in Table 3.1: the distribution of generated raw CO₂ emissions deviates from the line of equality, with some facilities contributing a greater share of emissions than others.³⁹

Figure 3.1: Facility-level emissions distribution – raw CO₂ (2015)

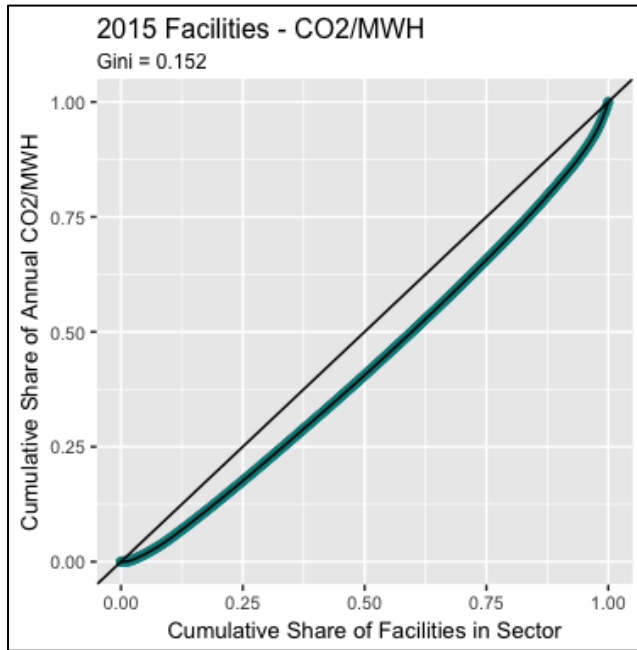


When I standardize annual CO₂ emissions for facility size by accounting for MWH of net generation (a proxy for facility size – see the Gini column for “generation standardized

³⁹ Because the Lorenz curves and Gini coefficients are very similar for each year, I present only the most recent study year as a Lorenz curve for ease of interpretation. Specific values for each year across variables are reported in tables 3.1 and 3.2.

emissions” in table 3.1.), evidence of disproportionality diminishes. Gini coefficients for the size-normalized facility groups range from 0.11 to 0.18, depending on the year. This indicates that when standardizing for the net electricity produced by each facility, there is a very low level of inequality in the generation of emissions at the facility level. Simply put, facilities that burn more coal produce more emissions. These findings are consistent with other studies of disproportionality in CO₂ emissions that have found strong correlations between size and contribution to environmental harms in the case of households at the community level (Kennedy et al. 2014) and power plants at the national level (Jorgenson, Longhofer, and Grant 2016). Figure 3.2 presents the Lorenz curve and associated Gini coefficient for the generation-standardized CO₂ emissions variable for 2015. The Lorenz curves for previous study years mirror the 2015 CO₂/MWH distribution, with limited deviation from the line of equality. To restate, the generation of CO₂ emissions at the facility level is unequally distributed when using the raw CO₂ measure, showing evidence of patterns of disproportionality, but when emissions are normalized by size, these patterns diminish.

Figure 3.2: Facility-level emissions distribution – CO₂/MWH (2015)

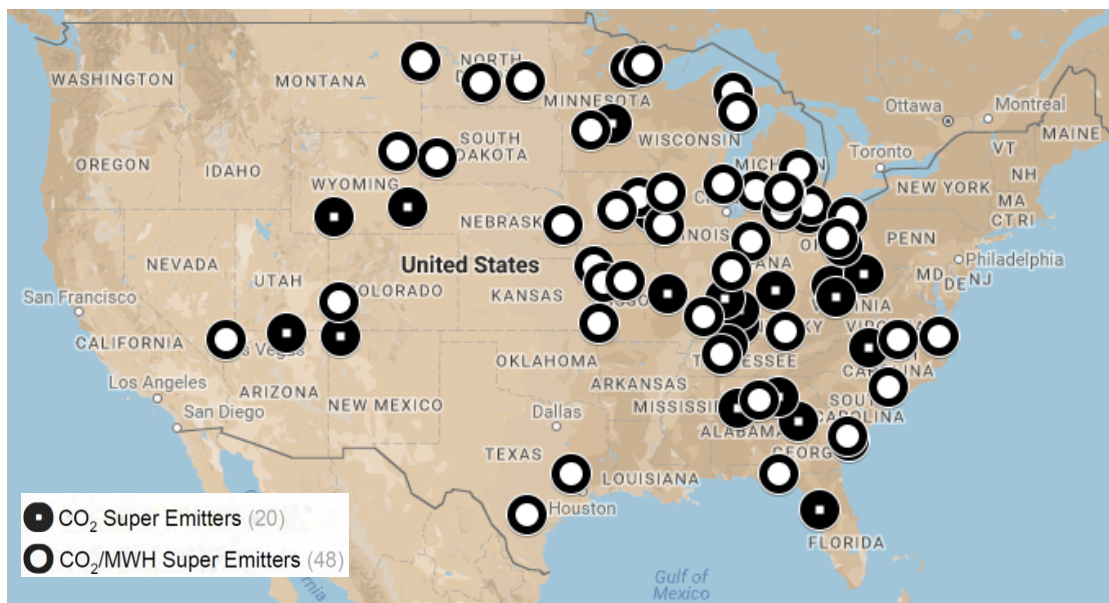


I also identify “extreme emitter” facilities by using an additional measure of within-sector inequality: the cumulative contribution of facilities to the sectoral emissions total. When analyzing the raw emissions measure, I find that about six percent of facilities included in this study are extreme emitters—facilities that generate the worst 25% of total emissions for each study year. This finding indicates that a smaller percentage of facilities generate more than their proportionate share of emissions. This proportion rises to between 13% and 17% each year after accounting for facility size (see “percent extreme emitters” columns in Table 3.1 above), indicating lower levels of disproportionality when standardizing by net generation.

For additional context, I compare the spatial distribution of extreme emitter facilities in each distribution (raw emissions and size-standardized emissions). Figure 3.3

presents a map of the extreme emitter facilities for the most recent study year (2015), distinguishing between extreme emitter facilities for raw CO₂ (20 facilities) and CO₂/MWH (48 facilities). In general, extreme emitter facilities are distributed across states with high percentages of coal-fired electricity in their energy mix.⁴⁰

Figure 3.3: Geographic distribution of U.S. super emitter facilities (2015)



The facilities that emitted the worst 25% of raw CO₂ in 2015 are concentrated in the Southeast, with additional facilities in Arizona, Minnesota, New Mexico, and Wyoming. These facilities are the largest coal-fired generation stations in the US, many of which have been the targets of environmental campaigns calling for their closure (see e.g. Sierra

⁴⁰ For an overview of the energy mix and coal-intensity of electricity generation in each US state in 2015, see https://www.washingtonpost.com/graphics/national/power-plants/?utm_term=.f769fc88ebc8 (accessed December 4, 2017).

Club 2016). The facilities that produce the least efficient 25% of electricity from coal (CO_2/MWH) are concentrated in in the Midwest and Southeast and are more numerous and geographically diffuse in the size-standardized distribution. The raw emissions measure and size-standardized emissions measure highlight not only different extreme emitter facilities, but also point to a variety of contextual factors that may contribute to emissions disproportionality, including facility characteristics, state and regional energy market dynamics, subnational policy contexts, and the corporate structure and political activities of facilities' parent companies. To understand how the distribution of emissions inequality differs beyond the facility level, the next section of this chapter shifts to parent companies as a unit of analysis.

Parent Company Disproportionality

Given that there is evidence of disproportionality in the generation of CO_2 emissions among coal-fired electric utility facilities in the US, it is necessary to consider the degree to which the parent companies of these facilities differ in their relative responsibility for emissions. To assess whether disproportionality in the generation of CO_2 emissions differs at the parent company versus facility level, I conduct the same analyses for the total emissions generated by each parent company in the coal-fired utility sector each year (2010-2015). Table 3.2 displays parent company Gini coefficients and the percent of parent companies generating the worst 25% of emissions for each measure, as well as the total number of parent companies in the sector for each year (2010-2015).

Table 3.2: Parent company disproportionality measures by year

	Annual CO2 Emissions (metric tons)		Generation standardized emissions (CO2/MWH)		
Year	Gini coefficient	Percent extreme emitters	Gini coefficient	Percent extreme emitters	Total parent companies
2010	0.78	1.6%	0.47	3.7%	190
2011	0.78	1.4%	0.46	3.8%	213
2012	0.79	1.4%	0.48	3.2%	216
2013	0.78	1.4%	0.47	3.3%	214
2014	0.79	0.9%	0.48	3.3%	211
2015	0.78	1.5%	0.47	3.6%	197

Like facility-level findings when using the raw CO₂ measure, I find that the generation of CO₂ emissions is unequally distributed, with Gini coefficients ranging from 0.78-0.79. These coefficients indicate a high level of distributional unevenness across every study year and are 0.20-0.25 higher than coefficients from analysis of the same emissions measure at the facility level. Figure 3.4 presents the Lorenz curve and associated Gini coefficient for raw CO₂ emissions at the parent company level for 2015.

When the same calculations are performed using the CO₂/MWH variable, which standardizes for size by dividing parent company emissions by the total energy each company generates using coal each year, I find higher levels of disproportionality among parent companies compared to facilities. Gini coefficients for the size-standardized measure at the facility level range from 0.46 to 0.48 each year. These values indicate that distributional unevenness declines less substantially when accounting for annual net generation at the parent company level compared to the facility level, where size-standardized Gini coefficients ranged from 0.11-0.16. Figure 3.4 presents this measure for the distribution of CO₂/MWH at the parent company level in 2015.

Figure 3.4: Parent company emissions distribution – raw CO2 (2015)

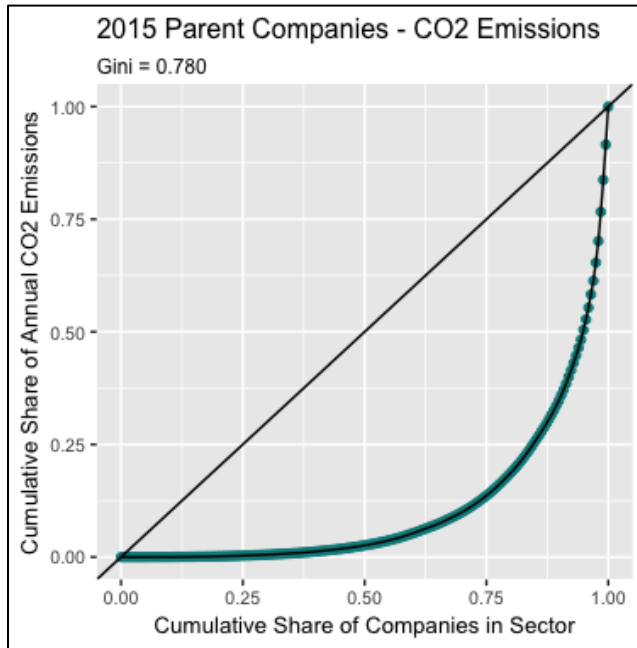
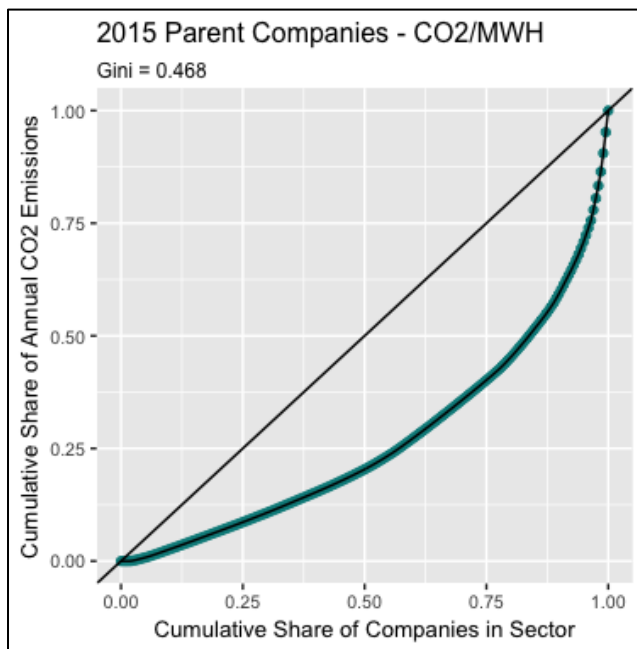


Figure 3.5: Parent company emissions distribution – CO2/MWH (2015)



This analysis of raw CO₂ emissions provides strong evidence of patterns of disproportionality among parent companies in the coal-fired power sector. Although less dramatic than the coefficients for the unstandardized measure, distributional unevenness remains among parent companies when using the standardized CO₂/MWH measure. Unlike among facilities, the persistence of disproportionality even when standardizing for size indicates that there is substantial inequality in the carbon efficiency of parent companies in the coal-fired power industry.

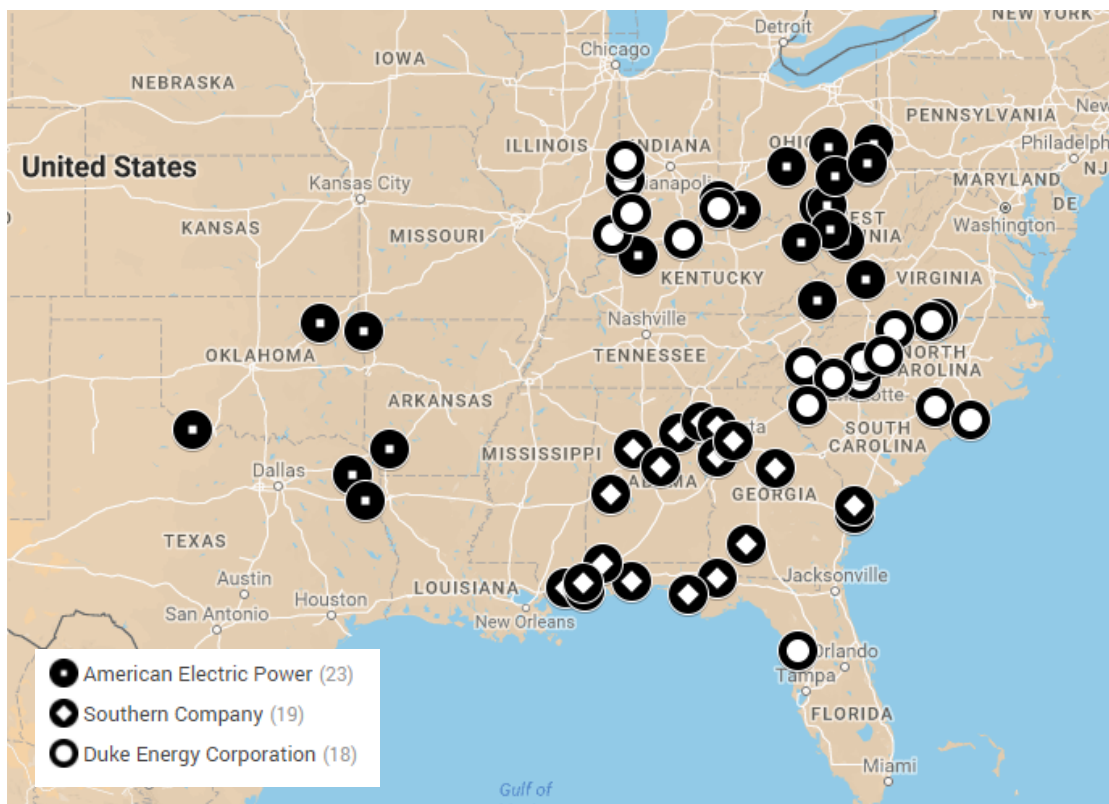
There are notable differences when comparing inequality among extreme emitter facilities and extreme emitter parent companies: disproportionate patterns as measured using Gini coefficients diminish after accounting for size among facilities but remain at the parent company level. When analyzing the proportion of contribution to total emissions, I find that one or two percent of parent companies included in this analysis generate the worst 25% of total emissions (depending on the year - see “percent extreme emitters” columns in table 3.2). In 2015, only three parent companies generated the top 25% of raw CO₂ emissions: Southern Company, American Electric Power, and Duke Energy. These three companies are the largest utilities in the U.S. and generated larger amounts of electricity from coal than their counterparts that year. Because these three companies own the largest share of coal-fired generation capacity, they also generate the largest share of CO₂ emissions. This number rises to between three and four percent of parent companies each year when using the size-standardized CO₂/MWH measure. These values indicate that very small minorities of parent companies produce the worst 25% of emissions in the sector and account for the least efficient 25% of electricity generated. In 2015 only seven parent companies fell into this category. These seven companies, which

include the three companies listed above as extreme emitters for raw CO₂, own the most inefficient sources of coal-fired electricity generation in the country.

Linking Facility and Parent Company Disproportionality

To conclude my analysis of facility and parent company disproportionality, I examine the geographic distribution of the facilities owned by the three extreme emitter companies listed above. Figure 3.6 presents a map of the facilities owned by the top three extreme emitter parent companies—American Electric Power (23 facilities), Southern Company (19 facilities), and Duke Energy Corporation (18 facilities) — in 2015.

Figure 3.6: Facilities owned by extreme emitter parent companies 2015



In total, these three companies and their associated facilities emitted the worst 25% of CO₂ in 2015. From an efficiency perspective (CO₂/MWH), these companies are among the worst in their sector, generating more emissions per unit of electricity than their counterparts. American Electric Power, Southern Company, and Duke Energy Corporation have facilities in operation in the South and Midwest, regions which have especially coal-intensive electricity markets.⁴¹ The limited geographic spread of these facilities suggests that political and economic factors at the regional and state levels may play a role in the “privileged access” of these super emitter companies (Freudenburg 2005).

Disproportionality and Freudenburg’s Double Diversion

All in all, the empirical findings presented in this chapter provide evidence that disproportionality in the generation of CO₂ exists among coal-fired power plants and their parent companies. Although these results provide support for the idea that industrial facilities are unequally responsible for environmental harm (Berry 2007), they also suggest that disproportionality researchers must be cognizant of the role that our units of

⁴¹ The operations of these three companies span several of the Regional Entity Compliance Programs established by the North American Electric Reliability Corporation (NERC), including the Reliability First, Southeast Power Pool, Southeast Reliability Corporation, Florida Reliability Coordinating Council and Texas Reliability Entity. These facilities are also located across multiple Regional Transmission Organizations (RTOs) and Independent System Operations (ISOs) defined by the Federal Energy Regulatory Commission (FERC), including the Midcontinent ISO, Southwest Power Pool, Electric Reliability Council of Texas, and PJM Interconnection. As described in Chapter 2, these regional energy markets are the most heavily reliant on coal as a fuel source for electricity generation.

analysis play in our research findings. Although I find that CO₂ emissions are unequally distributed across facilities, when such emissions are standardized by size, the level of inequality diminishes. In brief, facilities that generate more power annually, as measured in net generation megawatt hours (MWH), also generate more CO₂ emissions. I find that disproportionality in the generation of CO₂ is much higher at the parent company level than at the facility level when controlling for net electricity generation, whereas the same measure is relatively stable across facilities. Parent companies display conspicuous differences in the amount of CO₂ generated per megawatt hour of electricity. In 2015, for example, only seven 197 parent companies included in this analysis generated the worst 25% of emissions per MWH.

Overall, this analysis contributes to a more complete understanding of inequities in responsibility for the generation of environmental harms in the coal-fired power industry. These findings provide evidence of Freudenburg's "first diversion" by highlighting the privileged industrial actors – in particular, the parent companies that own coal-fired electric utilities – that are most responsible for the environmental harms and climate impacts related to CO₂ emissions produced by the burning of coal for electric power. By establishing empirical evidence of disproportionality in CO₂ emissions (what Freudenburg called *privileged access*) these results raise questions about the socially-structured processes that allow these patterns of inequality to persist. The findings presented in this chapter findings indicate that in addition to the geographic characteristics included in most environmental justice studies, a broader view of facilities within the context of their corporate, political, and social structures may provide researchers a deeper understanding of the disproportionate production of environmental

harm (Freudenburg 2005, 2006). In the next chapter, I explore these questions from the perspective of what Freudenburg identifies as *privileged accounts*: “the social construction and maintenance of a sense ‘of non-problematicity’” through hegemonic narratives and other forms of discursive control that allow “privileged access to our shared natural resources to go largely unchallenged” (Freudenburg 2006:19–20).

Chapter 4: Privileged Accounts in the Debate over Coal-Fired Power

The patterns of disproportionality documented in the previous chapter provide quantitative evidence of the durability of industrial environmental privilege. In review, I find that the parent companies that generate the worst 25% of emissions also own the majority of coal-fired electric generation in the country. These companies hold monopolies over regional utility fleets that include many of the largest and oldest facilities in the sector. At the same time, they generate far more than their share of pollution. This disproportionate impact on the environment is what Freudenburg called *privileged access*.

