

Public Response to Coal Export: The Millennium Bulk Terminal in Longview, Washington

BY

MAM MARIE NJIE

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This Thesis for the Master of Environmental Studies Degree

by

Mam Marie Njie

has been approved for

The Evergreen State College

by

Shawn Olson Hazboun, Ph.D.
Member of the Faculty

Date

ABSTRACT

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Mam Marie Njie

It is widely accepted that anthropogenic activities like fossil fuel combustion, and accumulation of greenhouse gases (GHGs) in the atmosphere increases climate change and its negative impacts. In the United States, there is a huge national divide between different sectors of the public on expanding the fossil fuel industry. Public response to building any energy facility depends on several factors. This study explores the different factors driving public support and opposition to building a proposed coal terminal in Washington, including the different reasons people gave in support or opposition. Transporting coal releases greenhouse gases, dust and coal particulate matter (PM) into the atmosphere and the negative impacts are well documented. For methodology, I used a random sampling procedure to assign a number to each of the 4026 people that commented on the Millennium Bulk project draft State Environmental Policy Act (SEPA) Environmental Impact Statement (EIS). Then I proceeded to code 1000 online comments using a predetermined coding key. I analyzed occurrence of support and opposition by location, followed by an analysis of prevalence of coding variables/themes. Last, I provide representative excerpts from the public comments to highlight qualitatively the type of perceptions commenters expressed about the Millennium Bulk project. Findings in this study show that not all sectors of the public support the transition away from fossil fuel. The extent of public support or opposition for energy developments mainly depends on who is negatively or positively impacted from the facilities, but there are many other relevant factors as shown in this study. Overall, commenters supported building the coal terminal and, in Washington State, more people expressed support for the project because of the perceived economic benefits. Findings show that while public opinion is broadly favorable towards renewable energy, when it comes to expanding fossil fuel energies such as coal mining, public opinion is divided. This implies that more people are willing to sacrifice the environment and the ecosystem services they provide for economic growth.

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CHAPTER 1: Introduction

Coal is on the decline worldwide. The renewable energy transition is high on the policy agenda in many countries around the world. Several governments, especially European governments, have set impressive targets and goals aimed at facilitating market implementation. The European Union has been able to increase sustainable energy consumption in Europe from “9% in 2005 to 16.7% in 2015: projected to increase to 20% by 2020” (EU Commission, 2017). The International Renewable Energy Agency (IRENA) reported that effective planning, setting long-term goals and policy measures enabled the region to achieve continuous steady growth in renewable energy developments and consumption (IRENA, 2018).

The degree to which global policies have been successful varies between countries. According to the United States Energy Information Agency (EIA), natural gas, crude oil and coal are still the three biggest energy sources consumed in our country. While much emphasis has been given to building renewable energy facilities, the transition has not been completely smooth. Not all sectors of the public support the transition away from fossil fuels, which has created a divide in public opinion. The extent of public support or opposition for energy developments mainly depends on who is negatively or positively impacted from the facilities, but there are many other relevant factors.

Fossil fuel extraction and transportation has many concerning impacts, including associated environmental and health risks. Coal mining and exportation is linked to environmental degradation, including contamination of ground water and air pollution. The steps associated with exporting coal (from the mining phase to the shipping phase), also has major environmental consequences (Clark et al., 2015 & Covert et al., 2016). However, in light of all

the negative effects, local communities often support coal industries because of the short-term benefits they create: jobs, regional revenue and international trade have all been cited as potential benefits derived from coal production.

For example, Boudet (2016) found that especially in communities with high unemployment rates, people who thought they could benefit economically from fossil fuels extraction were more likely to support facilitating one. Additionally, Hazboun (2018) found that communities largely dependent on fossil fuels are more likely to support ongoing extraction activities, even if the negative impacts outweigh the benefits. Furthermore, Knight (2018) explained that economic dependency on fossil fuel use and production impacts public understanding, response, and risk perception of climate change, especially because of the perceived economic benefits derived from the fossil fuel industry.

Climate change and environmental degradation are among the biggest challenges to human development as they present a combination of risks that negatively impact human health. They are also among the biggest reasons citizens oppose fossil fuel developments. The United States' concerns about climate change and global warming has put energy production of fossil fuels and the greenhouse gases they emit at the forefront of public discussions about climate and the environment. These discussions combined with long-standing economic pressure to decrease reliance on other countries for energy needs has given more attention to renewable/cleaner forms of energy but divides the nation because of the potential economic benefits of the fossil fuels industry.

The United States coal industry has been slowly declining in the last decade especially as natural gas prices continue to go down (Clarke et al., 2016). Coal production declined by 19% from 2015 to 2016 and by 38% in 2008 (Energy Information Administration, 2017).

This year the U.S coal sector reported that the country has experienced a 40% decline in coal-fired power generation since then (2019). Coal mining employment additionally declined by 23% between 2008 and 2015 (Mine Safety and Health Administration, 2016), and 50 coal mines have closed since President Trump came into office (The National Institute for Occupational Safety and Health, 2016). However, in the last couple of years coal industries have proposed to build several terminals in Oregon State, Washington State and British Columbia, Canada. The purpose of these terminals is to mine and export millions of tons of coal overseas.

Coal is a nonrenewable fossil fuel formed from the remains of dead plants hundreds of millions of years ago. According to the London BP Statistical Review of World Energy (2008), the United States has a vast supply of coal, with almost 30% of world reserves. It is the world's second largest coal producer yearly yielding more than twice as much coal as India; the third largest producer of coal (BP Statistical Review of World Energy, 2008). Coal accounts for roughly one third of all U.S. Greenhouse gas (GHG) emissions (Kalen, 2013). Finkelman (2007) reported that harmful elements like arsenic, fluorine, selenium, mercury, and lead are also emitted during the combustion process.

The coal industry has a massive geopolitical presence, and many citizens find coal valuable and effective; it provides electricity for families, grows the economy, improves international trade, etc. (Finkelman, 2007). However, the contributions from coal follows an unfathomable extraction cost because of the ongoing damage to the environment, ecosystems and human health. With climate change at the center of many global discussions, tackling global warming means leaving the remaining coal reserves in the ground. Additionally, scientists and doctors have jointly advised that not only is coal harmful to the environment, it

can cause very adverse health issues for humans. In China, numerous studies have shown that there is an association between lung cancer and coal smoke exposure (Zhang & Smith 2007). Despite the fact that the United States has generally experienced a downward surge in black lung case incidences particularly in miners, in China and other developing countries, this is still an ongoing problem (Finkelman, 2007). The disease is a progressive respiratory problem caused by inhaling coal dust.

Growing the fossil fuel industry in the United States will impact many communities, including citizens not living in the host communities. It has been documented that impacts of shipping and burning fossil fuels can be felt miles away from the facility. For example, Vishwakarma and Nema (2019) reported that in India coal pollution from power plants due to burning fossil fuels, not only damaged the natural environment within the local area, but over an extended period of time, has affected neighboring towns. Furthermore, in an effort to determine why Norfolk Virginia suddenly had massive amounts of arsenic in their soil samples, Bounds and Johannsson (2007) collected and, tested samples from the local area. They found that the extensive amounts of particulate coal were migrating from another source, the Lambert's Point Docks. In addition, the researchers found that the areas closest to the shipping terminal contained the most particulate coal by weight: "Along with the particulate coal, arsenic associated with the coal is also enriched in these soils by 2 to 20 times over upper crustal abundances" (Bounds and Johannsson 2007). It is clear that nearby residents bear the majority of the negative costs associated with building any fossil fuel facility.

Hence, it is important to always include citizens in environmental decisions. Participation allows the public to either show support or voice their concerns before any fossil fuel project commences, and how well participation is carried out can also influence citizens' overall

perceptions about a project. According to Rowe and Frewer (2000) there are different levels to public participation. The lowest level of public participation involves communication between scientists or regulators and the general public. Higher levels of participation involve some degree of input from the public for example in the solicitation of public opinion or the active participation of public representatives in the decision-making process itself (2000).

The purpose of this research is to explore the factors driving public support and opposition for the Millennium Bulk Project, including the different reasons people gave in support or opposition for the proposed coal terminal. For methodology, the research question was answered by systematically analyzing the online comments made under the draft State Environmental Policy Act (SEPA) Environmental Impact Statement (EIS), using a predetermined coding key. The coding key contained several variables which were used to code the comments before using a qualitative content analysis approach to analyze responses. I then analyzed bar charts to compare the prevalence of all coding variables, including support and opposition to the proposed coal terminal and reasons that commenters provided for their support or opposition. I first analyzed occurrence of support and opposition by location, followed by an analysis of prevalence of coding variables/themes. Last, I provide representative excerpts from the public comments to highlight qualitatively the types of perceptions commenters expressed about the Millennium Bulk project.

Thesis project significance

In the United States, petroleum, natural gas, and coal have accounted for at least 80% of energy consumption for over a century (Department of Energy, 2018). Production, extraction and exportation of coal as a source of energy has always been fundamental to United States energy policies (Boudet et al, 2018). Historically, the fossil fuel industry,

especially coal mining has contributed tremendously to the country's economy; through job provisions and improving international trade and foreign relations. The historic precedence influences and divides public opinion on the fossil fuel industry. Moreover, there are various published studies analyzing the different aspects of public opinion on extracting, producing and consuming fossil fuels. There is much less research seeking to understand public perception of fossil fuels export. Thus, the present thesis research fills a gap in knowledge by investigating what drives public support or opposition for a coal terminal in Washington State.

Thesis preview

The next chapter (Chapter 2) provides an overview of relevant scholarship, including the various factors relevant for public perception about fossil fuels related issues. Chapter 3 discusses the methodology used in this research. Chapter 4 highlights the results of the study, both quantitative and qualitative. Lastly, Chapter 5 provides a discussion of the results and overall conclusions of the research.

CHAPTER 2: Literature Review

This first part of this chapter begins with a brief background information on the project and company of this study, Millennium Bulk Terminals. Second, I will provide an examination on current available research about why some people support fossil fuel development projects and why others oppose. Additionally, this chapter delves into the importance of public participation in decision making processes, especially those pertaining to the health of the environment and humans. Some reasons for public resistance to cleaner forms of energy are also briefly tackled toward the end of this chapter.

Background information about the Millennium Bulk Terminals proposal

In 2012, Millennium Bulk Terminals in Longview, WA, proposed to construct and operate a shipping terminal to export coal at the site of the former Reynolds Aluminum smelter in Cowlitz County. The proposal was for a facility that would ultimately have the capacity to handle and export 44 million metric tons of coal annually (MBTP, 2017). Trains were expected to carry coal from Montana, Wyoming and other coal states, which would be loaded onto ships at the port in Longview then exported to Asia. Millennium expected to invest roughly \$600 million in the construction project. The proposed facility was expected to begin operations in 2015 with full site capacity of coal exported by 2018. In 2017 The SEPA draft EIS was released on April 28th and provided information for the public, state, and local agencies on the potential impacts of the proposed project on the environment and neighboring communities. However, the Department of Ecology (DOE) rejected a water quality permit that was crucial in moving the project

forward. The DOE mentioned "significant and unavoidable harm to the environment, especially to the Columbia River, effects to air quality, noise pollution and tribal resources" as the main reasons why the permit was denied (DOE, 2017). In early 2018, Millennium filed a lawsuit in U.S. District Court against some of the top officials at the DOE. As of 2019, the Cowlitz County Superior Court has denied the company's motion for summary judgement (DOE, 2019) but, still upheld the DOE's decision to deny the water permit Millennium needed.

