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The Impact of Framing on Natural Gas Pipeline Siting In Virginia

Ritvik Shukla

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THE IMPACT OF FRAMING ON NATURAL GAS PIPELINE SITING IN VIRGINIA

by

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ABSTRACT

Natural gas has become a major share of energy consumption in the U.S. over the past two decades. This rise has resulted in considerable investment in the natural gas pipeline network so that the supply can be maximized. However, pipeline infrastructures, much like other fossil fuel energy infrastructures and activities, have an uneven distribution of benefits and costs across different regions. In regions where natural gas activities and infrastructure are being developed, local communities can become increasingly dependent on natural gas systems for stable revenue and employment. Such communities risk becoming “locked in” to carbon energy at a time when the U.S. is expected to transition towards a low carbon energy sector. By framing natural gas in self-beneficial ways, industrialists, politicians, media outlets, Non-Government Organizations (NGOs), Civil Society Organizations (CSOs), and local community members attempt to influence the local discourse around these systems. If the public find the benefits of the pipeline infrastructures more favorable than the costs, pipeline siting is more successful, however when communities do not favor the benefits, pipeline siting is heavily contested.

In this study, I investigate how discourse around natural gas pipeline was influenced by pro- and anti-pipeline stakeholder’s framing of the Atlantic Coast Pipeline and Mountain Valley Pipeline projects in Virginia. I conduct a framing analysis across social media and newspapers and examine how discourse around pipelines changed over time and in proximity to the pipeline projects. Additionally, I interview local NGO and CSO representatives who pushed back against the pipelines being sited in their

communities to place the social media and newspaper framing analysis in context to events and emotions associated with the pipeline project. I find that framing of pipelines changes over time as a result of competitive framing by various stakeholders and in turn shapes the public discourse around ongoing pipeline siting processes. Additionally, I find that pro-pipeline advocates framed natural gas pipelines predominantly through economic benefits, especially in counties where the pipelines were sited. Anti-pipeline groups, however, framed the natural gas pipelines in opposition to any and all actions and statements made by the pipeline groups.

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LIST OF ABBREVIATIONS

AAP.....	Appalachians Against Pipelines
ACP.....	Atlantic Coast Pipeline
CSO.....	Civil Society Organizations
EIS.....	Environmental Impact Statement
FERC.....	Federal Energy Regulatory Commission
MVP.....	Mountain Valley Pipeline
NGO.....	Non-Governmental Organization

CHAPTER 1

INTRODUCTION

The rise of natural gas production and consumption in the U.S. during the last two decades has produced a myriad of socio-cultural impacts. Natural gas energy systems have displayed an uneven distribution of benefits and costs across different regions. In regions where natural gas activities and infrastructure are being developed, local communities can become increasingly dependent on natural gas system for stable revenue and employment. In these spaces, natural gas can transcend its role as simply an energy resource and instead becomes a culturally accepted source of prosperity and employment in local communities while its negative impacts on local ecosystems, greenhouse gas emissions and public health are ignored. However, the energy challenge in the twenty-first century is to bring about a new transition towards a more sustainable energy system characterized by universal access to energy services via a secure and reliable supply of energy from efficient, low-carbon sources (Bridge et al., 2013). As the U.S., as well as the majority of the global north, is expected to undergo an energy transition away from natural gas energy systems and towards renewable energy systems, such communities risk becoming locked into natural gas systems and can be left unable to transition with the rest of the country.

In areas where natural gas systems are novel, associated stakeholders frame natural gas in ways that benefit their own agendas (Blair et al., 2015; Yordy, et al., 2019). By framing natural gas in particular ways, industrialists, politicians, media outlets, Non-

Government Organizations (NGOs), Civil Society Organizations (CSOs), and local community members attempt to influence the local discourse. If the public is favorable towards natural gas systems, they are more likely to welcome gas infrastructure and tend to focus on its economic and employment benefits. If the public is unfavorable to natural gas systems, pipelines may face resistance due to their environmental and public health costs. This thesis attempts to understand how various stakeholders' framing of natural gas systems can lead to success and failure of natural gas pipelines. To do this, I investigate framing trends around two controversial natural gas pipeline projects in Virginia, the Atlantic Coast Pipeline (ACP) and the Mountain Valley Pipeline (MVP).

1.1 Rise of Natural Gas in the U.S.

Over the last few decades, natural gas production and consumption in the U.S. has increased substantially. Between 1970 and 2020 U.S. production of natural gas grew by 62%, with current production is 34.68 quadrillion British thermal units (bcu) per year while consumption is at 31.54 quadrillion bcu per year (U.S.-EIA, 2021a).¹ The rise in natural gas production stems from advancement in key natural gas extraction techniques such as hydraulic fracturing and horizontal drilling, a favorable market, and a lagging policy development (Haggerty, 2017). However, just 60 years ago, natural gas was far from a key energy source in the U.S. energy share.

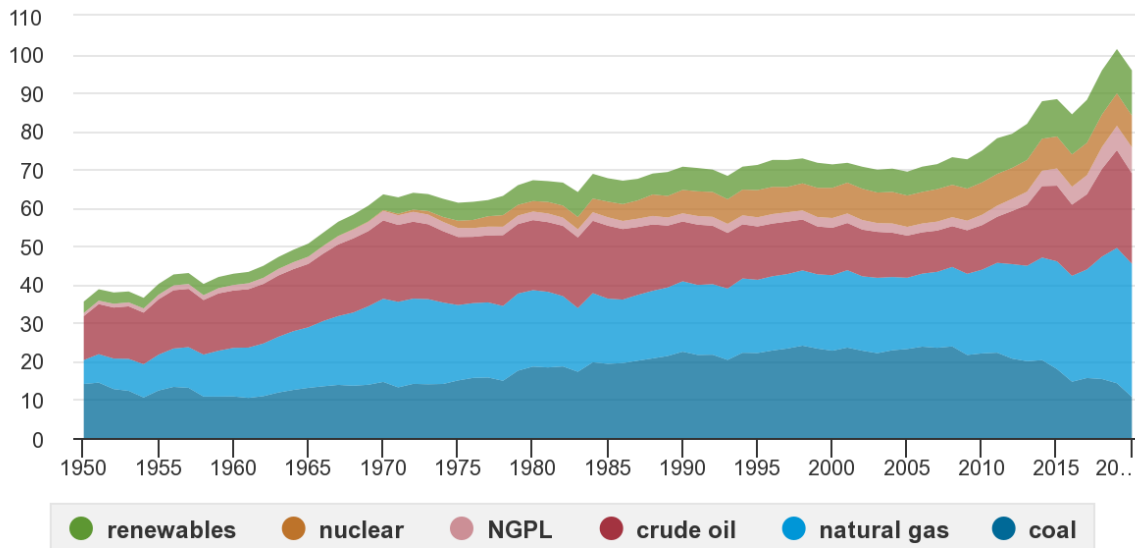
Natural gas's use as an energy resource was first seen in the U.S. in Pittsburgh, PA, where it provided a less polluting, alternate fuel source for the booming iron industry (Tarr, 1999; Haggerty, 2017). For long periods of time, the U.S. depended primarily on coal and oil for energy, with natural gas viewed as more of a hinderance during oil

¹ The U.S. has been a net exporter of natural gas since 2017.

extraction and burned into the atmosphere (Elvidge et al., 2015). However, during the 1970's U.S. import of oil and gas was halted from the Middle East in retaliation to U.S. military support of Israel (U.S.-Department of State, n.d). This resulted in a rise in natural gas and electricity prices in the U.S. Since the Arab oil embargo, U.S. energy legislation has focused heavily on acquiring energy security and independence by developing domestic energy sources (Shum, 2015).

U.S. primary energy production by major sources, 1950-2020

quadrillion British thermal units



Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 1.2, April 2021, preliminary data for 2020



Note: NGPL is natural gas plant liquids.

Figure 1.1 U.S. energy production by share. *Source: U.S.-EIA, 2021a*

Figure 1.1 displays the major sources of energy production in the U.S. We see an increase in natural gas energy production following in the 1970s and another around 2008. Between these periods, however, natural gas shares remained consistent. This consistency was due to the country's dependance on cheaper coal as an energy source as well as its availability within U.S. borders. Natural gas extraction was limited to regions where liquids and gases flow readily under normal pressure. Additionally, lacking

infrastructures for extraction and transportation of natural gas raised natural gas prices. Such prices could not compete with existing coal prices that had been lowered through generations of investment in extraction technologies and support infrastructures. It was not until the 1990s that the natural gas industry developed commercially viable techniques to extract natural gas at levels that could sustain the growing U.S. energy demand. Key “unconventional” technological advances, such as hydraulic fracturing and horizontal drilling, marked the so-called shale revolution and enabled extraction of natural gas from vast yet previously inaccessible domestic reserves of oil and natural gas found in tight sandstone and shale rocks (Haggerty, 2017).

As figure 1.1. shows, the rise of unconventional natural gas extraction starts between 2005 to 2009. In this period, new areas of the U.S. were opened to gas production. The Barnett Shale in east Texas saw a boom in shale production, followed by developments in the Haynesville formation in Louisiana and east Texas, the Eagle Ford formation in south Texas, and the Marcellus formation in Pennsylvania and Ohio (Haggerty, 2017).

The finding of natural gas fields and advancements in unconventional extraction technologies provided the U.S. with an energy source that could meet its growing demands. Between 2003 and 2008, U.S. witnessed a steady rise in natural gas prices (U.S. EIA, 2021a). High gas prices brought additional drillers to the oil and gas market as previously undeveloped natural gas fields boomed. Consequently, new transmission pipelines were (and continue to be) constructed to link the expanded and new production sources to more consumers around the country, most notably in the Northeast (U.S. EIA, 2021a). The boom seen in natural gas production led to lower natural gas prices and

consequently increased natural gas demand. In the last two decades, the U.S natural gas pipeline network has doubled and is currently more than 3 million miles across the country (U.S. EIA, 2021b). The importance of natural gas pipelines in ensuring energy security and lowering the costs of gas transportation was recently touted by the U.S. Department of Transportation (2018), which stated that to move the volume of even a modest pipeline would take a constant line of about 750 tanker trucks per day, loading up and moving every two minutes, seven days a week.

The competitive pricing of natural gas as well as rising environmental concerns around coal combustion has allowed natural gas to leapfrog coal as a leading source of electricity generation in the U.S, comprising 40% of all electricity generated. Natural gas is also currently the second largest source of total energy consumed in the U.S., just behind oil (34% v. 35%) (Figure 1.2). This rapid shift in energy production enabled an energy transition towards natural gas energy. The growing demand for natural gas has brought energy infrastructure, its associated costs, and benefits to natural gas rich regions in the U.S. However, regions in the U.S. that were previously dependent on coal production, extraction, and transportation have been subjected to an economic crisis.

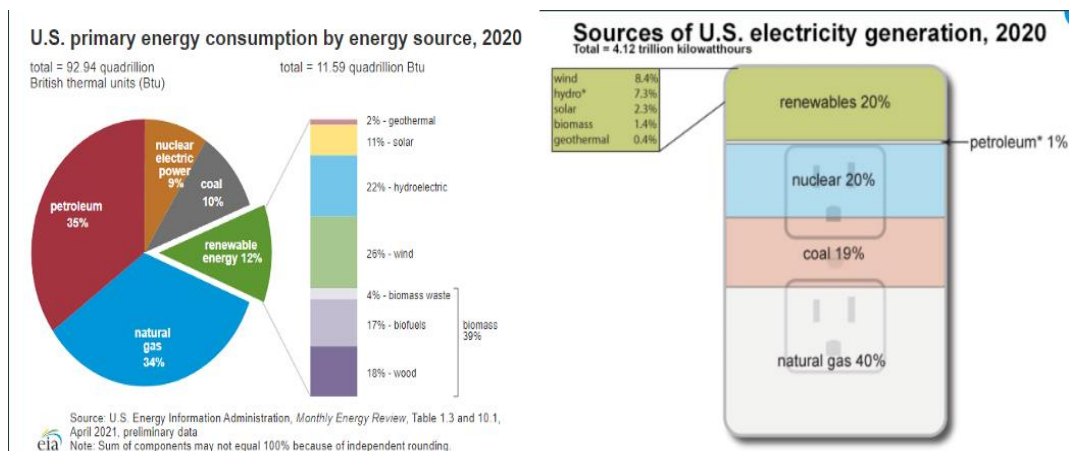


Figure 1.2: U.S. 2020 energy output and electricity generation. *Source: U.S. EIA, 2021a.*

1.2 Energy transitions and carbon lock in

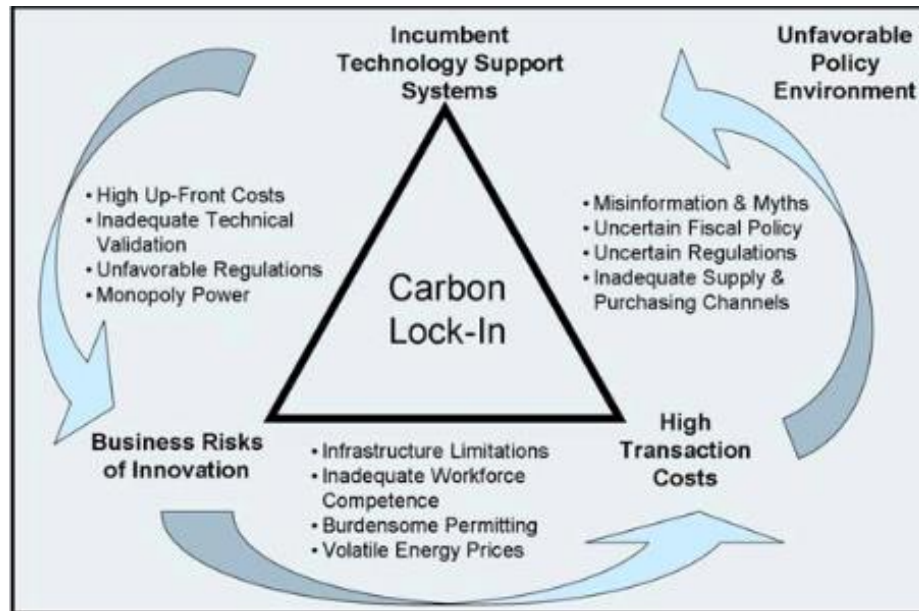


Figure 1.3: Carbon lock in barriers. *Source: Brown et al., 2008*

The shift from coal to natural gas energy systems has adversely impacted parts of the U.S. where communities have become overdependent on coal-based energy systems. Between 2009 and 2025, the U.S. has seen a shift away from coal with one fifth of its coal power plants being shut down (Headwaters Economics, 2017). The shutdown of coal power plants and coal mines often imposes detrimental impacts on local communities, leading to losses of coal employment, household income decline, and tax revenues (Haggerty et al., 2018). Even while the rise of the U.S. economy in the past two centuries has been heavily dependent on cheap and plentiful supply of coal, coal producing communities have been disproportionately burdened with the environmental and health impacts of extractive processes. Nixon (2011) describes such communities as sacrifice zones, areas in which gradual deterioration occurs over a long temporal scale and out of sight. As the rest of the nation moves towards a cleaner energy sector, coal dependent communities are reaffirmed as sacrifice zones in favor of the greater good. This decline is

most clearly seen in regions such as the coal counties of West Virginia where the reduced demand for coal has led to a slow deterioration of human capital and a rise in crime and poverty (Scheuch, 2020).

Communities such as in West Virginia's coal counties found themselves locked into carbon energy systems and displayed the detrimental impacts of carbon "lock-ins." Locked-in carbon energy systems produce a climate policy paradox in which the environmental and health impacts of fossil fuel energy systems are well known, and carbon emission mitigation technology is available, yet locked-in communities are seldom in favor of transitioning to low carbon technologies. Unruh (2000) determines that there are barriers in incumbent energy systems that constrain apparently rational choices. Brown et al. (2008) found that these barriers hindered technology commercialization and deployment by locking in incumbent technologies by escalating the business risks of innovation and by increasing transaction costs associated with change. They found that these barriers were further reinforced by policy environments that favor incumbent energy regimes.

Through international treaties such as the Kyoto Protocol and the Paris Agreement, transnational pressure has been placed on developed nations to move away from fossil fuel energy. Currently, the U.S. energy sector is displaying a potential transition away from carbon energy (coal, oil, and gas) towards renewable energy systems such as solar, wind, and hydropower. As of 2021, President Biden's administration has reaffirmed a zero net carbon emission goal for the energy sector by 2050. However, natural gas infrastructures such as pipelines are rapidly being developed across the country. Carbon infrastructure places disproportionate burdens on already

marginalized minority, low income, and rural communities. With such an energy transition, there is a real risk that transformative change in energy production, distribution, and consumption will exacerbate existing socio-spatial inequality and further disadvantage already marginalized groups (Axon & Morrissey, 2020). In communities where pipelines are being sited, the risk of carbon lock in rises and exposes them as sacrifice zones (similar to West Virginia's coal counties) in the face of a national energy transition to renewable energy.

1.3 The role of framing in creating barriers in already marginalized communities

During the pipeline siting processes, multiple stakeholders, including pipeline industry actors, local politicians, media outlets, community members, NGOs, and CSOs, become embroiled in a battle to frame natural gas systems and pipeline infrastructures in ways that benefit their agenda. Framing theory suggests that how something is presented to the audience influences the choices people make about how to process that information, and thus how they choose to support or resist certain societal, institutional, or political agendas (Arowolo, 2017).

Dodge (2015) studied the role framing plays in shaping public discourse on natural gas systems and found that opposing advocacy groups contest over frames to form frontiers of disagreement. These frontiers are contested across platforms that reach wide audiences and have potential to shape public support/resistance at varying spatial scales. Newspaper articles, social media, cable media, photography, and magazines are most commonly seen to host a competitive frontier of disagreement. The success or failure of the frames used by the advocacy groups influences the success or failure of the pipeline project. If pro-pipeline frames are dominant, local communities can display

favorability to the projects and risk becoming carbon locked in. Such frames can then place barriers to other energy industries. However, if anti-pipeline frames are dominant, local communities can display unfavourability to the project and lead to rising project budgets and litigative battles.

1.4 Purpose of this study

In this study, I aim to investigate the role framing plays in determining the success or failure of energy infrastructure siting. I do so by investigating two pipeline controversies in Virginia between 2017 and 2021. I examine how various stakeholders framed the Atlantic Coast Pipeline (ACP) and Mountain Valley Pipeline (MVP) projects. Both the pipeline projects were initially proposed in 2014 and resulted in a contentious framing battle between pro- and anti-pipeline advocacy groups. While the ACP was cancelled in 2020, MVP remains under construction despite it being delayed by over 4 years and \$2 billion over budget.

I conduct this investigation in two steps that are supplemented by semi-structured interviews with Virginia's pipeline NGOs and CSOs. First, I investigate how anti-pipeline and pro-pipeline advocates on Twitter framed both pipelines in 2019, a period in which discourse on social media peaked. Second, I examine the general framing trends around ACP and MVP across all newspaper articles in Virginia. Newspapers proved to be a key mode of communication for local stakeholders and displayed a highly competitive and data-rich platform of debate. Through this analysis, I aim to understand how the framing of natural gas pipelines changed both over time and across distance from the pipeline routes. Through the insights gained into pro- and anti-pipeline framing trends via

social media analysis and in newspaper articles, I hope to understand the role framing played in the failure of ACP and the continued success of MVP.

In this study, I review past studies on the influence of framing on natural gas systems (Chapter 2). Then, I present the background to the ACP and MVP projects since their proposal in 2014 up to December 2021 (Chapter 3). Following the background, I discuss the methodology I used to collect and analyze Virginia's social media and newspaper pipeline discourse (Chapter 4). Then, I present my social media analysis and discuss my findings in chapter 5, followed by my newspaper analysis and discussion in chapter 6. Finally, I present my conclusions in chapter 7 where I discuss the key takeaways, limitations, and contributions of this study to the field of energy geography and framing analysis.

CHAPTER 2

LITERATURE REVIEW

2.1 Framing analysis

Framing refers to the process by which people conceptualize and reorient their thinking regarding any object of evaluation. Framing theory emphasizes that an issue can be viewed from a variety of perspectives and be constructed as having different implications for multiple interests (Chong & Druckman, 2007). Framing theory is increasingly being used to assess how various stakeholders are framing an issue to influence public perception. Framing analysis has been utilized in assessing media coverage of key societal issues of the 21st century such as bullying (Yang, 2020), racism and xenophobia (Kang & Yang, 2021), gender equality (Leek, 2018), LGBTQ rights (Sterbenk et al., 2021), and immigration (Sarah liu, 2021). In light of the COVID-19 pandemic, medical literature focusing around (mis)information has drawn attention to framing's effects on public opinion (Wicke & Bolognesi, 2020; Clark & Nickels, 2021). Environmental framing analysis is increasingly being used in studies pertaining to issues such as sustainability (Foss, 2018), climate change (Eck & Dewulf, 2020), and vulnerability and resilience (Bohensky & Leitch, 2013; Laeni & Arts, 2019).

2.2 Carbon Lock in

The success of industrial framing in garnering a community's favorability for natural gas infrastructure risks communities becoming locked into carbon-based energy systems at a time of rapid energy transition towards renewable energy. Carbon lock-in

creates long lasting market and policy failures that can place barriers in the introduction of low-carbon technologies despite their apparent environmental and long-term economic advantages (Unruh, 2000). Carbon lock in is a post establishment phenomenon, often witnessed most clearly during a period of energy transition away from the status quo. Past literature on carbon lock in has focused primarily on developed nations and around industry narratives (framing) against transition such as existing installed capacity, age of existing stock, committed emissions, stranded assets, capital costs intensity, mitigation costs, emissions/energy gap, residual emissions, elasticity related to long-term capital, technology scale and employment (Fisch-Romito et al., 2021). Additionally, in a study conducted by Seto et al. (2016), past literature focused on carbon lock ins was assessed and identified that industry narratives lock in communities via infrastructural and technological longevity, institutional dependance, and behavioral dependance on the status quo. Once installed, energy infrastructures are difficult and costly to change and often involve long term financial investment from local and state governments. Seto et al (2016) also found that institutions intentionally coordinate efforts to structure institutional rules, norms, and constraints to promote their goals and interests and structure long term behavioral dependance (lifestyle, income, education, and employment) on communities. Such lock ins coevolve with one another and are reinforced by industrial and pro-carbon energy actors' attempts to influence support and establish carbon energy as a status quo.