In this chapter, I turn to the second component of the Freudenburg's "double diversion" framework: *privileged accounts*, or the specific discursive processes that enable patterns of environmental privilege and inequality "to go largely unchallenged" (2006:20). Using data from qualitative interviews with federal and state-level energy policy actors conducted before and after 2016 election. I also identify the dominant narratives employed in support of the coal-fired power industry and analyze the connections between specific pro-coal arguments and the broader discursive strategies that support the industry's ongoing ability to generate extreme levels of emissions.

The concept of privileged accounts – which Freudenburg called the "second diversion" of environmental harm – connects with the sociological literature on discursive power (e.g. Foucault, 1971; Habermas, 1975; Lukes, 1974) to explain how inequality in the generation of environmental harm persists due to power imbalances in the ability to explain environmental problems (Freudenburg 2005, 2006). In other words,

the ability to define and speak about environmental problems through privileged accounts serves as a mechanism by which industrial environmental privilege is legitimized and maintained (Davidson and Grant 2012).

In this chapter, I use data from in-depth interviews with policy actors working on energy and climate issues around the 2016 election to explore the structure and function of privileged accounts in the debate over coal-fired power. I begin by introducing a typology of privileged accounts as documented in previous research on debates over industrial pollution and environmental problems. Second, I provide a brief overview of the literature on power and legitimation as it relates to environmental discourse and define the two elements of discourse analyzed in this chapter – *narratives* and *discourse coalitions*. Then, I present the results of my analysis of qualitative interview data. I analyze interview data at the pre- and post-election periods at both the federal and state levels to achieve two goals: (1) an understanding of the different pro-coal narratives that emerged before and after the 2016 election at the federal and state levels, and (2) an understanding of how the discourse coalitions constructed via these narratives shifted across the pre- and post-election periods.

A Discursive Typology of Industrial Environmental Privilege

As described in the introductory chapter, this dissertation explores how discourse serves as a mechanism by which environmental privilege (and thus environmental inequality more broadly) is maintained. The theoretical framework of the “double diversion” allows researchers to consider the ideological undercurrents of debates over environmental

problems. Rather than focusing on a specific policy outcome, this project explores how industry and environmental interests compete to define environmental problems in their own interests (Freudenburg 2005)

This chapter investigates how industry-driven narratives operate within the “struggle for discursive hegemony” (Hajer 1995:59) that is at the core of the debate over coal-fired power and the regulation of greenhouse gas emissions in the US. Here, I engage with the literature on the discursive power of industry interests within environmental politics. This discussion is distinct from the literature on social movement framing processes, which I discuss in the in the next chapter. Freudenburg’s concept of privileged accounts captures the wide range of rhetorical strategies employed by industry interests as they seek to maintain their positions of privilege through the production of hegemonic discourse.

Rather than identifying a unified line of argument that justifies and maintains industrial environmental privilege, this concept allows for the analysis of a variety of narratives and shifting discourse coalitions. In a book section published five years prior to his landmark article on the “double diversion,” Freudenburg described privileged accounts as:

ideological beliefs that confer differential advantage on one group, often at the expense of other groups, but that in many cases come to be taken for granted or ‘naturalized.’ The important ideologies, in other words, include not just the forms of discourse that are socially contested and/or otherwise recognized as being ideologies, but also the forms of legitimation that appear to be just the opposite – those that have become so widely accepted or unchallenged as to become ‘naturalized’ or taken for granted (Freudenburg 2000:111).

Building on Foucault’s notion of “embedded power” (1971) the framework of the “double diversion” pushes environmental researchers to analyze not only the statements

that make up a given discourse, but also all that goes unsaid within debates over environmental problems and policies. In other words, privileged accounts are both active efforts to shape how policymakers and the public view and respond to environmental problems and more subtle acts of “magicianship” by which discourse can shift attention away from environment problems (Freudenburg and Alario 2007). Freudenburg and his colleagues have called this process *diversionary reframing* (Freudenburg and Gramling 1994a; Gramling and Freudenburg 2012). This “special form of changing the subject” (Freudenburg 2000:112) involves the discursive strategies and narratives that industry interests employ in their efforts to avoid questions that challenge their legitimacy (for a more thorough review of the literature on legitimation, see Chapter 1). For example, diversionary reframing can take the form of questions about the legitimacy of policy approaches, scientific findings, or the character or standing of privileged actors’ critics (Beamish et al. 1995; Freudenburg and Alario 2007; Sodero and Stoddart 2015).

When introducing the concept of the “double diversion,” Freudenburg identifies a set of specific arguments used to support the idea that pollution is inevitable and necessary, rather than problematic and preventable (2005:100–105). These accounts, which center on economic concerns, are presented as “commonsense” knowledge when, in fact, they can be traced back to the specific interests of a small group of environmentally privileged actors. Although a few environmental sociologists have sought to ground-truth these industry-driven tropes using quantitative approaches (e.g. Greenberg 2016; Matthews 2011), qualitative inquiry on this topic has been sparse to-date (but see the 2015 study by Sodero and Stoddart of tourism expansion and greenhouse gas emissions in Newfoundland and Labrador).

Environmental communication scholars have also addressed questions about industry interests' rhetorical strategies within environmental policy debates. Most notably, Schneider and colleagues' comprehensive rhetorical analysis of the coal-fired power industry highlights how coal industry representatives use a set of cohesive, yet adaptable, discursive strategies in response to the multiple social, political, and economic pressures (Schneider et al. 2016). The authors propose that these narratives are part of a broader set of discursive strategies that seek to maintain the status quo of industrial environmental privilege: "coal campaigns tend to align the industry's interests with economic, cultural, or moral concerns, co-opting the discourses and structure of other voices to achieve its goals, as it deploys discourses that come from a wide variety of social and political organizations and ideologies" (Schneider et al. 2016:15).

Previous studies of processes of legitimation and communication in environmental politics have documented a set of longstanding tropes that appear across a variety of cases of industrial opposition to environmental regulation. These narrative themes include (in alphabetical order): critical services; delegitimizing science; economic impacts; employment impacts; industrial fixes; international threat; regulatory burden; and U.S. industry independence. I describe these themes in detail in the pages that follow.

Critical Services

A discursive tactic that attempts to prop up industrial interests when purely economic arguments are lacking, the critical services narrative relies on the argument that industrial actors are vital to the economy, infrastructure, or institutional stability of society. In other words, industrial sources of pollution are understood as producing "critical" materials or

services that cannot be replaced via alternative methods of production. Freudenburg posits that this line of argument is most common in cases of “older industries that use outdated and generally inefficient technologies” to justify their ongoing operation in the face of environmental challenges and competition from more advanced technologies (2005; see also Ashford, 1994). The code that emerged during coding of qualitative interviews that aligns most closely with the critical services theme is that of *reliable energy* (see chapter 2 for an overview of the coding methods used in this study). This code includes arguments about the necessity and irreplaceability of coal as a fuel source based on its purported reliability.

Delegitimizing Science

Narratives that highlight the uncertainty of scientific findings, generate doubt about scientific consensus, or reject the authority of scientific institutions and organizations all have the same goal: sowing seeds of doubt about the legitimacy of environmental science among policymakers and the public (Freudenburg 2005; Freudenburg and Alario 2007). This discursive tactic has been especially central to fossil fuel industry opposition to federal and international climate policies. This policy realm is particularly prone to “climate denial” narratives that question the legitimacy of climate science, anthropogenic climate change, and the role of greenhouse gases in global warming (Fisher, Waggle, and Leifeld 2013; McCright and Dunlap 2011; Mccright and Dunlap 2003; Farrell 2016).⁴² In

⁴² I identify “climate denial” and “no climate impact” as separate narratives because they engage different assumptions. Whereas “climate denial” takes issue with the scientific evidence of anthropogenic climate change or casts doubt on the existence of climate change, the “no climate impact” narrative casts doubt on regulations. Rather than denying climate change, the

her meta-analysis of industry framing of climate change, for example, Schlicting documents that industry-driven climate communication during the early and mid-1990s relied on narratives about the “scientific uncertainty” of anthropogenic climate change (2013). More broadly, scholars have found that because scientific data are central to the legal justification of regulatory actions, interest groups may criticize findings or delegitimize research in order to postpone policy implementation (Freudenburg and Gramling 1994b; Freudenburg et al. 2008). In my coding of qualitative interview data, I identify *climate denial* as the emergent code falling under the umbrella of this theme.

Economic Impacts

A hallmark of industrial opposition to environmental regulation, this narrative argues that that the costs of regulation will be passed on to consumers, leading to widespread harm to the economy (Freudenburg 2005; Repetto 1995). Scholars have shown that economic arguments tend to dominate discussions of the necessity of environmental harm in a variety of industrial contexts (Hoffman and Ventresca 1999; Matthews 2011; Perrow 1997). For example, Schlicting finds that fossil fuel interests shifted toward the narrative of “socioeconomic consequences” during Kyoto climate negotiations in 1997 (2013). As Schneider and colleagues note, the coal industry has been highly active in the articulation of a “shared fear that excessive environmental regulation may lead to economic catastrophe” (2016:18). Similar lines of argument have also been documented in studies of industry framing of coal extraction in Appalachia (e.g. Bodenhamer 2016; Greenberg

“no climate impact” narrative forecloses the debate over whether climate change is real by simply denying that an industry or regulation has an impact on global climate.

2016). Within the qualitative data coded for this project, I identify the emergent code of *coal economy* – which encompasses a variety of discussions about the centrality of coal to economic progress – as well as the code of *affordable energy* – which covers discussions of coal as a low-cost energy source - as iterations of this theme.

Employment Impacts

This line of argument is similar to the economic impacts theme discussed above, with a specific focus on the potential for layoffs, unemployment, and associated economic consequences should industries be subject to environmental regulations (Schneider et al. 2016). Freudenburg begins his analysis of privileged accounts by disproving the claim that “environmental improvement could only be achieved at a significant cost to jobs” by documenting disproportionality in the emission-to-jobs ratios of a variety of industries and facilities (2005). Similarly, Matthews (2011) shows that industry groups attempt to naturalize environmental and economic inequality by focusing on the idea of a trade-off between national employment and environmental protection, despite the fact that there is no statistical basis for this argument. As Repetto argues, although the conflict between jobs and environmental regulation is “largely imaginary,” this trope is an efficient method of gathering opposition to regulatory actions (1995; see also Freudenburg, Wilson, and O’Leary 1998). More recently, Bodenhamer’s study of public discourse around mountaintop removal mining shows that public buy-in to the narrative of employment impacts is especially likely among communities that have already experienced economic depression and increases in unemployment (2016; see also Greenberg, 2016). I use the code *loss of jobs* to refer to discussions of employment

impacts within the qualitative analysis presented below.

Industrial Fixes

In contrast to narratives that focus on economic and regulatory issues, this theme of privileged accounts foregrounds the idea that technological innovations and corporate responsibility campaigns are valid responses to environmental risks and that “industrial leadership” is a viable alternative to environmental regulation (Schlichting 2013).

Schneider and colleagues describe this narrative as “a rhetorical process of misdirection that relies on strategic ambiguity about the feasibility, costs, and successful implementation of technologies in order to deflect attention from environmental pollution and health concerns” (2016:4). The emergent code that connects with this theme is *clean coal*. Discussions related to this code include claims that coal itself can be made “cleaner” prior to being burned, that emissions from coal can be filtered out using additional technology, or that it is feasible for carbon emissions to be captured and stored in a safe and reliable way. This campaign glosses over technological and financial challenges while promising that the coal industry is both responsive to environmental concerns and capable of addressing climate change.

International Threat

Whereas the other themes discussed in this section focus on domestic concerns, the international threat narrative centers on two interrelated claims about more global issues. First, it emphasizes that environmental regulations might “inspire wholesale industrial flight” to developing nations where regulations are less stringent and where the cost of

labor is lower (Freudenburg 2005:103). Although Repetto (1995) disproves this narrative, showing that that regulated industries did not remove their operations from the U.S. during the period of increased environmental regulations following the 1970s, the threat of outsourcing continues to be common theme within industry campaigns against the regulation of greenhouse gases. Second, this narrative advances the storyline of international competition and the negative impact domestic regulations would have on the ability of the U.S. to compete with nations with fewer environmental restrictions (Gramling and Freudenburg 2012; Shearer et al. 2013). I code a variety of statements related to this theme under the title *international threat*.

Regulatory Burden

As a more general rejection of environmental regulations than those discussed above, the narrative of regulatory burden is simple yet powerful: it claims that that regulations will cause industries to go out of business by imposing unnecessary and undue costs (Freudenburg 1991, 2005). By positioning industries as victims of costly and unjustified regulations, this narrative shifts policy debates away from discussions of environmental harm and toward discussions about the role of government and the efficacy of regulatory regimes (Freudenburg et al. 1998). The notion of regulatory burden is central to the “industrial apocalyptic” rhetorical strategy identified by Schneider and colleagues, which incorporates narratives that foretell “the imminent demise of a particular industry, economic, or political system and the catastrophic ramifications associated with that loss” (2016:3). In the case of the coal-fired power industry, recent narratives of regulatory burden have been constructed through a variety of claims that posit that regulatory

entities (e.g. the Environmental Protection Agency under the direction of the Obama Administration) are “illogical, inept, hypocritical, devious, and/or malicious” as well as “defective beyond redemption” and therefore must be opposed and replaced (Schneider et al. 2016:33). In qualitative coding, I use the code *opposition to regulations* to capture a variety of arguments that connect to the theme of regulatory burden to argue against state and federal regulation of power plant emissions.

US Industry Independence

In another attempt to frame coal as a beneficial fuel source, the industry independence theme constructs fossil fuels as reliable and purely “domestic” sources of energy. This narrative justifies the generation of environmental impacts by appealing to nationalist agendas and exploiting concerns about national security. In their institutional history of the oil industry in the US, Gramling and Freudenburg explore how claims about domestic energy independence made way for continued environmental degradation on the part of a small number of companies, diverting attention away from the “real winners in the game” (2012:69–70). Similarly, in their study of policy decisions related to land leases for coal mining, Shearer and colleagues find that discussions of looming energy crisis and the need for domestic energy production were used to justify “the concentration of benefits of energy development among a privileged few in the name of national energy and economic security” (Shearer et al. 2013:59). As discussed in the findings, I do not identify industry independence as an emergent code within the qualitative interview data collected for this project.

Freudenburg’s concept of privileged accounts as “socially constructed beliefs that

help in the appropriation or legitimation of privileged access to natural resources” (Freudenburg 2000:115) explains how the discursive dominance of the themes discussed above leads not only to influence within the realm of environmental policy, but also allows patterns of environmental inequality to persist by way of going unnoticed or unchallenged (2005, 2006; Freudenburg et al. 2009). Table 4.1 presents an abbreviated typology of these themes.

Table 4.1: Typology of privileged accounts

Narrative Theme	Central Claim	Documenting Sources
<i>Critical Services</i>	Industry provides a critical service or materials not otherwise available	Ashford 1994; Freudenburg 2005
<i>Delegitimizing Science</i>	Questioning of scientific consensus and certainty	Fisher et al. 2013; Freudenburg and Alario 2007; Freudenburg and Gramling 1994b; Freudenburg, et al. 2008; Mccright and Dunlap 2003; McCright and Dunlap 2011; Schlichting 2013
<i>Economic Impacts</i>	Regulations will lead to higher costs to consumers and overall economic decline	Bodenhamer 2016; Freudenburg 2005; Greenberg 2016; Matthews 2011; Repetto 1995; Schneider et al. 2016
<i>Employment Impacts</i>	Regulations will cause companies to lay off workers, impacting local economies	Bodenhamer 2016; Greenberg 2016; Freudenburg 2005; Matthews 2011; Repetto 1995; Schneider et al. 2016
<i>Industrial Fixes</i>	Technological innovation within industry can address environmental problems	Bonds 2016; Crane and Moon 2008; Schlichting 2013; Schneider et al. 2016
<i>International Threat</i>	Regulations lead to outsourcing and decline in U.S. competitiveness on global market	Freudenburg 2005; Gramling and Freudenburg 2012; Repetto 1995; Shearer et al. 2013
<i>Regulatory Burden</i>	Regulations will cause facility closures and company bankruptcies	Freudenburg 1991, 2005; Freudenburg et al. 1998; Repetto 1995; Schneider et al. 2016
<i>US Industry Independence</i>	The U.S. should not rely on other countries for energy services	Bodenhamer 2016; Gramling and Freudenburg 2012; Shearer et al. 2013

The Discursive Formation of Environmental Privilege

Although research across academic disciplines has documented the negative impacts of coal-sourced greenhouse gas emissions on public health, the environment, and the global climate (see Boden et al. 2015 for an overview) efforts to regulate power plant CO₂ emissions in the U.S. have been notably unsuccessful (see chapter 2 for a more detailed account of the history of coal-fired power and its influence in U.S. politics). The analysis presented in the sections that follow details the structure and function of the discursive strategies that have made coal-fired power such a central theme in US politics. What lines of argument did policy elites advance in the year preceding the 2016 election, and how did these arguments shift following the election as President Donald Trump declared that his Administration had “finally ended the war on coal” (The White House 2017a)? More broadly, how do the pro-coal narratives and discourse coalitions help to explain the role of ideology in maintaining patterns of environmental inequality?

I address these questions by analyzing qualitative interviews conducted with policy actors working on energy and climate issues at the federal level and in the state of Ohio during before and after the 2016 election. A thorough description of the case selection, interview methods, and qualitative analysis process is provided in chapter 2. The statements analyzed below represent not only the public positions of the various policy actors involved in the debate over coal-fired power and the regulation of CO₂ emissions, but also the more nuanced reflections of organizational representatives on the

state of energy markets, environmental regulations, and American electricity infrastructure.⁴³

As Hajer and Versteeg note, by analyzing the discourse of environmental policymaking, researchers can explore the role of language in environmental politics, reveal how the asking and answering of environmental questions is shaped by the power dynamics inherent in discourse, and identify inequities in the distribution of discursive control within environmental debates (2005). In this chapter, I employ Hajer's definition of *discourse* as "a specific ensemble of ideas, concepts, and categorizations that is produced, reproduced, and transformed in a particular set of practices and through which meaning is given to physical and social realities" (1995: 61; see also Hajer 2002). This definition allows for both analytical specificity (i.e. identifying the specific narratives used to maintain environmental privilege) and contextual analysis of discourse as a relational process (i.e. the relationships between various speakers, arguments, and interests).

For the purposes of this analysis, I consider two specific discursive formations: *narratives* and *discourse coalitions*. Building on Hajer's work on the social construction of environmental discourse (1995), I explore how each of these formations relate to Freudenburg's "second diversion" – the diversion of attention away from environmental harm through the strategic framing (or reframing) of environmental debates (2005; see also Freudenburg and Alario 2007; Gramling and Freudenburg 2012).

⁴³ See table 2.3 in chapter 2 for a breakdown of policy actors by level, research period, and policy stance.

The first set of discursive constructions considered in this chapter are those that I will from this point forward call *narratives*. This term is interchangeable with Hajer's notion of "story lines," which serve political interests by simplifying the discourse around the topic of debate and creating a cohesive line of argument to which political actors can easily refer. In Hajer's words, these discursive devices have three defining characteristics: (1) they serve a "functional role of facilitating the reduction of the discursive complexity of a problem," (2) they diffuse among political actors and "become 'tropes' or figures of speech that rationalize a specific approach to what seems to be a coherent problem," and (3) they provide a tool by which political actors "expand their own discursive competence of the phenomenon beyond their own discourse of expertise or experience" (1995: 63).

By identifying the specific narratives employed within environmental debates, researchers can understand, not only the structure of the discourse, but also how the various stakeholders of that debate are able to construct their interests as rational, legitimate, and beneficial to society (Freudenburg 2000). In the sustained political conflict over U.S. climate policy, the industries most responsible for the generation of greenhouse gases tend to advance similar lines of argument against government regulation that center around the cost of regulations and raise questions about the certainty of climate science (Farrell 2016). By analyzing pro-coal narratives at the case level – measuring whether each policy actor engaged with each line of argument – I can assess both the relative dominance of each narrative at the federal and state levels before and after the 2016 election, as well as the connections between narratives and respondents. In other words, the more individual respondents who engage with a

particular narrative, the more dominant that narrative is within the broader discourse surrounding coal-fired power. Rather than focusing on only those respondents who represented organizations identified as supportive of the coal-fired power industry in policy documents, I conduct this analysis across the entire sample of interview respondents, who represent policy actors from across the political spectrum. This approach enables me to measure the prevalence of each narrative within the overarching policy debate, as well as the overlaps between pro-coal and anti-coal discourse (see Chapter 5).