Factors influencing public views on fossil fuels

Individual and public risk perceptions on fossil fuel production and its impacts on the environment, climate, health of citizens, economic impacts (jobs, trade, etc.) greatly influences how people react to the prospect of building one (Owusu et al., 2016; Leiserowitz et al., 2005). The perceived risks/benefits associated with the various impacts of fossil fuels influences whether the public support or oppose building any fossil fuel plant or a coal terminal. By definition risk perception is associated with attitudes, decision making, and communication cues that aid researchers identify, understand risks and how they are perceived (Owusu et al., 2016). The factors that impact risk perception, behavior, and the degree of dread associated with the risk varies with the individual's understanding and experience with the risk (Owusu et al., 2016).

The importance of risk is highlighted in a study conducted in Switzerland to analyze the risk perception of nuclear energy after the Fukushima incident. The authors wanted to see how attitudes and opinions have changed, if at all, over the years. The accident at Fukushima Nuclear Power Plant, in addition to killing many human beings, destroyed and flooded

massive land areas, and reportedly released radioactive over several days after the unexpected disaster (World Nuclear Association, 2018). After the disastrous accident, public attitudes changed toward nuclear energy in most countries and Switzerland was not an exception (Kristiansen et al., 2016). Results showed minimal differences between the two years the experiment was conducted, 2012 and 2014. Public opinion about nuclear energy was reported as slightly more favorable as time passed. Notably, the authors established that “the most important predictor of the general opinion about building a nuclear energy is the individual assessment of its benefits and risk” (Kristiansen et al., 2016).

Additionally, individuals’ beliefs about climate change are related to their views about fossil fuels, and as such they are likely related to the public’s views about the proposed coal terminal. The Yale Program on Climate Change Communication has conducted nationally representative studies each year since 2008 to determine American climate change risk perception. Their surveys have shown that a majority of Americans consider climate change to be a moderate risk. The most recent survey however revealed that more Americans (69%) believe climate change is either “extremely” or “very” real (Ballew, 2019). The survey also found that majority of Americans are more concerned about their local areas been destroyed by extreme heat, drought, flooding, water shortages etc. Similarly, Leiserowitz (2019) examined the United States’ perception of climate change over the past decade, analyzing important trends in public understanding of climate change and their perception of risk. They measured “Harm to future generations”, “Animals”, “plants,” “Developing countries”, “US” and “Personal self”. The authors found that Americans' climate change risk perceptions have seldom changed over the years. More people continue to believe climate change will harm future generations, plants and animals (73%). Risk perceptions of personal harm (46%) or harm

to people in the United States (63%) have remained the least concern to the people. Both articles demonstrate that more Americans are believing climate change is a problem that needs to be mitigated. The results substantiate those from Leiserowitz (2005). Both concluded that Americans report greater risk for people and species than they do for themselves or their own communities. An individual or community is more inclined to support coal developments if they do not perceive climate change as a threat to them or their ways of life.

In addition to climate change, opposers of the coal industry have also cited health reasons as a deciding factor in opposing a coal terminal. Transporting coal releases greenhouse gases, dust and coal particulate matter (PM) into the atmosphere. The major pollutants that result from coal transport include CO_x, SO_x, NO_x, PM, and heavy metals (Jaffe et al., 2016). Particulate matter is a general term used to describe small particles in the air including coal dust. Health impacts that result from coal transportation and burning fossil fuels are well documented. According to the World Health Organization, particulate matter is harmful to human health even in extremely small doses (WHO, 2018). Coal PM levels, whether individually or in reaction with other chemicals can cause some additional serious diseases, including lung cancer, cardiovascular diseases and reproductive disorders (Munawar, 2018). Continuously particulate matter has been linked with increased risk of multiple types of cancer including exposure nasal cancer. More recent research shows that living near rail lines significantly increases exposure to particulate matter which is toxic to human beings because of its ability to get into the bloodstream after being inhaled (Clapp et al., 2013).

Furthermore, another reason why citizens oppose fossil fuel industries and energy projects, particularly transporting coal along residential neighborhoods, are the noise disturbances from the trains and traffic congestion. Millennium proposed to utilize 6-8 trains a

day to transport coal and ship it in through our waterways (Health Assessment and Evaluation (HAE) (2013). Noise and produced by these massive, loud trains, can affect people's stress levels and mental well-being. "Stress influences health through the secretion of stress-related hormones and causing behaviors (particularly coping mechanisms) that can increase risk of disease" (HAE, 2013).

Support or opposition for a fossil fuel plant can be influenced by education level, economic status, and even gender. For example, Boudet et al. (2013) used a national online survey to explore factors shaping Americans' views on specifically hydraulic fracturing which like coal and other fossil fuels have devastating consequences on the environment. The authors examined the different factors that influence public support or opposition for exporting this fossil fuel. They found that the majority of supporters were male, had higher education than the average person, were wealthier and held conservative political views. In contrast, opponents/opposers are more likely to be politically liberal women. The authors shared that 39% of surveyors were unfamiliar with the fracking process. 13% had little knowledge of fracking, 9% heard quite a lot of fracking. With regards to support or oppose, majority of the subjects in this national survey were undecided about the extraction and use of fossil fuel through fracking. Fifty-eight percent of respondents did not know/were undecided; 20% were somewhat/strongly opposed; and 22% were somewhat/strongly supportive. The astonishing thing about this study is that the majority of responders were either unfamiliar with the process, undecided, or simply didn't know.

It is important to access and be exposed to the right information, especially in the Anthropocene era. We depend on media for information and it plays a crucial role in how energy developments are viewed and interpreted by the public. The media influences public

support or opposition for fossil fuels because of the way they frame topic issues, including what information they decide to feed the public (Boudet et al., 2013). They have the power to shape complex science, policy, and political debate into narratives that do not support the right discourse (Painter, 2013). However, it is a consensus among scholars that television coverage is not the best way to stay informed. In contrast, newspapers are considered to be highly more effective in acquiring the right information. They tend to provide more opinions and analysis, of broad themes for the public (Boudet, 2013). Yet, some scholars have suggested that due to having access to so many technological platforms, citizens' experience increased speed of information flow but, the internet is considered to be the favorable place to seek out knowledge. Furthermore, the media's treatment of climate issues particularly the United States has shown a general division between skepticism and/or belief in the anthropogenic causes of global warming and effects on our climate (Painter 2013). This can be addressed by shifting how information about energy technologies is presented to the general public by the media, and, by energy companies. Additionally, the fact that the general public tends to access scientific knowledge through the media provides a skewed understanding of this issue (Painter, 2013). As a result, news about environment and energy in particular is biased due to economic and or political interests (Smith, 2005). However, in addition to risk perception and the media playing important roles in driving public opinion on energy resources, the following paragraphs will explain other driving factors of fossil fuels support or opposition.

The phrase "NIMBYism" has been used to explain how local residents often oppose proposals for new facilities. The acronym NIMBY means "not in my backyard" and it is defined by Wright as "the protectionist attitudes of and oppositional tactics adopted by community groups facing an unwelcome development in their neighborhood ... residents

usually concede that these facilities are necessary, but not near their homes” (2009). The term is often used interchangeably with words such as “volunteer’s dilemma” and “prisoner’s dilemma” (Carlisle et al., 2014 & Boyle et al., 2019), referring to the idea that people generally support proposed facilities when they are not in close proximity to their homes. Instead, various research has shown that proximity can actually lead to greater support for projects, especially in communities where jobs are needed (Machol, & Rizk, 2013).

Additionally, NIMBY has also been used as a spatial explanation for opposition, assuming an individual’s proximity to a proposed facility is the best determinant of support or opposition. Many scholars have argued that opposition or support to local projects are much more complicated than NIMBY and the hypothesis does not always hold true. For example, Warren et., al (2005) studied case studies of public attitudes towards existing and proposed wind-farm developments in Scotland and Ireland to test the NIMBY hypothesis about proximity to energy farms. While several studies associate NIMBY with proximity, their results and analyses revealed that majority of the people were generally in favor of wind power development including a strong support for the local wind-farms. Those living closest to existing wind farms showed the majority of the support (Warren et al., 2005).

Conversely, “PIMBYism”, or Please in my backyard, refers to support for fossil fuel developments or any energy development. PIMBYism is related to opportunities for new employment or economic growth in related industries (Dokshin, 2016). New industrial facilities provide a new source of tax revenue for local governments including creating new employment opportunities for local residents, especially in places where the unemployment rate is lower than the national average. Research shows that residents in economic deprived communities targeted for fossil fuel technologies will ignore the apparent issues because it

benefits them in a way. For example, Pennsylvania residents, especially landowners, expressed significant support for the fossil fuel industry even though many studies have concluded that the loss outweighs the benefits (Jerolmack & Walker 2016). Moreover, when communities decide to support a fossil fuel facility, they have a high risk of getting “stuck” with the dangerous effects, especially when the facility shuts down or goes out of business (Jerolmack & Walker 2016).

Moreover, scholars have emphasized the importance of place attachment. They have argued that recognizing the relevance of place attachment and place identity to individuals is significant in understanding reasons for opposition or support to fossil fuel projects, especially in the local level (Carlisle et al., 2014). Devine-Wright defined place attachment as both the process of attaching oneself to a place and a product of this process (2009). Wright (2013), expanded on his previous definition and thus defined place attachment as “positively experienced bonds, sometimes occurring without awareness, that are developed over time from the behavioral, affective and cognitive ties between individuals and/or groups and their socio-physical environment” (Wright, 2013). Individuals tend to have greater place attachment to the area they settle, relative to those who live elsewhere. Still, individuals living farther away from for example national symbolic areas can also feel a sense of connection to those areas. Human connection and attachment to place is a very valid reason for a community or an individual to oppose building a coal terminal and having a coal site or several as a neighbor.

In contrast to place attachment, place identity refers to the ways in which physical and symbolic characteristics of certain locations contribute to an individual’s sense of self or identity. Threats to a place could be perceived as threats to self and identity. This is often referred to as threats to “place attachment” or “place disruption” (Wright, 2013) which affects

communities, especially on the local level. Threats to place could be any disruption to the environment, including building energy facilities whether they are fossil fuels related or renewable energy related. For example, in an executive summary published in 2010 by The National Renewable Energy laboratory about the social acceptance of utility-scale energy project in the San Luis Valley, Colorado, local residents opposed a concentrated solar power (CSP) facility because of the impact it would have on the local environment (Farhar et al., 2010). While this is not an isolated event, it is not always the case. Renewable energy projects can garner some support due to perceived benefits to local and regional communities. Boyle et al. (2019) stipulated that although numerous opinion polls have indicated public support for more renewable energy, especially wind energy, actual developments have often been cancelled or met with resistance (Wright, 2009).

Moreover, political viewpoints also influence individuals' views toward fossil fuel technologies. Political ideologies and party affiliation have been found to influence opinions on energy technologies (Hazboun, 2017). Republicans have been notorious for supporting fossil fuel developments and coal industry. However, based on a 2016 study by the Pew Research Center, support for renewable energy has been growing steadily across the U.S. in recent years. The researchers found that 83% of conservative Republicans and 97% of liberal Democrats favor solar farms (PEW Research Center 2017). Similarly, researchers at Vanderbilt University found that conservative states are also as likely to support renewable energy and energy efficiency policies as liberal states (Vanderbilt University 2016). Support for renewable energy among Democrats is largely thought to stem from environmental concerns, while the reasoning behind Republicans' support is less well understood.

Another factor that influences public support or opposition for fossil fuel is public

participation. Citizens with easy access to technology and other means of transportation are more likely to familiarize themselves with the issue, allowing them to stay informed. Those with less means are more likely to skip the participatory process. The processes are designed to consult, involve, and inform the public in decision making regarding policy and environmental projects. Rowe and Frewer (2000) published an article providing a brief description framework for evaluating public participation. The lowest level of public participation involves communication between scientists or regulators and the general public (2000). In contrast, higher levels of involvement “may seek some degree of public input, as in the solicitation of public opinion or the active participation of public representatives in the decision-making process itself” (Rowe and Frewer, 2000). The authors contended that the most appropriate method of public involvement depends on the specific project and specific location but advised against unwillingness to participate.