2.3 Framing Natural Gas

Previous work on natural gas framing has primarily focused on understanding how energy discourse is shaped by stakeholders. Much of the past work looks at a variety of frames that may garner public support or opposition to natural gas, fracking activities

and/or natural gas infrastructure. Focus is also placed on which platforms these stakeholders are driving natural gas discourse. Previous scholarship range from framing analysis of *newspaper articles* (Blair, 2015; Dodge 2017; Dodge & Lee, 2017; Hedding, 2017; Olive & Delshad, 2017; Yordy, 2019), *surveys* (Bayer & Ovodenko, 2019; Boudet et al., 2016; Budgen et al., 2017; Clarke et al., 2015; Hazboun et al., 2019; Hazboun & Boudet, 2021; O'Neill & Schneider, 2021; Stoutenborough et al., 2016), *ethnographic fieldwork* (Dodge, 2015 Poole & Hudgins, 2014), *cable media* (Gearhart et al., 2019), *policies* (Kalaf-Hughes and Kear, 2018; Lee and Lee, 2018), *social media* (Furgen et al, 2021; Liang et al., 2021), and *photographs* (Sarge et al., 2015; Krause & Bucy, 2018). In this work, framing analysis seeks to understand how the ways in which natural gas systems (extraction, transportation, and policies) are framed, leads to the favorability of natural gas.

Gas pipeline companies are eager to establish favorable views of natural gas infrastructure in local communities. However, how favorably local communities view such infrastructures is often dependent on existing beliefs of local community members. For example, Budgen et al. (2017), found that local communities who had a positive association with legacies of mining and timber extraction were much more favorable towards natural gas infrastructures. Their study highlights that people with little to no prior contact with pipelines will depend on past experiences with natural resource extractive practices to form opinions on pipeline infrastructures. Another study, undertaken by O'Neill & Schneider (2021), investigated the correlation between political ideology and natural gas extraction, finding that people often form their opinions regarding the environmental and economic framing of natural gas via political outlets.

Clarke et al. (2015) argue that such pre-existing beliefs illicit top of mind associations on individuals. As a result, competitive framing between stakeholders attempts to reconfigure such top-of-mind associations in ways that benefit their interests. Such competitive discourse sees stakeholders frequently utilize emphasis framing. Emphasis framing conveys different underlying messages focusing on different aspects of the same issue (Clarke et al., 2015). Public discourse can be influenced by such frames and result in competitive discourse across various communication platforms, which can determine the success and failure of the projects (Bayer & Ovodenko, 2019). Existing framing analysis has sought to capture such emphasis framing at varying details. Some authors have investigated the impact that natural gas extraction terminology (Clarke et al. 2015; Stoutenborough et al., 2016) and natural gas extraction imagery (Sarge et al., 2015; Krause & Bucy, 2018) have had on acceptance of natural gas. Other scholars have investigated the specific ways through which the public discussed natural gas infrastructures and how different stakeholders framed these infrastructures.

Derived from past works, figure 2.1 displays a list of most frequently found frames used to assess public (un)favorability towards pipelines. These frames fall within framing trends that have been preferred by both pro-pipeline and anti-pipeline stakeholders. Olive and Delshad (2017), in their comparative study of Canada and U.S., found that pro-natural gas system actor's framing centered on economic benefits while anti-natural gas actors utilized environmental and public health frames to form an opposition. As a result, past research has repeatedly demonstrated that when the public favorability lies with the economic benefits, natural gas infrastructure siting is successful. However, when the public sentiment favors environmental impacts, natural gas

infrastructure siting tends to be unsuccessful (Blair et al., 2015; Hazboun et al., 2019; O'Neill & Schneider, 2021; Sarge et al., 2015).

No.	Frame	Description	Source
1	Environment	1. Impacts on Environmental components (ecosystems, water, air, etc.) 2. Mitigation and conservation efforts	Hudgins & Poole, 2014; Blair et al., 2015; Clarke et al., 2015; Matz & Renfrew, 2015; Sarge et al., 2015; Stoutenborough, Robinson & Vedlitz, 2016; Dodge & Lee, 2017; Hedding, 2017; Olive & Delshad, 2017; Scanlan, 2017; Hughes & Kear, 2018; Krause & Bucy, 2018; Lee & Lee, 2018; Hazboun et al., 2019; Hazboun & Boudet, 2021; O'Neill & Schneider, 2021
2	Economy	1. Economic impacts (taxes, investments, etc.) 2. Company appeasements 3. Local organizations given donations by ACP/MVP	Blair et al., 2015; Clarke et al., 2015; Dodge, 2015; Sarge et al., 2015; Dodge & Lee, 2017; Hedding, 2017; Olive & Delshad, 2017; Scanlan, 2017; Kalaf-Hughes & Kear, 2018; Krause & Bucy, 2018; Lee & Lee, 2018; Hazboun et al., 2019; Yordy et al., 2019; O'Neill & Schneider, 2021
3	Employment	1. Long term and short term employment 2. Local and outside employment	Boudet et al., 2016; Scanlan, 2017
4	Public Health	1. Water and Air Pollution impacts to public. 2. Infrastructure hazard/ accidents	Blair et al., 2015; Dodge & Lee, 2017; Olive & Delshad, 2017; Scanlan, 2017; Krause & Bucy, 2018; Hazboun et al., 2019; Hazboun & Boudet, 2021; O'Neill & Schneider, 2021
5	Infrastructure Safety	1. Construction safety to public and ecosystems. 2. Risk of pipeline damage, leaks or explosion	Scanlan, 2017
6	Policy/ Regulation	1. Pipeline regulations and policies 2. Litigation based on policies 3. Federal and state laws mentions	Blair et al., 2015; Dodge, 2017; Dodge & Lee, 2017; Hedding, 2017; Kalaf-Hughes & Kear, 2018; Lee & Lee, 2018; Yordy et al., 2019
7	Energy security	1. Necessity of energy supply 2. National and local energy demand	Scanlan, 2017; Hazboun et al., 2019

Figure 2.1: Common frames analyzed in past literature

2.3.1 Natural gas framing to influence local communities

Focusing on the local scale utilization of economic benefits vs. environmental costs, Blair et al. (2015), investigated how actors' certainty or uncertainty in communicating the risks and benefits framings of natural gas extraction influenced local community favorability. They found that industry (and pro-pipeline) actors' certainty in framing fracking in terms of economic benefits and local employment garnered higher favorability, especially when environmental groups displayed uncertainty in their framing of environmental and health impacts. Industry actors hope to gain local community favorability by leveraging the economic frames and downplaying the environmental risks. Scanlan (2017) states that corporate communication focuses on local communities

via education, transparency, and trust; safety and responsibility; faith in science and American ingenuity; economic development and jobs; community collaboration; energy independence and security; and environmental protection and sustainability. The author finds that through these frames, industrial actors attempt to greenwash natural gas extraction, and in doing so, form a narrative around the loss of economic benefits and employment potential if natural gas extraction is not carried out in the region. Another study by Matz and Renfrew (2015) emphasized how, in the face of potential environmental and social disruptions, oil and gas industries are undertaking a myriad of public relation initiatives to frame the shale oil boom in a positive light. They found that industry actors attempted to frame natural gas extraction infrastructures through cultural associations, economic benefits, and patriotism. Industrial actors also sought to build connections with local communities, positioned themselves as experts backed with scientific knowledge, and framed their opponents as irrational obstructionists (Matz & Renfrew, 2015). Positioning themselves as experts exhibits certainty in portraying the benefits of natural gas systems in local communities and to local legislators.

2.3.2 Natural gas framing to influence legislation

Industry strategy to initiate carbon lock ins excels when the local political climate favors the industry's interests (Brown et al., 2008). Local political ideology and partisan framing of natural gas systems is visible in both public favorability as well as legislation. Hudgins and Poole (2014) examined the discourse related to unconventional natural gas development in Western Pennsylvania. They found that the discourses that emerge from industry-involved actors is justified, endorsed, and empowered by policies and official bodies that exclude certain forms of knowledge that reframe public goods and properties

as utilitarian owned. They also found that state, capital, and industry all utilized expressions and rhetoric that were designed to persuade, not inform the public. Looking at partisan framing trends in Wyoming, Colorado, and New Mexico, Kalaf-Hughes and Kear (2018) found that Republicans and Democrats were likely to vote on bills that can be seen as a win-win (i.e., framed the bill as economically beneficial and safeguarding the environment). However, Republicans were more likely to vote on a bill supporting the status quo as long as the economic benefits outweighed the environmental costs.

2.3.3 Framing natural gas pipelines

Over the past two decades, U.S. has seen the natural gas pipeline network double, much of which impacts rural and already economically marginalized communities. This success in siting can be due to the contrast in industrial actor's focus on building community connections and shifting the scale of benefits to a local level with environmental groups directly opposing pipeline advocates. Bayer and Ovodenko (2019) found that individuals were more favorable to natural gas extraction when benefits were framed exclusively and less favorable when costs were framed. However, they found that competitive framing, one which framed natural gas extraction in opposition to other's framing, displayed no change in existing opinions. In case of U.S. pipelines, past research has displayed a common trend of pro-pipeline actors showcasing economic benefits, while anti-pipeline actors are placing greater emphasis on framing in response to pro-pipeline frames, instead of focusing on the environmental and public health costs. Yordy et al. (2019), found that pro-pipeline actors' conceptual framing centered on economic benefits while anti-pipeline actors' conceptual frames were more diverse and emphasized

statements directly opposing pipelines. This shows an evolving natural gas framing, especially during a period of energy transition.

2.4 Building on previous literature

Discourse around natural gas extraction then, can no longer be broken into an oppositional relationship between economic benefits and environmental costs. Dodge (2015) attempts to display the role of civic society organizations in forming a deliberating democracy through an ethnographic analysis of New York's hydraulic fracturing controversy. Deliberative democracy emphasizes that final political decisions must be based on fair and competitive discussions among different stakeholders. Dodge broke down the controversy into distinct phases of framing evolution. First the 'act,' where an actor advocates for a particular way to frame an issue. Second is the 'interact,' where other actors react to and challenge an element in the initial framing. The final step is the 'double interact,' in which multiple actors adjust their framing in response to others. Through their analysis, Dodge found that various civil society organizations offer differing frames ranging from risks, landowner rights, economic development, and energy security. Since these frames often emphasize and omit parts of the discourse, they present partial and often competing perspectives of an issue and form "a frontier of disagreement." For example, while industry activists frame natural gas as a cleaner energy source, they push focus away from methane emissions, sedimentation, and erosion due to pipeline siting. However, environmentalists focus more heavily on such issues while disregarding the advancement in carbon emissions by natural gas pipelines. Thus, we see environmental impacts becoming a frontier of disagreement which is framed in different ways by industrial and environmental groups.

In a later study, Dodge (2017) conducted a newspaper analysis to view how the mobilization and counter mobilization of advocates with competing fracking coalitions led to a crowded advocacy space and formed frontiers of disagreement. Dodge broke down her work temporally into six peak periods of discourse around fracking and broke down the analysis into act, interact, and double interact episodes. She found that coalitions collectively influenced natural gas discourse through diverging notions of what they believe is credible information, who they regard as experts in the field, and which institution should be in charge of oversight and management. A key observation Dodge (2017) made regarding these frontiers of disagreement was that oftentimes advocates were forced to make changes to their analysis by responding to (reacting) the frames put forth by competing advocates. This can change entire discussions around the issue and lead to further contexts of advocacy in a crowded field.

This finding was further confirmed by a study by Dodge and Lee (2017), which investigated the role of an interactive framing process among competing coalitions in the formation of political gridlock. The authors found that gridlock is a dynamic process through which competing coalitions engage in interactive framing processes that restructure the discussion. Analysis of framing discourse across five peak engagement events revealed that: through interactive framing dynamics, coalitions are denied a shared discursive space capable of allowing a consensus to be reached. In the case of New York, the framing began with economic benefits but soon evolved into policy negotiations based on frames such as environmental protection, public health, economic development, and governance.

A key takeaway from Dodge's work is that there are changes in how natural gas infrastructure is framed over time. While pre-existing viewpoints can determine whether communities support or oppose new energy infrastructures, the effects of those prior experiences fade over time. As the effects of earlier interactions fade, individuals become newly susceptible to changes in their opinion (Chong & Druckman, 2013). The effectiveness of framing thus becomes more dependent on time and can be viewed over changes in framing trends by various stakeholders. This paper attempts to view the change in discourse around ACP and MVP over time and to assess key frames being used in frontiers of disagreement formed over social media and newspapers. I do so by asking the following research questions:

- 1) How have anti- and pro-pipeline advocates framed pipelines in Virginia?
- 2) How did framing trends around the ACP and the MVP change over time?
- 3) Does the distance to the pipeline impact the frames being used around the ACP and MVP?

While the first research question builds upon past scholarship investigating how pro- and anti-pipeline actors shape discourse, the second and third question attempt to take Dodge's time-based framing analysis a step further. Dodge states that framing in crowded advocacy spaces changes over time in response to other stakeholders. Building on Boudet et al. (2016), who state that proximity also plays a part in influencing support for natural gas favorability, I hypothesize that framing also changes with proximity to natural gas infrastructures such as pipelines. Investigating these questions will also enable me to understand how framing contributed to the relative success and failure of pipeline projects and adds to the growing literature on carbon lock ins.

CHAPTER 3

ATLANTIC COAST PIPELINE AND MOUNTAIN VALLEY PIPELINE BACKGROUND

3.1 Atlantic Coast Pipeline

In September 2014, four energy companies, Dominion Energy (majority 48% shares), Duke Energy and Piedmont Natural Gas (47% shares), and AGL Resources (5% shares) proposed to build the Atlantic Coast Pipeline. The majority shareholder, Dominion Energy, is based in Richmond, Virginia and provides electricity and natural gas heating to more than 7 million customers in 16 U.S. states (Dominion Energy Climate Report, 2021). Duke Energy is one of the largest electric power holding companies in the U.S., providing electricity to 7.8 million customers in six states and providing natural gas to 1.6 million customers, primarily in Ohio, Kentucky, Tennessee, North Carolina, and South Carolina (duke-energy.com, 2022). Piedmont Natural gas, a gas provider for residential and business customers in North Carolina, South Carolina and Tennessee was bought by Duke Energy in October 2015 (Downey, 2021). Georgia based AGL Resources, now part of the energy holding company the Southern Company, provides natural gas solutions for approximately 4.3 million customers through regulated distribution companies in four states and boasts a growing pipeline network designed to transport natural gas out of the Marcellus shale to the East Coast (Southern Gas Company, 2022).

The proposed 600-mile natural gas pipeline was initially estimated to cost \$ 4.5 – 5 billion and would transport natural gas from the West Virginian Marcellus shale deposits starting in Harrison County, West Virginia. In Virginia, the pipeline was initially proposed to follow the path shown in Figure 3.1, passing through Highland, Augusta, Nelson, Buckingham, Cumberland, Prince Edward, Nottoway, Dinwiddie, Brunswick, Greensville, and Southampton counties with an extension to Chesapeake, and then southward through central North Carolina to Robeson County (Star-Tribune, 2014). The pipeline aimed to move Appalachian natural gas from West Virginia’s Marcellus shale deposit to markets in Virginia and North Carolina (Star-Tribune, 2014).

Atlantic Coast Pipeline (ACP) Proposed Route

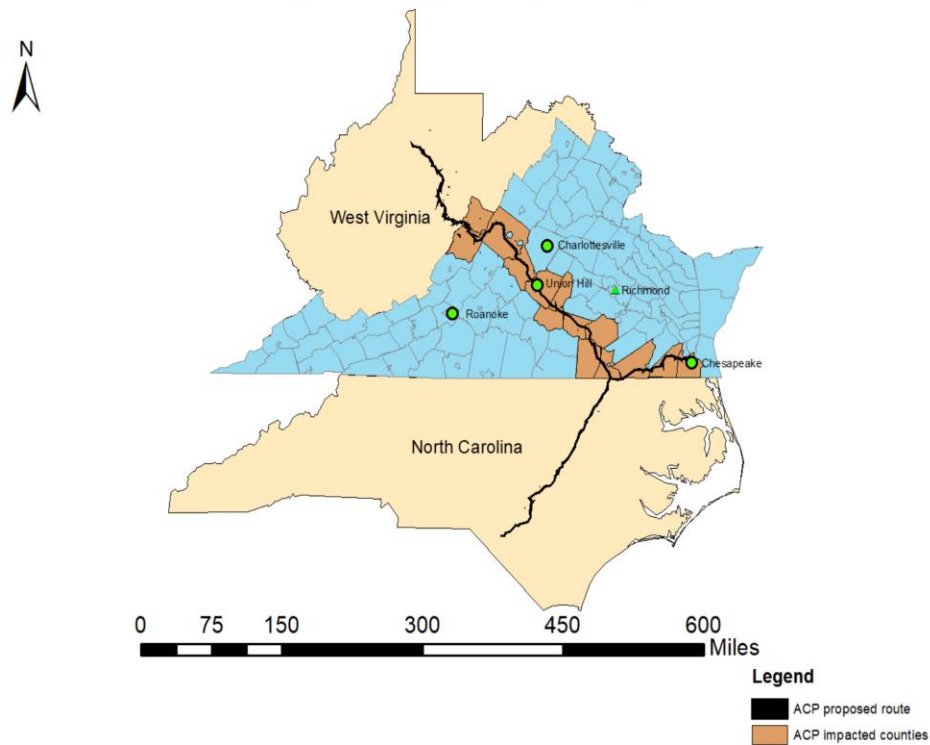


Figure 3.1: Proposed ACP pipeline route and impacted counties.

At the time of the pipeline's proposal, the four companies partnered to form the Atlantic Coast Pipeline, LLC, and then issued a statement proclaiming the pipeline's benefits to local communities and the states of West Virginia, Virginia, and North Carolina. The joint statement described the pipeline project as a creator of thousands of jobs, a significant revenue stream for state and local governments, and a reliable fuel source for economic development (Star-Tribune, 2014). In addition, the statement referred to the lower greenhouse emissions of natural gas and the critical need for natural gas in order to meet the growing consumer demands for "clean" energy.

Before beginning construction, natural gas pipelines need to be approved by a variety of federal, state, and local agencies. The federal approval process is governed by the Natural Gas Act of 1938, which states that interstate pipeline projects must be deemed to be in "public convenience and necessity" by FERC. However, the act does not provide a clear definition for "public convenience and necessity" and thus treats each application individually. Prior to the certification of the pipeline, a pre-filing process is followed (Figure 3.2). This process includes the identification of and visits to potential siting locations, consultation with all interested agencies, and public input opportunities via open houses and filed comments. Upon completion of the site visits, public input period, and submission of a formal FERC application on part of the applicant, FERC issues a Notice of Application and prepares a draft Environmental Impact Statement (EIS). Following a period of public comment on the draft EIS, a reviewed and updated final EIS is produced by FERC and a final public comment period is opened to assess the needs for construction and to hear cases of opposition. In addition to federal permits, a variety of statewide and local level permits are required in each state of operation. Once

the public comment period is closed and if the project is approved, FERC issues a notice to proceed with construction and the pipeline can begin construction. Following the notice to proceed with construction, the applicant can begin acquiring right of ways (via land easements, eminent domain, etc.) and begin construction (The News and Advance, 2014).

Just one month after the project was announced, ACP announced that they would be rerouting the pipeline plan in response to ongoing land surveys and pushback from landowners and environmentalists. Throughout the approval process, ACP spokespersons maintained that their routing team had established the route over a span of two weeks. This raised concerns of lacking attention to environmental and private property rights. As one spokesperson from an environmental organization stated in an interview, “Dominion spent two weeks, two people planning the route of a 600-mile pipeline... What a joke right?”

Despite minimal planning, two weeks after the initial announcement, Atlantic Coast Pipeline, LLC initiated the FERC review process. In addition to FERC, the project also required the approvals of 40 federal, state, and local regulatory agencies before construction began (The News and Advance, 2014). While the pipeline quickly attained endorsement by several Virginian politicians, new county and state level Civil Society Organizations (CSOs) and Non-Governmental Organizations (NGOs) were already being formed to oppose the construction of the pipeline.

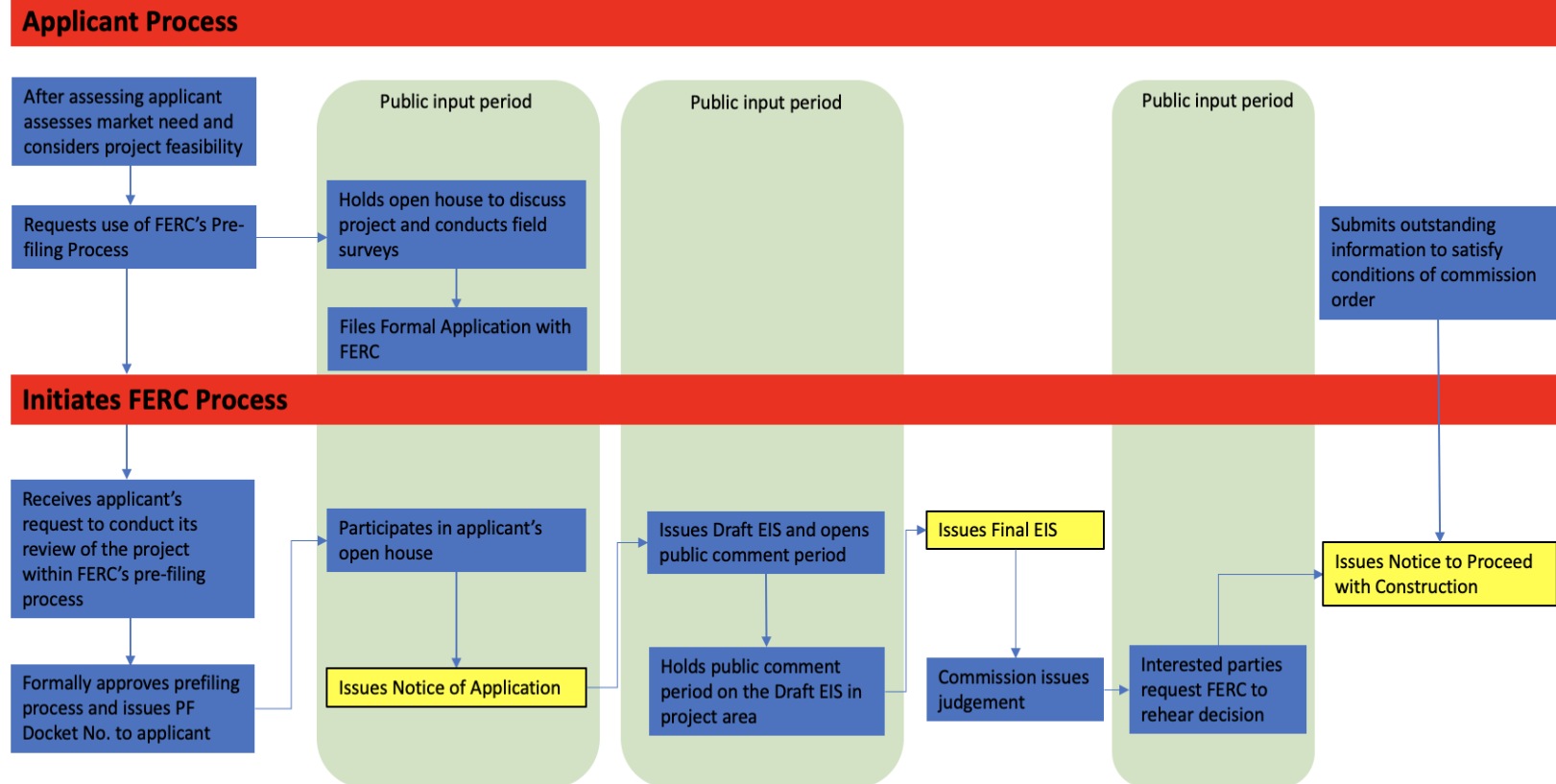


Figure 3.2: FERC Environmental Review Process. *Adapted from: FERC, 2020*

In the case of the Atlantic Coast Pipeline (Figure 3.3), FERC issued a draft EIS on December 30, 2016, more than two years after the project was first announced. Following a 4-month public comment period, FERC then reassessed the pipeline's environmental impacts, the need for the project, and whether the gas will be provided at just and reasonable prices. The draft EIS report found that the 600-mile pipeline would have some adverse and significant environmental impacts that could be reduced to less than significant levels with the mitigation measures FERC proposed to Atlantic Coast Pipeline, LLC.