The second set of discursive formations related to privileged accounts analyzed in this chapter are what Hajer identifies as *discourse coalitions*: “an ensemble of a set of story lines, the actors that utter these story lines, all organized around a discourse” (1993: 47, see also Hajer 1995). In the context of discourse coalitions, narratives and story lines can be thought of as “the medium through which actors try to impose their view of reality on others, suggest certain social positions and practices, and criticize alternative social arrangements” (Hajer 1993: 47). Discourse coalitions become dominant when their central narratives become “commonsense” (Foucault 1980) – in other words, when a story “sounds right” (Hajer 1995: 61) – and when the relevant policy process comes to reflect the coalition’s central assumptions (Hajer 1993; see also Krogman 1996). At the same time, actors with similar ways of conceptualizing policy issues have also been found to share broader assumptions about governance, regulation, and the sources of social problems (Freudenburg and Gramling 1994b; Murphy and Gouldson 2000; Schlichting 2013).

In this study, I identify discourse coalitions by using the Jaccard index to measure the strength of narrative co-occurrence within each interview case (Bischoff-Mattson and Lynch 2016; Leifeld 2013; Rantala 2012; Vernon, Bischoff-Mattson, and Clark 2016). Ranging from 0-1, the Jaccard index measures the similarity between two narratives based on whether they appear or do not appear within each interview. This coefficient is calculated from a fourfold table as $a/(a+b+c)$, where a represents cases where both items occur, and b and c represent cases where one item is found but not the other. This measure is especially useful in the analysis of policy discourse, as it can be used to identify coalitions of speakers or positions using cluster analysis techniques (Leifeld 2010). This approach allows for visualization of the dominant discourse coalitions – or, the degree to which narratives tended to be used in concert with one another – within the debate over coal-fired power. Here, a Jaccard coefficient of 0 would indicate absolute division between two narratives (i.e. respondents who mentioned one narrative *never* mentioned the other), while a coefficient of 1 would indicate perfect similarity between two narratives (i.e. respondents who mentioned one narrative *always* mentioned the other and vice versa). All analyses were conducted using Provalis Research QDA Miner 5 (2017).

In the pages that follow, I present the results of my analysis. I begin by providing an overview of the pro-coal narratives that emerged across all qualitative interviews. Then, I compare the dominance of narratives across subsets of the interviews, engaging in-depth with the most dominant themes from each sample. I also explore how discourse coalitions are constructed, how these sets of narratives differ between national and state-level debates, and how these coalitions changed following the 2016 election.

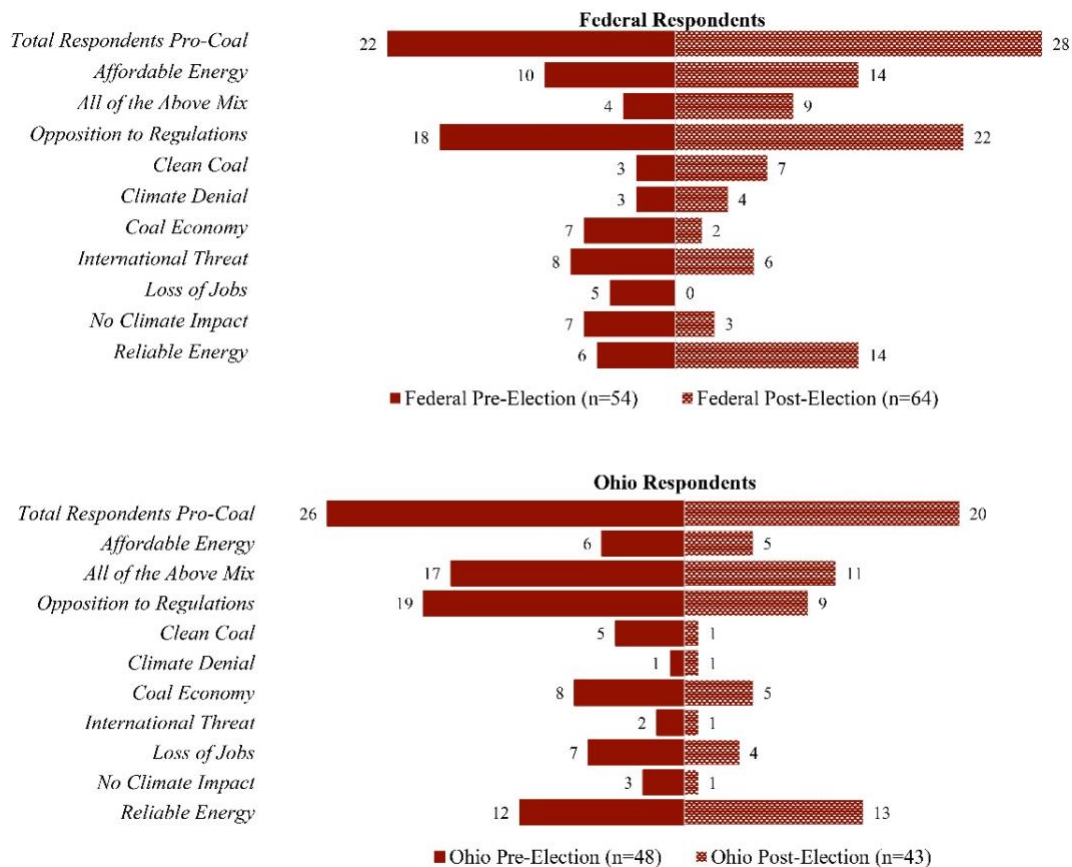
Results: Pro-Coal Narratives

Each of the pro-coal narratives identified in this analysis represents a distinct line of argument that provides legitimacy for the environmental privilege and political influence of the coal-fired industry. As noted by Schneider and colleagues, industry-driven rhetoric is not static - it adapts to policy contexts, economic pressures, and environmental challenges and engages with a variety of themes in an effort to secure discursive dominance (Schneider et al. 2016). Collectively, the narratives described above contribute to the broader ideological project of privileged accounts: “the diversion of attention, largely through the taken-for-granted but generally erroneous assumption that the environmental harm ‘must’ be for the benefit of us all” (Freudenburg 2006:3).

Figure 4.1 presents the frequency of respondents who mentioned each pro-coal narrative, for the total sample of respondents (n=209) and for each subset of the interviews (federal and Ohio, pre- and post-election). Narratives are not mutually exclusive. The top bar of each section reports the total number of respondents who engaged with at least one pro-coal narrative for that policy level and study period. At the federal level, 40% and 43% of all respondents made pro-coal statements in the pre- and post-election periods, respectively. Among all Ohio respondents, 54% made pro-coal statements in the pre-election period, compared to 46% in the post-election period. This indicates that pro-coal discourse was similarly dominant across both periods at the federal level, and that it was slightly more dominant overall in Ohio interviews. In the sections that follow, I describe the most prevalent narratives (those narratives employed by ten percent or more of all respondents in each level/period) and the structure of discourse

coalitions within each subset of interviews. The percentages reported below are calculated using the total number of interviews for each level and period, enabling me to measure the relative dominance of each narrative across all respondents in each sample.

Figure 4.1: Frequency of individual respondent engagement with pro-coal narratives



Federal Pre-Election

The most common pro-coal narrative in pre-election interviews with federal policy actors was opposition to environmental regulations. In total, one-third of all federal pre-election respondents employed *opposition to regulations* narratives, often in concert with other pro-coal lines of argument. The overall assumption of this narrative is that emissions

regulations such as the proposed Clean Power Plan and renewable energy incentives present an economically unfair and legally unsound attack on the coal industry. Members and supporters of the coal-fired power industry who were opposed to the Clean Power Plan framed the proposed regulations as “illegitimate,” an “overreach of federal authority,” far removed from the “how the Clean Air Act was intended to be used”, and a “heavy handed” and “invasive” infringement on state and regional authority in energy markets (multiple interviews – summer 2016).

In the months preceding the election of Donald Trump, some federal respondents justified their opposition to the Clean Power Plan by stating that its proposed reductions in CO₂ would have *no climate impact*. This line of argument claimed that emissions reductions from coal-fired power would be no more than a drop in the bucket of global greenhouse gas emissions, an argument in line with the “delegitimizing science” theme of privileged accounts. A university researcher known for his involvement with fossil fuel interest opposition to climate policies explained that the proposed regulations would: “only help a small amount. The U.S. has probably contributed somewhere like 20 percent of the global warming so far. Global warming in the last 100 years has been one degree. The U.S. has contributed one-fifth of one degree. The coal industry has produced less than a twentieth of a degree” (June 2016). Thirteen percent of all respondents in the federal pre-election interview sample employed a similar line of argument.

Some federal respondents (15% of the pre-election sample) also raised concerns about the negative impacts of the proposed EPA regulations on the competitiveness of U.S. companies within global economic markets, arguing that China and India burn large amounts of coal and have less environmental regulations, which creating pressure for

U.S. companies to either close or outsource labor and production. The following discussion of international competition by a trade industry representative exemplifies this narrative:

as long as steel is going to be made, do you want it to be made somewhere where there's fewer greenhouse gas emissions associated with a ton of steel or somewhere where it's more? That's our jumping off message on a lot of this, is how the economics and how the energy and environmental science all come together in [the] transfer of the associated emissions and the associated jobs overseas (June 2016).

These discussions of *international threat* shifted the blame for emissions generation to other countries and raised the specter of the decline of American industry in an era of global competition.

Beyond anti-regulations themes, discussion of the need for *affordable energy* served as an additional discursive tactic by which federal policy actors justified the ongoing use of coal for electric generation in the months leading up to the election. Nearly one-fifth of all respondents engaged this narrative, which is tied to the “economic impacts” theme of privileged accounts. This line of argument centered on the role of low-cost coal-fired electricity in the American economy and the potential costs to consumers should energy markets continue to move away from coal. As the director of an energy policy research center explained, coal provides “an abundant supply of a very cheap energy that's allowed us to build a manufacturing sector that was next to none for a long time. Building that manufacturing sector allowed us to build the middle class in America – really there's a lot about American society that's stronger and better because of the coal industry” (May 2016). The following statement from a representative of an energy-

focused conservative think tank exemplifies the concerns of pro-coal respondents regarding the cost of regulations for ratepayers:

our motivation is to produce energy in a market-based way so that consumers and companies can reap the benefits of low-cost energy. The only way to get low costs is not to subsidize it, but to let the free market work. Because as we tell people, it's not just your electric bill that's going to go up under the Clean Power Plan, but so is your daycare. So is your church. So is your firehouse. Your school. Many of those taxes you pay are for their electricity: not only are you going to pay more for your energy, but your taxes are going to go up to pay for the firehouse and the school and all these other things. It's a bad system that's worth fighting against (June 2016).

On the other hand, although the notion of environmental regulation as an enemy of blue collar workers has been a central element of the Trump Campaign's rhetoric and the new Administration's goal of "putting coal country back to work" (The White House, 2017a), I do not find that it was a particularly dominant storyline within the federal discourse preceding the 2016 election: less than 10% of respondents mentioned the threat of job losses.

When considering the connections between narratives, there is evidence of a strong discourse coalition among the narratives used by respondents who opposed the Clean Power Plan in the pre-election period. These respondents tended to engage with multiple lines of argument as they discussed their reasons for opposing the proposed regulation. For example, a professor conducting research for a conservative energy policy center argued that implementation of the Clean Power Plan would:

cause us to shut down a tremendous amount of baseload coal capacity that would make our energy more expensive in this country, would reduce reserve margins, thus making energy less reliable, and would also incur a tremendous amount of additional costs in the supply of electricity in this country through the development of additional transmission, distribution, and grid investment to be able to bring in new sources of renewable power but here's the catch: all of those

sources of renewable power *are going to need backup* (May 2016, emphasis added).

This statement exemplifies the interrelated nature of the narratives that make up pro-coal privileged accounts. While engaging in an *opposition to regulations* line of argument, the speaker also employs the narratives of *reliable energy*, *coal economy*, and *affordable energy*. Other respondents, many of whom represented conservative think tanks or trade associations, also combined multiple narratives as they described their organizations' opposition to regulations.

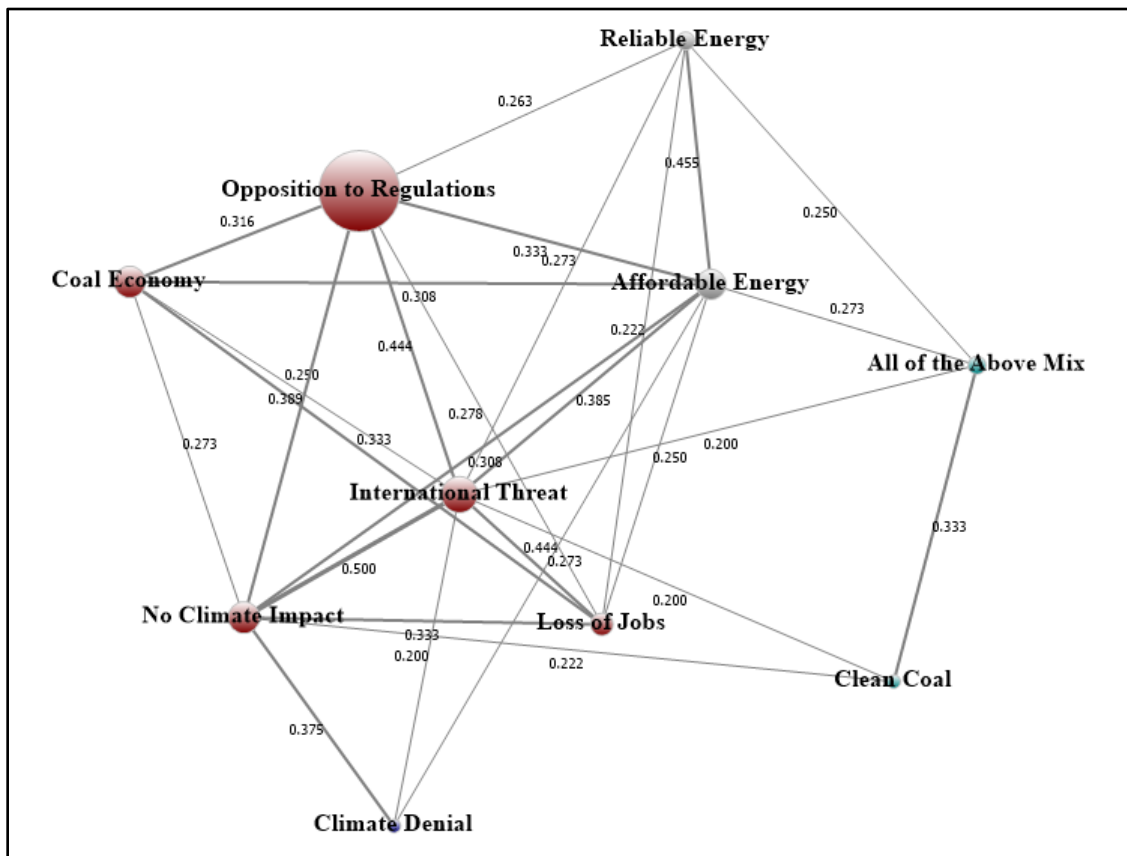
The following statement, part of an interview with the director of a national trade association provides another example of how pro-coal interests engaged with multiple storylines. This statement, in which the respondent describes his testimony in a Congressional hearing regarding the proposed Clean Power Plan, includes the narratives of *affordable energy*, *international threat*, *all of the above mix*, *reliable energy*, and *coal economy*:

the *cost of electricity* is vitally important [...] relatively small changes can have *substantial impacts* to energy-intensive trade industries. What we want is *low cost energy to compete with the likes of places like China, India*, and so forth. *Coal is a very low-cost source* of BTU energy for product generation, and we need to utilize *a diverse energy mix* for electricity production in the United States. It is dangerous vis-a-vis *cost and reliability* if we get *too dependent on any one source of energy* (July 2016, emphasis added).

Figure 4.2 shows the relationships between pro-coal narratives for the federal pre-election sample using nonmetric multidimensional scaling based on the Jaccard index. In the discourse diagrams in this chapter, the size of each node represents the number of respondents in the sample who engaged with each individual narrative, with larger nodes representing more dominant narratives. The lines between nodes represent the links

between narratives and report the Jaccard coefficient of similarity for each link. All links with Jaccard coefficients of 0.2 or higher are displayed. The coalition of narratives used in opposition to the Clean Power Plan is visible in the left side of the figure, highlighted in red. Two smaller coalitions, one used in discussions of the necessity of coal-fired power (highlighted in grey) and one used in discussions of coal technologies (highlighted in green), are visible to the right. The narrative of *climate denial* (highlighted in blue) is most isolated.

Figure 4.2: Pro-coal discourse coalitions – federal pre-election



Ohio Pre-Election

At the state level, I observe both similarities and differences in pro-coal narratives compared to the pre-election federal discourse discussed above. As in the federal sample, *opposition to regulations* themes were the most dominant component of pre-election discourse at the state level, with 40% of respondents discussing opposition to existing or proposed regulations. In the pre-election period, these narratives focused on the EPA's Clean Power Plan as well as on Ohio's Renewable Portfolio Standard (RPS), an embattled policy intended to reduce the state's greenhouse gas emissions (see Chapter 2 for a complete description of this policy debate).

Opposition to regulations narratives that focused on federal policies centered on concerns about the legality and economic impacts of EPA regulations. For example, a representative of an Ohio-based business association that opposed all types of environmental regulation explained that his organization's "biggest concern with the Clean Power Plan is that it's just not lawful. The rule is not based on any federal statute" (July 2016). Other respondents cited opposition to federal regulation of state-level energy markets: "we don't think the federal government needs to come in heavy handedly and dictate how we make decisions" explained an Ohio-based trade association representative (July 2016). Some respondents framed the coal-fired power industry as a victim of overly punitive EPA regulations, a narrative connected to the broader trope of the "war on coal" (Bodenhamer 2016). When asked about the future for coal in the US, a trade association representative working on energy policy in the Midwest expressed his concern about the industry's survival should the Clean Power Plan be implemented,

saying, “the coal industry has really taken it to the chin with regulation after regulation after regulation over the past eight years” (July 2016).

Ohio respondents engaged a different set of *opposition to regulations* narratives when voicing opposition to the state’s RPS during the pre-election period. Broadly, pro-coal respondents saw “mandates” such as the RPS as “discriminating against coal” and as contributing to the “punitive” regulatory climate surrounding coal-fired electric generation (multiple interviews, summer 2016). By framing the standards as “mandates,” these respondents engaged with established conservative narratives of free-market competition and government overreach. A representative of a state-level business association explained that “if [renewable energy] is good for your business, you will take it up on your own [...] the government shouldn’t be forcing those behaviors. If the market’s going to get there, it will get there.” Later, in a discussion about wind power in the state, he explained that while the members of his organization were “open” to renewable energy, “the idea of government subsidization of it is what drives them crazy” (July 2016). Nearly every statement made in opposition to Ohio’s renewable standards in the pre-election period engaged with this “anti-mandate” frame (trade association representative, July 2016). However, it is important to note that these arguments did not imply outright rejection of renewable energy. Rather, pro-coal respondents engaged broader narratives about free market competition in their arguments against the renewable standard while also framing their long-term intentions as environmentally friendly. For example, a representative of an “energy intensive” manufacturing company explained his desire to move away from “the regulatory push for renewable energy”

toward “policies that get existing regulations out of the way, so we can have a market pool [that incentivizes] renewable energy” (September 2016).

Turning to narratives associated with *opposition to regulations* in the pre-election period, I find that the themes of *coal economy* and *loss of jobs* were more common among respondents in Ohio than federal respondents. Seventeen percent of Ohio respondents engaged in the discussion of the economic impacts of regulations (compared to 12% of all federal pre-election respondents) and 15% of Ohio respondents raised the topic of layoffs or unemployment due to regulations (compared to 9% at the federal level). This slight increase in discourse around jobs and the economy at the state level makes sense given that coal makes up a large proportion of Ohio’s economy and energy markets (EIA, 2017). As a think tank director working on energy issues at both the federal level and in the state of Ohio explained, any discussion of regulation of coal-fired power in Ohio brings up the threat of job losses: “we’re literally talking about our jobs and our industry. And either you’re with us or you’re against us. And it’s clear that you’re not with us” (August 2016).