Fossil fuel to renewable energy transition- What is lacking?

Understanding the underlying dynamics influencing public support or opposition to renewable energy is critical in United States’ complete transition away from fossil fuels, especially given Americans’ increasing political divisions over environmental and energy issues (Hazboun et al., 2017). Earlier research seeking to understand the factors related to social opposition or support for renewable energy technologies and policy has focused more on community-scale studies and comparative case study analysis. Less emphasis has been put on understanding these factors on a broader scale and even less emphasis has been put on the complexity of transitioning to renewables. Past research has neglected to include social acceptance as part of renewable energy technology implementation when policy programs started. The rationale by most developers, including energy companies, authorities, and

private local investors was that implementation was not a problem. However, further advanced investigations showed that public support and support from major stakeholders at varying levels is crucial in energy innovation (Wolsink et al., 2007). Communication and inclusion are key to a smooth transition because the vast development of renewable energy systems suggest that the general public have become more aware of renewable energy systems (Hazboun et al., 2017). Breukers & Wolsink (2017) asserted that negative attitudes are based primarily on the perceived impacts of the facility. They agreed that those negative attitudes can be reinforced by lack of inclusion of local communities in decisions that directly affect them. This cultivates mistrust between the main stakeholders involved and, at the local level, residents might deploy roadblocks to completely derail a project due to a lack of inclusion; it exacerbates conflict. “Local involvement in decision-making, appears to enhance support for wind schemes locally” (Breukers & Wolsink 2007). The used term by most sociologists to describe this process is called participatory decision-making and it is defined as “the idea of more direct involvement by citizens in plan making beyond formal consultation for both normative and instrumental reasons” (Breukers & Wolsink 2007). This process is essential in finding common ground and solutions that are acceptable by all and benefits everyone; not just a number of people. It avoids alienation of minority groups and gives everyone a fair chance of being heard irrespective of race, age, sex, etc. However, inclusion in this process does not automatically turn fundamental naysayers of wind farms into supporters and vice versa. However, “conditional supporters” e.g., local residents or nature protection organizations, may accept a wind project when they have been given an opportunity to influence the design and be included.

Horne and Kennedy (2008) conducted in-person interviews at the homes of 64

registered Democrats and Republicans across Washington State to better understand support for energy among both conservatives and liberals. The researchers asked study participants about their views on people who had solar panels or those engaged in other pro-environmental behaviors and, their own interest in installing solar panels. The team also conducted a larger, nationally representative online survey that asked participants about their views of a family in their neighborhood that recently installed panels on their home. Their results showed that Democrats and Republicans have different moral intuitions when it comes to energy technology with both Democrats and Republicans valuing self-sufficiency. These findings explain how politically polarized environmental attitudes can exist alongside a shared support for similar energy (Horne & Kennedy 2018). In contrast, findings found by Hazboun et al. (2019) showed mixed support for renewable energy policy advancement. In addition, though Democrats as a collective seem to be more supportive than Republicans on renewable energy, there is still lingering debate amongst liberals on the environmental benefits versus harms of technologies such as wind and solar energy to wildlife and other ecosystems (Hazboun, 2017).

Conclusion

The present research will serve as a useful addition to past, current and future available research on public opinions about fossil fuels as there are many dividing opinions on this issue, particularly coal. Understanding public opinions and responses to the proposed Millennium Bulk Terminal will hopefully facilitate honest communication between policymakers, developers and the public. Analyzing the public comments on the draft SEPA EIS will provide insight into the various reasons commenters gave for supporting or opposing the proposed coal terminal. Additionally, this study adds to current and future research seeking to understand public perception and response to fossil fuels, in addition to showing the

benefits of public participation in decision making processes. Moreover, this study will provide insights on the varying and diverse opinions on the proposed coal terminal from different locations in the United States. This is significant because of the additional information it provides; who is commenting and where are they from.

One of the key challenges that emerged in this literature review is the divide between national and local stakeholders. It is important for locals to recognize that they are being treated fairly and included in meetings. This is an important step in building relations and solidifying trust between all the stakeholders involved. Locals need to recognize fairness at every step of the way, from project design to project implementation. Trust is a key issue in all energy meetings and an important element of perceived process fairness and damaged relationships (Wolsink et al., 2007). Perceived fairness relies on how information is interpreted and communicated to the local communities and residents. This includes how extensive and thorough potential risks are defined, how they will be managed, and who benefits from the projects. Locals are often times skeptical when investors and energy companies are community outsiders. Understandably, trust in their intentions, attitude and ability becomes an issue. The openness of the process for local involvement, the flexibility and open-mindedness of outside actors/investors is crucial in moving a project forward.

Moreover, another vital area in which progress can be made lies in the hands of the science and the policy community. There needs to be more understanding and research into why some in the population act indifferent to transition. Moreover, while scientists may not have control on how scientific information is communicated through the media, they can still affect change by providing ideas, advice, and critical feedback in relation to the energy narrative. Smith (2005) argues that the scientific community needs to dominate the climate change

dialogue through alternative forms of communication (such as emails, letters and calls) that are rarely used. Sharing the right information to the public affects public opinions on renewable energy systems and impacts ongoing dialogues on renewable energy transition.

Hence, scientists need to work together, share information, be more available, and, more assertive in relation to what our planet might face if drastic actions are not taken. Lastly, while research shows there are other underlying factors that drive or constrain public opinion on energy facilities. The perceived benefits or lack of seem to have significant influences on a person's viewpoint on developments. However, the revitalization of a region's economy should not be dependent on building or reviving the fossil fuel industry. The persistence and dominance of fossil fuels in the United States restrains progress and smooth transition to renewable energy. Authorities need to develop effective communication strategies that emphasize the risks of climate change and demonstrate the benefits of engaging in behaviors that address climate change problems, supports innovation, policy change, and most importantly sustainable energy developments.

Chapter 3: Methods

SEPA process and data collection

The aim of this study was to determine the factors driving public support and opposition for the Millennium Bulk Project, including the different reasons people gave in support or opposition. The methodology involves analyzing online public comments made on the proposed terminal's draft State Environmental Policy Act (SEPA) Environmental Impact Statement (EIS) through a qualitative content analysis approach.

The Washington State Environmental Policy Act (SEPA) is a process (Fig 1) that identifies and analyzes environmental impacts associated with governmental decisions (Department of Ecology (DOE), Washington State, 2019). This process is extensively explained by Charles Luce of the USDA Forest Service and Gordon Bradley from the University of Washington (1993). According to the authors, accepting or denying a project through an EIS must be based on the impacts recorded in the same EIS and involving the same project. A proposal is denied if the agency finds that the project will have significant environmental impacts and, that there are no available alternative mitigations to reduce those impacts (Luce & Bradley 1993). "This requires that the policies, regulations, and plans used as bases for conditioning or denying a permit include some statement of the degree of impact that could be considered sufficient to deny a permit or place conditions on a project" (Luce & Bradley 1993). While SEPA plays a significant role in environmental protection, Luce and Bradley explain some of the limitations of the process. According to the authors, the basis for conditioning or denying project actions are not written as "strict rules" and therefore rarely cited. The lack of clear definition/distinction between words like "substantial" and

“significant” “impacts the effectiveness of the process in decision making” (1993). SEPA’s environmental policies and regulations apply to both non-project actions and project actions. Non-project actions involves agency decisions relating to policies, plans and regulations. Project actions are decisions relating to funding, undertaking or issuing a license for a proposed project (Department of Ecology, 2009). SEPA requires an EIS review before a state, or local agency issues a permit or approves a project. Below is a brief summary of the SEPA process as illustrated in Fig1, extracted from the *State Environmental Policy Act Handbook*, Department of Ecology (DOE, 2003).

Step 1: Determine whether a SEPA environmental review is required for the proposal by defining the scope project, identifying any agency actions (licenses, permits, etc.) and deciding if the proposal fits one of the categorical exemptions.

Note: If the project does not involve an agency action, or there is an action but does not involve the project, an environmental review is not required. However, if an environmental review is required, then the steps below follow.

Step 2: Determine and identify SEPA lead agency associated with the project. This is the agency responsible for the environmental analysis and procedural steps under SEPA.

Step 3: Evaluate the proposal. The lead agency gathers all relevant information available on the proposal and evaluate the project’s likely environmental impacts and mitigation measures.

Step 4: Distribute draft checklist for inter-agency and tribal consultation. According to the SEPA handbook, “the best opportunity to make changes to a proposal based on environmental impacts is prior making the threshold determination and issuing the Determination of Non significance or Determination of Significance” (2018).

Step 5: Assess significance and issue a threshold determination. After the proposal is evaluated and mitigation measures identified, the lead agency determines if it would still have negative environmental impacts. The lead agency then issues either a determination of non-significance (DNS), or a determination of significance (DS). DNS means mitigation conditions are deemed acceptable. DS is issued when the project is determined to have significant adverse environmental impact which starts the EIS process.

Step 6: EIS is completed and ready for SEPA to analyze and come to a decision about the project. The agency makes a decision based on the information available in the proposal and the agency's approved SEPA policies. (State Environmental Policy Act Handbook, 2018)

In 2012, Millennium Bulk Terminals in Longview proposed to build and operate the largest coal export terminal in North America in Cowlitz County along the Columbia River. A draft SEPA EIS was prepared and reviewed under SEPA and released for public commentary. The comment period was from April 29-June 13, 2016. Commenters included individuals from all over the United States. Individuals submitted commentaries via online web form, email, mail, and public meetings. A total of 4026 comments were submitted on the draft SEPA EIS, each containing a unique identification number. The data for this project include a random sample of these 4000-plus comments, explained below.

First, I copied and pasted all 4026 comments into Microsoft Excel. Then, I used a random sampling procedure to assign a random number to each person that commented; range (0-100,000). These were then sorted into ascending order. Cases were randomly chosen to guarantee that each participant had an equal chance of being selected.

The first 1000 comments in the sorted list were then selected for analysis after the above steps had been completed. However, several participants submitted comments multiple times, and thus any duplicate comments were replaced with the next available randomly assigned comment starting with the 1001th comment in the sorted list. Additionally, comments that were transcribed at the three hearings held across the state were not coded due to concern that the comments at the hearings could introduce bias in the sample (i.e., the hearing comments could be systematically different than comment submitted through mail, email, or web form). Lastly, any form letters from environmental groups, labor groups, etc., were also replaced with the next available coded comment. These form letters were replaced because it was crucial to reflect the genuine reasons given by commenters and not echo the thoughts of those who might have hidden agendas.