Interestingly, while Dominion Energy initially framed the pipeline infrastructure as predominantly bringing in local economic benefits and increasing employment, environmental groups and FERC had a different take on the pipeline. FERC's executive summary for the draft EIS acknowledged that the project would impede upon endangered species, wetlands, groundwater, and nearly 2000 surface water bodies (Zullo, 2016). In addition to these environmental concerns, opponents of the pipeline also framed it as harmful for public health and safety. For example, a statement put out by a group of anti-pipeline organizations, which included the Virginia chapter of the Sierra Club and Appalachian Voices, stated that FERC's draft EIS ignored evidence that the pipeline was not needed and put lives, communities' drinking water supplies, private property, publicly owned natural resources, and the climate at risk (Zullo, 2016). While the draft EIS did note multiple environmental impacts, opponents such as the Alleghany Blue Ridge Alliance emphasized that the draft EIS did not include an assessment of the project's landslide hazards, such as a slope stability analysis, despite the project being sited across fragile Karst limestone slopes of Virginia (Zullo, 2016).

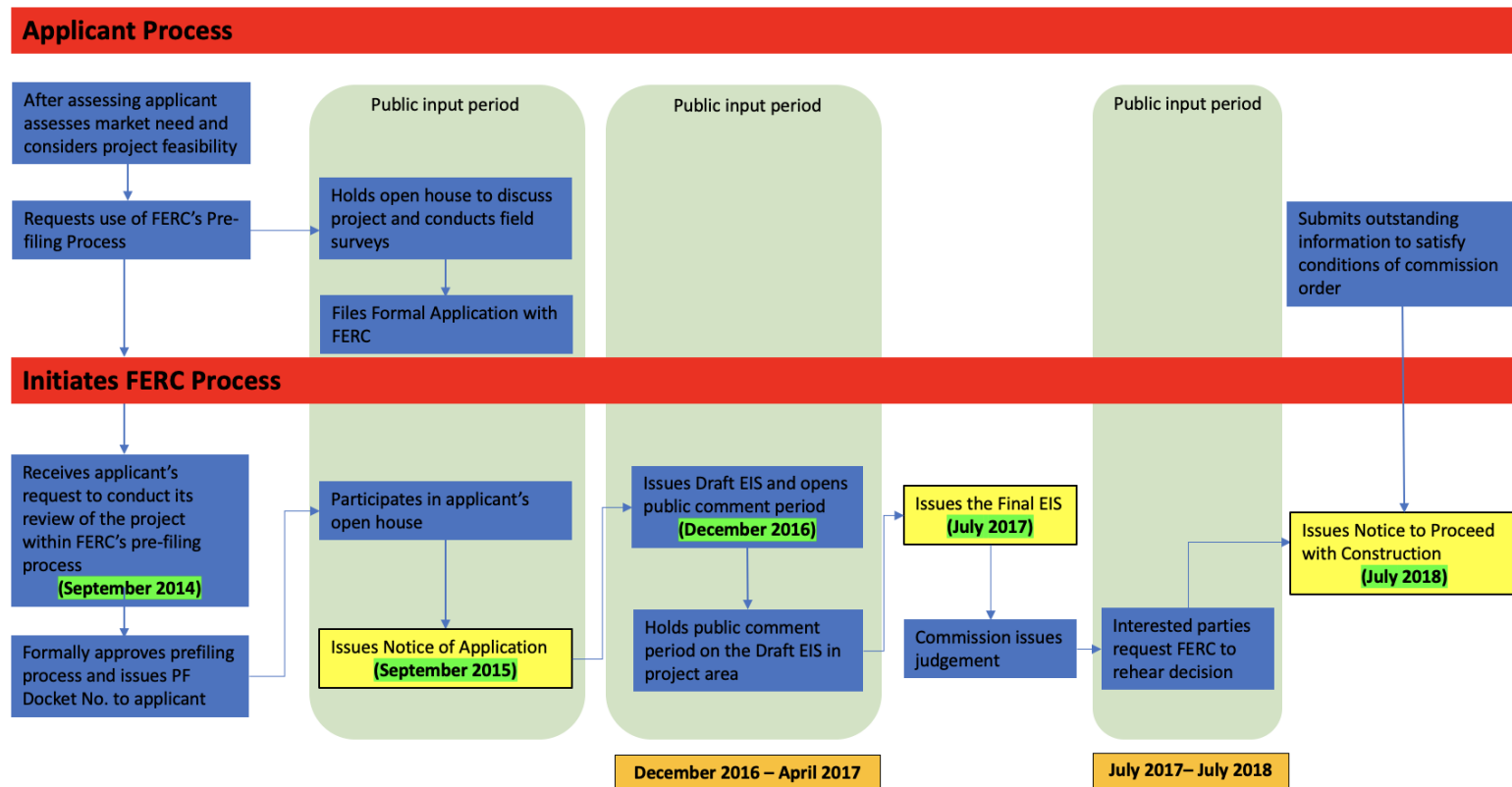


Figure 3.3: FERC Environmental Review Process for ACP. *Adapted from: FERC, 2020*

After the public comment period, on July 21, 2017, FERC issued the final EIS. This final document provided details for the proposed pipeline pathway and looked at alternative routes, public safety concerns, socio-economic concerns, and environmental issues over the karst terrain, public and private lands, and sensitive species (Zullo, 2016). The report addressed all comments made during public comment period following the draft EIS. However, despite continued resistance by environmental groups, local landowners and some political actors, the overall tenor of the final EIS was favorable, and FERC issued a certificate for convenience and necessity for the ACP. Over the course of the year, ACP gained FERC's notice to proceed with construction; approval from the U.S. Fish and Wildlife Service; U.S Forest Service permits allowing for construction through George Washington; and Monongahela national forests and water quality certification for Virginia's State Water Control Board. In addition to gaining right of ways through public lands, Dominion Energy and the Atlantic Coast Pipeline, LLC commenced acquisition of private land through easements and eminent domain (Zullo, 2017).

Despite receiving the go-ahead from FERC, the issue of eminent domain was a contentious one. Under the Natural Gas Act of 1938, and as a result of being issued a certificate of public convenience and necessity by the Federal Energy Regulatory Commission, Atlantic Coast Pipeline, LLC could attain privately owned land through eminent domain. Despite gaining several key federal, state and county permits that allowed for construction of the pipeline, local NGOs and CSOs pushed back against the project. While many groups stated that the pipeline was an unnecessary project and exhorted the pipeline's impacts on the environment and local community resources,

several more argued that the company's use of eminent domain posed a critical human rights issue.

In order to counter Dominion Energy's seemingly insurmountable financial and political influence, several of Virginia's NGOs and CSOs formed alliances to merge resources and fight against the pipeline project. The alliances sought to push back against statements put out by Dominion Energy, and also engaged in litigation, community protests and editorials in local and statewide newspapers. As an NGO representative told me in an interview "how we framed it was don't believe anything they're telling you. It's going to have environmental impacts and you've got the safety concerns." Another spokesperson stated that their strategy to fight against Dominion Energy was "if they pass a resolution or do something like that, then take their seat away from the table and push back with contracted studies that can be sent to FERC."

This activism proved effective: groups including the Augusta County Alliance, Appalachian Voices, Friends of Nelson County, Alleghany Blue Ridge Alliance, and the Virginia chapter of Sierra Club were able to delay several construction activities. The alliance of local NGOs and CSOs focused their opposition on the permits granted by the National Park Service and the U.S. Forest Services in 2018, permits from the U.S. Fish and Wildlife Service in 2019, and the siting of a natural gas compression station in a predominantly African American community. One NGO representative told me that these groups aimed to draw public attention and support by framing these issues in predominantly bipartisan narratives. He continued:

The one thing that I think all or most of our local leaders get here, is water and water is not Republican or Democrat. They all get the importance of protecting that because that is economic. I mean, you can't run a business if you don't have water. Augusta County is the

second leading agricultural producer in the state of Virginia, and you can't run a farm without water.

Lawsuits filed against the permit issued by the National Park Service experienced some success. In August of 2018, the 4th U.S. Circuit Court of Appeals tossed out a federal permit issued by the National Park Service for ACP to cross beneath the Blue Ridge Parkway (Martz, 2018a). The ruling was based on unjustified incidental threatened and endangered species impact statements along ACP's pathway (Martz, 2018b). Following the rulings, ACP construction was halted in order to attain new permits. Local opponents then pushed further litigation on ACP due to its pathway across the Appalachian Trail and Dominion Energy's use of eminent domain to acquire private property. In December of 2018, the same federal court vacated a permit issued by the U.S. Forest Service that allowed ACP to cross beneath the Appalachian Trail and 21 miles of steep national forest land in Virginia and West Virginia (Martz, 2018b). The court found that the U.S. Forest Service held no authority to grant the right of way for the pipeline to cross the national scenic trail and stated that the Forest Service had acted haphazardly by changing its forest management plans to accommodate the project, without evaluating alternative routes (Martz, 2018b).

In addition to successfully litigating against the project in federal courts, opponents also sought to highlight that the ACP had proposed a new compression station site next to a predominantly African American community in Union Hill. Union Hill allowed environmental groups to shift their focus towards addressing environmental injustice and environmental racism issues. In response to this criticism, Dominion Energy pledged an investment of \$5.1 million in the community while maintaining that no environmental injustice was occurring as Union Hill was neither a minority nor a low-

income community (Green, 2021). Despite the pushback from Dominion Energy, in September 2018 local anti-pipeline groups gained another major victory when the State Air Pollution Board acknowledged environmental injustice concerns and delayed the vote on permitting the natural gas compression station in Buckingham County.

Litigation success continued in July 2019 when the 4th District Court of Appeals vacated the permit issued by the U.S. Fish and Wildlife Service. While the agency issued the permit upon finding that the pipeline would not negatively impact four identified endangered and threatened species, the Court found that in fast-tracking its decisions, the agency had lost sight of its mandate under the Endangered Species Act to protect and conserve endangered and threatened species and their habitats (Martz, 2019). In July, 2020, and after months of delays, the ACP won a landmark case in front of the U.S. Supreme Court that allowed construction across the Appalachian Trail. It was somewhat surprising then that Dominion Energy and Duke Energy announced the cancellation of the Atlantic Coast Pipeline on July 4, 2020. This cancellation was a result of the ACP being repeatedly thwarted by environmental groups in federal courts and a related federal court ruling in Montana that threw out a nationwide federal water quality permit that was crucial for ACP to cross several waterbodies. While ACP cited growing legal uncertainty around energy infrastructure around the nation, a 3-year delay and \$3 billion excess to ACP's budget were instrumental in the project's cancellation. Virginia's anti-pipeline alliances had hoped to drown ACP in litigation in attempts to delay the project as much as possible. ACP's cancellation capped a 6-year fight that produced a rare win for pipeline opponents in the U.S. The Mountain Valley Pipeline project presents a separate story.

3.2 Mountain Valley Pipeline

In June 2014, the interstate Mountain Valley Pipeline (MVP) was proposed for construction by the Mountain Valley Pipeline, LLC. The project is a joint venture between EQM Midstream Partners, LP (42.7 % shares); NextEra Capital Holdings, Inc. (31% shares); Con Edison Transmission, Inc. (12.5% shares); WGL Midstream (10% shares); and RGC Midstream, LLC (1% shares). EQM Midstream Partners is operating the pipeline and holds the majority ownership (Mountain Valley Pipeline Project, n.d.). EQM midstream partners has an operational focus on gas transmission and storage systems, gas gathering systems, and water services that support natural gas development and production across the Appalachian Basin (Equitans Midstream, n.d). NextEra Energy Capital Holdings, Inc. operates as a holding company and through its subsidiaries, develops, constructs, operates, and manages wind and solar energy plants, electric transmission lines, natural gas pipelines, and energy storage facilities (Bloomberg, n.d). Con Edison Transmission, Inc is one of the world's largest energy delivery systems and invests in a growing energy infrastructure portfolio that claims to provide greater access to energy supplies and more competitive pricing for customers (conedtransmission, n.d). WGL Midstream is a wholesale energy solutions business that invests in and optimizes natural gas pipelines and storage facilities in the Midwest. (WGL, n.d). RGC Resources Inc. is the parent company for Roanoke Gas company and RGC Midstream. Roanoke based RGC resources provides natural gas service to more than 60,000 customers in the greater Roanoke Valley (RGC Resources, n.d).

Initially the MVP pipeline was proposed to be 303 miles long and would carry two billion cubic feet (Bcf) of West Virginia's Marcellus Shale gas to markets in West

Virginia, Virginia, and, via the Southgate extension, to central North Carolina. The pipeline would run from Wetzel County, West Virginia to the Transcontinental Gas Pipeline Company's (Transco) Zone 5 compressor station 165 in Pittsylvania County, Virginia. In Virginia, construction for the pipeline project currently is underway and spans across Craig County, Franklin County, Giles County, Montgomery County, Pittsylvania County and Roanoke County (Figure 3.4). Local opponents have raised concerns of MVP's future expansion goals towards the Gulf of Mexico and potential export to foreign economies. As one concerned NGO representative stated, "They want to continue it into North Carolina, where the South Gate extension goes where you're getting closer and closer to the coast and to export opportunities."

Mountain Valley Pipeline (MVP) Proposed Route

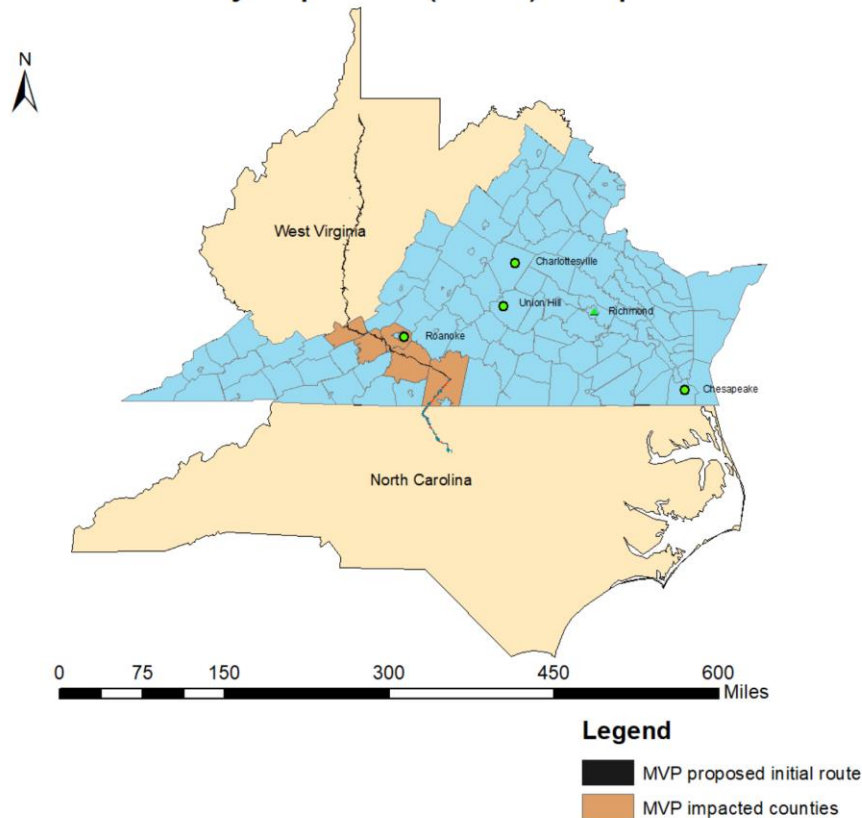


Figure 3.4: Proposed MVP pipeline route and impacted counties

On October 23, 2015, more than a year after the project was first announced, MVP formally filed for FERC's approval to construct and operate the pipeline and on November 5, 2015, a certificate for Public Convenience and Necessity was requested (Mountain Valley Pipeline Project, n.d.). The formal application outlined vastly changed plans following months of community pushback during the pre-filing public comment period. These amendments included the forfeit of a compression station in Montgomery or Roanoke County (depending on where the compression station would be sited) and the inclusion of alternative routes for FERC's review. Like ACP, upon submission of the formal application, FERC analyzed data pertaining to various public concerns, conducted visits to potential siting locations, and consulted with all interested agencies. FERC issued MVP's draft EIS on September 16, 2016. In the draft EIS, FERC found that the pipeline produced limited adverse environmental impacts with the exception of substantial impacts on local forests due to the construction and operation of the pipeline (Martinsville Bulletin, 2016). FERC did, however, acknowledge that about 67% of the project crossed areas with slope gradients greater than 30% and was therefore susceptible to landslides. FERC also found that the pipeline would cross over 51 miles of fragile karst limestone terrain.

Opposition to the draft EIS was stiff from local environmental groups. Concerns were raised about the report prioritizing data provided by Mountain Valley Pipeline, LLC and ignoring several comments by local citizens and experts (Adams, 2016a). Environmental groups also raised concerns regarding the style of "open house" public comment period that followed FERC's issuance of MVP's draft EIS. While the norm for public input is via open house style public forums, FERC had initiated a one-on-one

conversation with stenographers in lieu of a public hearing. Several regional NGOs and CSOs also raised alarm over construction of the pipeline in high slope terrains where sediment erosion can harm local water sources and impact ecosystems and public health.

In addition to public comments against FERC's draft EIS accepting MVP, in December of 2016, the U.S. Environmental Protection Agency (EPA) expressed numerous concerns about the lack of depth in the draft EIS (Rousseau, 2016). The EPA implored FERC to revise its draft statement due to its insufficient consideration for the purpose, need, or public benefits associated with the project. It raised concerns regarding the construction of the pipeline across karst terrains where any contamination to groundwater could have unpredictable impacts to local drinking groundwater and surface water resources. Additionally, the EPA asked FERC to investigate the projects cumulative contribution to greenhouse gas emissions (Adams, 2016b). In response to these concerns, local conservation and community groups filed a 15-page letter to FERC that quoted EPA's critiques of the FERC approval process and asked for a revised draft EIS (Adams, 2016a).

Further concern was raised when MVP filed hundreds of pages of new information with FERC one month after the issuance of the draft EIS (Adams, 2016a). However, the filings were reported by MVP to be adjustments to the pipeline pathway to mitigate concerns raised during the public comment period (mountainvalleypipeline.info, n.d). Taking note of the concerns raised during the public comment period, as well as the updated pipeline route and analysis by MVP, FERC issued a final EIS on June 23, 2017. In its final EIS, FERC noted MVP's adoption of hundreds of route adjustments, the majority of which were based on various landowner requests, avoidance of sensitive

and/or cultural and historic resources, or engineering considerations (mountainvalleypipeline.info). The final statement re-asserted that the pipeline would result in limited adverse environmental impacts except for its impacts on forests (The Adams, 2017).

Despite numerous public concerns regarding the pipeline's impact to local ecosystems and public land and water resources, the final adjustments by MVP were deemed sufficient for FERC to provide the project with a Certificate of Public Convenience and Necessity. Through the certification, Mountain Valley Pipeline LLC began filing eminent domain litigation in attempts to attain right of way from landowners who are unwilling to sell out their property to MVP. One local NGO spokesperson raised concerns with MVP being allowed to use eminent domain, stating:

You also saw a lot of concerns related to property rights from some folks because mountain valley pipeline is a private company. For it to qualify to be able to use eminent domain, they must show that it's for the public need. So, there was a lot of contention about how that was possible. What it ends up being, is a process that kind of moves the applicant and the project along without listening to the experts of the region who are doing that work to educate and raise these concerns.