Additionally, I find that Ohio respondents raised the topic of *affordable energy* within broader claims that environmental regulations would lead to economic decline. As one utility lawyer explained, the implementation of the RPS required upgrades to the grid infrastructure as well as the purchase of coal-fired power from outside the state in order to “keep the lights on,” which led to additional costs for utilities and their industrial and residential customers that then trickled out to the state’s economy (August 2016). This line of argument is related to statements that a “cascade of negative price consequences from federal regulatory actions” like the Clean Power Plan (energy company

representative, August 2016), mirroring the discussion of affordability at the federal level in the pre-election period. Overall, 13% of Ohio respondents in the pre-election period engaged with the narrative of coal as source of *affordable energy*.

I find that the narrative of needing an *all of the above mix* of fuel sources in energy portfolios was more dominant among state-level policy actors than it was at the federal level during the pre-election period: 35% of all Ohio respondents engaged this narrative, compared to only 7% of federal respondents. This divergence can be attributed to a difference in organizational focus between the two policy arenas: whereas federal respondents tended to be more concerned about sweeping regulations, Ohio respondents were more involved in specific decisions related to the state's energy markets and the day-to-day operations of the companies tied to the electric grid. Like the "anti-mandates" narratives used in arguments against the state's RPS, the narrative of the *all of the above mix* served as a discursive construction within which respondents could advocate for the interests of the coal-fired power industry while simultaneously engaging the rhetoric of sustainability. The organization position described by a trade association representative exemplifies this framework:

we support the state having a diversified energy portfolio. We believe in an all of the above approach. We don't believe in turning our back on the natural resources we have here, but, at the same time, we believe that there should be renewables in the mix. But we've never tied ourselves, and our policy, to the specifics of the current portfolio (July 2016).

By declaring that they were "agnostic" about fuel sources, respondents attempted to insulate their anti-regulatory actions within narratives that sounded as if they embraced environmental regulation. For example, the CEO of a manufacturing company that had been heavily involved in the state's opposition to the Clean Power Plan and the fight to

repeal the RPS, stated “it's not like we care what they use to make the electricity. If it's compliant with environmental regulations, I don't care if we burn lawn furniture” (August 2016).

Discussions of coal as part of a diverse energy portfolio dovetailed with discussions of coal as a necessary source of *reliable energy*. In the pre-election period, 25% of Ohio respondents mentioned concerns about reliability due to the decline of coal-fired power in the energy mix. Members of the business community tended to be quite specific in about their concerns regarding threats to reliability. For example, the manufacturing company CEO quoted above explained in detail that the reliable electricity generated from coal was essential for his business for three reasons:

we need that energy to be there when demanded because we have to keep our promises to our customers [...] it's not uncommon to have a contract penalty of \$1 million a day for missing a delivery to one of these customers of ours - automotive companies and aerospace companies, or jet manufacturers [...] so reliability's really important to our production schedule. We can't miss dates. The second reason that reliability's important is if you have a sudden loss of power to a large energy intensive process, you can damage the equipment. It's a lot of money. [...] And the third, and most important reason that reliability matters is safety. If you suddenly shut down these energy intensive processes, you can hurt somebody and kill them (September 2016).

Ohio policymakers tended to express broader concerns about reliability across the grid, using narratives that were similar to those observed at the federal level. As the environmental director of a state government office explained, “wind is great, solar is great, but wind only runs 38 percent of the time in Ohio so you need to have something backing that up or offer the cheapest available option to help with that. Whatever works, works” (July 2016).

Similar to pre-election results at the federal level, the connections between pro-coal narratives in the pre-election period in Ohio illustrate that respondents used a varied set of narratives in favor of coal-fired power and in opposition to environmental regulations. These narratives often appeared together within individual statements. For example, a prominent trade association representative mentioned *reliable energy* and *affordable energy*, as well as concerns about federal overreach and legal authority, while describing his opposition to the Clean Power Plan:

a large number of the power plants that were the *backbone of electricity* are either not in existence any longer or won't be in a very short period of time. Which is just one of the many things that begs the question, what takes its place? And *that's not even the EPA's job*. The EPA's job isn't to worry about things like that because it's not what the Clean Air Act says.[...] The problem is you end up with some of these unintended consequences. And in this case, it's *a reliability issue*. And it's also *a cost issue* (August 2016, emphasis added).

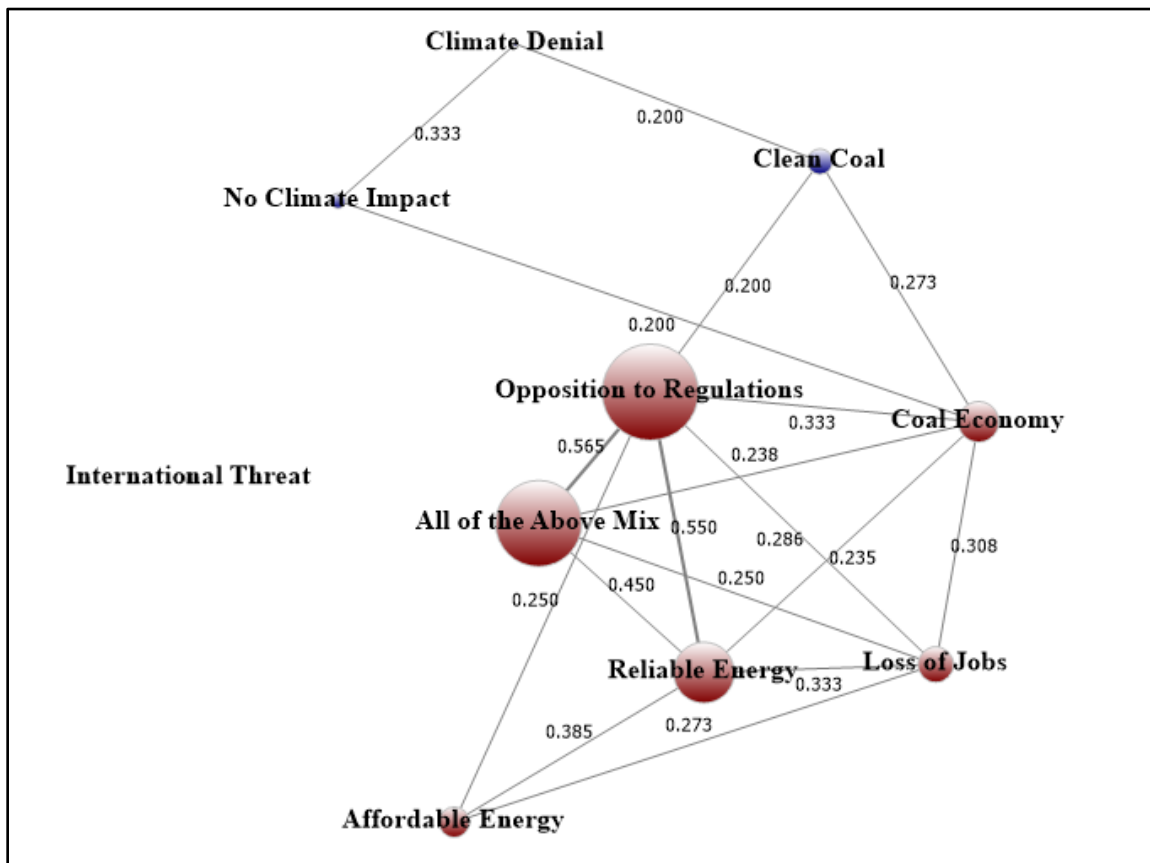
In a similar discussion with a representative of a smaller trade association, narratives of *coal economy*, *loss of jobs*, and *all of the above mix* serve as complementary lines of argument against federal regulations:

there's a reasonable conversation you can have about the *place of coal moving forward*, but [...] these coal plants are in some of the most *economically disadvantaged places* in the entire state. A lot of these *coal plants provide jobs* for a lot of people [...] There's a feeling sometimes that those groups – U.S. EPA – are *rulemaking from Washington*. Sometimes the practical implications are not understood, and the Clean Power Plan is a perfect example. It's just *an impractical rule to comply with*. A lot of folks feel that way. If there was more room for the states to set their own goals, we [...] could tailor the goal to our state, but sometimes *we feel like we're being dictated to* (July 2016, emphasis added)

Figure 4.3 shows the relationships between pro-coal narratives for the Ohio pre-election sample. Unlike the federal pre-election interviews, where I observed a variety of discourse coalitions, pre-election narratives in Ohio were grouped into a single and relatively cohesive coalition (highlighted in red). Discussion of *climate denial*, *no climate*

impact, clean coal, and international threat were peripheral to the dominant discourse coalition, mentioned by only a few respondents.

Figure 4.3: Pro-coal discourse coalitions – Ohio pre-election



Federal Post-Election

I now turn to analysis of interview data from the post-election period, beginning with the responses of federal policy actors. During the first 100 days of the Trump Administration, the President and his appointees took a variety of actions that benefitted coal industry interests, including revoking the Office of Surface Mining's Stream Protection rule, lifting the freeze on new coal leases on public lands, withdrawing guidance for the

inclusion of greenhouse gas emissions in environmental reviews, rescinding limits on the discharge of toxic metals from power plants into waterways, delaying a lawsuit over the regulation of mercury air toxics from power plants, and ordering the “immediate reevaluation” of the Clean Power Plan (Popovich and Schlossberg 2017). This last action, part of Trump’s campaign platform, essentially guaranteed that the proposed EPA rule would either be repealed or revised, a policy shift that was hailed as a long-sought victory for the coal industry (Harvey 2016). Rather than finding that *opposition to regulations* narratives declined in the context of sweeping regulatory rollbacks, I find that they remained dominant, with more than one-third of all federal respondents employing this line of argument. However, the content of these narratives differs from the pre-election discourse in several ways, reflecting a shift in rhetorical strategy among pro-coal policy actors.

First, pro-coal respondents shifted the target of their criticism toward the broader structure of federal energy policy and environmental regulation as the threat of the Clean Power Plan disappeared. Respondents argued that the EPA’s actions constituted an “overreach of federal authority” through the Mercury and Air Toxics rule and the proposed Clean Power Plan, citing legal claims that Clean Air Act had been “used inappropriately to force states to set their electrical mix” (utility association representative, May 2017). As a prominent lobbyist whose clients included coal mining and utility companies explained, “the EPA was not designed to run our energy policy and it has basically been the de-facto maker of energy policy for years” (May 2017). Second, federal respondents shifted their focus toward other policy instruments such as tax credits for renewable energy and subnational renewable energy initiatives, arguing that

“government is picking winners and losers” through subsidies and “mandates” (trade association representative, May 2017). As one university researcher whose recent work was funded by fossil fuel interests explained, “when you prop up renewable energy with all these subsidies, that becomes a competitor to carbon-based energy. But if those subsidies fall away, there’s no way they can compete against carbon for cost” (April 2017).

Another component of *opposition to regulations* narratives among federal policy actors in the post-election period is the claim that environmental regulations are flawed because they “distort free markets to achieve a desired policy objective” (think tank representative, April 2017). Numerous representatives of national business associations representing energy and manufacturing sectors took the position that EPA emissions restrictions, as well as the threat of regulations in the future, have “forced” coal plants to retire (multiple interviews, spring 2017). Rather than blaming the increased availability of cheap natural gas for the uptick in the retirement of coal-fired power plants, these respondents balanced their statements about low natural gas prices with statements about federal overreach and over involvement in energy markets. The coal and fossil fuel lobbyist quoted above explained in detail:

it is a huge fallacy for people to say that the price of natural gas is what has caused coal-fired power plants to shut down [...] That’s not the decision-making process. The decision-making process is ‘I have this coal-fired power plant. I have to add five million dollars of control equipment to it. Do I add the equipment, or do I fuel switch?’ and the equipment that they have to add is done by regulation and so [EPA administrators under Obama] consistently said that it’s the price of natural gas that is driving coal use down. That’s not accurate. You must have that driver before they make that decision. No CEO is going to wake up and say ‘the price of gas is so cheap I am going to spend half a million dollars to fuel switch’ – it doesn’t make cost-benefit sense (May 2017).

In almost the same breath, this lobbyist went on to explain that because the regulatory structure had “not operated under a free market” it was now necessary to provide subsidies to support coal-fired electricity generation. This line of argument, which rejects financial incentives for renewable energy while it simultaneously justifies subsidies for coal-fired generation, was common among representatives of national energy, trade, and manufacturing associations in the post-election period.

Arguments about the necessity of subsidizing “baseload generation” – electric generation facilities that operate on an around-the-clock basis in order produce electricity at a constant rate to meet the minimum required amount of power on the grid (EIA, 2018) – are tied to the second dominant pro-coal narrative identified in post-election interviews with federal policy actors: the notion that coal-fired power provides a vital service (reliable baseload power) that cannot be supplied using other fuel sources. Claims about the inherent reliability of coal-fired power, which are an iteration of the “critical services” theme of privileged accounts identified by Freudenburg (2005), were twice as common in the post-election period, increasing from 11% of all pre-election federal respondents to 22%. This discursive shift may be explained by the fact that market competition from natural gas had continued to increase in the year surrounding the election (EIA, 2017), leading to new announcements of plans to retire coal-fired power plants (EIA, 2017b). This economic pressure took place despite the efforts of industry actors and the Trump Administration to lessen the impact of environmental regulations on the industry. In the context of the ongoing – and arguably market-based – decline of coal, proponents of the industry turned to the rhetoric of coal as an irreplaceable source of electricity generation. Reliant on the tropes that renewable energy cannot service the grid “if the sun’s not

shining enough and the wind's not blowing" (university researcher, June 2017) and that the "intermittent nature of wind and solar" are "dangerous to the stability of the grid" (lobbyist, May 2017), this narrative of *reliable energy* discredits renewable and clean energy and positions coal as a superior fuel source.

The notion of coal as a critical source of baseload electricity generation is tied to the narrative of promoting "a diverse energy portfolio" or *all of the above mix* of fuel sources. The number of respondents employing this narrative at the federal level also increased twofold between the pre- and post-election study periods, rising from 7% to 14% of all respondents. As discussed in the Ohio pre-election results, this framing represents an effort by coal industry interests to co-opt environmental discourse (e.g. incorporating renewable energy to diversify the energy mix) as justification for keeping coal plants online. Piggybacking on post-election arguments that coal should continue to be part of the energy mix in the US, some respondents also extolled the virtues of *clean coal*. This narrative took two forms, with respondents either discussing U.S. coal-fired power as already being clean due to existing regulations and technological advances in air toxics reduction (e.g. "we've got the cleanest coal-fired power fleet in the world today" – university researcher, May 2017) or by discussing the need for the development of additional carbon reduction technology.

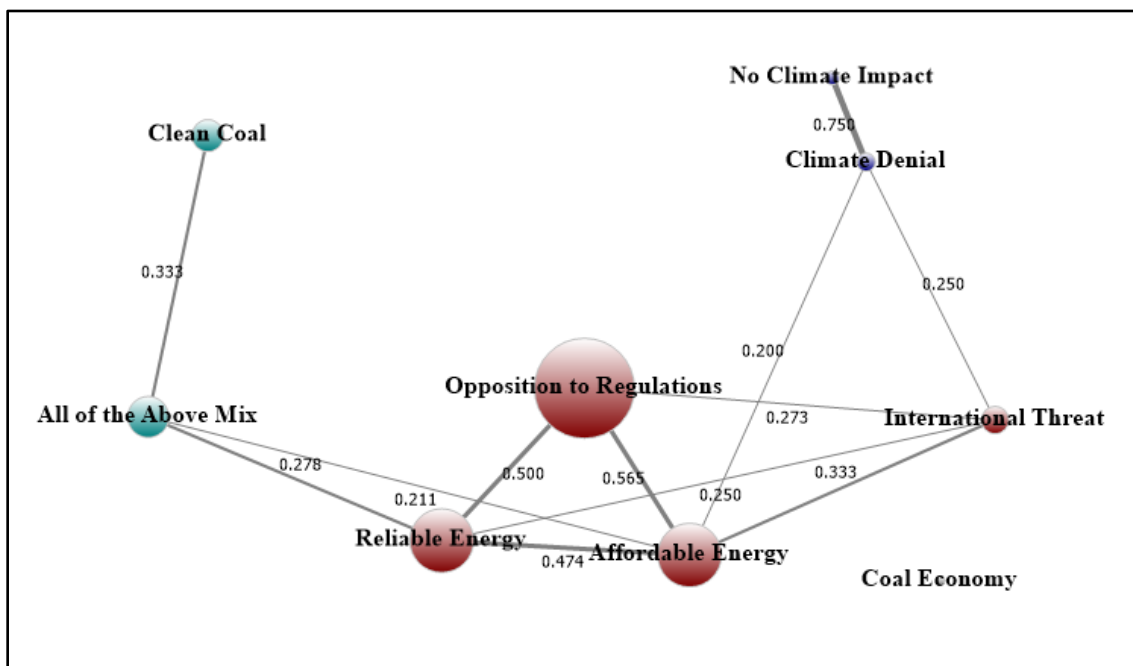
Discussion of coal as form of *affordable energy* remained prominent within post-election discourse at the federal level (22% of all respondents). Some respondents employed a narrative Schneider and colleagues (2016) identify as "energy poverty," which posits that international development requires energy use and that coal is the least expensive and thus most accessible fuel source with which to address concerns about

global poverty. As the director of a prominent conservative think tank in Washington, DC explained, “at the end of the day you’ve still got 1.3 billion people who don’t have any electricity at all and coal still represents the quickest, most efficient, cheapest way to bring them electricity” (May 2017). In the words of a representative from another conservative think tank focusing on energy issues, “people are dying because they don’t have access to electricity. There are preventable deaths in the developing world. I would hope that we’re not focused on [...] misguided energy policies so that we can actually help raise people out of poverty across the world” (May 2017). Whereas respondents discussed international economic concerns, discussion of coal as a central element of the U.S. economy declined from 13% to just 3% of federal respondents between the pre- and post-election periods. This discursive shift is likely related to the Trump Administration’s stated commitment to “reducing regulatory burden” and “ending the war on coal” (The White House, 2017b), a political reversal that upended the trope of impending economic catastrophe due to government policies.

Figure 4.4 shows the relationships between pro-coal narratives for the federal post-election sample (size of nodes indicates narrative dominance, while lines represent strength of co-occurrence as measured by the Jaccard index). A thinning out in the discourse can be observed when comparing this diagram to the pre-election discourse coalitions presented in the previous federal diagram (Figure 4.2). The reduced complexity in Figure 4.4 indicates that pro-coal actors used a more cohesive set of narratives in the post-election period. *Opposition to regulations* narratives remain dominant, with the most prominent discourse coalition (highlighted in red) showing more co-occurrence between discussion of regulations and the themes of *affordable energy* and *reliable energy* in the

post-election period. The expansion of narratives supporting an *all of the above mix* of fuel sources and touting the benefits of *clean coal* is visible in the network at the top left of Figure 4.2 (highlighted in green). *Climate denial* remains peripheral, with the *no climate impact* narrative nearly disappearing with the rollback of the Clean Power Plan, as seen in the top right of the figure (highlighted in blue). Discussion of the *coal economy* was only employed by one respondents and did not co-occur with any other narratives. Discussion of *loss of jobs* is entirely absent from the federal post-election discourse.