Figure 1: WA State Environmental Policy Act Review Process

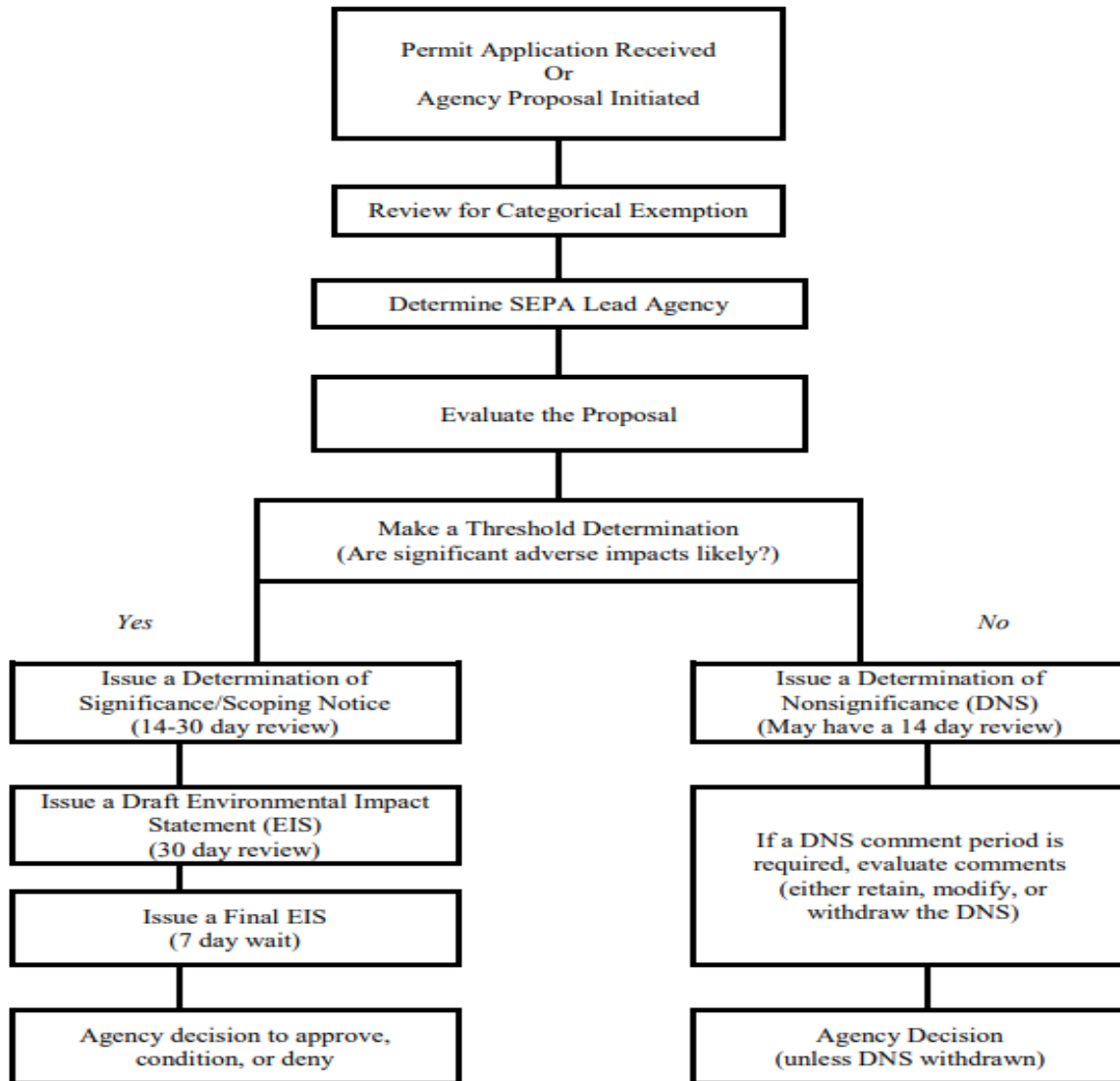


Figure 1. Overview of the SEPA process in Washington State (courtesy of the Washington State Department of Ecology SEPA website).

Qualitative content analysis

Qualitative content analysis was used in this study to quantify the qualitative information obtained and analyze the results. The basic process of qualitative analysis transforms data into findings. There are different approaches used in qualitative analysis. For example, ethnography is the study of a culture or shared culture among a group of people using participant observation over an extended period of time. Narrative methods use interviews and sometimes documents or observations to follow participants and tell their stories (Schutt, 2018). The main benefit of qualitative research is its ability to provide complex textual descriptions of how people experience a given issue. There are different ways of approaching qualitative analysis studies. This study uses qualitative analysis of public comments made on the Millennium Bulk project draft SEPA EIS.

Several examples of qualitative content analysis are provided below to highlight its utility. First, Maryam et al., (2018), set out to identify issues faced by children with fathers of substance abuse, in Tehran Iran. Data was gathered through in-depth semi-structured interviews and focus group discussions. Each interview lasted for approximately an hour after which they were transcribed. A coding key was created and transcribed interviews were coded by key phrases and analyzed accordingly. While this study used a different analytical approach, the analysis obtained from the interviews showed it was an appropriate method used in understanding issues faced by children with drug user fathers in that part of the world. The approach used in this study is similar to the qualitative content analysis used in this research because both utilized a coding key that was used in transcribing comments. This specific research was tailored for this particular project.

In another study, Potter (2018) analyzed and discussed the public response on social media to TIME Magazine's May 2012 cover photo of a mother breastfeeding her infant son. Comments were imported from three diverse news websites because the magazine's online story did not allow for comments. The websites were chosen for equal representation of all those who frequently read and comment on those sites. To analyze the data, Potter read all online comments and then imported them into a qualitative data analysis software program. She then proceeded to code all available data into categorical themes and sub-themes using an interpretative phenomenological analysis (IPA) approach, a type of qualitative analysis method (2018). Potter's study is relevant to this research because it is a clear example of how analysis of public comments can show varying opinions on an issue.

The IPA method is used to understand peoples' lived experience and how they make sense of them. According to Peters (2019), this method is grounded on three theoretical approaches; phenomenology, hermeneutics, and idiography. All three approaches are useful in decreasing biasness; phenomenology allows for data that is rich in participants' perception, hermeneutics includes both participants' perception and the researcher's interpretation of them and, lastly, idiography focuses on the individual experience of each participant as case studies. The IPA method was appropriately used in this study as it aided in providing perspective and, understanding individuals' views on extended breastfeeding in the United States. Qualitative analysis methods are not without limitations. The main challenge often involves conceptualizing and implementing research designs that result in valid interpretative data, while also safe guarding the authenticity of response-meanings

For the purpose of this research, I will be using the Qualitative Content Analysis (QTA) approach. It is described by Vaismoradi et al., as a research method for the subjective

interpretation of data context through the systematic classification process of coding and identifying themes or patterns (2016). This process is described by Chowdhury (2014) as a process used in understanding people and how they interpret any social phenomena. Due to the fact that the data used in this research was comments posted online about a specific proposal, content analysis is an appropriate method to use, especially to understand and visualize data patterns and themes as they relate to the Millennium Bulk Project.

Content analysis either uses a closed coding method with predetermined theme categories, or an open coding method whereby themes and coding categories are developed iteratively (Habibi et al., 2016). For this research, a closed coding strategy was used and a predetermined coding key (Appendix A) utilized. The coding key was adapted from Hilary Boudet at Oregon State University.

Coding and coding key explained

Utilizing a coding key in a qualitative research analysis is an effective approach/tool in analyzing, comparing, summarizing and presenting data in a concise manner. Coding is a very old technique that has been widely used for a long time to structure text and is probably the most popular technique used in data analysis (Glaser & Laudel 2013). The coding key used contains multiple variables that are coded based on the content, tone, words and phrases used by participants in their submission comments (See Appendix A). Each variable is explained below, as well as the decision procedure for each.

“Location known” was coded as 1 if either the State or the City of the person making the comment is known; either through the submission title, through the text or through the

usage of suggestive phrases such as “our community, our state”, etc. If the commenter was local from Washington State, then the “Washington” variable was coded as 1.

Those whose position was clearly supportive of the project meant the “Support” variable was coded as 1, and same with those who clearly opposed the project. Those whose position on the project was unclear (for example, those who acknowledge the significance of this project but, also have reservations due to its potential impact on the environment, climate change, health and fish) were coded as 1 under the “Unclear” category this automatically assigned 0 to both “Support and Oppose”. The variables “Jobs +” and “Econ +” were coded as 1 if specific references were made on the importance of the project on the local and regional economy. Conversely, the variables “Jobs –” and “Econ –” were coded as 1 when specific references were made on the negative impact of the project to the local and regional economy. “States +” was coded as 1 if comments related to the positive impacts of the project on other states apart from Washington. Comments on the negative impact of the proposed terminal, denoted by “States –” were coded as 0.

References directed to the revitalization of an old aluminum smelter where Millennium Bulk Terminals would be located were coded as 1 and, remarks directed towards the importance of the project in improving the unemployment rate in Cowlitz County and the nation as a whole were coded as 1. Conversely, comments referencing the importance of the project to the United States and to other states besides Washington State were coded as 1, and vice versa. The variable “Environment” was coded 1 if concerns were related to the impacts of the project on specifically the environment, ecosystems, species habitat, and water quality etc. “Climate Change” was coded as 1 if concerns involved impact of the proposal on climate change, global warming, and carbon emissions. Comments related to transitioning to a

renewable future are additionally coded as 1. “Fish” was coded as 1 if the comments were related to the impact of the project on fish and fish habitats. Contributors expressing disappointment on the amount of time taken by agencies to issue the required permits for Millennium to start building at the site were coded under the variable “Process” as 1. Contrarily, those who believed that the EIS was incomplete and should have included a Health Impact Statement meant the “EIS” variable was coded as 1. “Low sulfur” was coded as 1 if commenters argued that the coal facility would help facilitate burning clean coal from the USA and hence help climate change. Comments related to the negative impact of the project on the health of residents and those on transporting routes are coded as 1. Concerns about the negative impacts of the project on neighborhoods (traffic, schools, culture, quality of life, noise) were also coded as 1. “Train +” was coded as 1 if comments were specifically related to the positive impacts of the railroad trains associated with the coal project. “Train -” was coded as 1 if comments were specifically related to the negative impacts of the railroad transportation associated with the proposed facility. Additionally, comments related to keeping keep coal in the USA, sending coal to Asia or foreign markets (Foreign variable) were coded as 1. Similarly, comments referencing how the project would increase the capacity for trade and competitiveness on international markets were coded as 1. Furthermore, the variable “Coal Energy” is coded as 1 if comments relate to the importance and safety of coal as a source of energy. “Train” and “Ship” are coded as 1 if there were concerns about transporting coal by train or by ship respectively.

Analysis of Data

Bar charts are utilized to compare the prevalence of all coding variables, including support and opposition to the proposed coal terminal. Using Excel, I calculated the total occurrences

for each coding category. Then I calculated the total % of supporters, % opposers, and % occurrence for each variable, as shown in Table 1.

In the results section, I first analyze occurrence of support and opposition by location in Figures 2, followed by an analysis of the prevalence of coding variables/themes. Figures 3-6 show the total % of occurrences of support, opposition, and themed groups of coding variables (economic, environmental, and remaining variables). Figure 7 represents the % variable occurrence among supportive commenters in descending order. Lastly, Figure 8 displays the % variable occurrence for opposed commenters also in descending order. Each figure will be discussed in the next chapter.