Over the next few months Mountain Valley Pipeline, LLC was also able to attain other necessary federal, state, and local permits, and ultimately began construction in the first quarter of 2018. However, leading up to the commencement of construction, local opponents of the MVP project attempted to challenge several permitting processes. These included efforts to force the Virginia Department of Environmental Quality to open additional hearings regarding water quality permits, appeals against county zoning permits, and suing the state water control boards over permits issued to MVP. In addition

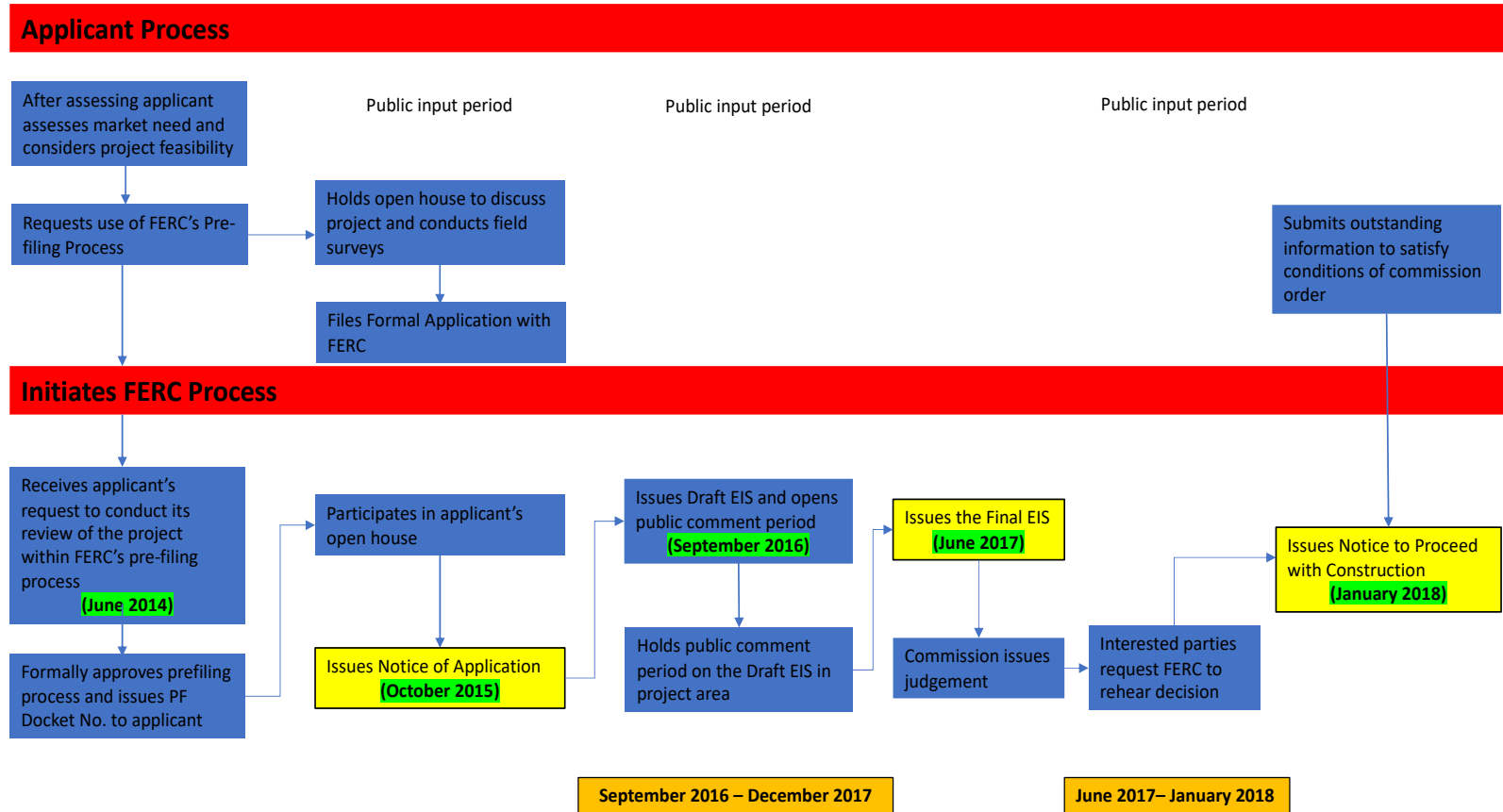


Figure 3.5: FERC Environmental Review Process for MVP. *Adapted from: FERC, 2020*

opponents sought to enforce reviews of MVPs erosion control plans and challenged several eminent domain cases filed by MVP. However, once construction began in 2018, the front for opposition expanded out from the courtrooms and instead on the site of construction itself.

Starting in the summer of 2018, several opponents of the MVP physically blocked the path of the pipeline in Montgomery County. The blockade involved activists occupying trees that were meant to be cut down to make way for the pipeline. The aptly named “tree sitters” in Yellow Finch Lane rotated in and out of trees while local community members and a local anonymous grassroots organization named Appalachians Against Pipelines endorsed the areal blockade. The tree-sit lasted for 932 days and resulted in additional litigative costs and delays for MVP. Throughout the tree-sits, several local and non-local activists also attempted to incur delays on construction by attaching themselves to construction equipment, parking cars in the construction path, and protesting along key construction sites.

In addition to the public pushback, between 2018 and 2020, MVP faced several permit cancellations and was repeatedly fined by Virginia’s state regulators due to environmental impacts arising from its failure to address erosion and sedimentation. In August 2019, MVP temporarily halted several construction activities to address erosion and sedimentation issues, particularly focusing on three permit cancellations. Through it all, MVP accrued penalties of more than \$2 million by state regulators. In October 2019, FERC ordered that all work on the pipeline must be halted except for stabilization and restoration activities and ordered for a review of a biological opinion, issued by the Fish

and Wildlife Service in 2017, that found the pipeline would not significantly jeopardize protected fish and bats (Hammack, 2020a).

Even while the initial project was delayed pending several federal and state reviews, the MVP managed to win FERC approval for an extension into North Carolina. The extension, called MVP Southgate, would start at the 303-mile pipeline's original terminus in Pittsylvania County and run for an additional 75 miles through North Carolina (Hammack, 2020b). The approval was based on a review of the demand for natural gas in the extended region. Controversially, instead of analyzing consumer needs, FERC issued the certificate of public convenience and necessity based on the analysis of financial contracts and commitments of Mountain Valley Pipeline LLC and partners Dominion Energy. Dominion Energy held rights to run and maintain the extension, upon completion of construction. The procedure for approval lacked considerations such as environmental impacts and the pending legal issues surrounding the main pipeline. However, in August of 2020 – and in spite of the FERC approval – North Carolina's Department of Environmental Quality denied state permits for MVP Southgate, citing the uncertainty over the completion of the Mountain Valley Pipeline in Virginia.

After months of waiting, in September of 2020, the U.S. Army Corps of Engineers reissued key permits for the pipeline (Hammack, 2020c). As local NGOs and CSOs challenged the reissuance of the permits, FERC approved a request to extend the construction period and all previously provided certification to MVP by an additional two years and lifted the hold on construction. While construction of the pipeline was more than 90% complete by this time, the in-service date was revised to begin in the first quarter of 2021. However, this date would be further delayed due to recurring permit

challenges by local environmental groups and subsequent construction holds. Delays stemmed from recurring contests over stream crossings permits, continued erosion and sedimentation issues, and litigation arising from activists disrupting construction efforts, especially at the Yellow Finch Lane tree sits.

While the initial MVP proposal expected the pipeline to be in service by the fourth quarter of 2018, as of January 2022 the pipeline remained under construction. The MVP team currently aims for completion of construction by summer 2022. However, the current cost stands at \$6.2 billion, \$3 billion over budget. Additionally, litigation and pushback from local and national opponents is not easing. Several local NGOs and CSOs continue legal challenges over any and all actions undertaken by MVP. In November of 2021, environmental injustice issues were raised regarding the compression station in Pittsylvania County, with concerns centered on MVPs failure to account for impacts on people of color and/or low-income families living close to the station (Womack, 2021). In addition, the cancellation of the ACP in July 2020 has also provided opponents of MVP (many of whom fought against both pipelines) with a blueprint to fight against multi-billion-dollar pipeline projects. While the MVP seems to be slowly reaching completion, by challenging any activities undertaken by MVP, opponents have been able to continue delaying the project in hopes of pushing costs of construction to levels that force Mountain Valley Pipeline, LLC to cancel the project. However, despite already being vastly over budget and after repeated environmental violations, construction on the pipeline continues.

CHAPTER 4

METHODOLOGY

Past research on energy framing has been primarily comparative and static in time. While much of this work has focused on investigating national or regional discourse around fossil energy systems and processes, there has been less consideration of how local public perception of fossil energy infrastructure varies over time and distance from energy infrastructures. A notable exception is research by Dodge (2015), Dodge (2017) and Dodge and Lee (2017), which focuses on time period-based analysis of changing framing patterns in the state of New York between 2007 and 2014. This work aims to further expand time-based framing analysis and utilizes quantitative data across media platforms to understand how the framing of pipeline infrastructures has changed over time. Additionally, it investigates how public discourse dissipates across distance from energy infrastructure sites.

Framing analysis aims to understand how a certain product or process is framed by a stakeholder to garner public support or opposition (Arowolo, 2017). In this thesis, I focus on the Atlantic Coast Pipeline (ACP) and Mountain Valley Pipeline (MVP) projects in Virginia by analyzing Virginian newspaper articles between 2017 and 2021 as well as tweets from Virginia based Civil Society Organizations (CSOs) and Non-Governmental Organizations (NGOs) in 2019. Newspaper analysis is a technique that has

been widely used by scholars to assess energy system framing as it provides a comprehensive time-based dataset (Blair et al. 2015, Dodge 2017, Dodge & Lee 2017, Hedding 2017, Olive & Delshad 2017, Yordy et al. 2019). Social media analysis is a growing field of framing analysis and offers a novel way to assess how energy is being framed by stakeholders online (Furgen et al 2021, Liang et al, 2021). Social media offers a more informal and often abrasive commentary that can help to better understand how community members view such projects.

While quantitative analysis of newspaper articles and tweets have allowed me to assess long term framing patterns, these techniques are limited in their ability to provide a context to better understand these framing trends. In order to understand the day-to-day impacts of the pipeline infrastructures on local communities, I interviewed local NGO and CSO representatives. This qualitative data provided context to short- and long-term framing trends and anchored framing trends to real world events and framing strategies employed by the stakeholders. Interviewing has been a staple in social sciences research through which the investigator can understand how individuals interpret and assign meaning to their social world (Hamill, 2019).

The first step of my methodology was to analyze past academic literature in order to investigate the framing of natural gas energy systems. I used this literature review to create a list of frontiers of disagreement that previous authors had identified (Figure 4.1). The academic literature I reviewed focused primarily on U.S. populations and included state, regional and national level framing patterns. I assessed each paper for the frontiers used in the “methodology” sections as well as how the authors themselves framed the natural gas infrastructures. Following a literature analysis of 25 articles, all distinct

frames found were included in the were recorded. Based on the analysis of this previous work, I identified the following key frontiers of disagreement of natural gas:

“environmental,” “economic,” “infrastructure safety,” “employment,” “public health,” “energy security,” and “policy/regulation.” I compiled these unique frames, along with descriptions of the frames into Figure 4.1.

No.	Frame	Description	Source
1	Environment	1. Impacts on Environmental components (ecosystems, water, air, etc.) 2. Mitigation and conservation efforts	Hudgins & Poole, 2014; Blair et al., 2015; Clarke et al., 2015; Matz & Renfrew, 2015; Sarge et al., 2015; Stoutenborough, Robinson & Vedlitz, 2016; Dodge & Lee, 2017; Hedding, 2017; Olive & Delshad, 2017; Scanlan, 2017; Hughes & Kear, 2018; Krause & Bucy, 2018; Lee & Lee, 2018; Hazboun et al., 2019; Hazboun & Boudet, 2021; O'Neill & Schneider, 2021
2	Economy	1. Economic impacts (taxes, investments, etc.) 2. Company appeasements 3. Local organizations given donations by ACP/MVP	Blair et al., 2015; Clarke et al., 2015; Dodge, 2015; Sarge et al., 2015; Dodge & Lee, 2017; Hedding, 2017; Olive & Delshad, 2017; Scanlan, 2017; Kalaf-Hughes & Kear, 2018; Krause & Bucy, 2018; Lee & Lee, 2018; Hazboun et al., 2019; Yordy et al., 2019; O'Neill & Schneider, 2021
3	Employment	1. Long term and short term employment 2. Local and outside employment	Boudet et al., 2016; Scanlan, 2017
4	Public Health	1. Water and Air Pollution impacts to public. 2. Infrastructure hazard/accidents	Blair et al., 2015; Dodge & Lee, 2017; Olive & Delshad, 2017; Scanlan, 2017; Krause & Bucy, 2018; Hazboun et al., 2019; Hazboun & Boudet, 2021; O'Neill & Schneider, 2021
5	Infrastructure Safety	1. Construction safety to public and ecosystems. 2. Risk of pipeline damage, leaks or explosion	Scanlan, 2017
6	Policy/Regulation	1. Pipeline regulations and policies 2. Litigation based on policies 3. Federal and state laws mentions	Blair et al., 2015; Dodge, 2017; Dodge & Lee, 2017; Hedding, 2017; Kalaf-Hughes & Kear, 2018; Lee & Lee, 2018; Yordy et al., 2019
7	Energy security	1. Necessity of energy supply 2. National and local energy demand	Scanlan, 2017; Hazboun et al., 2019
8	Community Engagement	1. Calls for community events, protests, fundraisers, etc. 2. Pipeline impacts on local communities (donations, meetings, public comments, etc.)	Included upon conclusion of social media framing analysis

Figure 4.1: Frontiers of disagreement used for framing analysis including description of each frame and sources found in literature review.

In the analysis of New York’s fracking controversy, Dodge (2017) found that competing stakeholders presented partial information regarding natural gas issues, while ignoring information that did not suit their agendas, thus, producing “frontiers of disagreement”. Frames found in previous works present common frontiers of disagreement. I use these frontiers as a key to categorize mentions, phrases or

discussions in each individual newspaper article and tweet. I gave special attention to how expert sources quoted in tweets and articles framed the project(s). Using Microsoft Excel, I recorded the publisher's name, tweet or article, and all associated frames recorded under the date published. I did this for each tweet and article within the allocated time period (2019 for social media; 2017-2021 for newspapers).

Upon the completion of the coding process, I recorded the frequency of frames by month and year. Additionally, I also recorded the annual and total 5-year frame shares, monthly framing trends and correlation coefficients (r^2) across each frame. Annual frame shares displayed how frequently a frame was used by a newspaper or twitter page in a given year. The total 5-year frame share displayed how frequently a share was used across newspapers between 2017 and 2021. Monthly framing trends displayed frequency of a frame used per month and how the frequency of frame use changed across the study period (five years for newspaper analysis and one year for social media analysis). I used monthly framing trends of newspaper articles to assess correlation of framing patterns between articles published in counties through which the pipelines were sited and those that did not. Additionally, I used the monthly framing trends of twitter pages to assess the correlation between pro-and anti- pipeline framing patterns.

4.1 Social Media Analysis

I used Twitter to assess how pro- and anti-pipeline advocates were using social media to frame the natural gas projects. Social media is a novel platform that is increasingly being used by scholars to assess community level energy framing. For example, Liang et al.'s (2021) work on China's coal to gas energy transition policies analyzed 46,651 posts on Sina Weibo (Chinese social media platform) between 2015 and

2019. The study found that people primarily framed the policies as complaints against poor policy design, natural gas shortage, official corruption, incorrect approach, increased cost, and safety concerns. I chose social media as a platform for framing analysis due to its capacity for mass communication, high daily public interaction, and regular utilization by the various pro- and anti-pipeline groups located in Virginia. In the case of ACP and MVP, I chose two NGO/CSO twitter pages for each project, one pro-pipeline and one anti-pipeline, for framing analysis (Figure 4.2). For the ACP project I selected ACP's official twitter page (pro) and the Appalachians Against Pipelines' twitter page (anti) for coding. For the MVP project I focused on, Equitrans Midstream's twitter page (MVP's majority shareholders, pro) and NoMVP twitter page (anti) for coding. The pages were selected based on the relevance to the pipelines as well as the number of followers they had attained as of December 2021. I used the frontiers of disagreement in Figure 4.1 to code all tweets between January 1, 2019, and December 31, 2019. This coding was conducted for each of the four Twitter accounts, for a total of 403 tweets. The year 2019 was selected due to it being the earliest complete year of engagement on part of the pro-pipeline pages.

Upon completion of the coding process, I added a new frame to the list of frontiers of disagreement due to the high frequency of "community engagement" framing found in tweets by both pro- and anti-pipeline groups. I broke down the frequency and percentage of the updated list of frontiers by month and year. I also developed framing trends for the year of 2019 for all four twitter pages and compared the relationships between framing patterns by pro- and anti-pipeline advocate groups. Additionally, I also calculated annual framing shares for both "pro" or "anti" affiliations.

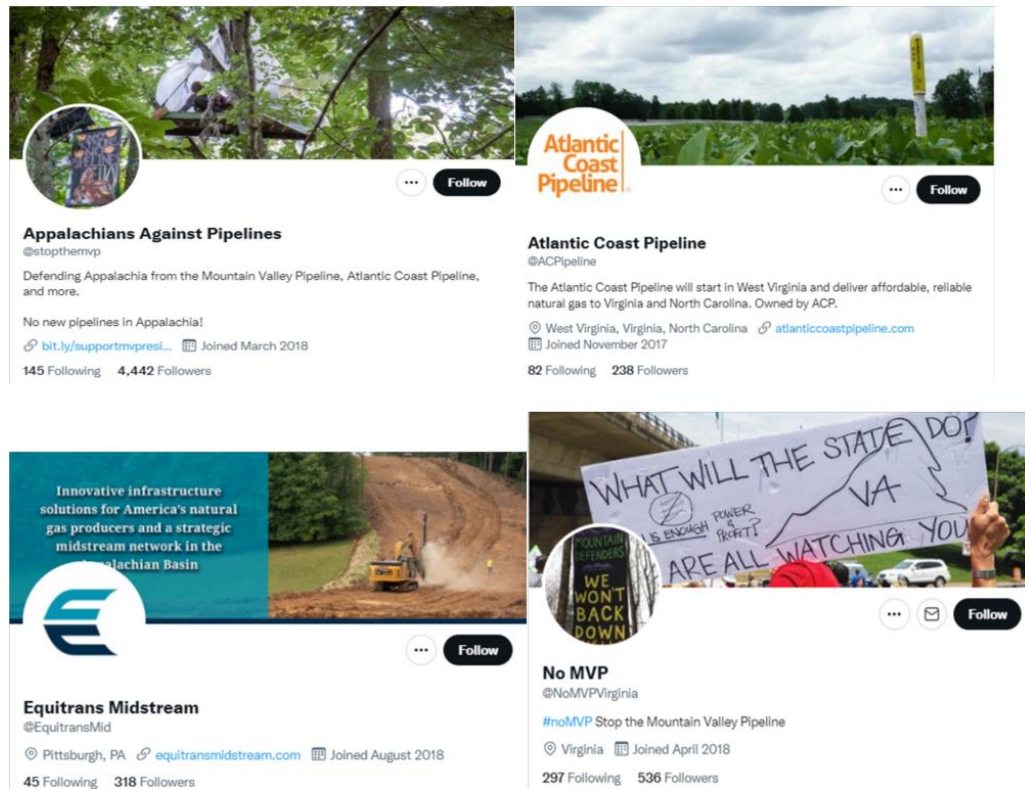


Figure 4.2: Twitter pages used to conduct social media framing analysis.

4.2 Newspaper Analysis

I used the database “NewsBank” to collect newspaper articles that focused on the ACP and MVP projects. I filtered the database using the tags “Mountain Valley Pipeline” for MVP and “Atlantic Coast Pipeline” for ACP. This identified all articles in which those terms appeared in the headings and lead/first paragraphs. This filter included all newspapers from the state of Virginia, between January 1, 2017 and December 31, 2021. This filter returned a total of 2,346 newspaper articles (ACP n= 956; MVP n = 1450; ACP and MVP n = 50) from across the state of Virginia. However, in both cases, duplicate articles were found across multiple newspapers. After removing duplicate articles, ACP was featured in 290 unique articles and MVP in 485 unique articles (Total n= 775).

Once these articles were collected, I conducted the framing analysis by assessing how the article's author, as well as their sources (pro-and anti-pipeline spokespersons), explicitly framed the pipeline projects. Each unique article was coded and categorized into one or more frames. I then multiplied that unique article by the number of newspapers in which the article was published. Figure 4.3 displays one how I framed each article. It displays the date published, all newspapers in which the article was published, the title of the article, regions in which the major newspapers companies were based, and all relevant frames. This categorization was conducted for each of the 775 unique articles. Because this article was found in four newspapers, each of the frames found were multiplied by four and added to the total frame use in January of 2019. In addition to framing analysis, I also recorded the names and affiliations of all expert sources in newspapers between 2020 and 2021 and contacted them via email asking if they would participate in semi-structured interview sessions.

S.no	Date	Newspaper name	▼ Article title	Region	Frames
221	1/27/19	Roanoke Times, The	Pipeline opponents to argue case in D.C. - Appeals court set to		regulation
		Daily Progress, The	review FERC's approval of the Mountain Valley Pipeline	Charlottesville	energy security
		Danville Register & Bee			environmental impacts
		Martinsville Bulletin			

Figure 4.3: Example of newspaper framing

I sorted the frames for each project by month and year and placed them into one of three data sets, based on proximity to the pipeline. Dataset 1 included all frames found in articles from the largest publishing newspaper (largest n) whose county was directly impacted by the pipeline (i.e., the pipeline ran through the county in which the newspaper company was located). For ACP, I analyzed “Nelson County Times” (n=130), based in Amherst, Virginia, and for MVP, “The Roanoke Times”, based in Roanoke (n=619). Dataset 2 included all the frames found from the largest publishing newspaper (largest n)

in a county that was not impacted directly by the pipeline (i.e., the pipeline did not run through the county.) “The Daily Progress” from Charlottesville displayed highest publishing numbers for both ACP and MVP (ACP n= 149 and MVP n=117). Dataset 3 comprised of coded frames found in all other newspapers in Virginia (n = 1331). For each pipeline project, I graphed framing trends by month across the 5-years and also graphed total 5-year framing shares. Additionally, I ran a correlation analysis for the frequency of monthly framing trends across dataset 1 and dataset 2, dataset 1 and dataset 3, as well as dataset 2 and dataset 3.

Dataset 1 and dataset 2 consisted of one newspaper each for MVP and ACP, thus frames found in each article published in this newspaper was recorded to the monthly framing use. However, for dataset 3, where the same unique article can be repeated across several newspapers, each frame was multiplied by the number of newspapers belonging to dataset 3. Looking at figure 4.3 we see that for MVP, article 221 was found in “The Roanoke times” (dataset 1) and “The Daily progress” (dataset 2) each of the frames coded for these papers were added to the monthly total of that dataset’s frame. Since “Danville Register and Bee” and “Martinsville Bulletin” both belong to dataset 3, each frame was multiplied by two and added to that dataset’s monthly framing total. I utilized this adjusted total because dataset 3 represents the true monthly framing frequency across Virginia. As no single newspaper covers the entirety of Virginia (geographic and personal preference of readers), the adjusted total in dataset 3 provides a better representation of Virginia’s natural gas discourse and provides a better comparative framing trend for datasets 1 and 2.

Data set	Description	Newspaper	County
1 Impacted County Newspaper		ACP - Nelson County Times	ACP - Nelson County
		MVP - The Roanoke Times	MVP - Roanoke County
2 Non Impacted County Newspaper		ACP and MVP - The Daily Times	ACP and MVP - Albemarle County
3 All other Virginia Newspapers		-	-

Figure 4.4: Breakdown of dataset 1, dataset 2, and dataset 3

4.3 NGO and CSO interviews

While conducting the newspaper analysis I also contacted advocates of pro and anti-pipeline NGOs and CSOs who were used as expert sources. While I contacted a total of 12 NGO/CSO representatives and four ACP/MVP spokespersons to assess how their organizations framed natural gas pipelines broadly and ACP/MVP projects, only five representatives, all NGO/CSV representatives, responded and participated in 45-minute, semi-structured interviews. The interviews included questions (see Appendix A) that assessed their organizations' association to either or both projects, the particular aspects of the pipeline they engaged with, how they framed the project(s), and their interactions with opposing NGO/CSOs, local political actors, and community members. I aimed to use these questions to dig deeper into how each interviewee's framing of the project was different to other NGO/CSOs, community members, and politicians, as well as to determine their preferred means of communication with the general public.