Figure 4.4: Pro-coal discourse coalitions – federal post-election



Ohio Post-Election

Finally, I turn interviews conducted during the post-election period in Ohio. No longer concerned with the threat of the Clean Power Plan and emboldened by the Trump

Administration's promises of regulatory relief, pro-coal respondents were more likely to discuss the virtues of coal than they were to criticize federal regulations and policy initiatives (Kowalski 2017a). As a representative of a conservative think tank explained, "there are plenty of changes to regulations that our organization obviously supports, and that will make the regulatory situation less punitive towards coal" (May 2017). Further, debate over the RPS waned after Governor Kasich vetoed a bill that would have extended the freeze of the policy, which effectively reinstated the besieged standards (Kowalski 2017b). This outcome was a likely contributor to a shift in pro-coal narratives toward other aspects of regional and state energy markets. Post-election respondents were more likely to discuss efforts to adapt within the confines of the standards than to discuss efforts to stall or dismantle them. A policymaker who had been a vocal opponent of the RPS before the veto complained that achieving the benchmarks of the reinstated standards would be expensive for businesses and ratepayers:

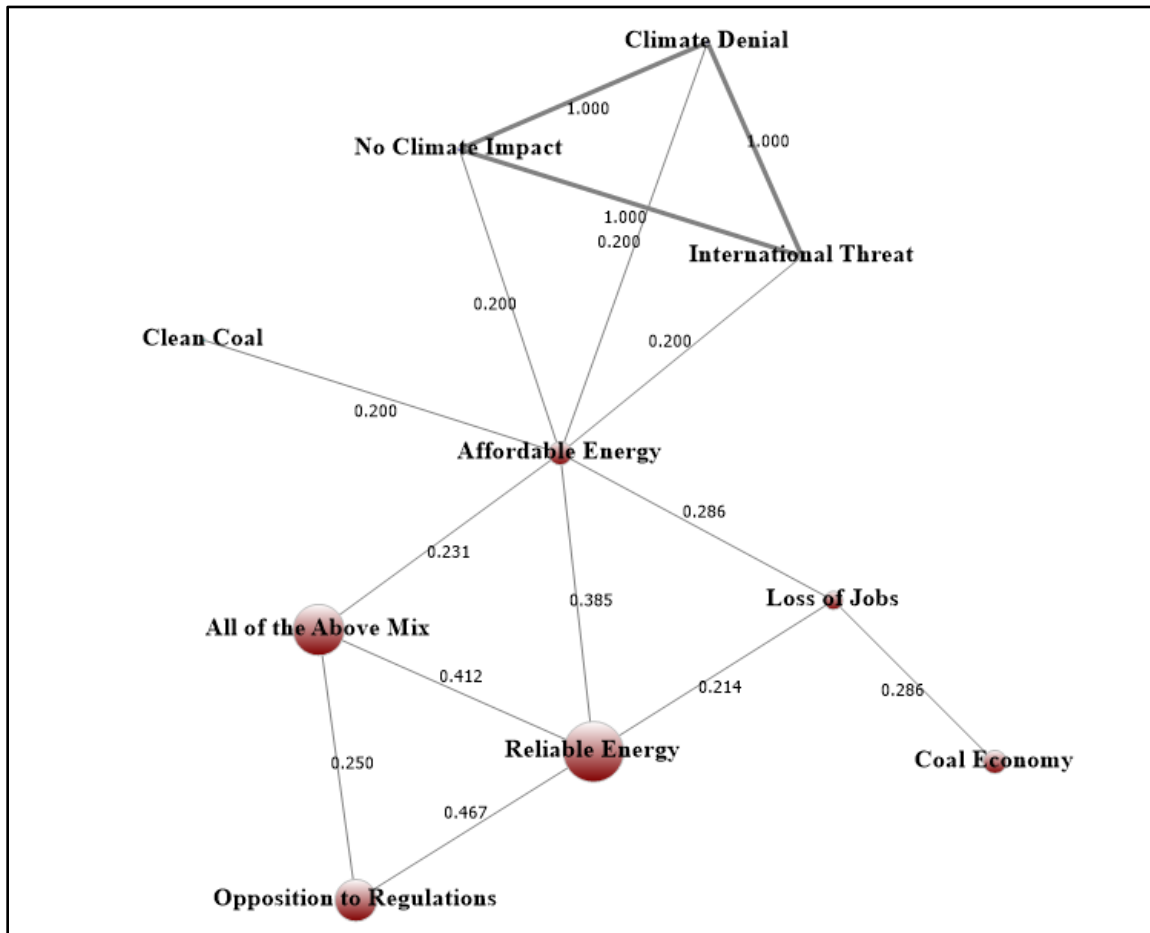
as we walk up mandate mountain, it continues to get more expensive. So, what we're focused on is, number one, counting all of the energy efficiency actions that exist as counting towards meeting the energy efficiency mandate, and number two, letting businesses opt out of the energy efficiency mandate on the theory that they buy electricity by the bushel full (May 2017).

Overall, engagement with *opposition to regulations* narratives dropped by half from the pre- to post-election period in the state, with only 20% of all post-election Ohio respondents mentioning their opposition to regulations. Likely due to the changes in the legislative landscape, this figure is the lowest observed incidence of this narrative across the four subsets of interviews, and the only case in which arguments against regulations are less dominant than other pro-coal narratives.

I find that themes of *reliable energy* and *all of the above mix* were the most dominant narratives in the post-election discourse in Ohio, mentioned by 30% and 26% of all respondents, respectively. Whereas policy changes at the federal level were almost entirely positive for the coal-fired power industry, policy actors in Ohio responded to a more mixed policy landscape: although the threat of the Clean Power Plan had faded, the state's RPS remained in force. Just as at the federal level, pro-coal interests scrambled to prop up arguments about the long-term necessity of coal-fired power in an era of exponential growth in the natural gas sector. In Ohio, respondents continued to express concern about grid reliability, with one state legislator explaining that the regional energy market has become too reliant on natural gas and “puts too many eggs in one basket” (May 2017). These concerns were connected to the notion that coal should be kept as part of the long-term energy mix in the state. Whereas I observe an increase in the *all of the above mix* narrative between the pre- and post-election periods at the federal level, I find that this narrative, although more prominent overall, declined among Ohio respondents (from 35% of respondents in the pre-election sample to 26% in the post-election sample). This divergence in federal and state-level discourse likely reflects differences in regulatory regimes and policy concerns: whereas federal policy actors were more concerned with overarching regulatory concerns, policy actors in Ohio had always been acutely aware of changes impacting the energy markets in their state. As a representative of an Ohio government official's office explained, “we want to be supportive of all the technologies. We think a diverse portfolio is good to have. Coal has been a consistent and majority aspect of our generation portfolio [...] so you can't disregard it by any means. We just take an ‘all of the above’ approach. We think that it's all good” (May 2017).

Figure 4.5 shows the relationships between pro-coal narratives for the Ohio post-election sample. It is notable that the Ohio post-election discourse differs from both periods of federal interviews and the Ohio pre-election interviews in that *opposition to regulations* narratives are not the most dominant line of argument. One explanatory factor may be that changes in the policy landscape – namely, the promised demise of the Clean Power Plan (viewed as positive among proponents of the coal-fired power industry) and the reinstatement of Ohio’s RPS (generally viewed as an inevitable policy outcome under Governor Kasich) – meant that questions about federal regulations and state-level legislative debates were fairly settled during the time post-election interviews were being conducted. Instead, the most contentious debate in the post-election period centered around regulatory cases at the state utilities commission. The strongest discourse coalition is made up of three narratives *reliable energy*, *all of the above mix*, and *opposition to regulations*. The narrative of *affordable energy* was less prominent but remained tied to more dominant lines of argument in support of coal-fired power. Further, the narratives of *coal economy* and *loss of jobs* (highlighted in grey) are separate from the dominant discourse network, indicating that pro-coal arguments focused less on economic and employment concerns in the post-election period in Ohio. Similar to the Ohio pre-election diagram, *climate denial*, *no climate impact*, *international threat*, and *clean coal* were mentioned infrequently and remain peripheral within the discourse diagram.

Figure 4.5: Pro-coal discourse coalitions – Ohio post-election



Contextualizing Pro-Coal Narratives

This chapter has presented an analysis of pro-coal framing in the debate over coal-fired power in the U.S. through an analysis of qualitative data from interviews with policy actors at the federal level and in the state of Ohio. In line with the findings of previous studies of discursive power and environmental privilege, I find that the interests of the coal-fired power industry are supported by a specific set of pro-coal narratives (e.g.

Hoffman and Ventresca 1999; Matthews 2011; Shearer et al. 2013). Narratives related to *opposition to regulations* made up the most prevalent line of argument in all samples except for the Ohio post-election interviews. The narrative of *reliable energy* (a form of the “critical services” theme of privileged accounts identified by Freudenburg) was also prevalent in the post-election discourse at the federal level and in both study periods at the state level. Rather than being static, privileged accounts are adaptive and responsive – they are strategic tools with which industry actors and supporters respond to policy contexts and economic challenges (Freudenburg 2005). Discourse coalitions between dominant narratives and more peripheral lines of argument varied across the subsets of the interview sample, reflecting the connections between changing policy contexts and the discursive strategies of industry proponents.

Although the dominant themes of these claims are notably similar to the categories of privileged accounts identified by Freudenberg himself in 2005, economic concerns and attacks on climate science took a backseat to opposition to regulations and claims about the virtues and necessity of coal-fired power. This finding is consistent with recent studies of industry discourse (e.g. Bonds 2016; Schneider et al. 2016). It is notable that the two narratives associated with the theme of “delegitimizing science” – *climate denial* and the claim that regulations would have *no climate impact* – were least common across both policy levels and study periods and are among the most isolated clusters in the diagram. Although contrary to assumptions about the parameters of the debate over climate policy more broadly, this relative lack of climate denial within qualitative interview data aligns with previous studies of recent iterations coal industry rhetoric (Bonds 2016; Schlichting 2013; Schneider et al. 2016) as well as more recent reflections

on the content of federal carbon policy debates (Fisher et al. 2018, 2013). In contrast to recent research, these findings do not show evidence of interview respondents engaging with narratives related to the theme of “U.S. industry independence” (Bodenhamer 2016).

When looking at discourse coalitions, the analyses presented in this chapter reveal the shifting connections between pro-coal narratives within interviews conducted before the 2016 election at the federal level. In the pre-election period, federal pro-coal narratives centered around discussions of legal questions and economic impacts related to proposed emissions regulations. In the months following the election, pro-coal arguments often emphasized the broader benefits of coal-fired power. The discourse coalition in the post-election period shows a dominant alliance between opposition to regulations and discussion of coal as a reliable and affordable source of energy. At the state level, the most prevalent narratives focused on more technical aspects of energy market dynamics such as energy mix and grid reliability, rather than the legal criticisms of regulatory regimes observed at the federal level. Among Ohio respondents, the discourse coalitions related to discussions of opposition to emissions regulations were similar across the pre- and post-election periods. However, discussion of opposition to regulations decreased by half in the months following the 2016 election.

Although the narrative content of these discourse coalitions shifted to align with policy contexts in the pre- and post-election periods, the core argument of *opposition to regulations* narratives – that coal is an essential source of energy that should not be regulated – remained a central element of the privileged accounts of members and supporters of the coal industry. Whereas the discourse coalitions surrounding anti-regulations themes tended to center on criticisms of regulations in the pre-election period,

respondents shifted toward a rhetorical strategy in the post-election period that emphasized the irreplaceability and necessity of coal as an affordable and reliable fuel rather than attacking established or proposed policy instruments. This change in the discourse suggests that privileged accounts are a constant mechanism of industrial environmental privilege: rather than a decrease in discourse as the regulatory contexts shift toward the interests of the coal-fired power industry, these findings show that legitimating discourses related to coal as a “vital” American energy source continue to be influential within environmental discourse (Gramling and Freudenburg 2012). Even though the content of these narratives transitioned from economic themes to the narrative of reliable energy, the central goal was the same: keep coal plants open despite mounting economic and environmental evidence about the benefits of retiring older, inefficient facilities.

Despite radical changes in national energy and environmental policy under the Trump Administration, proponents of coal-fired power have continued to maintain their legitimacy through the production and dissemination of strategic narratives about the necessity of coal. Although no longer under immediate threat of environmental regulations, the coal-fired power industry now faces the competition of the free market, a paradoxical challenge that leads industry advocates to argue for government subsidization and re-regulation after years of criticizing similar policies aimed at renewable and clean energy. Overall, these findings illustrate the enduring influence of industry discourse across shifting political and economic contexts. In the next chapter, I turn my attention to the relationship between privileged accounts and anti-coal counternarratives in the debate over coal-fired power.

Chapter 5: (Counter)Framing Coal-Fired Power

In chapter 4, the object of inquiry was the assemblage of strategic narratives that members and supporters of the coal-fired power industry use in their efforts to maintain the industry's political power and position in U.S. energy markets. The pro-coal discursive strategies described in the previous chapter – namely “privileged accounts” (Freudenburg 2005), “legitimizing discourses” (Sodero and Stoddart 2015), and “diversionary reframing” (Freudenburg and Alario 2007) – can, perhaps, be articulated more clearly by incorporating concepts from the study of collective action frames. In this chapter, I analyze the strategic narratives employed by respondents who expressed opposition to coal-fired power to develop a more complete understanding of the “privileged” position of industry accounts. I return to qualitative interview data, this time focusing on anti-coal discourse, to analyze the various ways environmental and industry-driven narratives compete within the overarching discursive structure of this contentious debate.

I begin by connecting the literature on environmental discourse to several key concepts from the literature on social movement framing, focusing on the concepts of counterframing and discursive opportunity structures. After a brief discussion of the political context and methods employed in my analysis, I present my findings. I identify the dominant narratives used in opposition to coal-fired power, comparing these discursive tactics to the dominant industry-driven narratives at the federal and state levels in the pre- and post-election periods. Rather than simply assessing the content of anti-coal

narratives, this analysis focuses on the dialectic nature of the discourse surrounding coal-fired power (Ellingson 1995).

Framing Processes

This chapter brings concepts from the social movements literature on collective action frames (Snow and Benford 1992; Snow and Benford 1988; Snow et al. 1986) into conversation with the literature on environmental discourse and legitimation discussed in the previous chapter. I incorporate this literature as an additional framework for understanding both sides of the debate over coal-fired power in relation to one another as well as to highlight the processes by which opponents of coal-fired power devise of and employ strategic narratives. Although social movements scholars have debated the definition of collective action frames in relation to narratives (see e.g. Polletta 1998), this project uses the social movements terminology of framing as a complementary set of concepts with which to explore the construction and dissemination of strategic narratives (what Hajer refers to as “storylines” 1993, 1995) within environmental debates. In the short overview that follows, I engage with two areas of interest from the broader field of research on collective action frames: counterframing and discursive opportunity structures (see Benford and Snow 2000 for an overview).

Within social movements literature, *framing* refers to the “signifying work” by which movement actors create meaningful discursive constructions of “relevant events and conditions in ways intended to mobilize potential adherents and constituents, to garner bystander support, and to demobilize antagonists” (Snow and Benford 1988, 198).

More specifically, *collective action frames* are “emergent action-oriented sets of beliefs that inspire meaning and legitimate social movement activities and campaigns” (Benford 1997:416; Benford and Snow 2000; Snow and Benford 1992). It is worth noting that social movements are not alone in the creation of frames (Coles 1998), which can be broadly conceptualized as the discursive constructions produced through the “meaning-making” efforts of movements, interest groups, industries, and other social and political actors (Ellingson 1995). From this perspective, frames are analytically distinct from ideology in that they serve as strategic interpretations that respond to, re-interpret, or capitalize on wider ideological constructs. As Benford and Snow explain, whereas ideology describes a “fairly pervasive and integrated set of beliefs and values that have considerable staying power,” collective action frames are “innovative amplifications and extensions of, or antidotes to, existing ideologies or components of them” (2000:613).

Framing processes take place within a multi-organizational and multi-institutional field comprised of a variety of social and political actors including social movements, private sector interests, civil society groups, state institutions, media, the public (Curtis and Zurcher 1973; Evans 1997; Meyer 1995). Studies of *counterframing* consider how competing interests create frames in response to, and in anticipation of, the framing practices of their opponents (Benford and Hunt 1994; Gallo-Cruz 2018; Mooney and Hunt 2009). To use Benford and Snow’s words,

the development, generation, and elaboration of collective action frames are contested processes. All actors within the collective action arena who engage in this reality construction work are embroiled in the politics of signification. This means that activists are not able to construct and impose on their intended targets any version of reality they would like (2000:625).

Rather, social movements and other policy actors are constantly anticipating and deflecting the counterframes of their opponents (Zuo and Benford 1995). These oppositional dynamics lead to what some scholars call *frame contests*, dialectical interactions between frames and counterframes brought about by the attempts of both sides of a debate to deflect, co-opt, or defend against the discursive claims of their opponents (Benford and Hunt 1994; Ryan 1991). At the same time, frames must connect with individual and cultural interpretations of the problem or issue at hand. Building on previous work by Snow and Benford (1988) and Benford and Hunt (1994), Zuo and Benford write, “whether or not movement actors’ initial framings and subsequent reframings *or* their opponents’ counter framings resonate depends on the extent to which the claims (or counterclaims) are consistent with what targets of mobilization know and believe about the world based on their observations, experiences, and cultural wisdom” (1995, 139, emphasis authors' own).

Another overarching focus within social movements research on collective action frames is resonance, or the alignment between movement ideologies and the target audience’s beliefs and experiences. The success of collective action frames depends on resonance not only within the bounded context of their claims, but also within broader ideological and cultural frameworks (see e.g. Benford and Snow 2000; Coy and Woehrle 1996; Heitlinger 1996; Jasper and Poulsen 1995; Sherkat and Ellison 1997; Snow and Benford 1988; Zuo and Benford 1995; see also Hart 1996; Jasper 1997; Swidler 1995). The concept of *cultural resonance* captures “the interrelations between movements frames and the cultural environment” and helps to “answer questions about the construction and potency of movement framing” (Kubal 1998:542; see also Berbrier

1998; Gamson 1988; Gamson and Modigliani 1989; Park 1998). In Gamson's words, cultural resonance can "increase the appeal of a frame by making it appear natural and familiar" within dominant cultural assumptions (Gamson 1992:135). Cultural resonance can be thought of as the compatibility of a frame within a *discursive opportunity structure*, defined by Ferree as the "institutionally anchored ways of thinking that provide a gradient of relative political acceptability to specific packages of ideas" (Ferree 2003:309; see also Cress and Snow 2000; Koopmans and Olzak 2004; McCammon et al. 2007). From this perspective, radical frames that are contradictory to the socially and politically acceptable ways of thinking about an issue may be less effective than frames that refer to more mainstream or hegemonic discourses (Ferree 2003; see also Ferree et al. 2002).

Thus, if policy actors in environmental debates are able to align their claims with dominant ideological constructs, or in the case of legitimating discourses, define "commonsense" knowledge in their own interests, they may see more success in achieving their goals (Foucault 1980; Gramling and Freudenburg 2012). This presents a paradox for policy actors that attempt to challenge the privileged accounts of industrial interests. As Hewitt and McCammon write, "the great challenge for movement actors is to construct frames so that they simultaneously resonate with *and contest* elements of the broader cultural and political environment" (2004:150 emphasis authors' own). This chapter engages the social movements concepts discussed above in tandem with the concept of privileged accounts to understand better the full discursive landscape surrounding the policy debate over coal-fired power.

“The War on Coal” vs “Climate Action”

Although I do not conduct this analysis with the goal of assessing the efficacy of narratives on either side of the debate, the election of Donald Trump and the victory it signaled for the coal industry should be considered as evidence of the relative success of pro-coal privileged accounts. Trump had campaigned on a platform of “bringing back coal,” a narrative that resonated with white, working class voters in swing states (O’Brien 2016). At a campaign stop in West Virginia, for example members of the campaign team handed out signs reading “Trump Digs Coal” to the crowd and Trump posed for photos in a hard hat given to him by the state’s coal association (Marra 2016). Meanwhile, the Clinton campaign platform emphasized clean energy and climate policy (Clinton 2016). In a particularly uncomfortable misstep, Clinton stated “we’re going to put a lot of coal miners and coal companies out of business” during a town hall in Columbus, Ohio in March 2016, producing a soundbite that did not help her already strained efforts to win votes in coal country (Long 2016).

In the months following his inauguration, President Trump began his promised regulatory rollbacks (Popovich and Schlossberg 2017), made coal-friendly appointments to federal agencies (Roberts 2017), and hosted coal miners at the White House for a press event for repeal of the Stream Protection Rule (The White House 2017a). At a June event titled “Unleashing American Energy,” surrounded by miners from Corsa Coal, Trump announced “we have finally ended the war on coal [...] we’re ending intrusive EPA regulations that kill jobs, hurt family farmers and ranchers, and raise the price of energy so quickly and so substantially” (The White House 2017a). This chapter explores the

structure of pro-coal and anti-coal narratives at the federal level and in the state of Ohio around the 2016 election, focusing on the relationship of environmental narratives to the industry narratives detailed in the previous chapter. In particular, I explore how opponents of coal-fired power engaged in counterframing efforts in the pre-election and post-election period and assess how these frames related to the wider discursive opportunity structure of the debate over coal-fired power.

I present the results of my analysis of frame contests between pro-coal and anti-coal narratives below. I begin by providing an overview of the anti-coal narratives that emerged in the pre- and post-election interviews, comparing the distribution of these narratives in relationship to pro-coal narratives across the federal and state levels. Similar to the previous chapter, the discourse diagrams displayed in this chapter were created using nonmetric multidimensional scaling based on the Jaccard similarity index using Provalis Research QDAminer 5 (for a full description of the Jaccard index see Chapter 4). Co-occurrence of narratives at the individual respondent level is displayed via the lines between nodes. For the diagram for each study period, pro-coal and anti-coal narratives occurring in ten percent or more of interviews are displayed, with all co-occurrence links with Jaccard coefficients of 0.2 or higher reported. The proximity of nodes represents the position of each node within the debate. The size of each node represents the proportion of pro-coal or anti-coal discourse occupied by the associated narrative (the number of respondents engaging a specific narrative divided by the total number of respondents engaging at least one narrative within the pro-coal or anti-coal discourse coalitions).

