CONNECTING COMMUNITY CONCERNS AND COLLABORATIVE

DECISION MAKING FOR WIND ENERGY PROJECTS

IN WASHINGTON STATE

by

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ABSTRACT

Connecting Community Concerns and Collaborative Decision Making
For Wind Energy Projects in Washington State

Dakota Burt

The effects of climate change are making countries around the world rethink their energy infrastructure and move towards renewable energy, especially wind energy. In the United States, wind energy projects are increasing but development is slow because there are many concerns that arise with wind development. There is also a lot of support for wind energy, but opposition and support push against each other causing projects to be built slowly. This trend can be found in Washington State for wind energy projects. Looking at decision-making processes to see if they are collaborative can help in understanding opposition and support. This thesis asks the question "what have been prominent concerns for community members during wind energy projects in Washington State and how could agencies and public utilities create more collaborative decision-making for future wind energy projects?" The methodologies used to answer this question were qualitative content analysis and semi-structured interviews. Qualitative content analysis was used to find out what concerns or reasons for support community members in Washington State had during wind projects. Semi-structured interviews were used to discover what decision-making processes were used for wind projects and if those processes were collaborative. This thesis found that community members have many concerns about wind energy projects in Washington State but there is also a lot of support for wind energy projects and that decision makers try to be collaborative for wind energy projects, but constraints exist that make collaboration difficult. This research shows that decision makers are being collaborative with wind energy projects in Washington State and with continued effort for more collaborative opportunities, more renewable energy projects can be developed. If renewable energy development continues in the United States and around the world, then the impacts from nonrenewable energy sources can begin to be reduced.

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CHAPTER 1: INTRODUCTION

Climate change has introduced a series of problems and concerns for the entire world that need to be addressed if any improvement to the climate is to occur. The energy infrastructure up to this point in history has largely relied on fossil fuel energy sources. These fossil fuel energy sources have resulted in higher carbon dioxide levels than ever seen before in human history, which is a cause for great concern around the world (IPCC, 2014). Higher carbon dioxide levels have changed our climate and created an unpredictable future, especially concerning energy sources. Moving the energy infrastructure away from harmful fossil fuels though has been and will continue to be extremely challenging. Fossil fuels have been used for so long that it is hard to change the status quo and to develop new energy technology to fill the gap. But, energy infrastructures around the world must change, and change rapidly, if the effects of climate change are to be reduced from the current predictions (IPCC, 2014).

Renewable energy sources are being developed that could change the current energy status quo. Wind, solar, geothermal, and hydroelectric energy sources have become game changers for many energy infrastructures around the world. There are many countries around the world that are working on moving to renewable energy sources instead of fossil fuel energy sources for their country's energy needs, especially wind energy. Slowly there has been a movement away from fossil fuel energy sources and towards renewable energy sources. This movement has not been quick enough though and climate change is still a growing concern worldwide. Renewable energy, especially wind energy, needs to grow more quickly in the coming years in order to have

an impact on fossil fuel usage and ultimately take over the use of fossil fuels for energy production.

The United States has been increasing the implementation of renewable energy sources to meet the growing energy demands. As of this year, approximately 17,000 MW of wind, solar, and geothermal are being constructed in the United States (WorldWatch, 2017). AWEA (2016) and WorldWatch (2017) predict that by the end of 2017 there will be a total of 7,500 MW of wind energy added, which will increase the United States wind capacity by close to 45 percent. But, with the increase of renewable energy implementation there has also been opposition (Hall et al., 2013; Baxter et al., 2013) to renewable energy projects, especially wind energy projects. Opposition and acceptance of wind energy projects in the United States is multifaceted and complicated. Often opposition stems from many different sources of concern and is unique to the community that the project is going to be near. Some of the concerns that are often voiced about wind energy projects are landscape changes, bird and bat mortality, noise, and concerns over the consultation and decision-making processes. People also have concerns related to justice. These justice issues are usually related to the distribution of impacts from the proposed wind project or from the decision-making process used to site the wind project. Addressing these justice issues is important for all energy projects, but especially wind energy projects since they are faced with increased opposition. Deeper understanding of the decision-making processes used for wind energy projects has the potential to alleviate some opposition by making sure projects are as just as they possibly can be.

On the other hand, there are also many people who support the wind energy projects that are proposed in local communities (Bidwell, 2013; Hall et al., 2013;

Mulvaney et al., 2013 (1); Bakker et al., 2012; Aitken, 2010; Olson-Hazboun et al., 2016). People support wind energy projects for many reasons but some of the most common reasons are supplemental income from having turbines on people's property, local jobs, tax money to schools, infrastructure development, and wind being a lower impact energy source. Projects that bring benefits to the community get support from people who see the value in those benefits. Oftentimes people can have concerns about the wind project but also be in support of it as long as certain concerns are addressed. Having concerns about projects and being in support for a project can happen side by side instead of against each other.