I transcribed these interviews in two steps, initially using the software "Otter" and then going through the Otter transcribed results and re-transcribing the interview personally. Once transcribed, I coded the responses based on the frontiers of disagreement. These responses were critical in shaping my understanding of how local NGOs and CSOs framed the pipeline projects, as well as determining how competing stakeholders framed the projects. In addition to frames, the transcribed responses also

allowed me to understand why and how framing patterns found in the social media and newspaper analysis changed over time.

CHAPTER 5

SOCIAL MEDIA ANALYSIS DISCUSSION

5.1 Introduction: Social Media Framing

In my analysis of how stakeholders discussed ACP and MVP, I utilized social media to assess the sentimental framing that they used to shape public discourse. Sentiment analysis is about assessing attitudes, emotions, feelings and used to understand impressions rather than facts. Sentiment analysis aims to determine the attitudes expressed by the text writer or speaker with respect to the topic or the overall contextual polarity of a statement (Mejova 2009; Batrinca & Treleaven, 2015).

My primary goals for conducting a social media framing analysis were to find broad trends in how Virginia's pipeline stakeholders were framing natural gas pipelines. With this project focusing on ACP and MVP, my emphasis was on the discourses surrounding each of these pipelines. Social media analysis of energy infrastructure's impacts on local communities is novel, yet rapidly evolving, approach. Social media analysis offers a close look at the day-to-day interaction local coalitions are having with the pipeline projects and impacted communities. Analyzing social media, and particularly Twitter feeds, for sentiment analysis has become a major research and business activity. This method is rapidly evolving due to commercial pressures and the potential for using social media data for computational (social science) research (Batrinca & Treleaven, 2015).

Social media analysis in the context of energy infrastructure has been primarily used to assess how local stakeholders are discussing these projects and to isolate the key frames being used. For example, Furgan et al. (2021) examined how local coalitions viewed and framed windfarms in the state of Ohio, finding that anti-wind groups were increasingly framing the projects in terms of health risks, litigation, and recreancy (sentiments against institutions). Additionally, they observed higher social media discourse around local concerns as compared to non-local concerns. In another example, Liang et al (2021) found that during an energy transition from oil to gas, China's public expressed complaints across poor policy design, natural gas shortages, official corruption, increased cost, and safety concerns on China's Sina Weibo social media platform. Through this project, I aim to assess how ACP and MVP stakeholders, and especially the natural gas pipeline companies and local grassroots organizations, are framing Virginia's Pipelines.

5.2 Pro-pipeline and anti-pipeline discourse

In my investigation of social media, I conducted framing analysis for tweets sent out by two pro- and two anti-pipeline pages in the year of 2019. Pro-pipeline pages included ACP's twitter page as well as Equitrans Midstream (MVP's majority shareholder). Anti-pipeline pages included "NoMVP" and "Appalachians Against Pipelines" twitter pages. Both anti-pipeline pages displayed high engagement, tweeting frequency, and followers as of December 2021. Since the focus of this chapter is to assess how stakeholders are framing natural gas pipeline in Virginia, I complied the pro-pipeline and anti-pipeline group's frames in two distinct datasets and compared framing shares and conducted a monthly framing correlation analysis.

Figure 5.1 displays the share of each frame used by pro-and anti-pipeline pages in 2019. Initially, I assessed the tweets for only environmental impacts, economic impacts, regulation and policy, energy security, public health, infrastructure safety and employment. I derived these frames from past scholarship looking at the framing of various carbon infrastructures. However, throughout the framing analysis, both pro-and anti-pipeline pages drew attention to upcoming community events, donations, and protests. While both groups of pages called for community engagement in ways that benefitted their own agendas, frames found in prior works alone did not fairly represent the sentiment of the tweets. Thus, I included “other - community engagement” to the list of frontiers of disagreement

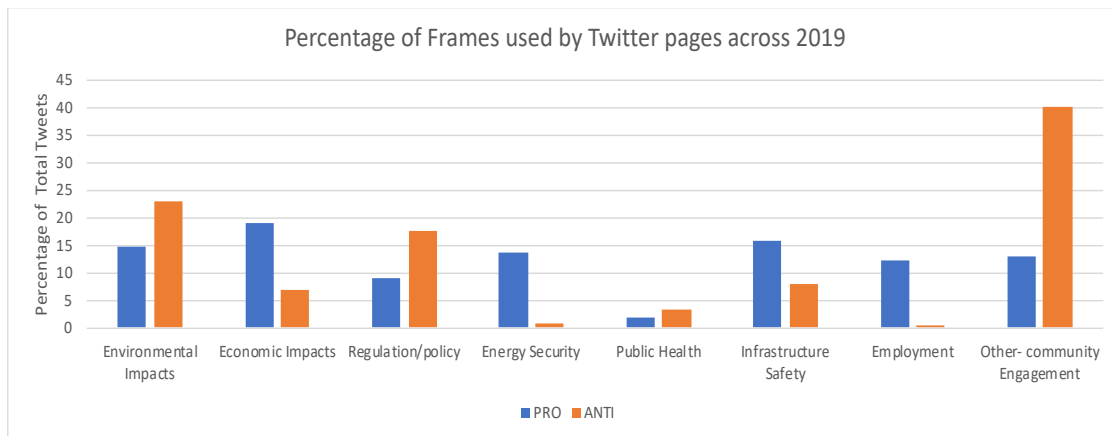


Figure 5.1: Framing shares by pro-and anti- pipeline twitter pages in 2019

As previously mentioned, Dodge (2017), found that during an energy infrastructure controversy, opposing advocacy coalitions change their framing in response to opposing framing trends to form frontiers of disagreement. The year of 2019 displayed a period of peak discourse around both ACP and MVP pipelines and offered a look into a discourse 4 years after both pipeline projects were proposed. To test Dodge’s findings in the context of the two pipeline projects, framing shares between pro-and anti-

pipeline pages across the year should displayed high correlation in framing trends and similar framing shares. In addition to the framing share, I also conducted a correlation analysis between the 2019 framing trends of both groups to find similarities in their framing (Table 5.1). I found both positive and negative correlation between framing trends based on the frame used and low correlation coefficient. While positive correlation indicates similarity in framing trends and negative correlation indicates opposing framing trends, the predominantly weak correlation indicates a lack of competitive framing.

Table 5.1: Framing correlation between pro-pipeline and anti-pipeline pages for 2019

Frames	Correlation Coefficient
Environmental Impacts	0.42
Economic Impacts	0.13
Policy/Regulation	0.06
Energy Security	0.07
Public Health	-0.19
Infrastructure Safety	0.19
Employment	0.06
Community Engagement	0.41

For environmental impact framing, I found that pro-pipeline pages (14.7% of annual frame use) had 36% lower frame usage than anti-pipeline pages (22.9%) and displayed medium-positive correlation in monthly framing trends. Economic impacts displayed a 64% higher use by pro-pipeline pages (19.1%) compared to anti-pipeline pages (6.9%) and low positive correlation in monthly framing trends. Regulation

displayed a 48% lower use by pro-pipeline pages (9.1%) compared to anti-pipeline pages (17.6%) and low positive correlation in monthly framing trends. Energy security displayed a 94% higher use by pro-pipeline pages (13.8%) compared to anti-pipeline pages (0.8%) and low positive correlation in monthly framing trends. Public health displayed much lower use by both groups. Within the limited use, I found a 36% lower use by pro-pipeline pages (2.1%) compared to anti-pipeline pages (3.3%) and low negative correlation in monthly framing trends. Infrastructure safety displayed a 48% higher use by pro-pipeline pages (15.9%) compared to anti-pipeline pages (8.2%) and low negative correlation in monthly framing trends. Employment displayed a 96% higher use by pro-pipeline pages (12.4%) compared to anti-pipeline pages (0.4%) and low positive correlation in monthly framing trends. Community engagement displayed a 67% lower use by pro-pipeline pages (12.9%) compared to anti-pipeline pages (40.0%) and medium positive correlation in monthly framing trends.

5.3 Discussion

My analysis of social media as a platform to shape natural gas discourse displayed a stark contrast between pro-pipeline and anti-pipeline groups. For pro-pipeline pages I selected ACP and Equitrans Midstream (MVP's largest shareholder and operator) twitter pages who framed the projects through environmental, economic, regulation, energy security, infrastructure safety, employment, and community engagement frames. In comparison the anti-pipeline pages "Appalachians Against Pipelines" and "NoMVP" framed the pipelines through predominantly environmental, regulation, infrastructure safety, and community engagement frames. This allowed the pro-pipeline pages to shape the economic, energy security and employment frontiers in their own favor in the absence

of competing anti-pipeline frames. In contrast, when the anti-pipeline groups displayed higher environmental and regulation frames, pro-pipeline groups displayed contesting framing patterns. Even in community engagement framing, where anti-pipelines displayed 67% higher frame use, I found three times higher correlation as compared to other frames.

Past research has found that pro-pipeline advocates focus on framing natural gas infrastructures such as pipelines, predominantly through its benefits such as economic impacts, while anti-pipeline advocates focus on framing natural gas infrastructures as environmental costs (Blair et al., 2015; Hazboun et al., 2019; O'Neill & Schneider, 2021; Sarge et al., 2015). I see similar patterns of framing by pro-and anti-pipeline pages to these past works. Pro-pipeline twitter pages displayed the highest economic frame shares in 2019 whereas barring community engagement, environmental frames were used most by anti-pipeline advocates. Social media offered anti-pipeline groups a unique opportunity to form coalitions and resist ACP and MVP's actions and was thus used most frequently by them. Social media platforms have rapidly become platforms for fueling self-organized, rapidly dynamic, and decentralized protests (Tarafdar & Ray, 2021).

Community engagement framing provided a key insight into the anti-pipeline social media outreach strategy. While both pro- and anti-pipeline groups displayed substantial share use, 40% of anti-pipeline tweets focused on building community engagement. One of the anti-pipeline pages, Appalachians Against Pipelines (AAP) anonymously shared several posts calling for support for the Yellow Finch tree sitters. Additionally, AAP shared and advocated for several trespassing protests during which people would attach themselves to construction equipment and delay construction (Figure

5.2). ACP in 2019 approached Virginia's justice system in attempts to identify who ran the page. However, community engagement through such posts drew the public attention towards such events and allowed the protestors to use the twitter page to voice their concerns with the pipeline. In opposition, the pro-pipeline pages also utilized community engagement frames to establish their corporate image as pro-community (Figure 5.3). However, their engagement was aimed more towards donations and other benefits they brought to the local communities.

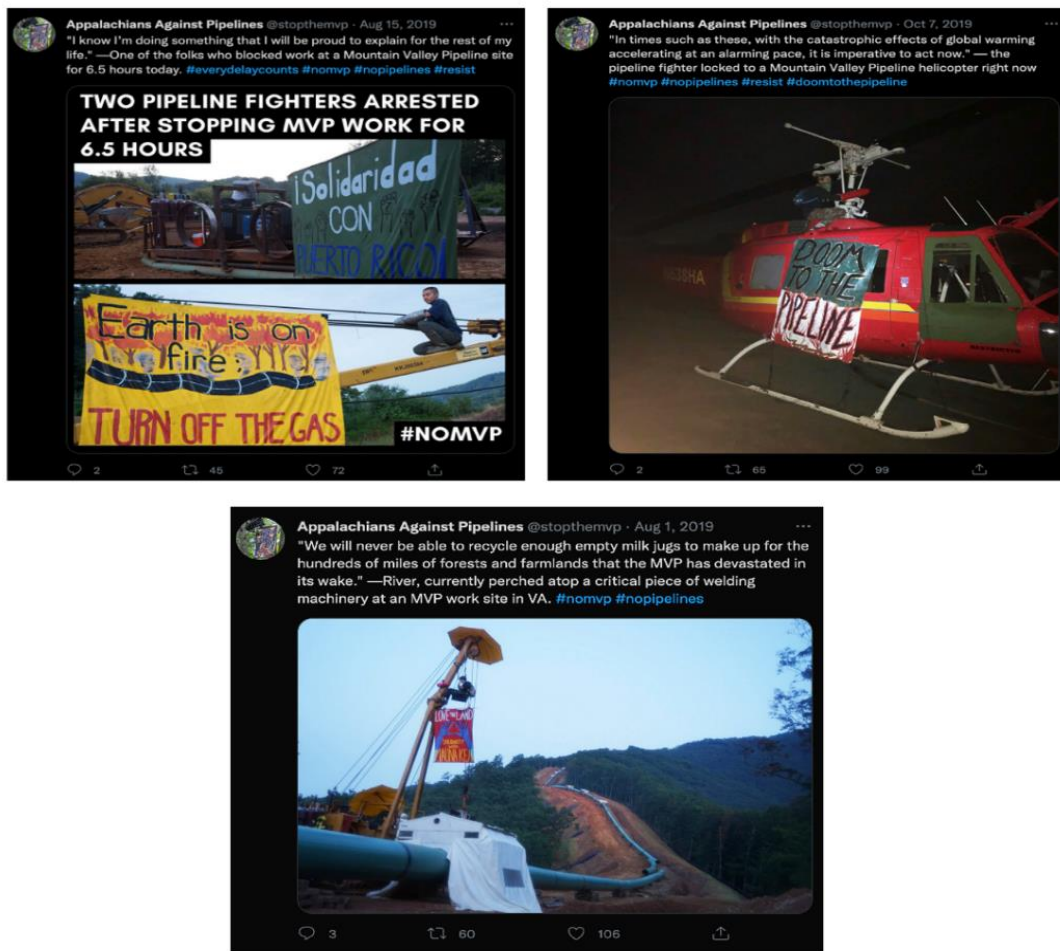


Figure 5.2: AAP Community engagement framing Tweets

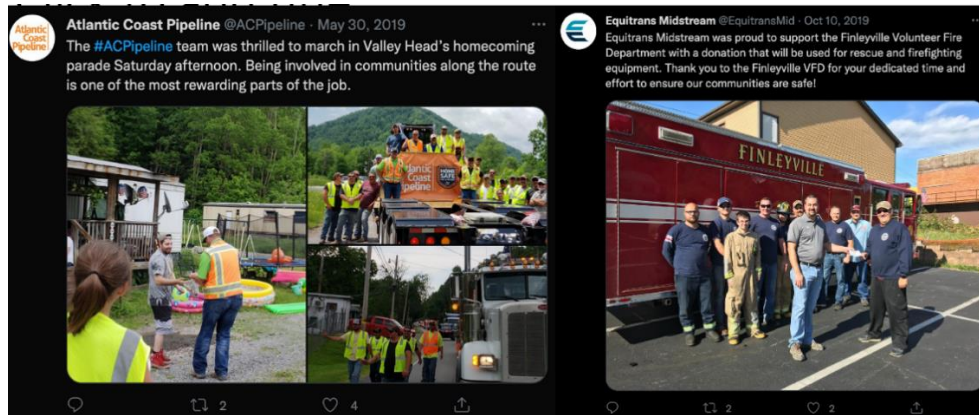


Figure 5.3: Pro-pipeline pages community engagement framing Tweets

I found a much more equal use of frames by pro-pipeline twitter pages, whereas anti-pipeline framing target fewer, sentimentally inspired frames. One reason for such a difference in social media utilization comes down to the ability of the selected pro-pipeline pages to hire social media managers and establish public outreach departments. However, many locally based twitter pages are often run by low budget grassroots organizations that cannot afford to hire social media managers. Instead, they depend on organization members to maintain a social media presence, many of whom are unable to compete with trained social media managers. One anti-ACP NGO spokesperson discussed being able to hire a social media manager but unable to sustain such an outlet:

We maintained a [social media] presence during the pipeline. It had quite a bit of activity. When I started, we had found enough money to hire somebody who kept the page very lively, organizing shirt [sales] and other things. However, we soon lost the person and soon I had to pick it up. Our follower ship really dropped off when I started doing the posting, but nobody else would pick it up.

During my interviews with local NGO and CSO representatives, all representatives stated that their strategy to fight against the pipeline projects was to push back against any statement or action being put out by ACP and MVP. However, my

social media analysis displayed that this strategy did not translate well over Twitter. This can be attributed to greater focus being placed on social media outreach by multi-billion-dollar pipeline companies via their social media management. However, at a time where social media is rapidly evolving to frame issues in ways that benefit the stakeholders, pro-pipeline pages are able to use social media as a platform to influence discourse across a variety of frontiers without extensive competing frames. This finding is similar to past academic scholarship focusing on natural gas infrastructure activities. Blair et al (2015) assessed how environmental and industrial actors assessed fracking's harm and benefits and found that environmental actors found it difficult to discuss the various harms as compared to industrialists who were better prepared to discuss the various benefits. Additionally, past studies have concluded that success for pipeline and other natural gas infrastructure has been found when people associated the projects more with economic benefits than with environmental impacts (Lee & Lee 2018; Yorde et al. 2019; O'Neill & Schneider, 2021). While anti-pipeline groups in Virginia have focused heavily on environmental framing (36% greater than pro-pipeline pages), pro-pipeline pages' have also targeted environmental impact framing (medium-positive correlation). In stark contrast, pro-pipeline groups' use of economic impact (64% greater than anti-pipeline) framing has gone relatively unchallenged by anti-pipeline groups (low-positive correlation).

While the inclusion of community engagement and pro-pipeline's diverse frame utilization of social media to shape discourse are important takeaways from this chapter, social media analysis remains a novel research platform. In the case of Virginia, anti-pipeline advocates expressed a preference to communicate via email blasts, meetings, and

newspapers. Discussing their outreach, one anti-ACP representative stated, “we had the Facebook page and we were sending out [Email] - blasts all the time, the E-blast were incredibly more effective.” Since the anti-pipeline representatives viewed the fight against ACP and MVP as local in scale, they put greater focus on building local community engagement. Another interviewee responded to my inquiry about outreach avenues with acknowledgement of social media being a part of outreach but placed higher focus on “attending the community-led events, attending any kind of informational event that's happening so [they] could gather information going to local planning commission meetings or board of supervisors meetings, just to understand the issue better and to get to meet and talk to the community members that are experiencing this.” Social media is an important platform for shaping natural gas discourse, and despite lacking social media strategies for anti-pipeline groups, resistance at the local level has effectively delayed construction and raised costs. Future anti-pipeline strategies should include social media as a platform for competing framing, especially as social media becomes an increasing source of news for Americans. Since newspapers were thought by several NGO representatives as critical to fighting against the pipeline companies, the following section analyzed framing patterns across Virginia newspapers between 2017-2021.

CHAPTER 6

NEWSPAPER ANALYSIS DISCUSSION

6.1 Newspaper Framing Analysis

In chapter 5 I used social media analysis to analyze “sentimental” framing trends as part of clearly defined “anti” and “pro” pipeline twitter pages. However, such “sentimental” framing could not be accurately analyzed across ostensibly ‘neutral’ newspaper articles. The strength of newspaper analysis comes from the use of a large, time stamped data that can demonstrate how discourse around the ACP and MVP pipeline evolved between 2017 to 2021. This chapter builds upon previous works focused on newspaper framing analysis of natural gas systems (Blair et al. 2015, Dodge 2017, Dodge & Lee 2017, Hedding 2017, Olive & Delshad 2017, Yordy et al. 2019), and adds to that by building upon Dodge’s work on understanding how discourse around fossil fuel energy system changes over time.

Dodge (2015) states that discourse around a controversy change with time in relation to how other stakeholders frame the controversy. Different stakeholders present partial information about a certain issue to form frontiers of disagreement. For example, Dodge (2015) found that during New York’s fracking controversy, several Civil Society Organizations (CSOs) competed across frontiers such as the safety/lack of safety of hydraulic fracturing; environmental risks/non-risk; what are the best ways to mitigate risks; the best type of energy sources for the economy (fossil fuel/industrial or green);

and the best model for energy production for New York (hydrofracturing or renewables). While different stakeholders can have “anti” and “pro” perspectives across the frontiers of disagreement during the controversy, competitive framing between these perspectives can change how the issue is being discussed over time (i.e., which frontiers of disagreement are being contested and how these contests evolve over time).

Dodge (2017) examined the controversial case of New York’s fracking ban by analyzing 452 New York newspaper articles between July 1, 2007, and December 31, 2014. Her study aimed to determine how competing advocacy groups in New York, influenced public discourse. Dodge found that different advocacy groups (stakeholders) collectively and competitively influence public discourse by articulating divergent notions of what constitutes credible knowledge, who can speak with authority on the issues, and what institutional arrangements should be activated to manage risks. Looking closer, Dodge found that over the course of the controversy, competing advocacy coalitions framed and reframed facts, science, and knowledge in response to changing natural gas discourse. She found that between 2007 and 2014, New York Fracking Controversy’s frontiers of disagreement shifted from economic impacts to environmental and public health impacts. Framing on part of stakeholders is seen to change the frontiers of disagreement in three steps: the act, interact and double interact (Chapter 2).

Dodge (2017) found that through framing interactions, advocates not only shaped discourse, but they also shifted their framing strategies in response to others. This is also true in the case of Virginia’s ACP and MVP controversy. In Virginia, local NGOs and CSOs utilized newspapers as a platform for shaping the discourse around the two pipelines. While discussing how they opposed the pipeline companies, one Virginian

NGO spokesperson told me, “We wrote editorials and columns, not just for our local newspapers, but also for the Richmond Times Dispatch and Washington Post.” In discussing their fight with local pro-pipeline government departments, another local NGO representative revealed that “the local officials were pushing the pipeline and they were all for it because they thought it would bring them a lot of jobs and money and so on, our dealing with them was more by dueling letters to the editor.”

In this chapter, I aim to understand how public discourse around the two pipeline projects changed over time but also with distance from the pipeline routes. Boudet et al. (2016) states that communities in close proximity to natural gas infrastructure play an important part in determining the success or failure of an energy project. This was especially true when communities saw themselves as directly benefitting economically and through increased employment. I hypothesize that framing patterns will vary in counties where the pipeline is sited in comparison with counties that are not directly impacted. I believe that industry actors will gain local community support by relying on economic and employment framing, an effect that will dissipate over distance. Dodge (2017) concluded her study by stating that controversies around fossil fuels will continue to exist until a common framing is reached by all stakeholders. In this chapter, I aim to further answer my second as well as answer my third research questions: How did framing trends around the ACP and the MVP change over time? And does the proximity to natural gas pipeline infrastructure impact the framing trends being used around the ACP and MVP?