Findings: Anti-Coal Narratives

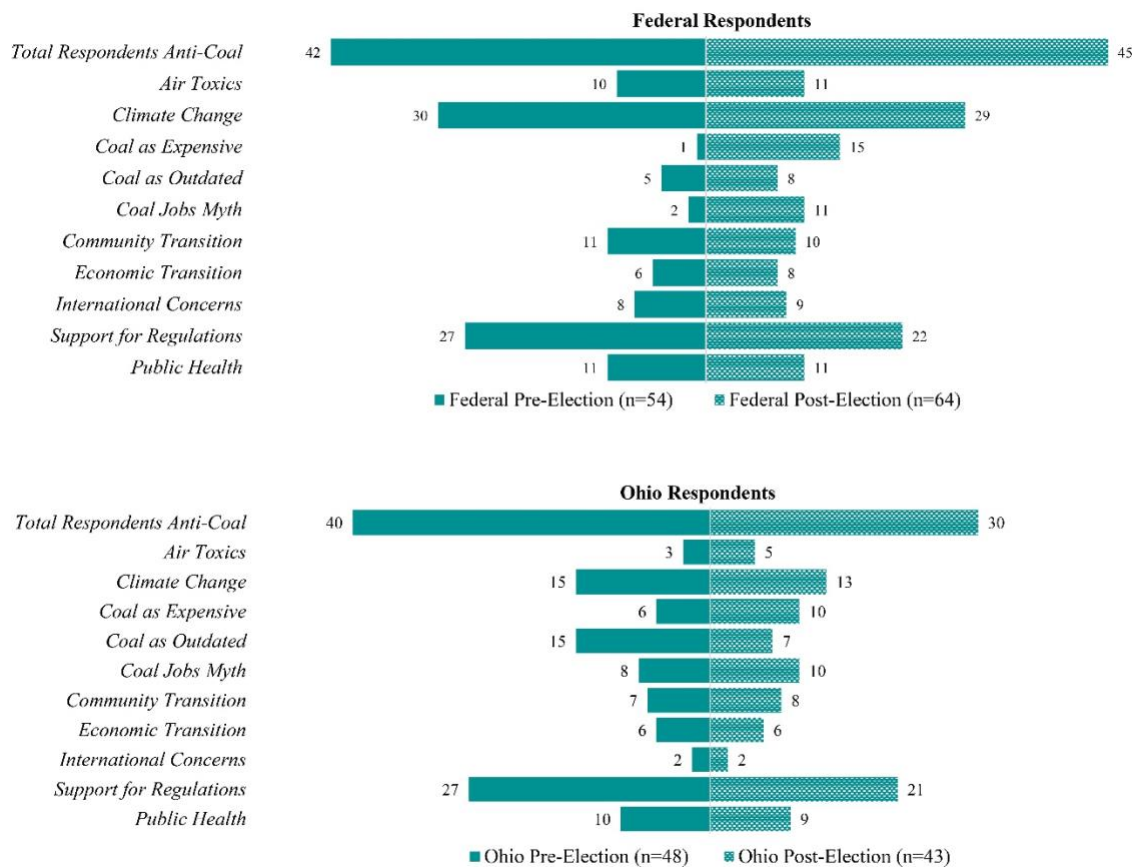
Whereas the previous chapter centered on pro-coal discourse, this chapter identified anti-coal narratives and investigates the relationships between pro-coal and anti-coal discourse. As described in chapter 2, these narratives are identified through multiple rounds of coding of qualitative interview data based on theoretically-derived and emergent coding. Statements were coded as “pro-coal” and “anti-coal” based on a pre-established coding scheme as well as the surrounding interview content. Figure 5.1 reports the frequencies of anti-coal narratives across the four interview samples. Narratives are not mutually exclusive. The first bar of each section reports the total number of respondents who engaged with at least one anti-coal narrative for each period.

At the federal level, 78% of all respondents made at least one anti-coal statement in the pre-election period compared to 70% of respondents in the post-election period. Among Ohio respondents, 83% made anti-coal statements in the pre-election period, compared to 70% in the post-election period. It is worth noting that anti-coal respondents are more prevalent than pro-coal respondents across all samples. There is some overlap between the two groups, as some respondents made both pro-coal and anti-coal statements,⁴⁴ which can be observed in the discourse coalition diagrams included later in this chapter. It is also important to remind readers that the sampling procedures for this project (see chapter 2) were not weighted by policy position, but instead weighted by

⁴⁴ The number of respondents coded in both “pro-coal” and “anti-coal” groups is as follows: federal pre-election (10); federal post-election (9), Ohio pre-election (18), Ohio post-election (7).

participation, yielding an interview sample that was not evenly distributed across pro-coal and anti-coal actors.

Figure 5.1: Frequency of individual respondent engagement with anti-coal narratives



The percentages reported in this chapter were calculated using the numbers reported in the “total respondents anti-coal” bars from figure 5.1 and the “total respondents pro-coal” bars from figure 4.1 in the previous chapter as the denominator. This approach allows me to assess the relative dominance of each narrative within each discourse coalition. From this point forward, I refer to this group of respondents as “anti-coal respondents” in comparison to the “pro-coal respondents” identified in the previous chapter. As noted

above, there is some overlap between these two categories. In the sections that follow, I describe the most prevalent anti-coal narratives (employed by ten percent or more of all respondents in each level/period) and the relationship between anti-coal and pro-coal counterframes within each subset of interviews.

Federal Pre-Election

The most dominant anti-coal narrative in pre-election interviews with federal policy actors was the discussion of coal-fired power as a contributor to global *climate change*. Statements coded under this category were specific to coal, while broader discussions of climate change that did not mention coal in some way are not included. This theme was followed by, and often used in conjunction with, declarations of support for the regulation of emissions from coal-fired power plants through the EPA's proposed Clean Power Plan (coded as *support for regulations*). A smaller number (19%) of anti-coal respondents discussed the need for the U.S. to transition away from coal in order to serve as a positive example for other countries. Rooted in *international concerns* about climate agreements and the burning of coal in developing countries, this narrative used the reputation of the U.S. abroad as a justification for domestic energy policies.

Overall, although the core reasoning behind support for regulations was concern over climate change, respondents tended to engage a variety of narratives beyond discussion of greenhouse gases or climate risks. The following statement from a climate scientist exemplifies the overlapping narratives employed in support of federal climate policies:

legislation has implications for how we *drive the economy*. The negative impact of fossil fuels on the economy are very clear, so I think we have to create incentives and legislative solutions to this problem that will shift us away from burning coal, oil, and gas, and drive us toward relying on sustainable energy sources that can provide employment and clean power, power that don't release carbon dioxide, methane, and even nitrous oxide into the atmosphere (June 2016, emphasis added).

In addition to pushing a the narrative of general support for regulations, this respondent engages the narratives of *economic transition*, *community transition*, *climate change*, and *air toxics*. However, it is notable that the respondent quoted above is discussing legislative action at the federal level – a response to climate change that has proven to be difficult, if not impossible, for policymakers to achieve.

Aligning with collaborative campaigns of large environmental organizations and medical associations in support of the proposed Clean Power Plan, *public health* narratives (mentioned by 26% of anti-coal respondents in federal pre-election period) drew connections between health problems such as asthma and heart disease the burning of coal for electricity. This line of argument aligns with the EPA's justification for the proposed regulation, which stated that "the Clean Power Plan will reduce pollutants that contribute to soot and smog that make people sick by over 25 percent in 2030" (EPA 2017). This justification is based on the EPA's 2009 "endangerment finding," which stated that "current and projected concentrations of the six key well-mixed greenhouse gases – carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride – in the atmosphere threaten the public health and welfare of current and future generations" EPA 2009). Given that *public health* narratives discussed the impacts of carbon co-pollutants, these statements were often made in connection with criticisms of coal as a dirty source of energy that produces a variety of toxic emissions in

addition to CO₂. I label these lines of argument, which were employed by nearly one quarter of anti-coal respondents in the federal pre-election period, as *air toxics* narratives. The climate director for a large environmental non-profit explained, his organization had intentionally constructed public health frames in relation to the Clean Power Plan in order to “re-energize public interest in and awareness of pollution and its health dangers” as a way of “reinvigorating support” for “policies that address both the pollutants that are directly connected to public health and pollutants like carbon dioxide.” By highlighting the public health benefits of climate policy, he hoped to remind the public that “there is still pollution and there are big polluters that are responsible for health-endangering pollution.” He noted that this narrative was also more connected to public concern about climate change, which was a less tangible problem: “there’s not much concern about polar bears or about philosophizing the arctic,” he explained five months before the election.

I also find that some federal respondents tempered their support for climate policies by discussing the need to support coal communities through economic development efforts. This frame aligns with campaign platform of Democratic presidential candidate Hillary Clinton, which promised to “revitalize coal communities by supporting locally driven priorities and make them an engine of U.S. economic growth in the 21st century, as they have been for generations” (Clinton 2016). The tone of these *community transition* narratives was notably self-conscious, as anti-coal respondents grappled with the political implications of overtly stating opposition to coal-fired power during an election year. As one representative of a progressive think tank opined,

look at rising sea levels, look at rising temperatures – those are really bad consequences. So doing nothing [about carbon emissions from coal] is a bad strategy. But ignoring the social and equity components of these displaced workers, who are angry white men, is bad, too. It may not be fashionable, but there are legitimate grievances there. And if they're not addressed [...] you open yourself up to bombastic fascist-like demagogues. These are all things that I think people who go around and hug polar bears and wear birkenstocks don't always think about (June 2016).

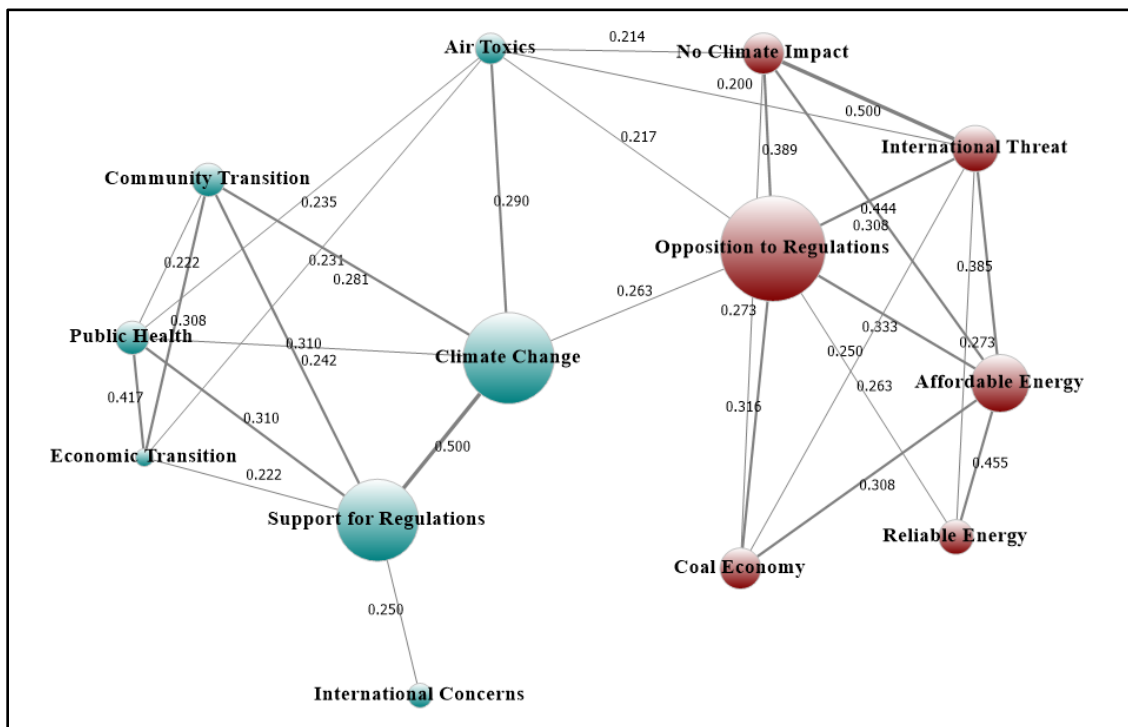
At the same time, this narrative tended to be embraced as an effective and important environmental frame during the push to transition away from coal. When asked how emissions regulations would impact the coal industry, a university researcher replied:

they already have, and they will continue to. The coal industry, as far as I'm concerned, is fighting a rear-guard action. I think Hillary Clinton got it exactly right, that the issue is what can we do for these communities. We have the responsibility of trying to help these communities out [...] we've gotta be responsive to these issues. But I think anybody who's invested in the coal industry in the U.S. is a damn fool (June 2016).

Although anti-coal respondents were adamant about the need to support coal miners and their communities, they were vague about the specific actions that could be taken to remediate the financial duress of the transition away from coal-fired power.

Figure 5.2 illustrates the distribution of prevalent pro-coal and anti-coal narratives in interviews conducted with federal policy actors in the pre-election period. There is a small amount of overlap between the pro-coal and anti-coal discourse coalitions in federal pre-election interview data. The size of nodes represents the prevalence of each narrative within interviews that engaged least one pro-coal or anti-coal argument. Pro-coal narratives are highlighted in red and environmental narratives are highlighted in green.

Figure 5.2: Federal pre-election counterframes



Rather than operating as a strong justification for the necessity of emissions regulations or the transition of energy markets “beyond coal,” discussion of *climate change* as it related to coal was diluted by its co-occurrence with anti-regulations narratives. Some respondents who engaged with *opposition to regulations* narratives also engaged in discussion of coal as a source of climate change and toxic air pollutants: for both frames, the Jaccard coefficient is just above 0.2. This co-occurrence reflects that although there was significant polarization over the topic of climate regulations, some supporters of the coal-fired power industry also discussed concerns about climate change. However, even if an industry member or supporter acknowledged the existence of climate change, they were generally opposed to the regulation of carbon emissions. For example, a

representative of a national trade association described the coal industry as “in a tough spot,” citing emissions regulations and what they perceived as the “aggressive approach in the courts, in Congress, and in the agencies” taken by climate scientists and representatives the renewable energy industry. Engaging in discussion of climate change while simultaneously engaging in the “war on coal” discussion associated with *opposition to regulations* narratives, he said: “everybody points to [the coal industry] as the bad guys. Whenever you think about climate change, and how to decrease greenhouse gas emissions, it’s ‘well, we’ve got to shut down those coal-fired power plants’” (July 2016).

Despite the co-occurrence of some pro-coal and anti-coal narratives described above, figure 5.2 illustrates that the federal-level discourse surrounding coal-fired power was heavily polarized preceding the 2016 election. Beyond the regulations debate, the anti-coal narrative of *economic transition* serves as a counterpoint to the pro-coal narrative of the *coal economy* in interviews with federal policy actors in the pre-election period. Respondents using this frame discussed the closure of coal-fired power plants as a positive benefit of the transition of energy markets toward cleaner energy or made claims about the unsustainable economic position of coal. The key to this *economic transition* narrative, which was employed by 14% of anti-coal respondents in the federal pre-election sample, was that the decline of coal was a positive economic signal. It is notable that the economy-focused discussion is more prominent within pro-coal discourse compared to anti-coal discourse. This difference may be explained by the prevalence of the *community transition* narrative within pro-coal narratives, which seems to have overshadowed discussion of national economic development. As anti-coal respondents

focused on job training and employment services for coal communities, I find that the topic of jobs was relatively absent from pro-coal discourse in federal pre-election interview. This finding suggests that there may have been a mismatch in the counterframing strategy taken by environmental organizations and other opponents of coal-fired power during this period. Similarly, while pro-coal discourse included discussions of coal as a source of *affordable energy* and *reliable energy*, I do not find evidence of anti-coal counterframes related to either theme. The consequences of this misalignment become more apparent in the post-election period.

Ohio Pre-Election

In this section, I compare data from interviews conducted with policy actors working on energy and climate issues in the state of Ohio in the pre-election study period. *Support for regulations* narratives were the most dominant anti-coal narratives in the pre-election period(used by 67% of anti-coal respondent). These narratives were focused not only on federal climate policy, but also on supporting Ohio's Renewable Portfolio Standards (RPS) and on intervening in debates taking place at the Public Utilities Commission of Ohio (see chapter 2 for a more detailed overview of policy contexts at the state level). The following statement from the energy director of a state-based environmental organization exemplifies the mix of federal and subnational policy goals articulated in state-level arguments against coal-fired power in the pre-election period:

our first goal is to work really hard on persuading decision makers to plan for progress. This includes strong implementation of the Clean Power Plan. We're rolling out a new initiative with cities to help them develop toolkits for climate readiness, resiliency, and also carbon pollution reduction. We have a focus on

utility transformation. We've got a team of attorneys that litigate on utility rate cases or efficiency portfolio cases, and intervene in other important cases like the latest coal bailout campaigns to really push electric utilities to transition away from fossil fuels (July 2016).

Similar to federal discourse in the pre-election period, anti-coal respondents engaged multiple frames in their statements of support for regulations. For example, the CEO of a renewable energy company explained, emissions policies were necessary because “a market-based approach is good, but it *shouldn't be just totally left to its own devices*. The [RPS] forces us to make the best and wisest decisions about not only our *economy*, but our national security, and our *climate and environment*, and *health*” (September 2017, emphasis added).

Although discussions of *climate change* are present among Ohio pre-election interviews, I find that they are less common at the state level than in federal interviews conducted in the same study period. Of anti-coal respondents in Ohio, 38% engaged with this narrative, compared to 71% of federal anti-coal respondents in the pre-election period. These state-level discussions of *climate change* tended to emphasize the pressing nature of the problem, perhaps because policy actors hoped to garner local support by drumming up concern about local environmental impacts. For example, the leader of a state-based climate action organization expressed a sense of crisis with regard to climate change: “the weather, what's been happening to the climate as a result of burning fossil fuels, it's just not sustainable. These issues are more and more undeniable. So, the problem is we're not being proactive. We're being reactive” (August 2016). The director of the Ohio branch of a large environmental organization expressed the need to “really clarify in real ways how climate is affecting people” by focusing on tangible issues that

are within legislators' self-interest such as the proliferation of tick-borne diseases, toxic algae blooms on Lake Erie, and problems with water contamination (July 2017).

As expected based on observations of pro-coal discourse in the previous chapter, opponents of coal-fired power in Ohio were more focused on subnational policy debates and energy markets, whereas federal respondents tended to focus on broader policy questions. The increased specificity of state-level discourse is highlighted by the content of the additional frames that were prevalent in the pre-election period. For example, respondents who discussed *public health* concerns also tended to refer to very specific issues compared to more general discussions at the federal level: the director of a state-based environmental organization discussed the role of emissions reduction in preventing “asthma attacks, heart attacks, premature deaths, hospitalizations, and lost school and work days” (July 2017). Similar to the pre-election discourse at the federal level, numerous Ohio respondents expressed that *public health* served as a strategic frame with which to garner support for environmental regulations.

Economic discussions, which were direct responses pro-coal discourse, were similarly specific. Twenty percent of anti-coal respondents discussed what I label as the *coal jobs myth*: a counterframe to pro-coal discussions of coal jobs in the state. These respondents tended to cite specific figures to demonstrate the relative lack of coal jobs, often using other industries, such as the solar industry, as a counterpoint to industry narratives about *loss of jobs*. When considered in combination with the theme of *community transition*, a constructive frame that attempts to respond to concerns about employment losses due to environmental regulations, the *coal jobs myth* narrative attempts to negate claims about employment losses by demonstrating that there are few

jobs to worry about in the first place. As the renewable energy lobbyist quoted above stated, “in the state of Ohio, as of a couple of years ago, there were fewer than 2000 direct coal mining jobs [...] most of the coal we burn comes in from Wyoming, and is shipped in because it’s low-sulfur. So the argument that coal provides jobs in our state is total B.S., and it’s one of those things where facts don’t matter” (July 2017). Similarly, discussions of *community transition* and *economic transition*, which served as counterframes to pro-coal narratives related to jobs and the local economy, tended to center on issues specific to Ohio. Discussions of support for RPS also tended to overlap with economic arguments. When asked about the future of the standards, the leader of a religious-based environmental organization said that the policy

is a step in the right direction because it creates more business opportunities to promote innovation and to signal that we're trying to move away from a fossil-fuel economy. So, I think it's a first step [...] it provides a signal that's helpful for businesses that are needing some extra encouragement and some kind of direction so that they can start being required to include renewable energy in their electricity mix (August 2017).