Wind energy has the potential to change the energy infrastructure of the United States by using an energy source that is better for the environment, economy, and society. While wind and other renewable energy sources are becoming important parts of the energy infrastructure of the United States, there is still an ongoing conversation about the decision-making processes behind renewable energy projects. The question this thesis examines is "what have been prominent concerns for community members during wind energy projects in Washington State and how agencies and public utilities could create more collaborative decision-making processes for future wind energy projects?"

Climate Change and the Energy Infrastructure of the World

In the first wakes of climate change, there has been an increase in concerns about fossil fuel scarcity around the world. As of 2014, electricity around the world was produced from coal (39%), gas (22%), oil (5%), and renewables, not including hydroelectric (7%) (TSP, 2014). These numbers are slowly shifting as countries use more renewable energy. Different renewable energy sources such as wind, solar, geothermal,

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and hydroelectric are starting to become important parts of the global energy infrastructure (Assefa & Frostell, 2007). Renewable energy projects are still a minority compared to fossil fuel projects in energy production even though they are increasing steadily (Groth & Vogt, 2014). As energy consumption continues to rise globally, renewable energy projects will play an important role in how we will meet future energy consumption demands. Figure 1 shows the wind energy capacity and the additions each year for the world. Figure 2 shows wind energy capacity and additions each year by the top ten countries with wind energy. Both these figures show how wind energy is increasing around the world.
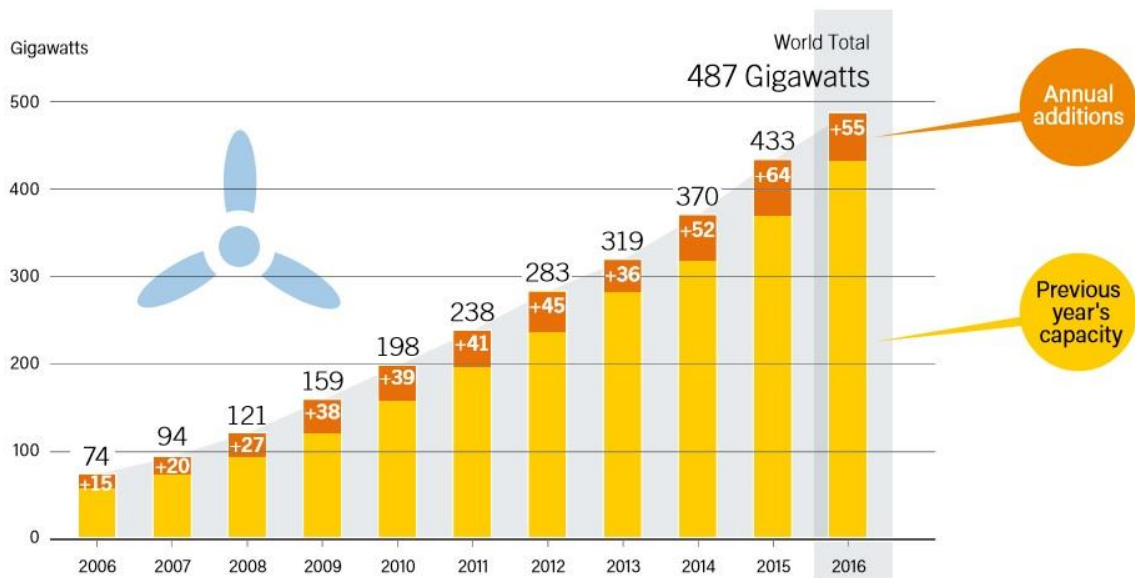
Figure 1. Wind energy capacity (in gigawatts) and additions per year for the world (REN21, 2017)
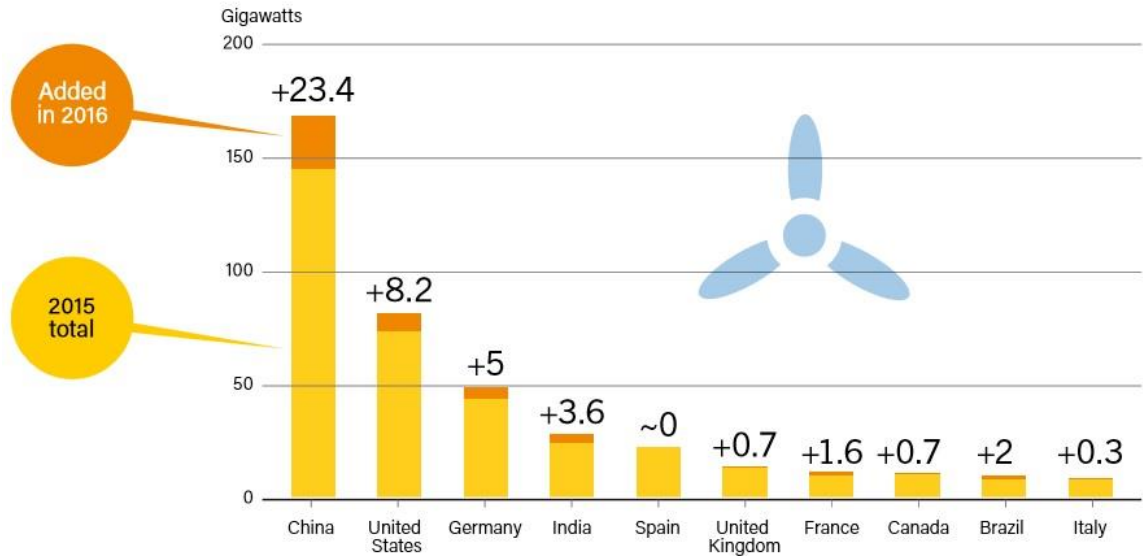
Figure 2. Wind energy capacity (in gigawatts) and additions for top ten countries (REN 21, 2017)