Table 1: % occurrence of each variable (n=1000 commenters)

	% of total
Location Known	49
Washington State	30
Unclear	3
Support	66
Oppose	32
Jobs +	28
Jobs -	1

Econ +	27
Econ -	2
Unemployment	7
Brownfield	16
States +	22
States -	11
Process	29
EIS	5
Coal Energy	8
Train	12
Ship	6
Environment	22
Climate	17
Low Sulfur	1
Renewables	8
Fish	4

Train+	3
Train -	5
Health	17
Neighborhood	12
Foreign	4
Trade	10

Chapter 4: Results

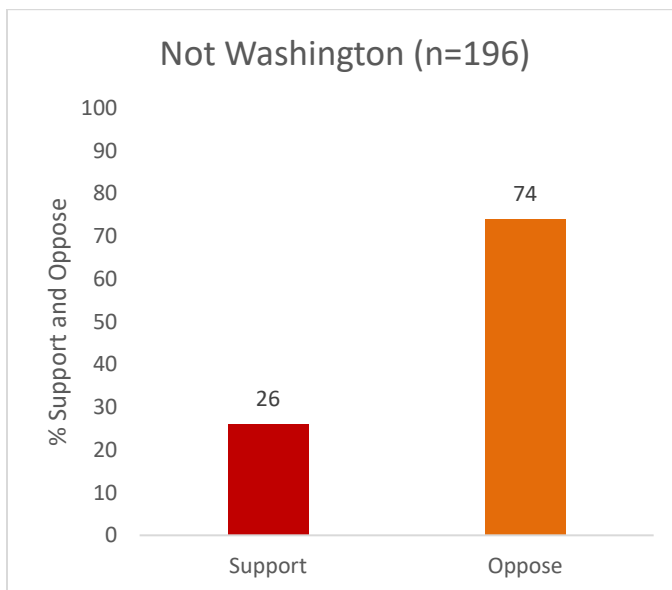
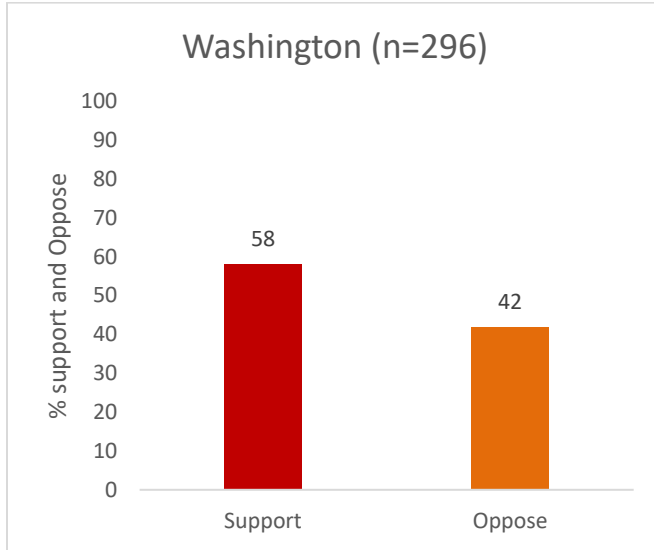
This research project investigated the factors driving public support or opposition for the Millennium Bulk Project in Longview Washington. I intended to investigate, compare and contrast the differences between national and regional support/opposition for the project by conducting qualitative content analysis on submitted comments on the SEPA draft Environmental Impact Statement (EIS), including the different reasons people supported or opposed the coal terminal.

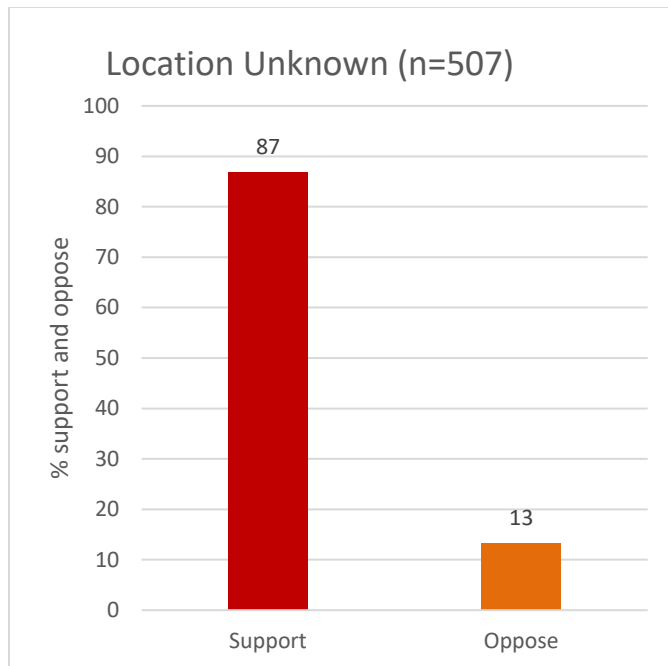
My analysis utilized bar charts to compare the prevalence of all coding variables, including support and opposition to the proposed coal terminal and reasons that commenters provided for their support or opposition. I first analyzed occurrence of support and opposition by location (Figure 2) followed by an analysis of prevalence of coding variables/themes in Figures 3-4. Last, I provide representative excerpts from the public comments to highlight qualitatively the types of concerns commenters expressed about the Millennium Bulk project.

Quantitatively analysis of comments

Figures 2 present a comparison of those who supported the project and those who opposed it, based on the commenters' location. Commenters who indicated they lived in Washington State are compared to those who stated places of residence not in Washington State and those with unspecified locations.

Figures 2: Stance by location





As the figures above show there is a 16 percentage point difference between those supportive and those opposed to the project in Washington State. Out of the 296 commenters from Washington State 58% of expressed support for building the proposed coal terminal while 42% opposed the project. Conversely, out of the 196 respondents from other states (for example, Utah, Montana, Colorado, and Oregon etc.), 26% showed support for the project while 74% opposed building the coal terminal – a substantial difference. Lastly, 507 respondents had unknown locations. Out of those people, 87% expressed support for the terminal while a measly 13% opposed building a coal terminal in Washington State.

Figure 3: Total % of occurrences of support, opposition, and all coding variables (arranged in descending order).

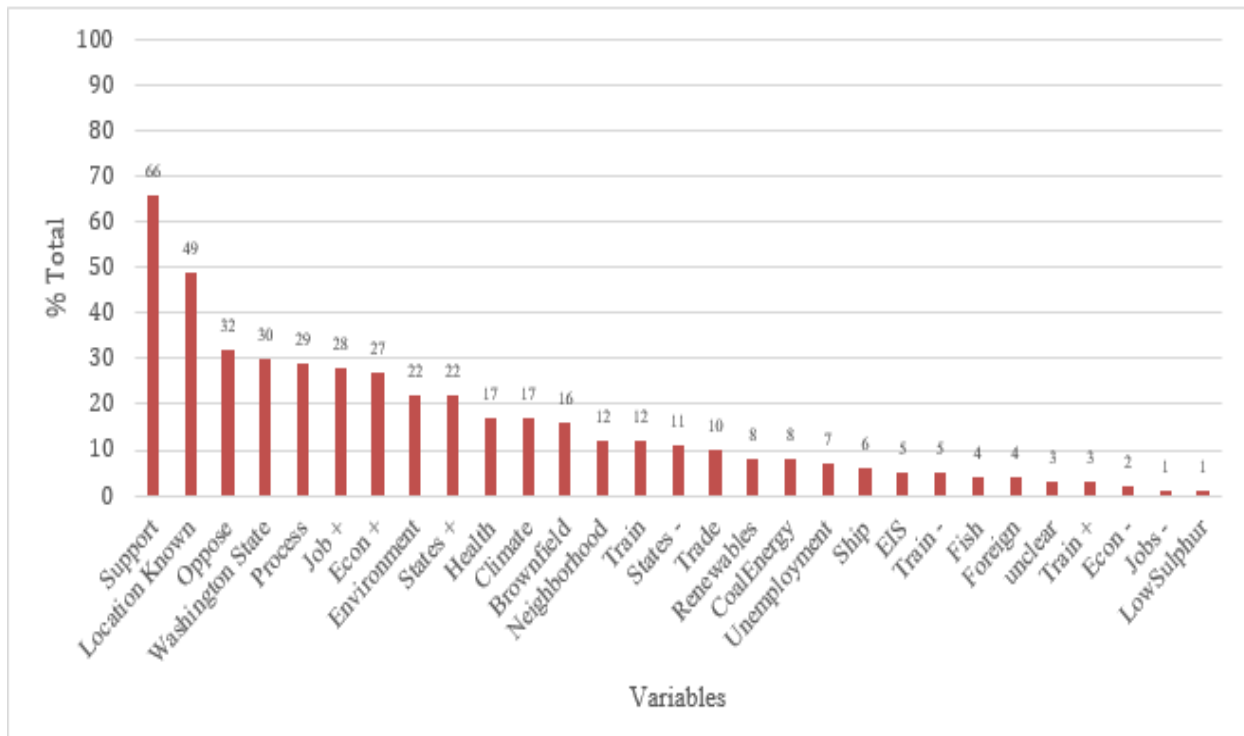


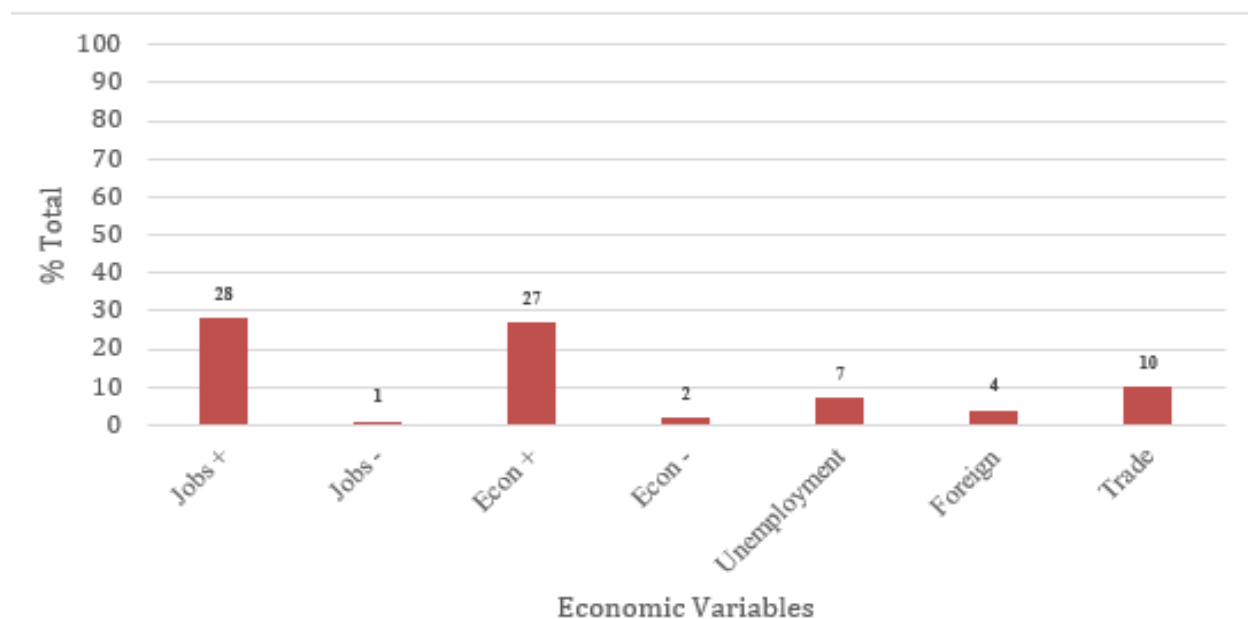
Figure 3 represents the occurrence of all coding variables in the 1000 public comments analyzed. Arranged in descending order for easy interpretation.

Location of commenters: Out of the 1000 coded comments, 49% of locations were known. 30% of comments were from Washington State, though there might have been many more commenters from Washington that did not reveal their location. Locations of other commenters included Colorado, Utah, California, Oregon, Montana, as well as other states.

Overall support and opposition: The majority of the comments were in support of the project, almost double those in opposition. There was 66% of occurrences in support of building the coal terminal and 32% of occurrences for those in opposition. Comments that neither supported nor opposed the project gathered 3% of total occurrences.