6.2 Total framing shares

6.2.i ACP Framing Shares

The ACP project was heavily covered by Virginia's newspapers between 2017 and 2021. I aimed to assess how framing of the pipelines varied in counties through which the pipeline was sited and the counties through which it was not. Figure 6.1 shows the framing shares used by the *Nelson County Times*, a newspaper covering an ACP impacted county, *The Daily Progress*, a newspaper belonging to a non-impacted county, and all other Virginia newspapers. I selected *Nelson County Times* as an impacted county newspaper due to it having the highest number of articles published between 2017 and 2021 (n=130). Similarly, I selected the Charlottesville based *The Daily Progress* as the non-impacted county newspaper (n=149). All other newspapers together published a total of 677 articles between 2017 and 2021.

In the impacted county newspaper, I found that most articles focused on the environmental impacts (21.7% of all frames used) and regulation frames (29.8%). Economic impacts (15.8%), community engagement (14.7%) and infrastructure safety (7.7%) were also used to frame the project. However, energy security (5.1%), employment (2.9%), and public health (2.2%) were seldomly used to frame ACP. Similar to the impacted county newspaper, the non-impacted newspaper also predominantly framed the ACP project through environmental impacts (22.0%) and regulation (28.6%). Economic impacts (15.9%), community engagement (14.1%) and infrastructure safety (7.9%) were also used to frame the project. Again, energy security (4.0%), employment (3.5%), and public health (4.0%) were seldomly used to frame ACP. Other Virginia papers generally followed suit, placing greater focus on environmental impacts (25.4%)

and regulation frames (32.9%); placed some focus on community engagement (14.1%) and infrastructure safety (10.7%) frames; and seldom used energy security (5.1%), employment (2.9%), and public health (2.2%) frames. Other Virginian papers focused much less on economic impacts (3.0%).

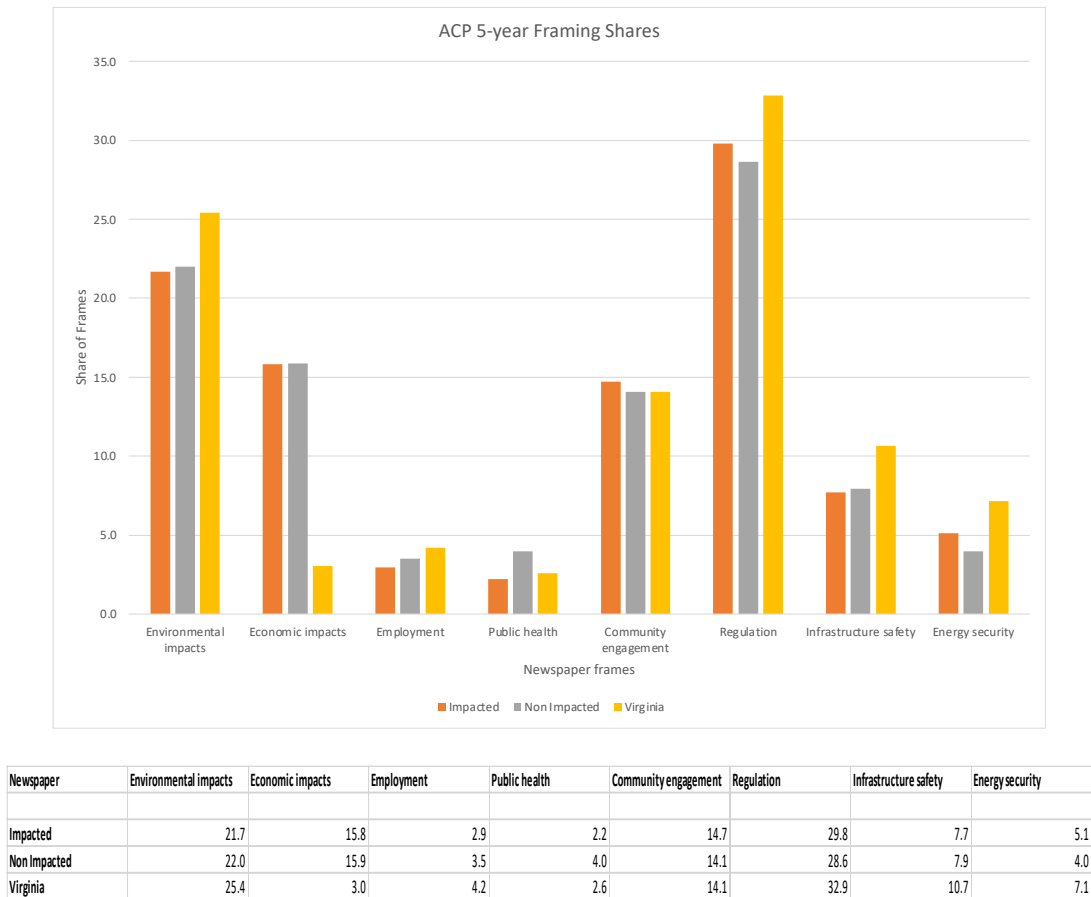
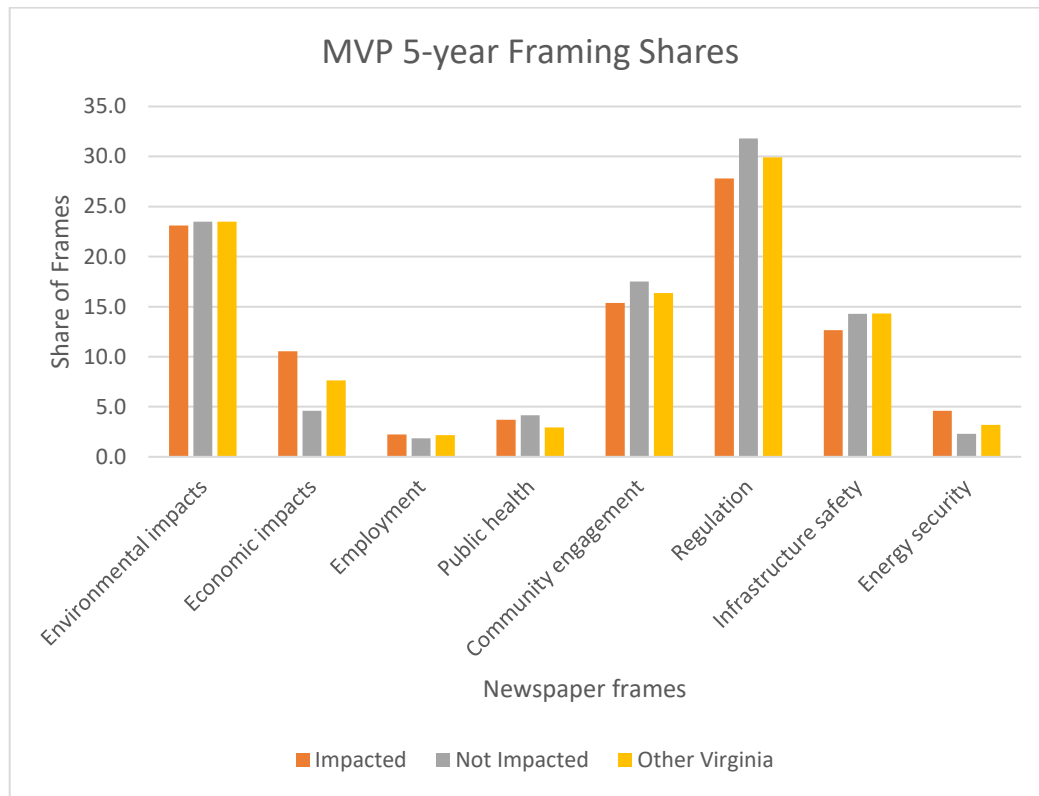


Figure 6.1: 5-year ACP framing trends

6.2.ii MVP Framing Shares

Similar to ACP, the MVP project was also heavily covered by Virginia's newspapers between 2017 and 2021. I aimed to assess how framing of the pipeline varied between counties through which the pipeline was sited and the counties through which it was not. Figure 6.2 shows the framing shares used by the *The Roanoke Times*, a newspaper covering an MVP impacted county, *The Daily Progress*, a newspaper

belonging to a non-impacted county, and all other Virginian newspapers. I selected *The Roanoke Times* as an impacted county newspaper due to it having the highest number of articles published between 2017 and 2021 (n=619). Similarly, I selected the Charlottesville based *The Daily Progress* as the non-impacted county newspaper (n=117). All other newspapers together published a total of 714 articles between 2017 and 2021.



Newspaper	Environmental impacts	Economic impacts	Employment	Public health	Community engagement	Regulation	Infrastructure safety	Energy security
Impacted	23.1	10.5	2.2	3.7	15.4	27.8	12.7	4.6
Not Impacted	23.5	4.6	1.8	4.1	17.5	31.8	14.3	2.3
Other Virginia	23.5	7.6	2.2	2.9	16.3	29.9	14.3	3.2

Figure 6.2: 5-year MVP framing trends

The overall findings were similar to those of the ACP analysis. In the impacted county newspaper, I found that most articles focused on utilizing the environmental impacts (23.1%) and regulation frames (27.8%). Economic impacts (10.5%), community

engagement (15.4%) and infrastructure safety (12.7%) were also used to frame the project. However, energy security (4.6%), employment (2.2%), and public health (3.7%) were seldomly used to frame MVP. Similar to the impacted county newspaper, the non-impacted newspaper also predominantly framed the MVP project through environmental impacts (23.5%) and regulation (31.8%). Community engagement (17.5%) and infrastructure safety (14.3%) were also used to frame the project. However, economic impacts (4.6%), energy security (2.3%), employment (1.8%), and public health (4.1%) were seldomly used to frame ACP. Other Virginia papers also placed greater focus on environmental impacts (23.5%) and regulation frames (29.9%); placed some focus on community engagement (16.3%) and infrastructure safety (14.3%) frames; and seldom used economic impacts (7.9%), energy security (5.1%), employment (2.9%), and public health (2.2%) frames.

6.2.iii Comparing ACP and MVP Framing

Both ACP's and MVP's coverage in Virginia newspapers framed the pipeline in terms of environmental impacts and regulation. Much of the discussion around the two pipelines was initiated even before the pipeline companies had formally applied for FERC's approval. Discussions surrounding the pipelines impacts included the fragmentation of local ecosystems, impacts on endangered species, water quality impacts due to sedimentation, air pollution around compression stations, and methane emissions. In addition, during the construction of pipelines, concern around large sections of the pipelines being routed through steep slopes was raised by local NGOs. Both ACP and MVP lost several stream crossing permits due to erosion and sedimentation during the

construction of the pipelines. Noting these environmental concerns, one NGO representative stated:

Dominion had routed [ACP] right over the slopes and over the crests and down the hill. Because you're going to go up a hill, you're going to pull out all the trees out of there, so they get the machinery and all that stuff. You're going to destabilize that slope. So, you put your pipeline and what happened is that you get big rains, and the soil softens up and starts moving. And when the pipeline moves, it breaks. And, you know, the results could be catastrophic.

Another spokesperson reinforced the role framing environmental impacts played in their strategy to fight against MVP:

The broad idea is that we've seen, we can base [the fight] on the fact that local community members, geologists, karst specialists, soil scientists, those who live there said we know XYZ will happen. We know there'll be erosion, sedimentation, all these negative impacts will happen if you do this, and it came true.

Over time, both ACP and MVP were heavily delayed due to stream crossing permits being lost following erosion and sedimentation events.

Throughout the construction process, anti- and pro- pipeline stakeholders battled through litigation. Several NGOs hoped to drown the pipelines in litigation to the point that it incurred delays and raised costs to unsustainable levels. This strategy proved effective in the fight against ACP, where the Montana high court's decision to repeal a nationwide stream-crossing permit proved to be detrimental to the ACP. Virginia newspapers focused heavily on these litigation issues and often employed experts as sources to frame the pipelines. Additionally, legal discourse around the pipelines centered around the permits gained and lost by the two pipelines. The

ongoing legal battles and halts on permits were most commonly covered by Virginia's newspapers. One issue, however, continued to draw attention, the use of eminent domain. One spokesperson understood eminent domain to be the key issue with the ACP and MVP pipelines:

The very first thing of course was that [eminent domain] was, I guess, an affront to our senses that there was going to be a private corporation that was going to use eminent domain to choose where they would want to put their pipeline. This was without any input from the citizens that they were impacting and they were using the government as an excuse for their private profit.

In addition to environmental impacts and regulation frames, newspapers covering the ACP and MVP projects also displayed economic impacts, community engagement and infrastructure safety frames and stakeholders utilized these frontiers of disagreement as ways to shape public discourse. Economic impacts of the pipeline infrastructures were most apparent in discussions of Atlantic Coast Pipeline LLC and Mountain Valley Pipeline LLC's economic investment in the projects, profit/loss trends, donations to local community institutions, legal fines, impacts to local businesses, and tax revenue at the state and county levels. Anti-pipeline coalitions often called attention to the rising costs and organized protests and blockades in hopes of raising the costs of the pipeline to unsustainable levels. While the pro-pipeline groups attempted to highlight the economic benefits that the pipeline would bring to the counties, local NGOs developed strategies to refute such claims:

We took on the idea of economic development here specifically for Nelson County. Our economy is, as I told you earlier on, unusual for a rural county. We have a tourism industry

here. That includes the Wintergreen Resort and several other major establishments such as the breweries, wineries, distilleries, and such...So, we commissioned a professor at UVA, and he tried to come up with an estimate of the social costs of the pipeline...The bottom line was that it was not going to help our county. It was going to hurt our county, even with the taxes that would come from the pipeline.

Due to the impacts the ACP route would have on the local tourism and agriculturally based economy, economic impacts frames were a more frequent discussion point in articles about the ACP as in comparison with MVP. However, community engagement and infrastructure safety were used more frequently in framing the MVP project. Community engagement in both ACP and MVP involved framing the pipelines as intruders on public and private community resources and instances of local community protests, debates, and fundraisers. Pro- and anti-pipeline coalitions competed across newspapers to advertise upcoming events and write opinion (letters to the editor) pieces in order to shape favorability or opposition. Discussing the changes in everyday community engagement, one NGO representative stated:

At the beginning in this community, it was pretty divided. If the pipeline wasn't coming through your property, maybe it wasn't on your radar screen... As the years went by, slowly, we were able to build the case that there is no good that's coming out of this in our community. So, by the end of it, people that I never would have discussed the pipeline with because I would have been certain that they were probably supportive of it, were coming up to me and just very quietly saying, keep up the good work or thanks for representing the community.

Infrastructure safety was also a key issue that was raised regarding the ACP and MVP projects. Both pipelines were sited across steep slopes that could lead to structural integrity failures in events of soil erosion. Additionally, large sections of both pipelines were routed over fragile karst soil. While both ACP and MVP were framed through infrastructure safety, MVP struggled with soil erosion issues throughout the construction and had several permits suspended and construction halted till infrastructure safety could be ensured. Thus, we see greater infrastructure frames being used for MVP compared to ACP. However, infrastructure safety remained a key frame used to fight against both the pipelines. Raising concerns of ACP being sited across such a fragile soil structure, one NGO representative stated:

It is the source of our water. But it is also a very vulnerable, fragile resource... We do live on top of it and we have to be very careful and smart about it...so that makes construction of a pipeline where you're going ten feet underground, cutting through that Karst soil as very problematic for the construction itself and then for the operation of [the pipeline]. If you have a sinkhole that opens up underneath the 42-inch-high pressure pipeline, and it causes a leak that causes an explosion, you know, because a sinkhole opened up from natural earth movement. That's not a good thing.

Surprisingly, the selected newspaper did not necessarily depend on discourses around employment, public health, or energy security to frame either pipeline projects. In instances that these frames were used, they supplemented other frames. Employment was often used to discuss the economic benefits of the pipelines, and public health was often used to reiterate the environmental impacts of pipelines on local water and air resources. Energy security, however, was used

to justify the need for the pipelines by pro-pipeline advocates and was often supplemental to the economic benefits that the pipelines would bring to local businesses.

6.3 5-year Framing Trends – Correlation Analysis

In addition to capturing the framing shares over the 5-year period, I also developed 5-year framing trends (Figure 6.5 – 6.14). Examining framing shares over time shows a clearer representation of how the use of the different frames changed in order to shape Virginia’s discourse around the pipeline projects. In doing so, I aimed to test my hypothesis of how framing differed in counties impacted by pipelines and those that were non impacted. Similar to the 5-year framing shares, I compared the 5-year framing trends across newspaper articles from counties impacted by the pipeline (dataset 1), newspaper articles not impacted by the pipelines (dataset 2), and all other Virginian newspaper articles (dataset3). Additionally, I also ran correlation analysis tests for each framing trend across the three datasets. This allowed me to understand whether impacted or non-impacted county newspapers were framing the pipelines differently to the rest of the state. Strong (1.00 – 0.70) and medium (0.69-0.40) correlation display considerably similar frame use over the 5-year period. Weak correlation (0.39-0.00) display very little to no correlation between the 5-year frame use. Once correlation in framing trends has been established, I then compare the frame use frequency between the impacted and non-impacted county newspapers to assess where a certain frame is being used more. For both MVP and ACP, most frames displayed high correlation. However, in some cases, low framing frequency was

observed along with one of the two datasets displaying much higher frame usage. In these counties, I found that a certain frame was being prioritized and being used differently than its counterparts.

Tests for ACP display positive correlation, and therefore suggest that when the frequency of a frame use increased in impacted counties, frequency also increased in non-impacted communities and across Virginia. Similarly, all MVP tests also display positive correlation. A positive correlation was expected due to all interviewed anti-pipeline coalitions stating that they based their frames in opposition to the pipeline company's framing. Additionally, the strength of most positive correlations was found to be high or medium. Stronger correlations displayed greater similarities in how stakeholders framed the pipelines in impacted, non-impacted and all Virginia newspapers. The higher strength of the correlation was unexpected, as it indicates that stakeholders in closer proximity to the pipeline infrastructures were not framing the pipelines any differently than those further away. Figure 6.3 displays the correlation of ACP's 5-year framing trends between newspapers covering impacted, not impacted, and all of Virginia. Similarly, Figure 6.4 displays the correlation of MVP's 5-year framing trends between newspapers covering impacted, not impacted, and all of Virginia.

Boudet et al. (2016) stated that during framing of natural gas infrastructure, local communities play a part in determining the success and failure of infrastructure siting and are more favorable to economic and employment framing. They found that in communities where natural gas infrastructure projects are sited, public discourse is shaped by industrial framing that focused on economic and

	Environmental Impacts	Economic Impacts	Employment	Public Health	Community Engagement	Regulation	Infrastructure Safety	Energy Security
Impacted: Non Impacted	0.77	0.68	0.09	0.77	0.53	0.79	0.66	0.37
Impacted: Other Virginia	0.84	0.44	0.55	0.83	0.81	0.78	0.77	0.78
Non Impacted: Other Virginia	0.83	0.3	0.4	0.73	0.54	0.79	0.78	0.57

Figure 6.3: Correlation of ACP framing trends

	Environmental Impacts	Economic Impacts	Employment	Public Health	Community Engagement	Regulation	Infrastructure Safety	Energy Security
Impacted: Non Impacted	0.49	0.28	0.4	0.61	0.73	0.64	0.71	0.37
Impacted: Other Virginia	0.62	0.59	0.65	0.47	0.77	0.79	0.82	0.46
Non Impacted: Other Virginia	0.76	0.55	0.83	0.59	0.75	0.78	0.81	0.64

Figure 6.4: Correlation of MVP framing trends

employment framing. Thus, I expected that utilization of environmental and public health frames to be much more pronounced in non-impacted communities, whereas economic and employment framing is more pronounced in pipeline impacted communities. Figure 6.3 and 6.4 display low correlation in ACP's and MVP's employment and energy security framing trends between impacted and non-impacted county newspapers. However, ACP displayed lower employment framing shares in impacted communities than in non-impacted communities. Additionally, the correlation hypothesis test revealed that the correlation was not statistically significant. Thus, we cannot conclude that employment framing discourse is impacted by proximity. Energy security frames around both ACP and MVP pipelines displayed higher use in impacted counties compared to not impacted counties. Economic impact frames displayed low correlation between MVP's impacted and non-impacted county newspapers. However higher correlation was seen in ACP's economic impact framing trends. Additionally, for both ACP and MVP, medium to high correlation was found in environmental and public health frames. With the exception of employment, all relationships were found to be statistically significant within a confidence of 95%. Thus, Boudet's assessment of framing trends being different across distance does not seem to hold true for environmental and public health frames.

The low correlation of economic framing in MVP can potentially point to the continued success of MVP particularly since we see a 56% greater use of economic framing in the impacted county than in the non-impacted county newspaper. Additionally, energy security framing was also impacted by proximity

to pipelines. Much of the discussions around energy security stemmed from discussions of natural gas bringing in much needed energy to the impacted counties to help local economies grow. In the case of ACP, the impacted county newspaper displayed a 22% higher use of energy security share compared to non-impacted counties. For, MVP, the impacted county newspaper displayed a 50% higher use of energy security share compared to non-impacted counties.

6.3.i Environmental Framing

Environmental concerns around natural gas pipelines are often central to pipeline projects. During construction, natural gas pipelines can lead to habitat loss, fragmentation, changes in species migration patterns, sedimentation, and air pollution (Johnson et al., 2011). Even after construction, issues of habitat fragmentation and sedimentation persist. The ACP project was heavily framed as an environmental hazard by Virginia newspapers. This was especially true between January 2017 and March 2019, the period immediately after which FERC presented the draft Environmental Impact Statement (EIS) for ACP which highlighted the environmental impacts the pipeline would have on local ecosystems and resources. Following this release on December 30, 2016, newspapers demonstrated significantly more frequent framing of the pipeline projects in environmental terms, particularly during the first public comment period (January 2017 to April 2017). FERC then issued the final EIS in July 2017, which led to another EIS based public comment period between July 2017 and July 2018. The second public comment period reinforced environmental discourse in response to FERC's final EIS that stated that the pipeline would have some adverse and significant environmental

impacts on the local ecosystems. Both public comment periods display frequent use of environmental frames.