The narrative of *coal as outdated*, a counterframe to the industry-driven *reliable energy* narrative, was not prevalent in federal pre-election discourse but was much more dominant at the state level. This narrative contended that although coal continues to produce a large proportion of electricity in Ohio, it is an old technology that is inefficient and unreliable. I find that nearly 40% of respondents who made at least one anti-coal statement in the Ohio pre-election sample engaged with this narrative, the same proportion that engaged in discussions of “climate change.” Here, claims that coal is “like so many industries of the past that eventually got replaced by newer and better ways of doing things” serve as strategic counterframe to the pro-coal narrative of coal as “reliable

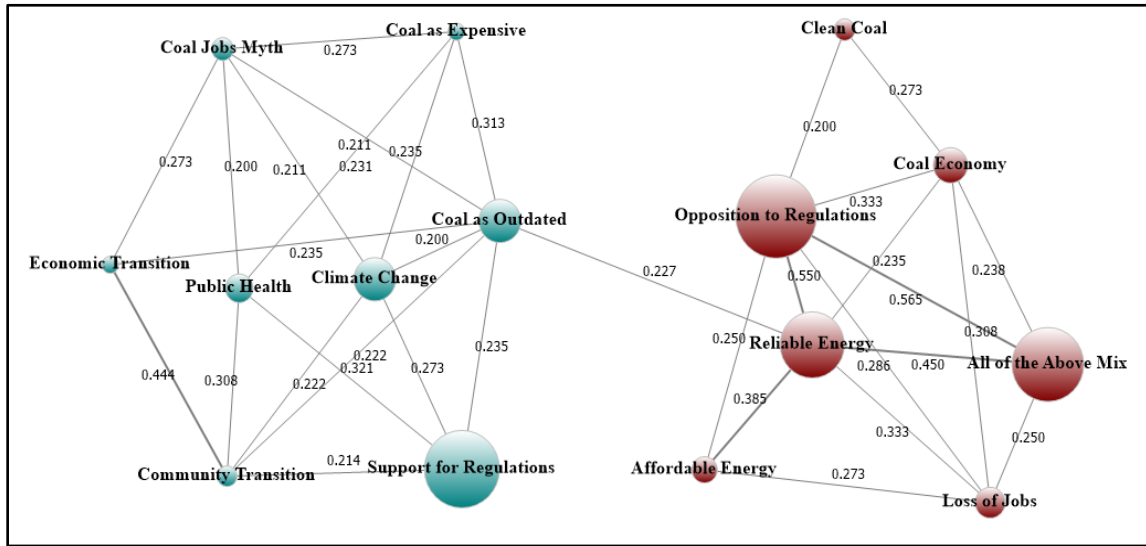
energy” (renewable energy company CEO, September 2017). When asked about the argument that renewable energy is not as reliable as coal, a lobbyist who had worked on renewable and clean energy in Ohio for more than 20 years responded, “it’s just another bogus argument.” He went on to explain that during an especially cold winter,

our utilities couldn't actually generate the power we needed because their coal piles were frozen and they couldn't feed it into their burners for their power plant. Then they turned that around and said, ‘if we shut down these coal plants, what are we going to do the next time we have a polar vortex?’ My interpretation of that is you'll be huddled in your basement, burning your furniture, trying to stay warm if you don't have these coal plants. This is a bunch of nonsense (July 2016).

Despite observing notable opposition among Ohio respondents to the claim that coal provided a “critical service” (Freudenburg 2005), I do not find evidence of a similar counterframe for the pro-coal narrative of the *all of the above mix* among interviews conducted pre-election period. Given that the rhetoric of a “diverse energy portfolio” mimics environmental rhetoric about the integration of renewable energy (see chapter 4), the lack of an anti-coal counterframe is especially apparent.

Figure 5.3 shows the relationship between pro- and anti-coal narratives among Ohio respondents in the pre-election period. Again, the links between nodes report the Jaccard coefficient and the size of nodes shows the relative dominance of each narrative within each side of the debate.

Figure 5.3: Ohio pre-election counterframes



As seen above, there is clear polarization between pro-coal and anti-coal discourse coalitions at the state level. Overall, *support for regulations* narratives (63% of anti-coal respondents) were relatively balanced with *opposition to regulations* narratives (73% of pro-coal respondents – discussed in detail in chapter 4) in pre-election interviews with Ohio policy actors. Other counterframes discussed above are less balanced. In the pre-election period, there is only one incidence of significant co-occurrence between contested frames: *coal is outdated* and *reliable energy* have a Jaccard coefficient of just over 0.2, indicating that some respondents engaged both the pro-coal and anti-coal counterframes. This co-occurrence reflects a dilution of environmental framing, as the respondents who engaged both narratives either mentioned the *reliable energy* theme as a justification for keeping old coal plants online or mentioned the *coal is outdated* theme as an afterthought in their discussion of it providing a “critical service” (Freudenburg 2005).

Federal Post-Election

As described in the previous chapter, I find that pro-coal discourse became more cohesive following the election of Donald Trump, with the focus on *opposition to regulations* narratives aligning with a smaller set of dominant arguments that were employed to justify the ongoing use of coal as a source of electricity. Conversely, my analysis of the anti-coal narratives used by federal policy actors in post-election interviews shows a proliferation and diversification of arguments against coal-fired power. In addition to the prevalent lines of argument identified in the pre-election period, the post-election period also includes two additional narratives, both of which were more overtly anti-coal than pre-election discourse: *coal as expensive*, which was used to demonstrate the coal could be replaced by cheaper fuel sources, generally renewable energy and natural gas, and *coal as outdated*. When analyzed together, these two frames represent anti-coal arguments that justified the closure of coal-fired power plants without engaging in climate or regulations-related debates. When asked “what is the future for coal in the US?” the director of a renewable energy trade association answered:

Very dim. And it's because of the economics. It's clearly economics. I read an article yesterday where largest Virginia generator of electricity using coal said, ‘we're not using coal anymore. We're not going to burn coal anymore. We're getting out of the coal industry.’ [Coal] doesn't make sense going forward from two perspectives, the economy and the environmental impact. If it's in the ground, keep it in the ground (May 2017).

Overall, respondents who engaged with other anti-coal narratives also tended to agree that coal was “simply not cost-competitive” given the low cost of natural gas and increasing availability of renewable energy (multiple interviews, spring 2017). Numerous respondents also framed coal as an “old” technology that was past its economic and

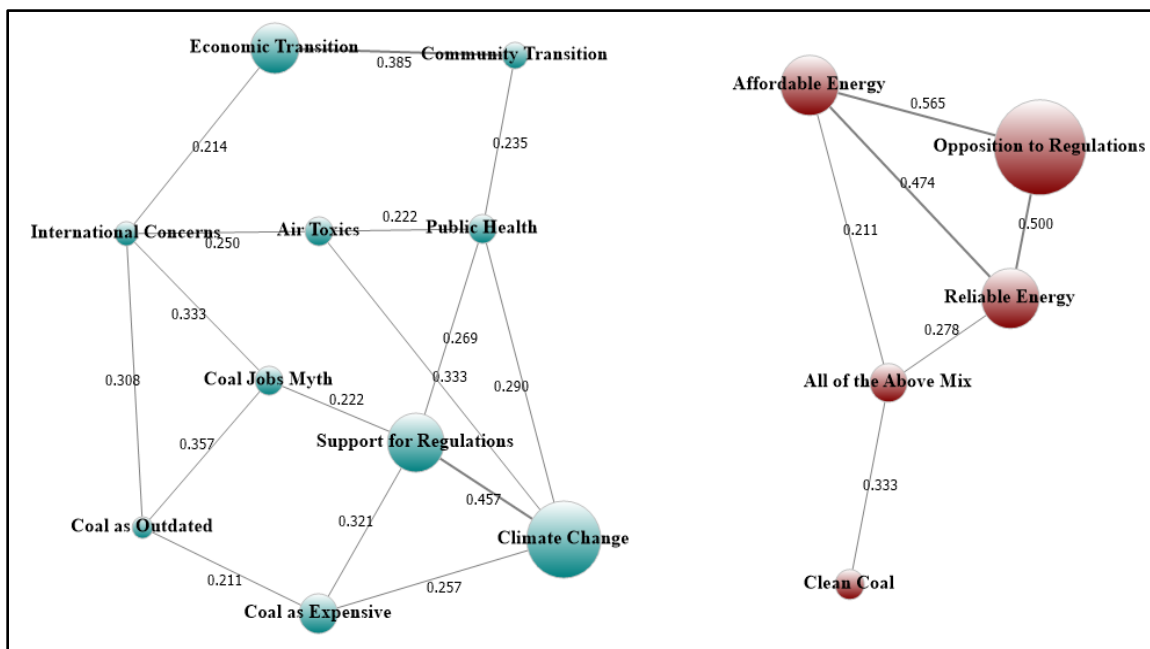
technological prime, often citing the age of the coal-fired power plant fleet as an inevitable signal of the sector's demise. In the words of the director of a public policy think tank in Washington, DC, "it's a dying energy source, just like typewriter manufacture" (June 2017).

I find that the proliferation of environmental narratives following the election led to small declines in the two dominant frames from the pre-election period. Discussion of *climate change* declined slightly (from 71% to 64% of anti-coal respondents), and the *support for regulations* narrative dropped more substantially (from 64% to 49%). Although the scaling back of the discussion of regulating carbon emissions from coal-fired power plants makes sense given that President Trump promised to revise or repeal the Clean Power Plan and withdraw from the Paris Climate Agreement during the first 100 days of his administration (Popovich and Schlossberg 2017), it is also notable that the most prevalent framings of the pre-election period appear are overshadowed by the proliferation of numerous, less dominant narratives in the post-election period. Anti-coal respondents tended to engage in narratives that emphasized the decline of coal without a federal policy driver as they struggled to adapt to the new pro-coal policy agenda of the Trump Administration. As a progressive think tank representative explained, "coal use is going to continue to be declining. Not quite as quickly as it would have without the Trump administration undoing the Clean Power Plan, but the number of economic and technological factors that have been pointing, pushing the decline of coal, except for climate policy, none of the rest of them are going away" (May 2017).

Figure 5.4 displays the discursive structure of pro-coal (red) and anti-coal narratives (green) within interviews conducted with federal policy actors in the post-

election period. The size of each node represents the dominance of each narrative within pro-coal or anti-coal discourse, while the proximity and links between nodes represent the likelihood of narratives being mentioned by the same respondent. In addition to highlighting the difference in the number of narratives within the anti-coal and pro-coal discourse coalitions, figure 5.4 shows that the two sides of the debate became more polarized following the 2016 election. Whereas figure 5.2 shows some co-occurrence of narratives, with a small number of respondents engaging lines of argument on both sides of the debate, figure 5.5 displays the two sides of the debate as entirely separate.

Figure 5.4: Federal post-election counterframes



I observe fewer direct frame contests in the post-election period as compared to the pre-election period. Although the debate between support and opposition to regulations is still present, the only other substantive anti-coal counterframes are *coal as*

outdated (a response to the pro-coal frame of *reliable energy*) and *coal as expensive* (a response to the pro-coal frame of *affordable energy*). In both frame contests, the anti-coal narratives are less dominant within the discourse coalition (33% and 18% of all anti-coal respondents, respectively) while industry narratives are more prevalent (both *reliable energy* and *affordable energy* were mentioned by half of all pro-coal respondents). All other anti-coal narratives at the federal post-election level stand alone in the discourse, rather than being matched to specific pro-coal narratives. For example, although respondents discussed the *coal jobs myth* in an effort to debunk industry claims about employment in the coal industry, there was no substantive discussion of *loss of jobs* on the pro-coal side of the debate. Moreover, the proliferation of anti-coal narratives in the post-election period led to a less cohesive discourse coalition (i.e. more narratives with less dominance) among anti-coal respondents, compared to a fairly cohesive coalition of anti-coal narratives (i.e. fewer narratives with more dominance). As opponents of coal-fired power struggled with the messaging of coal and climate policy in the wake of the election, supporters and members of the coal-fired power industry adapted quickly and doubled down on their strategically selected narratives (see chapter 4 for a complete analysis).

Ohio Post-Election

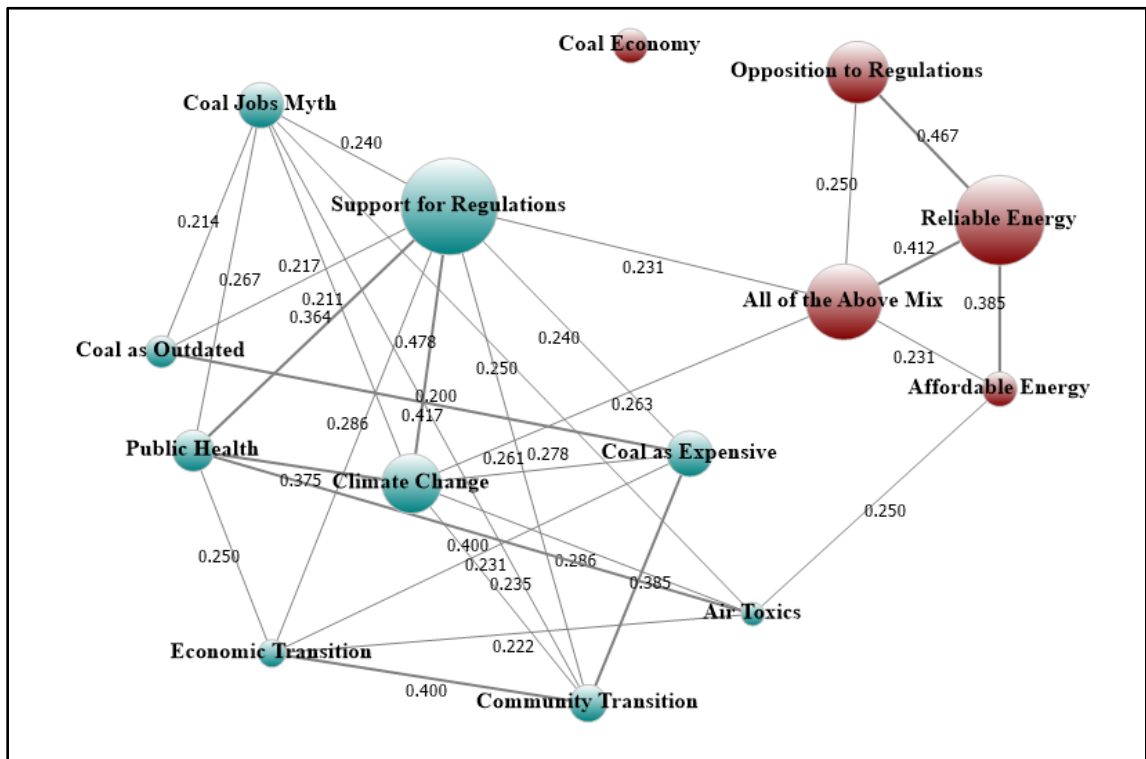
Finally, I turn to data from interviews policy actors in Ohio in the post-election period. Engagement with anti-coal narratives increased from the pre- to post-election periods (see figure 5.1 for frequencies) with one exception: discussion of *coal as outdated*

declined from 38% to 23% of anti-coal respondents in the post-election period. This decline was balanced by an increase in engagement with the complimentary argument of *coal as expensive* (from 15% to 33% of anti-coal respondents), revealing a transition in the discursive strategy of anti-coal respondents in the context of regulatory rollbacks at the federal level. In the words of one environmental lawyer, “I joke that I am an environmental litigator who almost never says the word environment because I am litigating in a public utility commission where we’re talking about the lowest cost option, and that option, more often than not, is to tear down coal plants and pursue clean energy” (June 2017). As proponents of coal-fired power re-asserted their dominance within this more favorable policy context, the industry’s challengers shifted away from arguments that coal should be phased out of the energy mix completely, focusing instead on the economic challenges faced by the industry. “The market is doing what it should do. It’s getting rid of inefficient competitors,” explained a leader of a state trade association that had been outspoken in its support of the RPS, “some of these plants are just old and costly to operate” (May 2017).

Anti-coal counterframes from the pre-election period persist in the post-election period in cases where pro-coal narratives remain prevalent: *support for regulations* versus *opposition to regulations*, *coal as expensive* versus *affordable energy*, *coal as outdated* versus *reliable energy*, and *economic transition* versus *coal economy*. As in the pre-election period at the state level, the *all of the above mix* narrative remains without a substantive environmental counterframe. Figure 5.5 illustrates the discursive structure of the debate over coal-fired power among Ohio respondents in the post-election period. As discussed above, engagement with most anti-coal narratives increased following the 2016

election, and *support for regulations* arguments remain dominant in the discourse coalition in the post-election period. Apart from the addition of *air toxics* discussions, the anti-coal discourse coalition remained relatively stable across the pre- and post-election periods.

Figure 5.5: Ohio post-election counterframes



The figure above shows increased co-occurrence between pro-coal and anti-coal narratives among Ohio respondents in the post-election period, a finding opposite from the pattern of increased polarization following the 2016 election as observed at the federal level. This is especially true of the *all of the above mix* narrative, which argues that coal is a necessary part of a “diverse” energy portfolio. The Jaccard coefficient for *all of the above mix* and *support for regulations* is 0.23, with some respondents making

statements in support of emissions regulations while also stating that coal had a lasting place in the energy mix. For example, a trade association director who had campaigned in support of the RPS also expressed support for the continuing use of coal for baseload power: “you need a diverse portfolio of energy sources. You do need a baseline so when the sun doesn’t shine and the wind doesn’t blow we can still serve our customers at some functional level” (May 2017). This level of nuance, which was absent from the federal post-election discourse, is also highlighted in the co-occurrence between the nodes for *all of the above mix* and *climate change* (Jaccard coefficient of 0.26).

The Persistence of Privileged Accounts

This chapter has explored how arguments against coal-fired power are situated in relation to the pro-coal narratives identified in the previous chapter. Efforts to influence the discourse of environmental debates are undertaken not only by members and proponents of large industry, but also by the various policy actors (policymakers, NGOs, businesses, civil society groups, etc.) that support environmental regulations. Whereas the literature on legitimation and privileged accounts highlights the relationship between ideology and environmental inequality, the literature on framing processes (Snow and Benford 1988) provides an additional conceptual framework for understanding efforts to unseat dominant narratives and redefine the structure of policy debates. The findings presented above indicate that in the recent debate over coal-fired power – a case that highlights what Hajer calls the “struggle for discursive hegemony” within environmental conflicts (Hajer 1995:59).

Results show both similarities and differences between the anti-coal narratives used across policy levels and time periods. The most dominant anti-coal discourse coalition in the pre-election period included the narratives of *support for regulations* and *climate change*, while a less dominant coalition is observed between discussions of *air toxics* and *public health*. Another anti-coal narrative, the discussion of supporting *community transition* in coal country, was also prevalent at this level. In the post-election period, anti-coal discourse shifted slightly, with a lower prevalence of *opposition to regulations* balanced out by two narratives that sought to detract from coal as a fuel source based on energy policy arguments: *coal as expensive* and *coal as outdated*. This change highlights how anti-coal respondents altered their discursive strategy in response to the outcome of the 2016 election, which signaled a shift away from federal environmental regulations toward policies that were intended to “bring back coal” (Bomberg 2017).

At the state level, pre-election discourse included a tripartite coalition of *support for regulations*, *climate change*, and *public health*, with respondents discussing more localized impacts compared to federal respondents in the same time period. The narrative of *coal as outdated* was also prevalent among these interviews. Further, anti-coal respondents in Ohio were more likely to focus on economic arguments against coal-fired power in the pre-election period, as evidenced by engagement with the themes of *economic transition* and *coal jobs myth*. In the post-election period, anti-coal narratives remained relatively stable with the exception of an increased engagement with the narrative of *coal as expensive* balanced by a decline in the discussion of *coal as outdated*. Similar to results from the analysis of pro-coal narratives in the previous chapter, these

findings show that environmental discourse at the subnational level is more tailored to the specific issues of the state, rather than broader debates over regulations.

When looking at the frame contests between pro-coal and anti-coal narratives, several distinctions are evident between policy settings and time periods. At the federal level, analysis of post-election discourse shows that the proliferation of anti-coal narratives was accompanied by a decline in direct counterframes. In other words, although anti-coal respondents engaged a wider variety of narratives in the post-election period, most of these narratives did not correspond with pro-coal lines of argument. At the state level, the number of frame contests was similar across the pre- and post-election periods, with proliferation in anti-coal narratives in the post-election period taking a similar pattern to that observed at the federal level. When looking at the overlap between the two sides of the debate, there is a divergence between the federal and state policy settings following the 2016 election. At the federal level, polarization increased, with the few incidences of co-occurrence between counterframes disappearing in the post-election period. Conversely, the discourse in Ohio shows slightly less division between the two sides of the debate following the election, with more co-occurrence between pro-coal and anti-coal narratives.