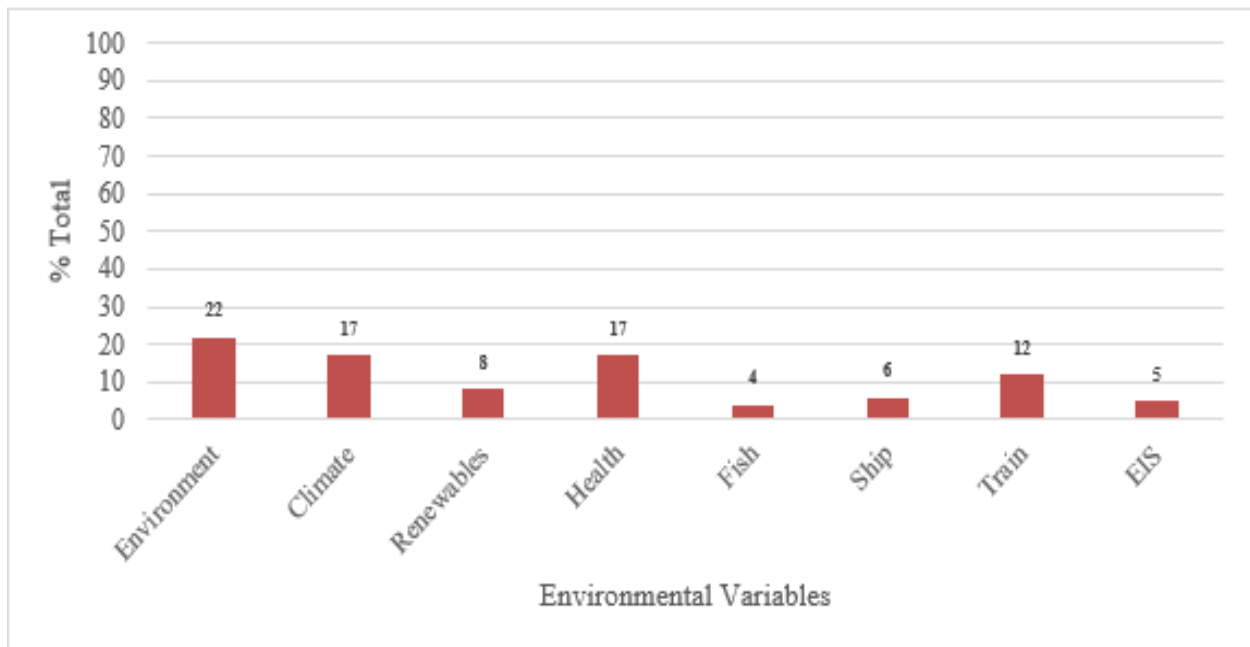
Below is a thematic visual representation of coding variables.

Figure 4: Total % of occurrences for all economic variables



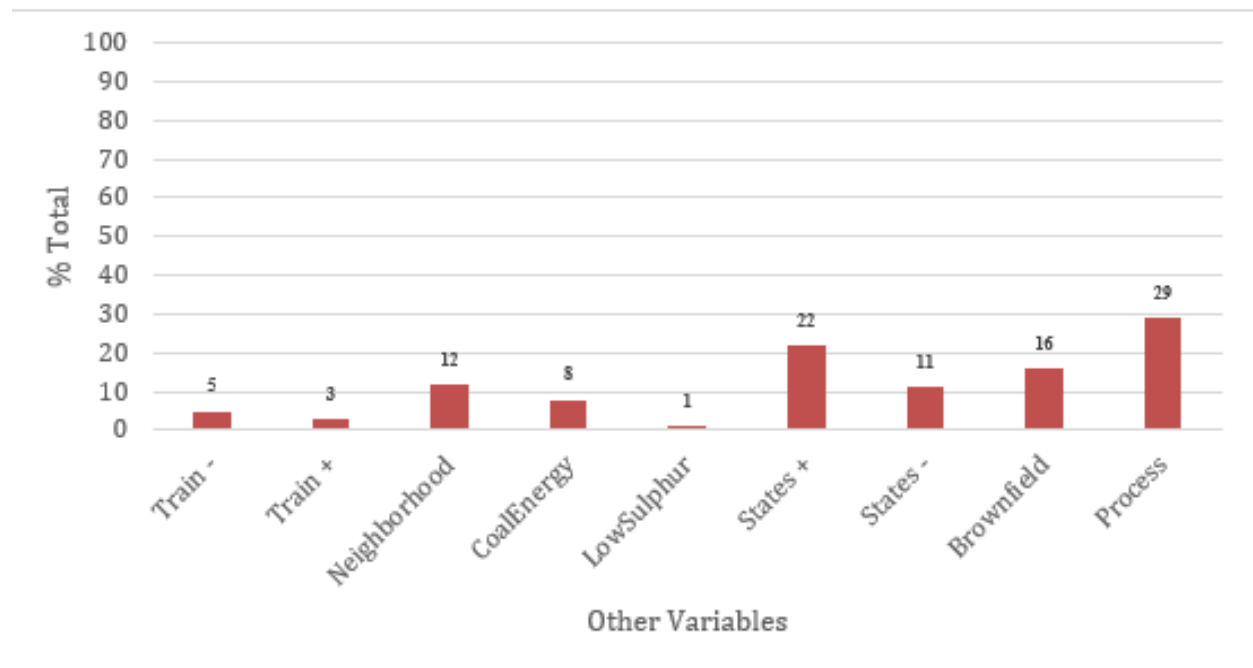
Economic variables: The economic variables (see Figure 4) are those related to either the economic benefits of the project or the negative impacts on the economy. They are “Job +”, “Job -”, “Econ +”, “Econ -”, “Trade”, “Foreign” and “unemployment”. At 28%, “Job +” had the most comments as shown in Figure 3, followed closely by “Econ +” at 27%. These comments were related to positive impacts of the project on local jobs and the local economy. 7% of commenters expressed support for the project because of its potential to improve the unemployment rate in Washington state and especially in Longview. 1% of commenters expressed concern that the project would have negative impacts on jobs. 2% of commenters were concerned about the negative impacts of the terminal on local and regional economy. 10% of commenters want the project to move forward because of the benefits from national trade, while 4% wanted to keep coal in the USA instead of sending it to international markets.

Figure 5: Total % of occurrences for all environmental variables



Environmental variables: These are variables related to either the negative impacts of the project on the environment or those related to impact of any of the variables' on ecosystems (see Figure 5). These variables are “Environment”, “Renewables”, “Health”, “Fish”, “Train” “Ship” “Climate” and “EIS”. 22% of commenters had concerns related to the impact of building a coal terminal on the environment. 17% were concerned about impacts on the global climate. 8% felt like it was high time we transition from coal to other renewable, more sustainable sources of energy. 6% had concerns related to shipping coal overseas. 12% of commenters expressed concern with transporting coal by train. Surprisingly, 4% had concerns related to negative impacts of the coal terminal on salmon and salmon habitats and lastly, 5% of commenters felt that the Environmental Impact Statement (EIS) created by Millennium was incomplete and insufficient.

Figure 6: Total % of occurrences for all other variables



All other Variables: (See Figure 6) 29% of commenters were concerned because of how long the process has been taking, the denial of permits and, biasness from state officials. Commenters believed the process was exhaustive and the project needed to move forward without any delay. 5% were concerned due to the negative impacts of the Millennium trains on residents and neighborhoods. 3% of commenters point out the positive benefits of the railroad transportation associated with the proposed facility. 12% of commenters showed concern because of the impacts of the facility and associated trains on traffic, schools and noise; quality of life in general. 8% made comments on how everyone uses coal-fired energy in their home and how that coal is a safe source of energy. 22% of commenters articulated how the project will positively impact other states besides Washington, or the nation as a whole. Half of that, 11% of commenters were concerned about how the project will negatively impact other states besides Washington. 16% of commenters mentioned how this proposed coal terminal will help clean up

an old industrial site, the Reynolds site. Lastly, 1% of commenters argued that coal from the USA is cleaner because of its low sulfur content. Hence exporting it overseas will facilitate burning cleaner coal and therefore help with climate change.

Figure 7: % variable occurrence among supportive commenters in descending order.

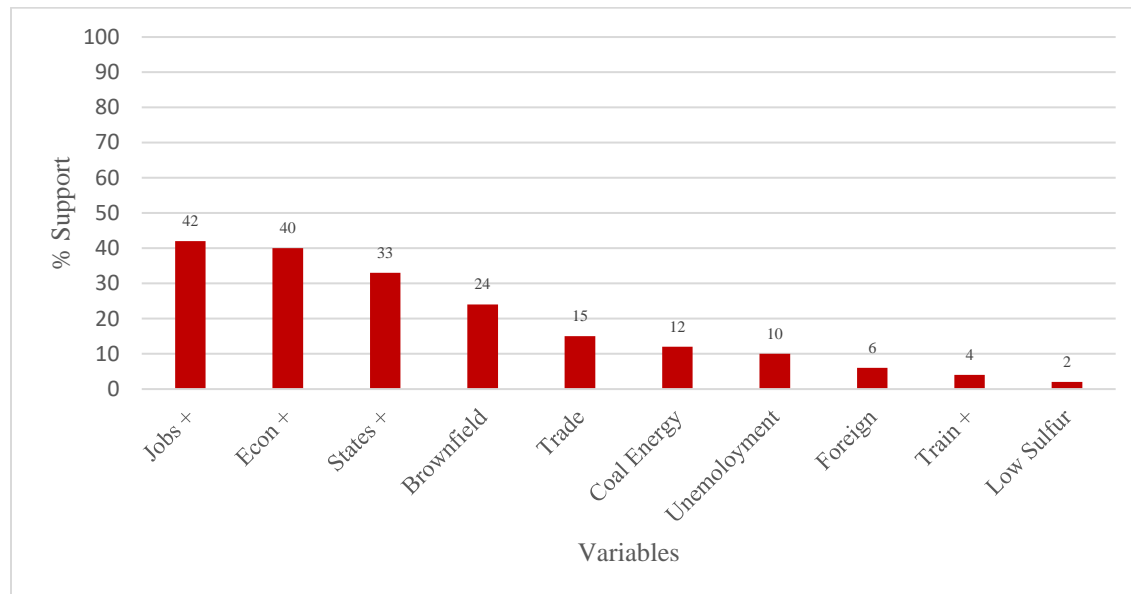


Figure 7 shows the occurrence of variables that rationalize support for the coal terminal among supportive commenters. Analysis of the data and figures above show that many supporters listed positively economic impacts to the local and national economy as a reason for their support – 42% of supporters stated that the project would increase local job opportunities, and 40% stated the project would bring overall economic development. 33% expressed support for the coal terminal because of its potential to impact other states other than Washington. Additionally, 15% of supportive commenters deemed the project necessary for local and international trade. 24% supported the revitalization of a former brownfield site in Longview WA, as opposed to building a new exportation site. There did not seem to be a lot of comments (2%) on exporting United States’ cleaner coal, with a lower sulfur content to overseas markets, which could have been due

to lack of knowledge and limited exposure on this topic. 12% of supporters alluded to the benefits of coal energy including some suggestions that coal is safe. 6% of supporters suggested keeping coal in the United States.

Figure 8: % variable occurrence for opposed commenters in descending order.