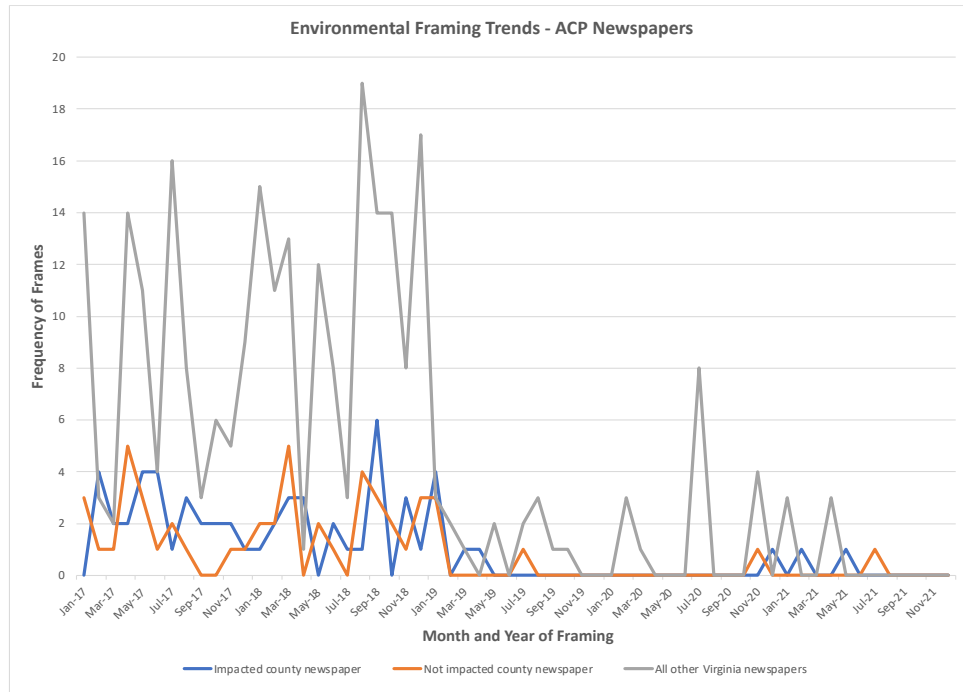


Figure 6.5: Environmental 5-year trends for ACP

Between July 2018 and March 2019, we see peak environmental discourse related to ACP. This is due to FERC issuing the notice to proceed with construction in July 2018, which was followed by a shift in local resistance strategy that focused on challenging several of ACP’s environmental permits. During this period, legal challenges spearheaded by local environmental groups resulted in ACP construction being halted to assess impacts on local endangered species and regain key permits that would allow ACP to construct along the Appalachian trail. Following March 2019, we see lower utilization of environmental frames, likely due to several permit withdrawals and a downturn in ACP’s public engagement as they sought to regain permits through litigation in the U.S. Supreme Court. In July 2020, ACP was cancelled and concerns around restoring the construction route resulted in another rise in environmental framing.

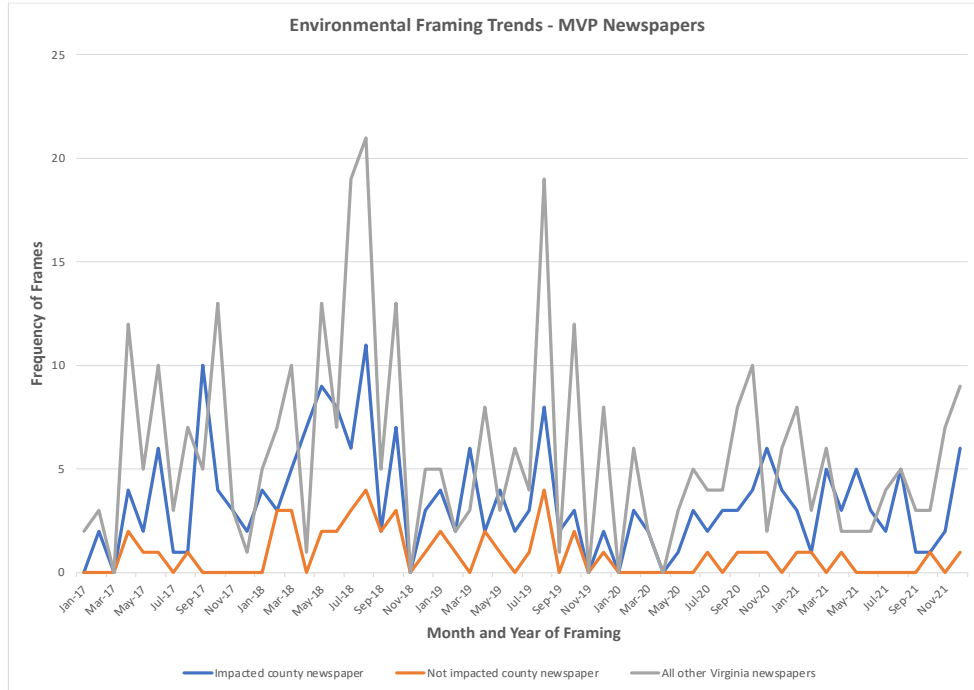


Figure 6.6: Environmental 5-year trends for MVP

For MVP, the final EIS was issued in June 2017 and construction began in January 2018. While this period displayed high environmental framing frequencies, MVP’s construction displayed a poor track record for environmental impacts. Issues around sedimentation and erosion persisted across the 5-year study period. During construction, sedimentation into the local water sources was central to the NGO/CSO’s framing of the project. Much of the environmental framing of MVP is seen in the period following the issuance of the permit to begin construction in January 2018. As MVP gained several key county, state, and federal permits, local opposition groups also shifted on legal challenges against these permits. In the summer of 2018, construction of large sections of MVP was suspended in response to growing concerns of sedimentation and FERC halting the nearby ACP project. Additionally, beginning in the summer of 2018, construction in Montgomery was halted due to the Yellow Finch Tree sitters. News

coverage of this protest focused heavily on the environmental concerns of the protesters, who sought to raise the public awareness of the environmental damages the pipeline was incurring on local ecosystems. Another rise in environmental framing is seen in August of 2019, this time due to another halt on all construction activities. While initially the stoppage was voluntary, it was then followed by a FERC mandated stoppage that came after a court ordered review of the biological opinion issued by the U.S. Fish and Wildlife Service in 2017.

6.3.ii Economic Framing

The most frequent use of economic benefits in framing the ACP can be seen between January 2017 and September 2018. This is due to pro- and anti-pipeline groups contesting the economic benefits of having a pipeline running through Virginia and the sited counties particularly. During this time, pro-pipeline advocates touted the benefits of the pipeline on local businesses and state and county tax revenue. However local anti-pipeline advocates questioned the routing of the pipeline. They raised concerns of the negative economic impacts of the pipeline being routed across agricultural, winery/breweries, and local resort lands. Additionally, several NGOs and CSOs also raised concerns of the pipeline's impacts on the local housing market, especially in counties impacted by the pipeline.

Once ACP was granted the notice to proceed with construction, the use of economic framing was less apparent. Economic frames used beyond 2018 were typically via coverage of labor union statements and Dominion Energy's shareholder meetings. Coverage beyond July 2020 raised concerns with costs associated with easement trials for

land acquired by ACP but was never used. Figure 6.7 displays the focus economic impact framing holds prior to the approval of a pipeline project.

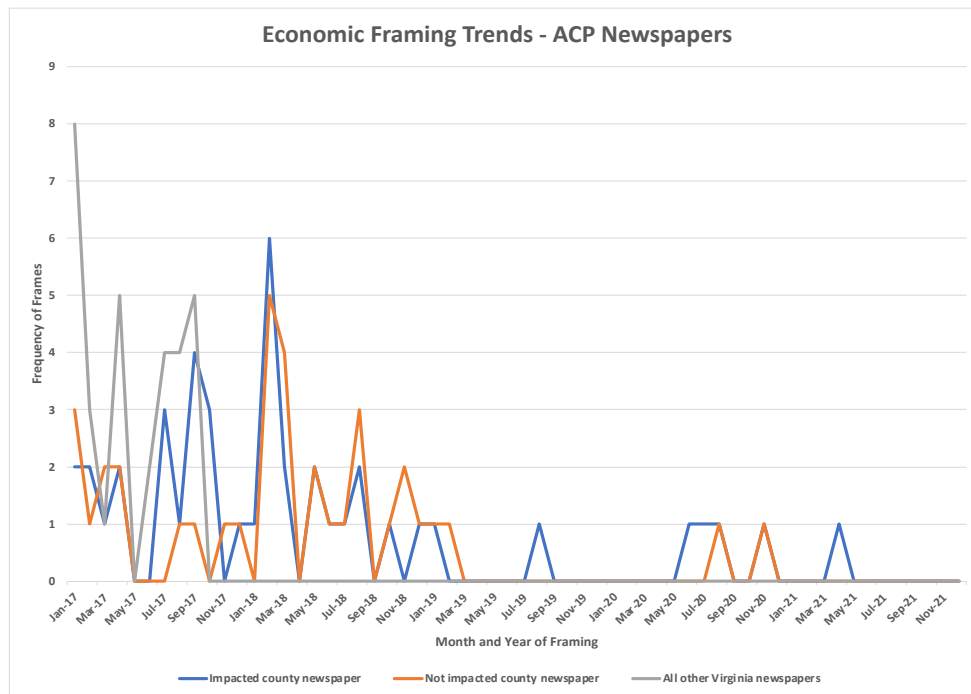


Figure 6.7: Economic 5-year trends for ACP

While ACP displayed higher economic framing prior to the initiation of its construction, newspapers covering MVP utilized economic frames consistently across the 5-year period. Much of this framing occurred in news coverage of easements for land in the path of the pipeline and active negotiations between landowners and MVP. The growing budget for MVP proved to be a strategic point of contention between local NGOs and MVP. Several spokespersons interviewed challenged the practicality of the project as its budget grew by more than \$2 billion. Since increasing the budget of construction to unsustainable levels was central to the anti-pipeline strategy, economic impact frames were regularly brought up in local newspapers. In the winter of 2019, we see a peak in the use of economic frames. This is a result of FERC imposing a pause on all construction activities, as well as local legislators fining MVP \$2.15 million in

response to a lawsuit over repeated sedimentation and erosion occurring during construction.

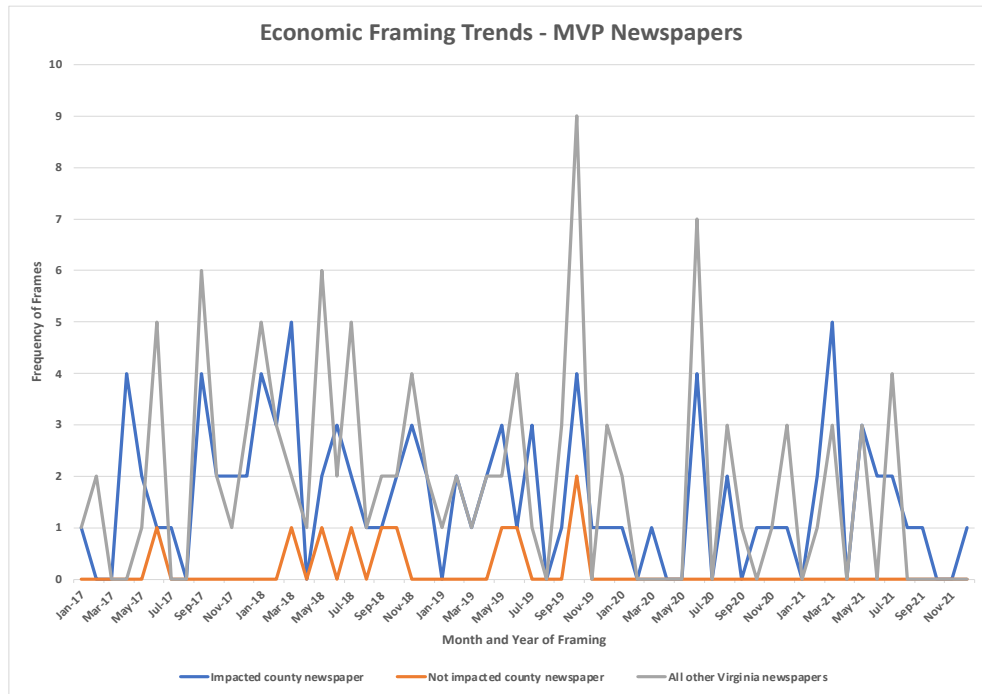


Figure 6.8: Economic 5-year trends for MVP

6.3.iii Community Engagement Framing

In addition to social media (see chapter 5), NGOs/CSOs utilized newspapers as a platform to discuss their concerns and gather public support against the pipeline projects. Community engagement was heavily covered in newspaper articles covering ACP. Figure 6.9 shows us that community engagement frames were regularly utilized by newspapers between January 2017 and March 2019. During this period, local NGOs and CSOs actively organized public gatherings, either as open house style events or by organizing protests against ACP. Speaking on the strategy to fight against ACP, multiple interview participants told me during the interviews that they depended on newspapers, particularly letters to the editor, as a means to push back against any and every ACP activity.

The frequency of community engagement framing was highest during the EIS public comment period between July 2017 and July 2018 and remained high up to the permitting delays following March 2019. After March 2019, the ACP remained in legal battles and focused on regaining permits, and the conflict shifted to courts instead of via letter to editors. Another peak was in July of 2020, when ACP was cancelled by Dominion and Duke Energy and newspapers put the spotlight of the victory on local coalitions and their role in shaping community pushback.

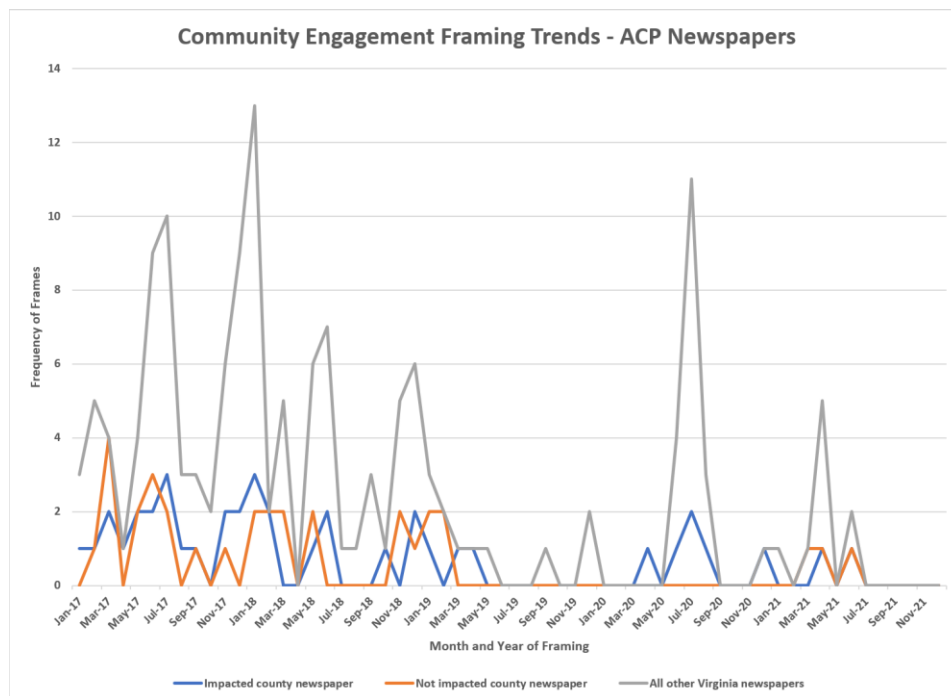


Figure 6.9: Community engagement 5-year trends for ACP

Like ACP, MVP also displayed high shares of community engagement framing. Figure 6.10 shows a high frequency of framing across the 5-year period. Much of the newspaper coverage came from pro- and anti-pipeline coalitions using newspapers as a platform to present their views on the pipeline and gain public support. As seen with the ACP, MVP opponents also used newspapers to advertise upcoming community events such as open house meetings, protests, and attending permitting and legal proceedings.

Despite MVP also losing several permits and construction being repeatedly halted, community engagement trend did not fall (as we see in ACP trends) due to active coverage of the Yellow Finch Tree sitters, as well as regular protests by individual critics of the pipeline who would trespass over the pipeline construction site or attach themselves to construction equipment. In the summer of 2018, we see newspaper utilization of community engagement peak. This is when the tree siting protests in Montgomery County began and gained widespread media coverage.

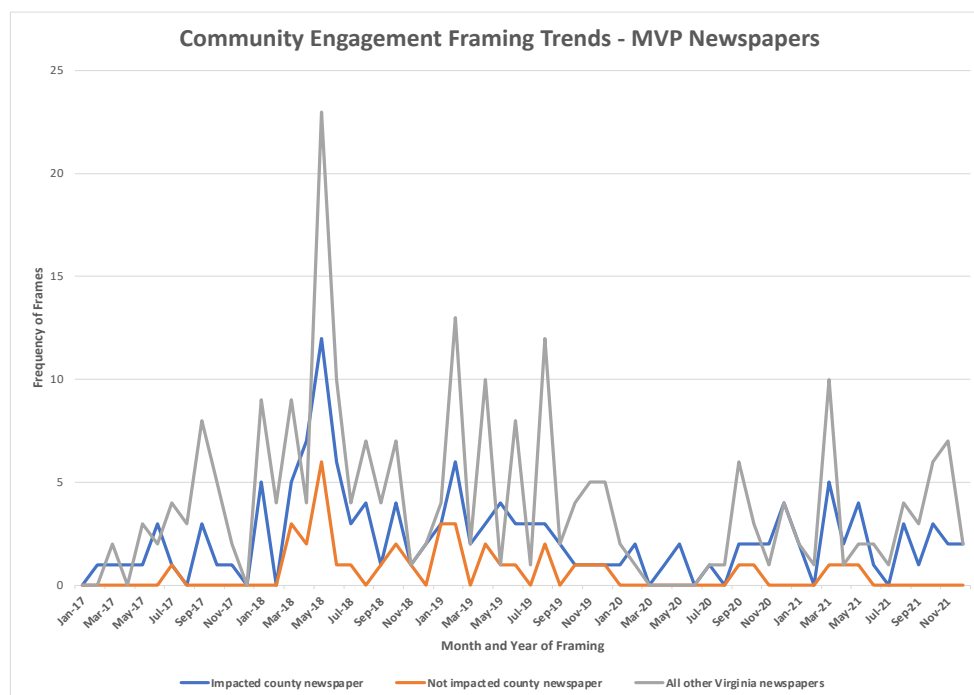


Figure 6.10: Community engagement 5-year trends for MVP

6.3.iv Regulation Framing

Regulation frames focused on legal proceedings, permitting processes and any mentions of county, state, or federal policies that were relevant to the two pipeline projects. In the case of ACP, regulation framing can be seen consistently across the 5-years. Similar to other pipeline discourse, news coverage of the ACP's advancement in gaining permits and initiating construction was anchored in policies. High Virginia-wide

regulation framing can be seen in Figure 6.11 due to coverage of policies and permits gained by ACP in Virginia as well as in neighboring West Virginia and North Carolina. Sustained usage of regulation frames was also due to the local opposition challenging several permitting processes gained by ACP. Another issue of regulatory contention revolved around ACP's use of eminent domain to grab private land from homeowners.

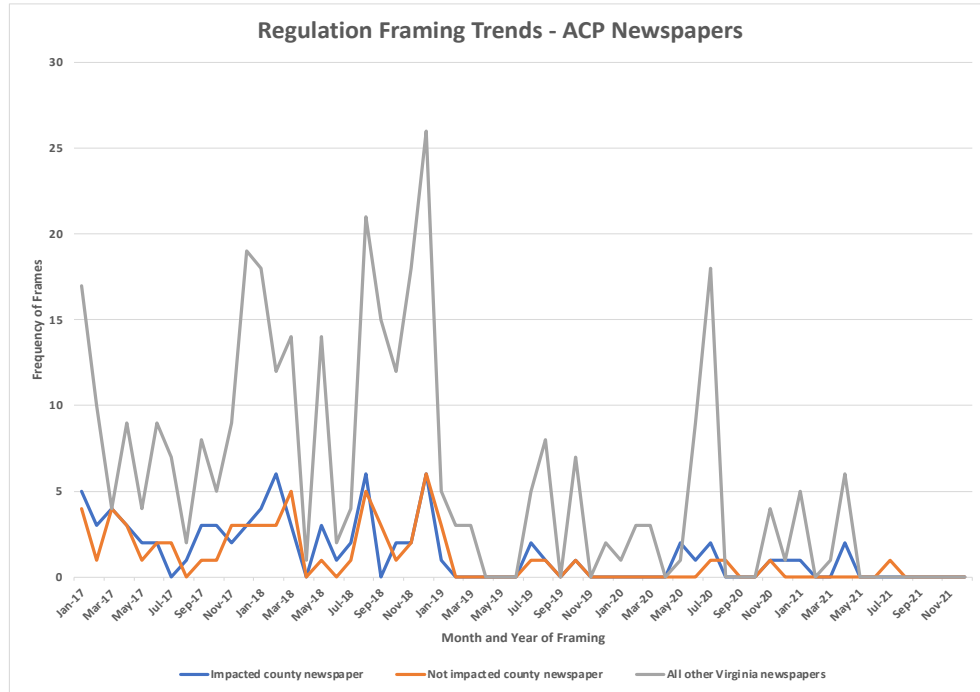


Figure 6.11: Regulation 5-year trends for ACP

Prior to July 2018, regulation frames were primarily focused on challenging FERC and ACP. However, after the notice to proceed with construction was initiated, legal challenges focused on permitting processes at the local, state, and federal levels. The gain, loss, and regaining of the several key permits in the months following July 2018 kept policy and regulation framing highly relevant and newspapers offered local NGOs and CSOs a platform for shaping natural gas discourse. We see a peak during this period between July 2018 and March 2019 and another peak in July of 2020 when ACP was finally cancelled due to the nationwide permitting withdrawal by Montana's High

court. Similar to ACP, MVP also displayed a sustained 5-year utilization regulation framing for MVP. Regulation remained the primary mode of framing the pipeline project since several NGO and CSO coalitions aimed to drown MVP in litigation in attempts to delay the project and pressure Mountain Valley Pipeline LLC into cancelling the pipeline project. Newspaper coverage ranged from legal proceeding against and by MVP to permitting gains, losses and regains following FERC's approval of MVP.

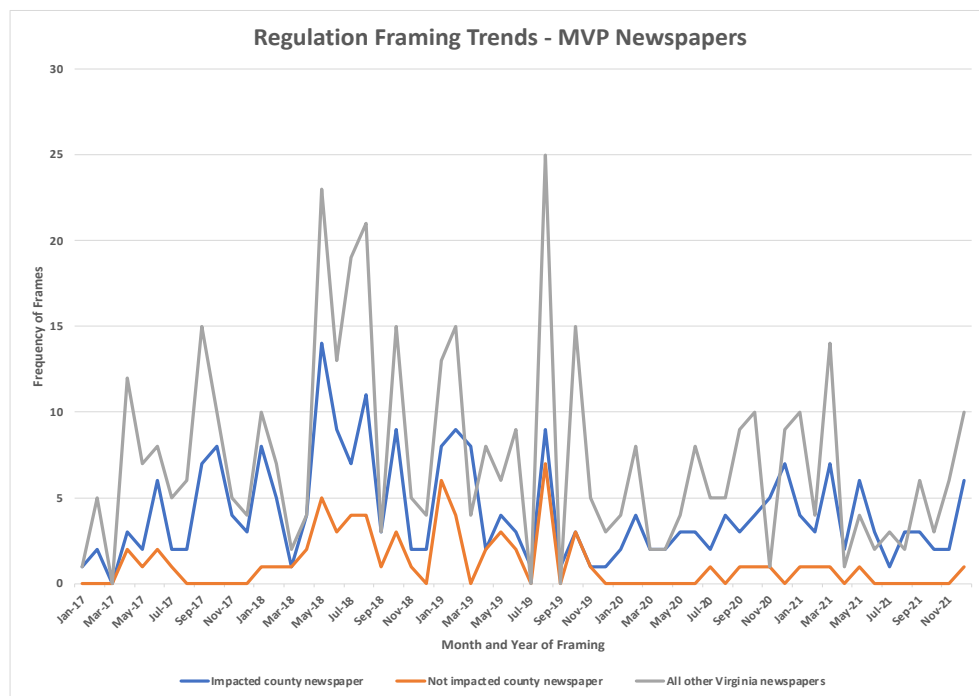


Figure 6.12: Regulation 5-year trends for MVP

We see two peaks in regulation frame usage, one in the summer of 2018 and another in August of 2019. Both peaks coincide with pauses to MVP's construction on grounds of permitting withdrawals and erosion and sedimentation control. The summer of 2018 stoppage was due to court ordered review of endangered species impact by MVP. The second pause, in August of 2019, was due to FERC halting several construction activities due to erosion and sedimentation concerns. This peak in regulation framing also

included coverage of MVPs loss of three key federal permits that plunged MVP's completion into doubt and allowed opponents of MVP to challenge more permits.