Another theme to emerge in this analysis of frame contests is the mismatch between the strategic narratives of anti-coal respondents when compared to the dominant narratives used in favor of coal-fired power. I observe this discrepancy across both policy levels and time periods. For example, discussion of *community transition* was much more prevalent among anti-coal respondents in the federal pre-election period than the pro-coal narrative of *loss of jobs* that it aimed to counteract. Anti-coal respondents at the federal

level continued to engage in counterframing related to employment in the post-election period by engaging with the narrative of the *coal jobs myth*, and emergent claim that sought to negate pro-coal arguments that were barely present in the discourse. This same mismatch, wherein anti-coal respondents discuss employment concerns more than pro-coal respondents, appears at the state level in the pre-election period. In addition, the pro-coal account of *all of the above mix*, discussed in the previous chapter as a hijacked version of environmental frames of a “diverse energy portfolio,” lacks a substantive counterframe across all levels of observation.

Moreover, one of the most dominant anti-coal narratives – discussion of *climate change* – appears to have little relation to the privileged accounts documented in this analysis. While anti-coal discourse centered around concern over rising global temperatures, severe weather, public health problems, and other environmental impacts related to climate change, pro-coal respondents rarely engaged with the counterframe of *climate denial*. In fact, as discussed in the presentation of data from the federal pre-election interview sample, some respondents engaged with the *opposition to regulations* narrative while simultaneously engaging with the language of *climate change*. This finding suggests that continued engagement with climate change narratives may not be an effective strategy when it comes to countering pro-coal ideology. This is an especially relevant consideration given the lack of opportunities for climate action at the federal level, where climate change dominated the anti-coal discourse in both the pre- and post-election periods.

Returning to the concept of discursive opportunity structures (Ferree 2003; Koopmans and Olzak 2004; Mccammon 2006; McCammon et al. 2007), the analysis

presented in this chapter highlights the difficulty of countering privileged accounts. As proponents and opponents of coal-fired power compete within policy arenas, they also compete for discursive control over the debate. Taken together, the findings discussed above suggest that pro-coal narratives may continue to occupy a privileged position within the debate over coal-fired power.

Chapter 6: Conclusion

In the conclusion to his original paper on the double diversion, Freudenburg identified the need for researchers “to develop more nuanced lines of theory and analysis that – rather than assuming that any given instance of environmental disruption occurs simply as part of a generic process, or because it contributes to the interest of the capitalist class as a whole – will devote greater attention to the ways in which such assumptions are actually created and sustained” (2005:108). Today, most environmental sociologists continue to approach the problem of industrial pollution as either an inevitable side effect of the economic and political power of large industries or as a problem that can be solved via financial incentives and regulation. This project adopts the framework of the double diversion – defined by Freudenburg as “the privileged or disproportionate diversion of environmental rights and resources, made possible in part by the diversion of attention through taken-for-granted or privileged accounts” – to analyze the relationship between “power over resources” and “power over discourses” in the case of the US coal-fired power industry (Freudenburg 2005:108). By identifying the specific facilities and corporations that are extreme emitters of CO₂ in the coal-fired electric utility sector, this study suggests that a specific subset of actors within the industry, rather than the industry as a whole, is most responsible for the sector’s harm to the environment and climate. Then, by identifying the pro-coal and anti-coal narratives that policy actors used around the 2016 election, this study maps out the debate over coal-fired power and highlights the specific mechanisms by which industry interests exert influence within policy debates.

In addition to engaging with previous studies of disproportionality and discourse as they relate to the double diversion, this project also brings in concepts from the social movements literature on framing processes (see chapter 5 for a full discussion). This synthesis of the literature on storylines and discourse coalitions in environmental politics (e.g. Hajer 1995) and the concepts of counterframing (Benford and Snow 2000) and discursive opportunity structures (McCammon et al. 2007) adds an additional theoretical layer to the notion of privileged accounts. Although briefly mentioned in Freudenburg's original conception of the double diversion (2005), there has been little overlap between these fields study. In addition to considering how ideological projects are carried out via the top-down efforts of industry interests or the "embedded" nature of discourse, this project also considers how competing frames interact and evolve within environmental conflicts.

This research was designed as a mixed-methods, comparative study of the double diversion. This research design is unique from previous studies of the double diversion in several ways. First, most researchers have focused on either the first or second diversion, rather than assessing both diversions in combination (but see Greenberg 2016; Matthews 2011). Second, although researchers have explored the relationship between disproportionality (a hallmark of what Freudenburg identified as the "first diversion of environmental harm") and discursive control (the core of Freudenburg's second diversion) in several other industries (see Chapter 1 for an overview), this study is the first to focus on the double diversion in the case of coal-fired power industry (2005). Third, this study uses both quantitative and qualitative methods – combining analysis of emissions data with qualitative interview data – an approach that is well-suited to the

double diversion as introduced by Freudenburg in 2005 but has yet to be employed within the small, but growing, group of studies that adopt this framework. Finally, the comparative design of both portions of the study sets this work apart from previous work of on disproportionality (which has, to-date, considered only one unit of analysis) and privileged accounts (which has not compared discourse across time periods or policy settings).

Privileged Access in the Coal-Fired Power Industry

In the quantitative portion of this project (chapter 3), I compare the distribution of CO₂ emissions across coal-fired power plants and parent companies in the electric utility sector. Previous studies have documented disproportionality in a range of sectors, including agriculture (Nowak, Bowen, and Cabot 2006), manufacturing (Collins 2011; Matthews 2011), oil extraction (Gramling and Freudenburg 2012), and coal mining (Greenberg 2016). These studies have found that that “outlier” facilities account for the majority of pollution in their sectors as compared to “mainstream” facilities, which produce lower levels of pollution overall (e.g. Collins, Munoz, and JaJa 2016). Although there are several recent assessments of within-group emissions inequality from coal-fired power (Jorgenson, Longhofer, and Grant 2016; Prechel and Istvan 2016), researchers have yet to compare coal emissions inequality across units of analysis.

Consistent with previous research on disproportionality, I find that responsibility for environmental harm (as measured in CO₂ emissions) is unequally distributed within the coal-fired power industry (Armstrong et al. 2012; Collins 2011; Collins et al. 2016;

Freudenburg 2005; Nowak et al. 2006). My findings suggest that researchers should pay close attention to how environmental inequality varies across units of analysis. When analyzing the distribution of raw CO₂ emissions at the facility level, results show that emissions are unequally distributed. However, when I use a size-standardized measure, measures of inequality (Gini coefficients and the proportion of facilities contributing to the worst 25% of emissions) diminish. These findings make sense, as CO₂ tends to scale with the amount of coal burned: facilities that generate more power annually, as measured in net generation megawatt hours, also generate more CO₂ emissions. What is striking is that this pattern does not hold when analyzing emissions at the parent company-level. Even after accounting for annual net electricity generation (a proxy for size), a small number of parent companies generates a disproportionate share of emissions. For example, in 2015 of the 197 parent companies included in this study only seven, or 3.6 percent, were “super emitters” identified as generating the worst 25 percent of total annual emissions. These patterns are stable across all study years (2010-2015).

Earlier researchers rightly point out that the disproportionality perspective suggests the possibility of greatly reducing negative environmental impacts by changing the activities of just a few privileged actors (Berry 2007). From a regulatory standpoint, these findings support this recommendation with an additional specification: namely, the possible implementation of a suite of environmental policies at various levels (e.g. source-based, company-based, and sector- or industry-based) rather than reliance on a single policy instrument. Moreover, the disproportionality observed among parent companies suggests that corporate sustainability efforts outside of the regulatory arena may be especially useful in reducing industry-wide environmental harm.

Defining the Debate Over Coal-Fired Power

The qualitative portion of this project (chapters 4 and 5) follows Freudenburg and Gramling's call to "specify more carefully the processes through which—and the conditions under which—the influence of differential power is likely to become more significant" in environmental politics (1993:233) by providing insight into the discursive mechanisms by which industry interests influence debates over energy and the environment. By using a comparative research design, I am able to assess shifts in the discursive structure of the debate over coal-fired power in two policy settings (federal and state) and across two time periods (pre- and post-election). In my analysis of discourse at the federal and state level, I demonstrate that privileged accounts operate at both the national and subnational levels and show how the content of pro- and anti-coal narratives differs across policy contexts. Given that environmental politics scholars have emphasized the importance of subnational solutions in the context of federal inaction on climate policy, this is an especially important consideration as scholars and policymakers seek solutions to climate change. The time-period component of this analysis adds depth to these findings by highlighting how narratives changed (or did not change) following the 2016 election.

Previous research on privileged accounts and industry-driven discourse (reviewed in chapter 4) has found that a specific set of narratives serve to justify and legitimize the actions of industrial polluters (Hoffman and Ventresca 1999; Matthews 2011; Shearer, Davidson, and Gramling 2013). Two the themes identified as privileged accounts by Freudenburg (2005) – "regulatory burden" and "critical services" – were especially

prominent among pro-coal narratives surrounding the 2016 election. The theme of regulatory burden was common in discussions of the costs, implications, and problems associated with proposed regulations of power plant emissions through the EPA's Clean Power Plan. This narrative was the most common theme in both the pre-election and post-election periods at the federal level. Among Ohio respondents, anti-regulations narratives were most dominant in the pre-election period but were less so in the post-election period. Second, the theme of "critical services" emerged in discussions of the necessity of coal-fired power as a reliable source of electricity generation. This argument, which was used as a justification for keeping coal-fired power plants open despite economic challenges, was more common at the state level than at the federal level and was more prominent in post-election interviews in both policy settings.

Using the Jaccard index as a measure of co-occurrence of narratives within interviews, I find that pro-coal discourse coalitions, or the links among specific narratives, varied across policy settings and periods. In the pre-election period, I show that anti-regulations narratives at the federal level were most closely tied to discussions of international competition, economic and employment impacts, and the negligible climate impact of proposed emissions regulations. A second set of pro-coal narratives – reliable energy and affordable energy – was also present among federal pre-election interviews. At the state level, anti-regulations narratives in the pre-election period were closely aligned with discussions of reliable energy and the centrality of coal to the state's energy mix. Discussions of economic considerations (local economies, employment, and affordable energy) were also connected to opposition to state and federal emissions regulations during the pre-election period. My analysis of interviews conducted after the

2016 election highlights how the structure of the discourse shifted: federal respondents engaged more substantively with themes of reliable and affordable energy (often in tandem with anti-regulations narratives), while Ohio respondents focused their attention on debates over energy markets rather than emissions regulations. These findings suggest that privileged accounts are both strategic and adaptive, highlighting the connections between industrial environmental privileged and hegemonic discourse.

To develop a more complete understanding of the full universe of narratives in the debate over coal-fired power, chapter 5 compares anti-coal narratives to the privileged accounts identified in chapter 4. This analysis reveals notable differences between anti-coal narratives and their relationship to privileged accounts at the federal and state levels. Whereas federal respondents in the pre-election period were most likely to discuss concern over climate change, a theme they connected to statements of support for the Clean Power Plan, Ohio respondents expressed support for emissions regulations in concert with a more varied set of anti-coal narratives (many of which were more focused on specific aspects of subnational energy policy). In addition, Ohio respondents were more likely to focus on direct critiques of coal as an outdated fuel source, compared to federal respondents' discussions of broader policy debates related to coal. In the post-election period, I observe that anti-coal narratives at the federal level remained similar (with the largest focus on climate change and support for regulations), with the addition of discussions of coal as a costly source of energy. This reflects a shift in anti-coal framing as the Trump Administration began its efforts to "bring back coal" (Bomberg 2017). Among Ohio respondents in the post-election period, I observe that anti-coal narratives remained similar to pre-election narratives: discussions of support for

regulations remained dominant, followed by discussions of climate change, public health, the “coal jobs myth,” and the economic costs of coal.

There are notable differences between the federal and state levels when comparing narratives from both sides of the debate over coal-fired power. At the federal level, there was some co-occurrence between pro-coal and anti-coal narratives during the pre-election period, suggesting that although the two opposing sides of the debate used separate narratives, a few respondents expressed views that aligned with both pro-coal and anti-coal positions. During the post-election period, however, the discourse at the federal level was more divided, with no observed co-occurrence between pro-coal and anti-coal narratives. I find the opposite at the state level, with only a few incidences of overlap between pro-coal and anti-coal narratives in the pre-election period compared to an increase in co-occurrence between the two sides of the debate in the post-election period. These results show that even contentious environmental debates may include opportunities for opposing interests to speak the same language. Whether these shared narratives truly decrease polarization, or whether they simply represent the cooptation of environmental discourse by industry interests remains to be seen.

An additional theme emerged from my comparison of narratives in the debate over coal-fired power: a mismatch in counterframing wherein pro-coal narratives were part of an offensive strategy whereas anti-coal narratives tended to be more defensive. I observe that the strategic narratives employed in favor of coal-fired power tended to define specific lines of argument that were then a topic of response among anti-coal narratives. I also find that the anti-coal narrative of the “myth” of employment in the coal industry, a defensive frame aimed at challenging the assumption that regulations would

lead to job losses, was more common than pro-coal frames about employment in the industry. The only case in which anti-coal respondents take an offensive approach is in the discussion of climate change, an anti-coal narrative that was met by very limited (or at times absent) narratives of climate denial. In this case, the damage to the climate narrative may have already been done (Dunlap and McCright 2010; Norgaard 2012), with pro-coal efforts moving on to more contentious topics in the debate. These findings are generally compatible with the research on discursive opportunity structures, which suggests that the influence and success of strategic frames is determined, in part, by their resonance within the ideological structure and cultural assumptions of the debate at hand (Ferree 2003; e.g. Ferree et al. 2002; Mccammon 2006; McCammon et al. 2007).

Linking the First and Second Diversions

Beyond the findings reported in this project specific to privileged access and privileged accounts, questions remain about the connections between these two mechanisms of environmental privilege. As discussed in chapter 4, pro-coal narratives reflect the interests of the coal industry and were produced in response to the political and regulatory contexts within which the industry was operating. As discussed in chapter 5, these narratives were successful in defining the debate over coal-fired power that took place around the 2016 election. As a brief synthesis of these qualitative findings and the empirical findings from my analysis of disproportionality in the coal-fired power industry, I now discuss how interview respondents discussed the super emitter companies identified in chapter 3.

As summarized above, findings from the disproportionality analysis identify only three companies – American Electric Power (AEP), Duke Energy, and Southern Company – as being responsible for generating the worst 25% of CO₂ emissions in the coal-fired utility sector in 2015. Moreover, these three large utilities are among the seven parent companies identified as producing the least efficient 25% of emissions per megawatt hour of annual net generation. Given the dominance of these three companies in terms of facility ownership, contribution to the electric grid, and emissions generation, one would expect that they would be mentioned in discussions of climate and energy policy. Moreover, these companies publicly opposed the Clean Power Plan and are members of the Utility Air Regulatory Group, a powerful industry group that has been a major player in litigation against the Clean Air Act.⁴⁵ What is surprising is that at the federal level, I find that interview respondents rarely discussed these super emitter companies.

Overall, only 5 interviews across both study periods at the federal level (4%) included mentions of Duke Energy or AEP. Two interviews discussed how these companies were implementing renewable energy, and the other three discussed the role of these companies in debates over the structure of state and regional electricity markets. I do not observe any mentions of Duke Energy or AEP related to their emissions generation or political influence. Southern Company was never discussed at the federal level. These results indicate that it is important to consider the implications of *absence*

⁴⁵ <http://www.snl.com/web/client?auth=inherit#news/article?id=37072675&cdid=A-37072675-13095> (accessed February 22, 2018).

within environmental discourse. In other words, rather than focusing only on those topics and actors that are discussed directly, there is also analytical value to the topics that are missing from policy discussions. From the perspective of large industrial polluters, staying out of the discourse can serve as a protective (and powerful) strategy: as the debate over the Clean Power Plan revolved around the authority of the EPA and the economic impacts of the proposed regulations, these companies continued to generate extreme levels of CO₂ emissions.

At the state level, respondents were much more likely to discuss Duke Energy and AEP (54 interviews total, or 58% of all interviews mentioned one or both companies). At first glance, the prevalence of these two companies within state-level interviews is to be expected: AEP is an Ohio-based corporation and owns a large portion of utility-scale generation in the state, while Duke Energy is active across the Midwest and Southeast. Ohio respondents did not discuss Southern Company, as this utility produces energy in a different regional system and is not active in the state. However, when analyzing the content of Ohio respondents' discussions of Duke Energy and AEP, I again find that the extreme emissions generation of these companies was not mentioned. Rather, Ohio respondents discussed the same themes as the few federal respondents: renewable energy implementation and electricity market structures. Statements related to renewable energy tended to cast the companies in a positive light, focusing on how even the largest utilities in the state were participating in efforts to increase renewable energy generation. Statements related to the structure of the state's electricity market focused largely on AEP's influence and involvement in ongoing debates at the Public Utility Commission of Ohio.

At the state level, the discourse around extreme emitters follows a pattern of diversionary reframing, or the diversion of “attention away from any questions about existing distributions of privileged, not by brute force, but by changing the subject (Freudenburg and Alario 2007:146; see also Freudenburg and Gramling 1994). As respondents discussed the positive actions Duke Energy and AEP were taking on the renewable energy front or argued about whether it was a benefit to utilities to change the regulatory structure of the state’s electricity market, these companies continued to contribute to Ohio’s position among the most carbon-intensive states in the country. The climate impacts of these companies went undiscussed, even among representatives of environmental and clean energy organizations. In fact, environmental organizations were the most likely type of policy actor to discuss Duke Energy and AEP renewable energy programs, while they *never* discussed these specific companies in terms of emissions or environmental impacts. These observations complicate the notion of privileged accounts as discursive mechanisms that may be produced by actors on both sides of an environmental conflict: rather than finding evidence of environmental interests and challenging extreme emitters, I find that these policy actors engaged in narratives that served to maintain the status quo for coal-fired electric utilities.

Considerations and Future Directions

This study has concentrated on interviews with policy actors to understand the discursive structure of the debate over coal-fired power. Although the findings of this study provide meaningful insight into the production and dissemination of privileged accounts, it is

important to note that the narratives that emerged during off-the-record conversations with interview respondents may be very different from the public positions of policy actors or media accounts of environmental crises. Looking ahead, it is important to assess how the structure and content of environmental debates differs across off-the-record conversations, policy debates, and media coverage. Such a comparison could lead to a more holistic understanding of how privileged accounts enable patterns of environmental privilege and inequality.

One avenue for future study would be the specific narratives used within the policy documents collected during the sampling for this project. Although the Climate Constituencies Project (see chapter 2 for a full description) includes analysis of policy documents, this project does not analyze the content of policy documents beyond identifying specific speakers, organizational actors, and policy positions within the debate over coal-fired power. A logical next step for this project would be a thorough analysis of the frames present in testimonies submitted for the record in policy debates at the federal and state levels. These narratives could then be compared to those discussed off-the-record in the interviews analyzed in chapters 4 and 5.

An additional avenue for future study would add an additional source of data: newspaper articles. Media-based discourse analysis would allow for a deeper understanding of the structure of pre- and post-election debates over coal-fired power. Discourse analysis and frame analysis have often turned to media coverage (especially newspaper articles) as a source of data (e.g. Andrews and Caren 2010; Earl et al. 2004; Ferree 2003; Ferree et al. 2002). The addition of discourse analysis of coverage from national and Ohio newspapers would lend an additional layer of complexity to the results

reported in this study. Additionally, media data would serve as a method of triangulation and comparison for interview and policy document data. An extension of the mixed-data collection design (Small 2010) of this study to include newspaper articles and policy documents would also open up possibilities to map out the connections between privileged accounts and privileged access. For example, the discursive power of the extreme emitter companies identified in this study could be traced not only through interview data (as discussed above), but also by analyzing the specific frames used by these companies in policy interventions and the ways they are discussed in media accounts.

I have deliberately avoided assessment of the efficacy of environmental policies or the political strategies of policy actors within the debate over coal-fired power. Given the design of this project as an assessment of environmental inequality and the structure of discursive power, it is beyond the scope and intent of the study to measure the influence of discursive strategies on policy outcomes. Rather, the findings presented in this dissertation speak to broader questions about the ability of large industries to generate extreme levels of environmental harm and exert influence over policy debates. At the same time, this study does offer suggestive evidence that recent victories for utility industry interests – namely, the election of President Donald Trump and the subsequent shift away from emissions regulations – were won, in part, by an ideological campaign aimed at opposition to EPA regulations of greenhouse gasses and the Obama Administration’s “War on Coal” (Marra 2016). Further, my findings related to anti-coal counterframing (discussed in chapter 5) appear to support the argument that environmental interests will need to reassess their strategic frames of climate and energy

conflicts if they wish to succeed in countering the influence of industry-driven narratives effectively.

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