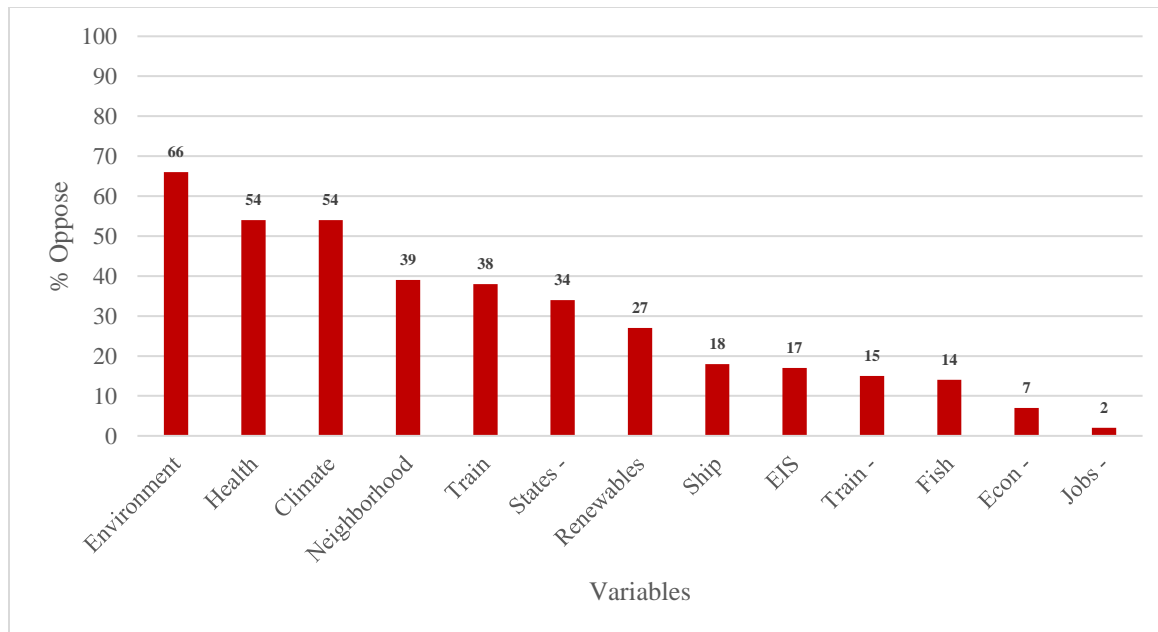


Figure 8 shows the occurrence of variables used to rationalize opposition to the coal terminal among opposed commenters. Similar to Figure 7, Figure 8 is arranged in descending order for easy comparison of data results. 66% of opposed commenters expressed concern for the potential impacts of the project on the environment and associated ecosystems. Comments and concerns related to impacts of the proposed coal terminal on the health and wellbeing of residents gathered 54%. Similarly, 54% of opposers conveyed concern and, some form of apprehension due to climate change. 39% opposed the terminal because of concerns to neighborhoods along the route example, increase in traffic congestion. 38% of comments were related to the overall impact of

trains as a mode of transportation. 27% suggested transitioning from fossil fuels to renewable energy while 18% opposed contributing to the shipping and burning of coal overseas.

Additionally, 14% of commenters showed concern related to impacts of the project on fish and fish habitats. Only 7% of opposed commenters opposed the project due to its impact on the economy. Lastly, 2% of commenters expressed concern due to impacts of the project on local and national jobs.

Qualitative illustration of key coding themes

Health: The comment below referenced the negative impacts of the facility on the health of people and reiterates that we should think about the enormous scientific evidence supporting these health impacts.

“As indicated above, my concerns about the proposed MBTL are legion. To start with, some can be focused on the dangers of coal dust intrinsic to the proposed terminal. Health concerns about coal dust coming off the proposed mound of coal at the terminal itself have been covered with far more expertise than I possess by the numerous health professionals who have offered testimony in this regard. Please pay due heed to their collective eloquence”.

Climate: This variable was coded as 1 because the comment specifically referenced the negative impacts of transporting and burning coal on our climate.

“The transporting and eventual burning of coal has a terrible impact on our climate doesn’t it make sense to find another use for this port? A use that doesn't have so many negative local and global impacts?”

EIS: These comments referenced the insufficiency of the EIS Millennium drafted up.

“The EIS should specify the potential health effects at the level of exposure levels citizens will be exposed to. All this has been studied and researched so let’s get transparent and real on this.”

“After reviewing the summary of the recent impact statement, I am writing to urge the decision makers to deny Millennium the permits to operate a coal terminal here in Longview.”

Environment and Train-: This comment is related to transporting coal by trains associated with the proposed project and its negative impacts on the environment.

“The transport of this much coal across the country by rail and by boat will have a negative impact on the environment with potential long-term hazards that cannot be mitigated. While the study found that coal dust was not a major concern, the graphic in the local newspaper of the

mountain of coal that will be transported annually in comparison to the Lewis and Clark Bridge left me in awe. When that much coal is moved and stored it must have impacts that over time must take a take a terrible toll...”

Ship and Train: The comments below are concerns associated with shipping and transporting coal by train in addition to the impacts of that on our ecosystems and most importantly on global warming.

“There was nowhere near enough expert testimony outlining the risks of shipping the coal down the Columbia River, which simply may not be deep enough in places to accommodate the huge heavy ships intended to transport it. With reduced river flows such as we experienced in our area last year, problems with drafting are likely to increase as erratic tributary flows can be expected more as the norm...”

“We need to phase out coal, not encourage more mining, transport, and export of it. Other people have testified at length on concerns about global warming resulting from burning coal, a concern I heartily share and feel compelled at least to mention among my most pressing objections to this proposed terminal.”

Fish: This comment relates to the potential negative impacts of the coal terminal on salmon fisheries.

“Of course, the economic harms to salmon fisheries, recreational boating, Native American treaty and subsistence fishing rights all need due consideration. Such consideration has been neglected to this point in the DEIS deliberations and will be hard indeed to come by if MBTL goes through.”

Renewables and health: Both the variables “Renewables” and “Health” are related to transitioning from coal to cleaner forms of energy especially because the economic benefits derived from coal are short lived. Additionally, the commenter mentioned concerns about the impact the project would have on human health and safety.

“Cheaper markets for coal are available to China from Indonesia, and coal has simply been superseded by other, more efficient and often cleaner forms of energy. The economic promises of a dying enterprise are hardly worth the treasures of human health, safety.”

Econ -: The following comments explain the economic unworthiness of building a coal terminal in Washington State and not only jeopardizing our treasured environment.

“Suffice it to say that a short-term theoretical economic gain that threatens the now-fragile climate stability of the entire planet at the expense of Washington State's treasured environment is economic foolishness of a breathtaking caliber.”

“It seems far more likely that when Millennium well and truly goes bust, Washington taxpayers in general and Longview taxpayers in particular will pay more in cleanup, lost property values, and health costs than they ever got from this doomed project. Please do your utmost to protect the citizens of Washington State and our treasured environment.”

Job - : This variable explains that the project will have so many negative impacts and the short-lived jobs it would provide are not worth it.

“The limited number of jobs the project would ultimately provide if it were approved would likely be sadly short-lived, and they emphatically would not be worth the cost of their brief duration.”

Job +: This comment mentions the positive impact of the proposed coal terminal on local jobs.

“Washington need the jobs! Other states need the job Millennium will provide. Let the people of Longview get back to work.”

Jobs- and States –:The comment is related to the negative impacts of the project on jobs and other states.

“There will be no jobs created in Spokane and quality of life human health, the environment and the health of plants and animals will be adversely affected. It is time to power past coal and find alternative clean energy solutions.”

Neighborhood: “Locally the daily eight round trips of mile-plus long trains will really have a negative effect on our traffic in town and our quality of life especially for folks who either live or have to drive in those areas.”

Ship and Train: “We all live downstream, we will all suffer from projects like this proposal. In addition, coal trains spread this pollution, and all to ship abroad. Say NO please to the rich polluting the world for their benefit. Say NO to this terrible proposal.”

Neighborhood and EIS: The comment referenced the incompleteness of the EIS and the impact the project would have on communities.

“My comments on the Draft EIS concerning the Millennium Bulk Terminal in Longview 1 – NOISE - In the EIS summary it’s stated that if the “mitigating actions – quiet zone” is not implemented the blowing of the rail locomotives would have a detrimental effect on the surrounding community. It’s my concern that the statement should say “a serious detrimental” effect on the surrounding community. Because of this the Millennium Bulk Terminal should NOT be allowed to operate prior to the implementation of the quiet zone mitigating action. 2 – NOISE – I believe the EIS did not look into consistent and ongoing ‘Switch Yard Noise’ which is considerable....”

Process: The comment mentioned the draft EIS was sufficient and it is time to move the project forward.

“Thank you for the opportunity to reach out on this important issue. The company has demonstrated their commitment to meeting all of the environmental requirements. The draft EIS is sufficient and it's time to move forward. Thank you for letting me submit my opinions and show my support for the project.”

Coal Energy: This comment referenced the safety of coal and its beneficial use to people.

“No scientific evidence that coal is bad. We all use coal. Why the delay.”

Chapter 5: Discussion and Conclusion

The aim of this study was to determine the various factors driving public support and opposition for the Millennium Bulk Project, including the different reasons commenters gave in support or opposition. This chapter summarizes the purpose, findings, implications, and limitations of this study. I first briefly review the importance of the study, then briefly recap the findings. I next discuss the implications of these findings in the broader context of the global fossil fuels market and climate change. Last, I review the limitations of the study and provide suggestions for future research.

Importance of study

This research study shows the prevalent reasoning of both supporters and opposers to fossil fuels, particularly coal. Understanding public opinions and responses to energy technologies helps facilitate communication between policymakers, developers, and the public (Boudet, 2018). Analyzing the public comments on the Millennium Bulk Project draft Environmental Impact Statement (EIS) provided an insight into the different reasons commenters gave for supporting and opposing the proposed coal terminal. Several environmental, economic and other coded themes were utilized in exploring and analyzing public comments. This revealed what variables commenters were most concerned about and those they were least concerned for. This study adds to current and future research seeking to understand public perception and response to fossil fuels, in addition to showcasing the benefits of public participation in decision making.

Public participation enables society to be more involved in decisions that could potentially impact their lives, in addition to bridging the gap between local and state stakeholders. Public participation on this specific proposed coal facility informs agencies and main stake-holders about general opinions on the terminal. The public comments were crucial in developing the methodology used in this research. It made the data collection straightforward as comments were already available online. Additionally, analysis of public comments provided varying and diverse opinions on the proposed coal terminal from different

locations, including Washington State and other states (Utah, Montana, Wyoming, etc.). Because location could be determined for half of all public comments analyzed, it was possible to compare and contrast the degree of support and opposition based on location.

Furthermore, people are more confident behind a keyboard, especially with sharing their opinions. The online platform provided for public commentary on the proposed Millennium Bulk Project terminal facility delivered a safe space where commenters possibly felt more comfortable sharing their true opinions.

Recap and discussion of findings

As stated earlier, this research points to several factors driving public support and opposition for the proposed coal terminal. A random selection of 1000 public comments on the draft SEPA EIS were analyzed using a predetermined coding guide. Overall support and opposition were recorded, as well as reasons that commenters provided for their support or opposition. Support and opposition were analyzed by location. Economic, environmental, and other variables were also examined. Additionally, representative excerpts from the public comments were provided to highlight qualitatively the types of perceptions commenters expressed about the Millennium Bulk project.

Out of the 1000 comments coded, a majority (66%) supported the proposed coal terminal while 34% opposed it. The main reasons commenters gave for supporting the Millennium Bulk Project coal terminal were its potential to positively impact the local and national economy, provide jobs in a place where it is much needed and revive a former brownfield site. Moreover, many commenters mentioned that the proposed terminal would improve local trade, international trade and the unemployment rate in Cowlitz County. It is relatively understandable why economic benefits showed up as the main reasons for support, especially in the local level. One would expect unemployment to score high on the list, next to jobs and economy, but instead it surprisingly took seventh place. One reason could be that support for jobs and the economy automatically improves the unemployment rate, so less emphasis was put on it by

commenters. Similarly, the low sulfur variable ranked last with a calculated occurrence of 1% of all comments. This could have been due to limited knowledge of the concept of “cleaner coal”.

Furthermore, most commenters listed the environment, health of residents along train routes, the climate, and concerns for neighborhoods as the main reasons for opposition. Commenters also pointed to the general impacts of trains as another reason the project should be terminated. This was slightly expected because more people continue to have concerns about the climate and environment as effects become more visible. Yet, it was surprising that comments related to concern on our climate ranked only number three on the list of concerns, behind concerns for environment and health. This means that the public is more concerned about what how the proposed terminal would impact their health than the climate. Residents in host communities are far more likely to be impacted health wise compared to residents that live miles away from fossil fuel industries. Additionally, it was surprising was that concerns for “Fish” did not gather many votes considering the importance of salmon to Washington State’s diet and economy. Furthermore, I anticipated the results to rank climate as the number one reason for opposition, followed by environment then concerns about health. There is scientific consensus that emission of greenhouse gases from human activities is the principal cause of climate change. Burning of fossil fuels represents a danger to not just human settlements but also food production and water supply (Endre Tvinnereim & Elisabeth Ivarsflaten, 2016). However, there is limited political consensus on what types of policies and measures should be implemented to avoid its detrimental effects.