6.3.v Infrastructure Safety Framing

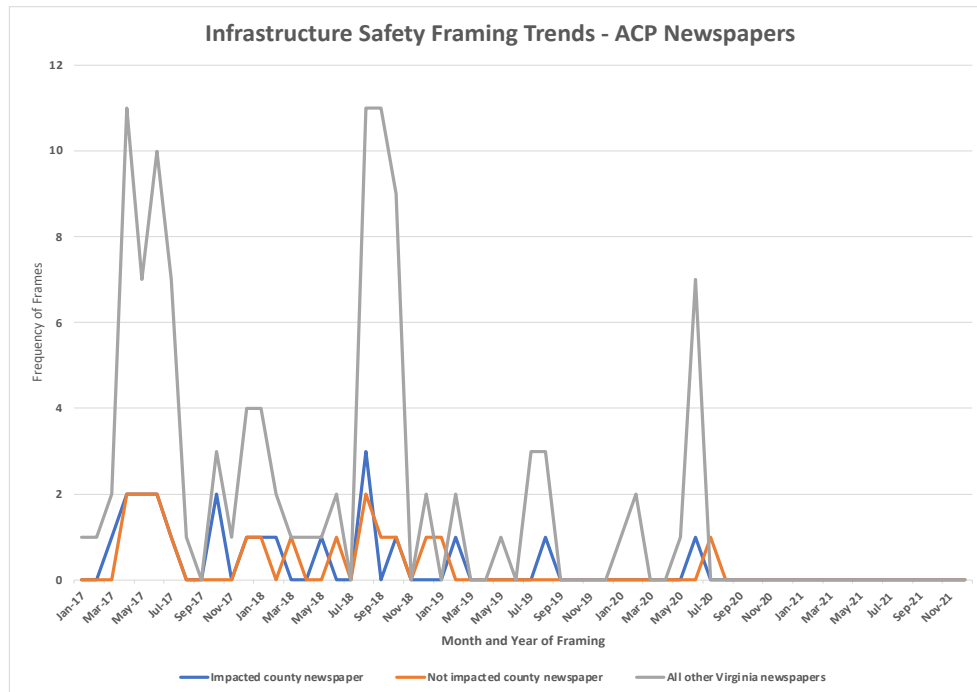


Figure 6.13: Infrastructure safety 5-year trends for ACP

Infrastructure framing has been a widespread concern around high pressure natural gas pipelines. Since gas pipelines are often underground and run across communities and critical public resources such as water bodies and nature trails, concerns around pipeline failures and gas leaks have received widespread news coverage. For ACP, infrastructure safety frames were heavily used by both pro-and anti-pipeline groups prior to the notice to proceed with construction was issued in July of 2018. Both groups used newspapers as a platform to shape the discourse of the safety of the pipelines. We see the first peak in infrastructure frame use between January 2017 and August 2017. This period directly followed the draft EIS which failed to discuss infrastructure safety in depth. A similar peak can be seen in July 2018 to November 2018. This period followed

the issuance of the notice to proceed and saw a shift in anti-pipeline groups strategy towards monitoring the pipeline construction process. Much of the infrastructure safety framing trend following the November 2018 peak is based on the coverage of infrastructure construction safety concerns brought up by anti-pipeline advocates. However, concerns around the safety of the Buckingham County compression station in regard to the minority communities in Union Hill also contributed to these trends.

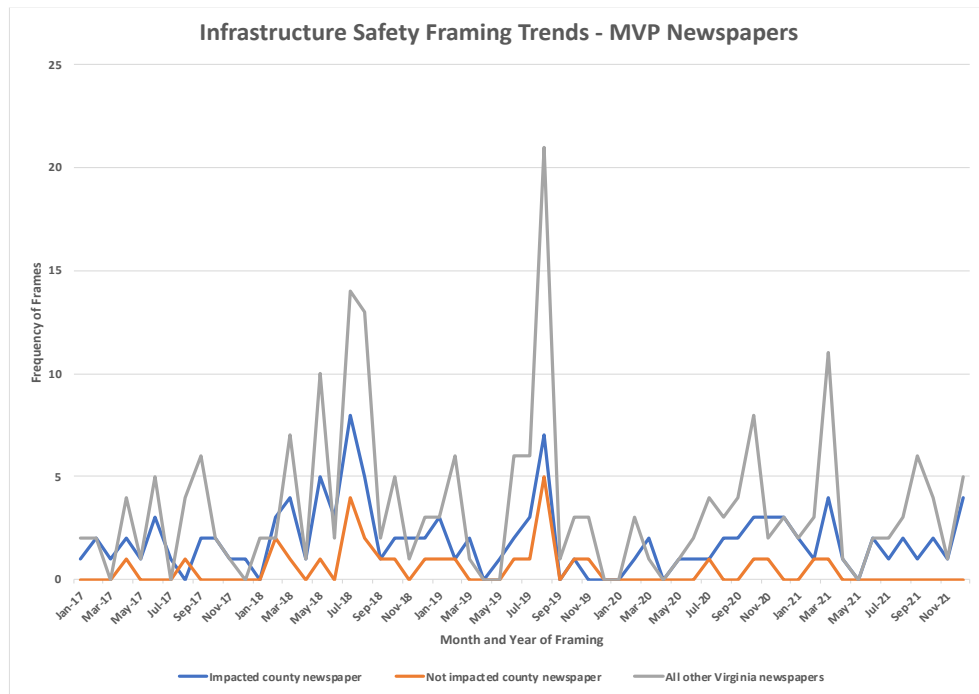


Figure 6.14: Infrastructure safety 5-year trends for MVP

In the case of MVP, infrastructure safety framing trended from coverage stemming from recurring sedimentation and erosion. In figure 6.14, we see a rapid rise in infrastructure safety framing trends after the January 2018 notice to proceed with construction. The figure displays a rise in infrastructure safety frame usage each time the MVP was cited by Virginia’s courts or legislators in failure to control sedimentation and erosion. Local NGOs and CSOs raised concerns around construction of the pipelines along high slope terrains where landslides could lead to pipeline infrastructure failure and

explosions. In figure 6.14 we see the first peak in infrastructure safety framing in July to September of 2018. This was due to a pipeline explosion that had occurred in West Virginia. In that case, the pipeline had shifted due to landslides and led to a rupture in the pipeline. Another peak is seen in July 2019 when pipeline construction was ceased by FERC to address sedimentation and erosion occurring during construction along steep slopes.

6.3.vi Other frames

Public health and energy security frames were used by newspapers to frame the two pipeline projects and displayed statistically significant correlation across impacted county and non-impacted county newspapers. However, I found that these frames were seldom used, and when used by expert sources, would be supplemental to economic or environmental frontiers of disagreement. Similarly, employment framing also displayed much smaller shares of framing that complimented other frames, instead of displaying a new frontier of disagreement. The public health and employment frames did not exceed 4% total framing shares for either project, energy security reached up to 6.3% for ACP. However, it did not produce clear trends and was primarily used in newspaper coverage of NGO concerns of ACP's exportation goals.

6.4 Discussion

Newspapers are a key mode of communication for local NGOs and CSOs. In my interviews with five NGO/CSO representatives, all five stated that newspaper articles, and particularly letters to the editor, were critical to their public outreach strategy. All five representatives also re-affirmed the findings of Yordy et al. (2019) who stated that anti-pipeline groups primarily frame natural gas pipelines in opposition to pro-pipeline

group's statements /actions. Framing trends in newspapers were thus guided by coverage of ACP and MVP's actions and the ensuing competing framing discourse between pro- and anti-pipeline coalitions. I found overwhelming similarity in framing trends and framing shares found in impacted, non-impacted, and all other Virginian newspapers for both projects. This is further reaffirmed through my correlation analysis tests which found that Virginia's newspaper framing trend was generally similar across the 5-year period.

These findings lend credence to findings from my interviews with local NGO/CSO representatives, nearly all of whom stated that their framing of the projects depended on the actions and statements put out by the pipeline companies. Thus, framing trends remain dependent on the actions of the pipeline company. Through Dodge's (2015) act, interact and double interact model, we would expect to find that the act lies in the action of the pipeline companies, Atlantic Coast Pipeline LLC and Mountain Valley Pipeline LLC. The interact occurs when opposition groups respond to the actions of the pipeline companies to form one or more frontiers of disagreement. Lastly, the double interact occurs when pro-and anti-pipeline groups contest each other's framing and lead to a dynamic rise and fall of framing in response to the act. Dodge finds that unless a common ground is reached by all involved stakeholders, framing trends will continue to shift and frontiers of disagreement will change. The rise and fall of framing trends across the five years characterize the occurrence of double interacts. In the absence of double interacts, we would witness an initial act followed by a single frontier of disagreement used by an opposition group. However, we see evolving frames used over the past 5-years, suggesting that competitive framing has created new frontiers of disagreement that

are visible across Virginia's newspapers. This answers my second research question of how framing of ACP and MVP pipelines changed over time.

Looking at the correlation in framing trends in relation to proximity to pipeline routes, we find only MVP's economic framing to have low correlation between impacted and non-impacted county newspapers. Since past work has established that public favorability towards energy infrastructures depends on framing of benefits and the influence of local communities on the success of projects when they can associate with its economic benefits, the statistically significant, 56% higher economic frame utilization in impacted counties may point towards the success of MVP. In addition to economic framing, energy security frames for both ACP and MVP also displayed low correlation between impacted and non-impacted county newspapers and higher framing shares in impacted communities. Much of the discourse on energy security around natural gas pipeline stemmed from stakeholders touting the economic benefits the impacted counties would see with a reliable energy source powering their businesses. Apart from economic frames, all other statistically significant frames displayed medium to high correlation between impacted and non-impacted county newspaper frames. This displayed a more generalized frame use across Virginia (high/medium correlation with impacted and all other Virginia's newspapers). This helps answer my third research question regarding the role of proximity and offers an interesting opportunity for future research.

CHAPTER 7

CONCLUSION

Following the 2005 to 2009 natural gas price hike, the U.S. pipeline network has expanded substantially across the country. Between November 2020 and January 2021, four natural gas pipelines, Saginaw Trail Pipeline (\$610 million), Buckeye Xpress Project (\$709 million), Permian Highway Pipeline (\$2 billion), and Agua Blanca Expansion Project (\$113 million) have been added to the U.S. pipeline network (US-EIA, 2021c). While considerable investment in pipeline infrastructure is being made in the U.S., the U.S. Energy Information Administration's (2022) short term outlook forecasts that following a 3% decline in natural gas consumption in 2021 (from 2020), natural gas consumption is expected to undergo a further 10% decline in 2022. As natural gas infrastructure continues expanding and natural gas demand decreases, communities where pipeline infrastructure are being sited are increasingly at risk of becoming carbon locked in. With the projected decline in natural gas consumption and the rise of renewable energy supply share (US-EIA, 2021d), the U.S. is making progress towards a net zero energy sector by 2050. Thus, assessment of how pro-natural gas stakeholders are framing long lasting infrastructures such as pipelines and potentially establishing sacrifice zones in sited communities is increasingly important. In this study, I have investigated the influence stakeholder framing of natural gas pipelines has on natural gas discourse and in establishing pipelines infrastructures in already marginalized communities. I have examined how different stakeholders framed the Atlantic Coast

Pipeline (ACP) and the Mountain Valley Pipeline (MVP) over social media and Virginia's newspapers. Additionally, I interviewed local NGO and CSO representatives to gain an understanding of how they framed the pipelines and their strategies in engaging with other stakeholders (Appendix A). Doing so allowed me to answer three research questions that aimed to find differences in framing patterns that influenced the cancellation of the ACP and the continued construction of MVP.

My first research question asked how anti- and pro- pipeline advocates associated with ACP and MVP framed natural gas systems and the pipeline projects. I conducted a *sentimental framing analysis* of pro- and anti- pipeline twitter pages and all tweets coming out in the year 2019. I found that pro-pipeline twitter pages “ACP” and “Equitrans midstream” primarily framed their pipeline projects in terms of economic benefits while also deploying more energy security, infrastructure safety, and employment frames than anti-pipeline groups. Alternately, anti-pipeline twitter pages, “NoMVP” and “Appalachians Against Pipelines” framed the MVP and ACP pipelines, respectively, through community engagement and also displayed higher environmental impacts, regulation/policy, and public health frames. While these findings are similar to previous work covering the framing of natural gas systems in general, they are less aligned with studies on pipeline framing trends. Yordy et al. (2019), for example, found that proponents framed pipelines predominantly with economic benefits and opponents framed natural gas pipelines directly in opposition to pro-pipeline framing trends and actions. In the case of ACP and MVP, anti-pipeline framing in social media lacked competition for pro-pipeline's economic impact, energy security, and employment framing. NGO and CSO representatives I interviewed re-affirmed that their strategy to

fight against the pipeline company was to push back against any and all actions and comments made by the pipeline advocates. However, this was not translated onto social media due to the inability of NGOs and CSOs to maintain a long term and consistent social media presence that could effectively compete with the social media presence of multi-billion-dollar pipeline projects.

My second research question aimed to assess how the public discourse around ACP and MVP changed over time. This work built upon Dodge (2017), who found that opposing advocacy groups compete over framing natural gas systems to benefit their own interests and form several frontiers of disagreement. Dodge found that over time, public discourse around natural gas shifts in response to which frontier is being contested by stakeholders. To answer my second research question, I conducted an analysis of newspapers in Virginia to examine how discourse around the ACP and MVP pipelines had evolved between 2017 and 2021. I found newspapers displayed high shares of environmental, economic, community engagement, regulation, and infrastructure safety framing for both ACP and MVP. Whereas employment, public health, and energy security framing's use supplemented discourse around economic and environmental frames. Applying Dodge's (2017) model of act, interact, and double interact model, I found that after the initial framing of the pipeline projects by Atlantic Coast Pipeline LLC and Mountain Valley Pipeline LLC, opponents reacted to the act by framing the pipeline projects in opposing ways. This interact trend in act-interact framing around ACP and MVP was discussed and confirmed by NGO and CSO representatives in Virginia. The 5-year framing trends (Chapter 6) demonstrated the fluctuation of framing between 2017 and 2021 depending on events around the pipeline projects. This fluctuation of frame use

is indicative of double interacts shaping a dynamic discourse around the pipeline projects. Thus, similar to Dodge's assessment of advocacy groups in New York, I find that ACP and MVP proponents and opponents, through this conflicting framing of the pipeline projects, influenced public discourse.

My third research question aims to understand the role proximity to the ACP and MVP projects played in the frames being used to influence public discourse. Using the analysis of Virginia's newspapers, I formed three datasets based on the proximity of the newspapers from the pipeline projects (newspaper from impacted county, newspaper from non-impacted county, and all other newspapers in Virginia). I found that newspapers from impacted communities displayed higher economic and energy security framing shares than non-impacted communities. This holds true to Boudet et al.'s (2016) findings that communities in close proximity to natural gas infrastructure are more likely to support the project when economic benefits outweigh the environmental costs. ACP's economic framing displayed a high correlation as well as equal framing shares in impacted and non-impacted counties. However, in the case of MVP, economic impacts displayed higher framing shares in impacted counties than in non-impacted counties. Additionally, they show low correlation between framing trends between impacted and non-impacted communities. This displayed a higher discourse around economic impacts in local communities than in non-impacted communities and can potentially point towards to continued construction of MVP.

In this study, I have aimed to analyze long-term framing trends around Virginia's expanding pipeline infrastructure. While much of the data has complimented past works, this study pushes framing analysis towards media platforms such as social media.

Batrinca and Treleaven (2015) argue that social media provides a unique opportunity for social scientists to assess sentimentality regarding an event. Twitter witnessed high engagement by pro- and anti- pipeline groups in Virginia and displayed a much more informal and abrasive discourse. Framing on social media also presented a new frontier of disagreement in “community engagement.” Much of the discourse around community engagement attempts to build community networks that push against pipeline construction progress. I find that anti-pipeline twitter pages relied heavily on building these connections through organizing protests, scheduling donation drives, and calling for community members to attend governmental discussion sessions.

Furthermore, I find that NGOs and CSOs base their framing of natural gas pipelines in response to the actions of the pipeline companies. Much of the pushback against the ACP and MVP projects banks on raising the costs of construction and delaying the project until the pipelines companies are forced to cancel the projects. This was successfully seen in the case of ACP, where the costs of operation increased by \$3 billion, and the project was delayed by three years. Much of these delays occurred via litigation against ACP activities and its gained permits. While quantitative analysis can display the changes in long term framing across newspapers and social media, qualitative methods such as interviews provide a context to the discourse around the pipeline infrastructures. The review of literature in Chapter 2 displays a mix of quantitative analysis, including surveys, newspaper analysis, photograph analysis, policies, and social media analysis as well as qualitative analysis such as ethnographic coverage of natural gas controversies. My thesis builds on this by providing a mixed-method approach in which long-term framing trends are supplemented by interviews with NGOs and CSOs

who pushed back against the pipeline projects. Despite the contributions of this work to the growing field of energy discourse and framing, my project is limited in two ways.

The first is related to my methodology. The coding of newspaper and social media derived data into different frames requires researcher interpretation of the context and the tone of the articles or tweets. Interpretation biases in past works have been tackled by working in teams of researchers and finding common inference of the data. Due to the nature of this project, I was unable to work with other researchers, and therefore the framing of discourse around the pipelines was subject vulnerable to interpretation bias. In order to reduce the influence of interpretation bias, I structured my coding of newspaper articles and social media posts to include frames explicitly mentioned by the authors. In doing so, I was able to maintain a high degree of certainty in how the pipeline projects were being framed. However, my data did not include framing of contextual commentary on the two pipeline projects. For example, several discussions around the issues of eminent domain were found in newspaper articles. Each mention of eminent domain was followed by discussions around ongoing human rights, policy failures, or economic issue. In such cases, unless these issues were explicitly mentioned, the frames emerging were not coded. Utilization of such contextually apparent frames, if done in the absence of interpretation bias, can enable a better representation of how the discourse around pipelines was influenced by framing.

A second limitation was related to data, and particularly the unavailability of long-term social media data in the “anti-pipeline” twitter pages. Social media provides sentimental data that cannot be found via newspaper analysis and is increasingly being used by social science researchers. The lack of long-term social media data can

potentially result in faulty correlation, especially within the “anti-pipeline” twitter pages. The lack of data inhibited my ability to compare intra-anti pipeline group discourse. Additionally, between 2017 and 2020 (peak discourse around the two projects) only one year displayed continuous data availability. While interviewees discussed their preference for newspapers over social media to communicate with the public, they also pointed out that they were unable to keep up with social media departments of multibillion-dollar companies such as Dominion Energy.

While these limitations considerably reduced the raw data that could be coded into different frames, these limitations offer a warning to future projects hoping to understand the influence framing may have on natural gas infrastructure discourse. As such, working within research teams can allow for inclusion of contextual data while reducing interpretation bias. Additionally, social media is a rapidly growing mode of communication in developed countries and should offer greater depth of data to be coded into frames. However, prior to initiating framing analysis of Twitter, engagement on social media should be analyzed. This should be done in terms of how many local and state-level twitter pages focused on natural gas projects exist as well as long term trends such as posting frequency, likes, forwards, shares, and retweets.

Through this study, I find that ACP and MVP have been actively framed by pro- and anti-pipeline advocates in ways that benefit their own interests. These framing trends display a contest across several frontiers of disagreement over social media and in newspaper. Future works may find it advantageous to place greater focus on framing over social media. Social media has recently displayed an interesting uprising of misinformation and pseudo-science to justify the persistence of a carbon-based energy

systems (McGreal, 2021). Additionally, focus also needs to be placed on community engagement framing. In this study, I find high “community engagement” framing shares in both social media and newspaper discourses. Future works, especially ones utilizing mixed method research, can assess the role community engagement plays in developing bridging social capital in communities at risk of carbon lock ins and how public resistance/support influences the success of natural gas infrastructures being sited in communities.

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APPENDIX A

INTERVIEW QUESTIONS

The following list of questions were used as the interview outline”

Atlantic Coast Pipeline – Interview Questions

1. What aspect of the Atlantic Coast pipeline project are you engaged with/ impacted by (issues such as” eminent domain, environmental impacts, policy, etc) ? What region(s) are being impacted by the issue?
2. What are your major concerns regarding the project? What issues do you see occurring in the short and long term?
3. How are the local government officials viewing the issue? What are your day-to-day interactions with these officials? How does this impact your work?
4. How are the local community members responding to your work? What are your day-to-day interactions with them? How does this impact your work?
5. How are the pro/anti-pipeline advocates viewing the issue? What are your day-to-day interactions with these groups? How does this impact your work?
6. What methods do you primarily use to present your views on the projects and natural gas? (Public outreach, newspaper reports, facebook/twitter, etc.)

Mountain Valley Pipeline – Interview Questions

1. What aspect of the Mountain Valley Pipeline project are you engaged with/ impacted by (issues such as” eminent domain, environmental impacts, policy, etc)? What region(s) are being impacted by the issue?

2. What are your major concerns regarding the project? What issues do you see occurring in the short and long term?
3. How are the local government officials viewing the issue? What are your day-to-day interactions with these officials? How does this impact your work?
4. How are the local community members responding to your work? What are your day-to-day interactions with them? How does this impact your work?
5. How are the pro/anti-pipeline advocates viewing the issue? What are your day-to-day interactions with these groups? How does this impact your work?
6. What methods do you primarily use to present your views on the projects and natural gas? (Public outreach, newspaper reports, facebook/twitter, etc.)