Several results obtained from this research were unexpected. Based on knowledge and general understanding, the expectation was that more commenters would be opposed to the coal terminal than in favor of it in Washington State. The observed results from other states was also very surprising because the majority of the commenters opposed building the coal terminal. A significant number of commenters listed Colorado, Montana, Wyoming and Utah as their places of residence. These states have historically had ties to the coal industry and coal is still very much part of majority of their daily lives. However, because of this historic precedence, many residents of these states have experienced and are still

experiencing the effects of coal transportation. Many commenters referenced having unexplained health issues after years of exposure to particulate matter and GHGs from coal transportation along their neighborhoods. Therefore, while there were many supporters from Colorado, Utah, Montana and Wyoming, there were similarly quite a few numbers of opposers from those same states.

Implications for broader context of fossil fuels and climate change.

Despite that WA state's environmental regulatory agency has denied the permits required to move the project forward, results show that people want the coal terminal to be built. The overall findings show that the majority of people support building the coal terminal, including people in Washington State. This implies that more people are willing to sacrifice the environment and the ecosystem services they provide for economic growth. If the Millennium Bulk Terminal is built in Longview it would be one of the largest terminals in North America, operating 6-8 trains a day and exporting 44 million tons of coal annually. According to the state environmental review, the terminal would increase global greenhouse gases (GHG) by 2 million tons at a time when we should be concentrating on lowering GHG emissions. However, the majority of commenters from Washington State were in favor of the project. Furthermore, the current national political climate might act as a catalyst for policy change in favor fossil fuels especially in economically depressed areas like Longview. Moreover, the coal states are already complaining that Washington is a barrier and in the way of getting their resources exported around the world. Currently, the proposed coal terminal is hanging in balance as Millennium sues the Washington Department of Ecology for denying their permits. It is impossible to predict what the future holds for the state's policy on fossil fuels however, the findings here indicate that there is a possibility we could be exporting more coal overseas in the future.

Limitations of study

A Qualitative Content Analysis approach was used in this study. This research required extracting, analyzing, and coding 1000 comments using 30 coding variables; it was time consuming.

There was scarcely enough time to go over coded comments a second time in case something was missed or went unnoticed. Additionally, even though all comments were carefully interpreted to match the appropriate coding variables, it is impossible to say for a fact that they were all coded as intended by commenters. Thus, one limitation of this study is interpretation of data.

Moreover, several respondents were from unknown locations and, it is possible that commenters just did not want to state their places of residency. This was another limitation of the study. Knowing all commenters locations could potentially have a significant impact on the findings of this study.

This research utilized a random sample of 1000 of the original 4026 comments. While 1000 comments are a good representation of the overall sample, it might not be the best representation of public opinions regarding the coal terminal. A larger sample size would produce more valid and precise results, such as produced from a survey.

Lastly, using public comments on an EIS as a source of data is not without its own limitations. It is impossible to know what commenters' backgrounds are and to assess differences in socioeconomic backgrounds and political ideologies, which can influence who chooses to respond to (and who is able to respond to) EIS public comment processes. People with more money, have access to technology, educated, are more likely to comment on these proposals. Education potentially plays a role in who comments on an EIS and who doesn't. Understandably, people with more education are more likely to comment online, on a proposal than those with little to no education. Additionally, those that think they will be directly affected by a fossil fuel export especially if it is going to be right in their backyards are more likely to voice their concerns on a proposal. For example, several people from coal-producing states commented on the Millennium Bulk project draft EIS because they have already experienced the health and the environmental impacts of extracting or transporting coal and do not want the terminal built. In contrast, those that live far from a coal mine or fossil fuel terminal and under the assumption they won't be affected are less likely to comment on a proposal. Therefore, while analyzing public comments is

useful in understanding public opinion on energy issues, it is not a true representation of the whole public because not all people have the necessities or capabilities to share their opinions online.

Future research

This study focused on public opinion about an energy export issue. Future research should include a similar study but on a much bigger scale with all locations of commenters known. This will provide a more accurate representation of public opinions on building a coal terminal. In addition, this study shows that the reasons people support fossil fuels and the fossil fuel industry is because of the perceived economic impacts. There are several studies on the impacts of fossil fuels on the climate, environment, and the health of both humans and animals. More research should focus on the long-term economic impacts of building a coal terminal, on both a local and national level.

Moreover, more scholars should study the economic benefits of renewable energy. If people are more aware that they can have economic growth while protecting the environment and their health, they would be more inclined to oppose fossil fuel use and exportation.

Conclusion

The Pacific Northwest has been a target for coal companies and communities across the region have been sharing their opinions on this issue. Some people have been standing up and speaking out against coal projects while others have been supportive. This project shows that while public opinion is broadly favorable toward renewable energy, when it comes to expanding fossil fuel energies such as coal mining, public opinion is divided.

Analysis of public comments provide a picture of where the public stands concerning the Millennium Bulk Terminals project. The decisions we make surrounding our environment and whether to move forward with a fossil fuel project or not is a significant one and participation by all stakeholders involved should be encouraged. Involving host communities and the public in decisions that directly impacts their lives shows a clearer understanding of public opinion energy discussions. The public has a

vested interest in these projects and their input provides insight into public perception and concerns; the online comments often present the "real world" concerns of those who care.

Overall, commenters supported building the coal terminal. In Washington State, more people expressed support for the project and the difference between those supportive and those opposed to building the coal terminal was just 16%. People want more jobs and an improved economy especially in Longview where the unemployment rate is high. The national divide in fossil fuel exports has several facets. First, the Northwest is generally more environmentally aware and thus people want to conserve the natural beautiful ecosystems. Plus, the state's economy does not depend on coal exportation or fossil fuels. However, the coal states (Montana, Wyoming etc.) have predominantly depended on the coal industry for jobs and economic growth. Building the terminal would give them the opportunity and necessary means to export their resources, produce more jobs and improve their economy.

Furthermore, the ideological and political differences in the nation and between Democrats and Republicans on fossil fuels has greatly contributed to the national divide on fossil fuels. A new survey from the Pew Research Center shows that Democrats remain far more likely than Republicans to stress that developing alternative energy should take precedence over expanding the coal industry (PRC, 2016). A similar past survey found that women, either Democratic or Republican, are less supportive of expanding fossil fuels compared to men. Both men and women hold similar views on expanding renewable energy (PRC, 2015).

In conclusion, for the United States to completely transition to cleaner forms of energy, we need to halt fossil fuel mining and exportation. However, because we lack substantial greenhouse gas policies, we are unlikely to stop relying on fossil fuels as a source of energy. Additionally, it is highly unlikely that extraction and production of fossil fuels in the coal states will stop anytime soon because of economic dependence. Even as use of coal in the United States declines, US coal companies aim to continue to export coal abroad to other countries who are likely use it for years to come. Therefore, to avoid the worst

global devastation of the 21st century, we need to tighten the noose on greenhouse gas emissions and policies worldwide. Understandably, executing such policies will be complex, especially since because developing countries' energy consumption is projected to grow at a sharp rate in the coming decades.

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Appendix A: Key for coding public comments

Millennium Bulk Terminals Project

Variable	Description	Coding
ID	Submission number for each comment	
Coder	Assigned coder for cutting and pasting text in excel and coding for content.	MN (Mam Marie), SOH (Shawn)
Date	Date of comment	MM/DD/YYYY
Name	Name of person making the comment	NA if unknown
Organization	If individual is associated with a business or organization, write it here.	NA if unknown
Location	Is the location of the person making the comment known (state or city), either through the text of the comment or through the submission title?	1 = Yes 0 = No
City	City where the commenter lives.	NA if unknown
State	State where the commenter lives; either stated in submission title or through the text of the comment (ie, language like “our state”).	NA if unknown
Local	Is it obvious that the commenter is local, either living in Cowlitz County, Longview, or nearby? (Ie, they use words like “our community” and so on)	1 = Yes 0 = No
Unclear	Is the stance of the comment neutral or unclear?	1 = Yes 0 = No
Support	Stance of public comment is supportive of Millennium Bulk Terminals	1 = Yes 0 = No
Oppose	Stance of public comment is opposed to Millennium Bulk Terminals	1 = Yes 0 = No

Jobs +	Does the comment talk about the projects potential to positively impact local jobs, apprenticeships or training?	1 = Yes 0 = No
Jobs -	Does the comment talk about the projects' potential to negatively impact local jobs, apprenticeships or training? Does it talk about how the jobs are insignificant?	1 = Yes 0 = No
Econ +	Does the comment talk about the projects potential to positively impact the local economy, local tax revenue, or local organizations?	1 = Yes 0 = No
Econ -	Does the comment talk about the projects potential to negatively impact the local economy, local tax revenue, or local organizations?	1 = Yes 0 = No
Unemployment	Does the comment reference the high unemployment rate locally, in Cowlitz County, or Washington?	1 = Yes 0 = No
Brownfield	Does comment mention how this project will help clean up an old industrial site, the Reynolds site? Does it talk about how this is a good use for an existing brownfield or old industrial site?	1 = Yes 0 = No
States +	Does the comment talk about how project will positively impact other states besides Washington, or the nation as a whole?	1 = Yes 0 = No
States -	Does the comment talk about how project will negatively impact other states besides Washington?	1 = Yes 0 = No
Process	Does the comment talk about concerns regarding: <ul style="list-style-type: none"> ● Length of time for agencies to issue permits ● Decision process/schedule ● Bias of state agencies and local government ● EIS is more than enough! It is exhaustive Informational benefits from studies of proposal or need to "get the facts." Amount of misinformation.	1 = Yes 0 = No
EIS	<ul style="list-style-type: none"> ● Does the comment talk about ways in which the EIS is insufficient or does not consider certain impacts of the project, or not to great enough depth? 	1 = Yes 0 = No
Coal Energy	Comments related to: <ul style="list-style-type: none"> ● Everyone uses coal-fired energy in their home / business, etc. 	1 = Yes 0 = No

	<ul style="list-style-type: none"> Coal is safe Coal is a good source of energy	
Train	Concerns about transporting coal by train.	1 = Yes 0 = No
Ship	Concerns about transporting coal by ship.	1 = Yes 0 = No
Environment	Concerns about harm to the environment, including species, habitat, water quality (but NOT climate change).	1 = Yes 0 = No
Climate	Concerns about impact of proposal on climate change, global warming, carbon emissions, transition to a renewable energy future, coal is not a cleaner-burning fuel.	1 = Yes 0 = No
Low Sulphur	Comment argues that facility would facilitate burning of cleaner coal. Coal from USA is cleaner and would <i>help</i> climate change because cleaner coal would be burned in China.	
Renewables	Comments about how we need to transition to renewable energy, this project delays important transition to renewables.	1 = Yes 0 = No
Fish	Concerns about impacts to fish and fish habitat specifically.	1 = Yes 0 = No
Train+	Comments related specifically to positive benefits of train/railroad transportation associated with the proposed facility.	1 = Yes 0 = No
Train -	Comments related specifically to negative impacts of train/railroad transportation associated with the proposed facility.	1 = Yes 0 = No
Health	Concerns about air pollution from normal operations and impact on asthma, air quality.	1 = Yes 0 = No
Neighborhood	Concerns about impacts on traffic, schools, culture, quality of life, noise.	1 = Yes 0 = No
Foreign	Comments related to: <ul style="list-style-type: none"> Keep coal in the USA 	1 = Yes 0 = No

	<ul style="list-style-type: none"> • Sending coal to Asia • Foreign markets Burning coal in other countries	
Trade	<ul style="list-style-type: none"> • References to how the project would increase capacity for trade, competitiveness on international market. 	1 = Yes 0 = No