Climate Change and Renewable Energy in the United States

The United States energy production is made up of a few choice energy sources. The main sources are coal, natural gas, crude oil and natural gas plant liquids (NGPL), renewable energy, and nuclear (EIA, 2017 (1)). Climate change is starting to get people to think about the fossil fuel energy infrastructure and how it can shift to be less carbon intensive. Renewable energy is beginning to get more attention from decision makers who are looking at how the energy infrastructure can move away from fossil fuel energy sources. By observing Figure 3, the United States uses significantly more fossil fuel energy sources than renewables. This allows for renewables to increase their development in the United States.
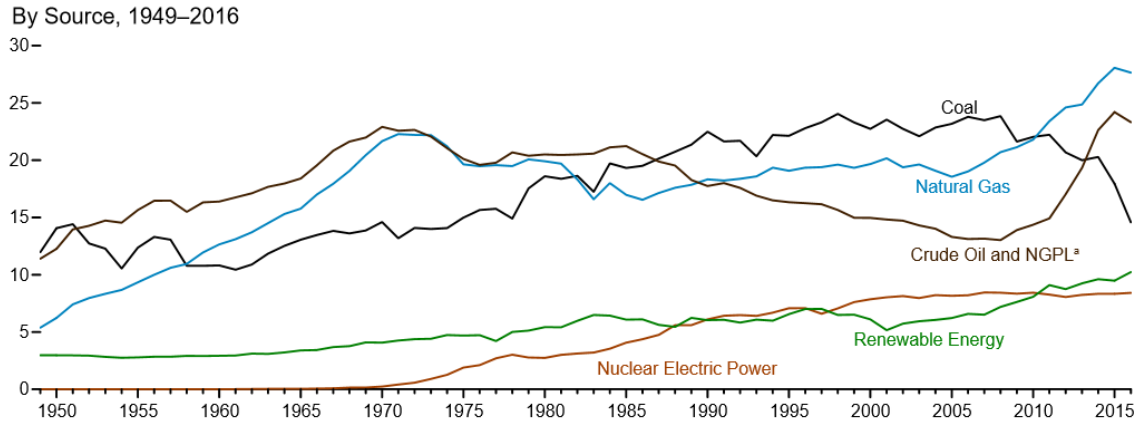
By Source, 1949–2016

Figure 3. United States primary energy production by source from 1949-2016 (EIA, 2017 (1))

Why Wind Energy is Important in Washington State

Wind energy is already used around the world and in the United States. It is part of the energy infrastructure currently, but has the potential to be a more important in Washington State. Wind power is the "cheapest and the fastest growing renewable energy option" (Ottinger et al., 2014, p. 662) and this holds true in Washington State as more wind energy projects are being proposed. Figure 4 shows the composition of Washington's energy consumption by power source. Hydroelectric power is immensely important in Washington and comprises of approximately two-thirds of the energy consumption (EIA, 2017 (2)). Natural gas is second to hydroelectric power consumed in the state. Hydroelectric also is approximately nine-tenths of the renewable power consumed in Washington (EIA, 2017 (2)).
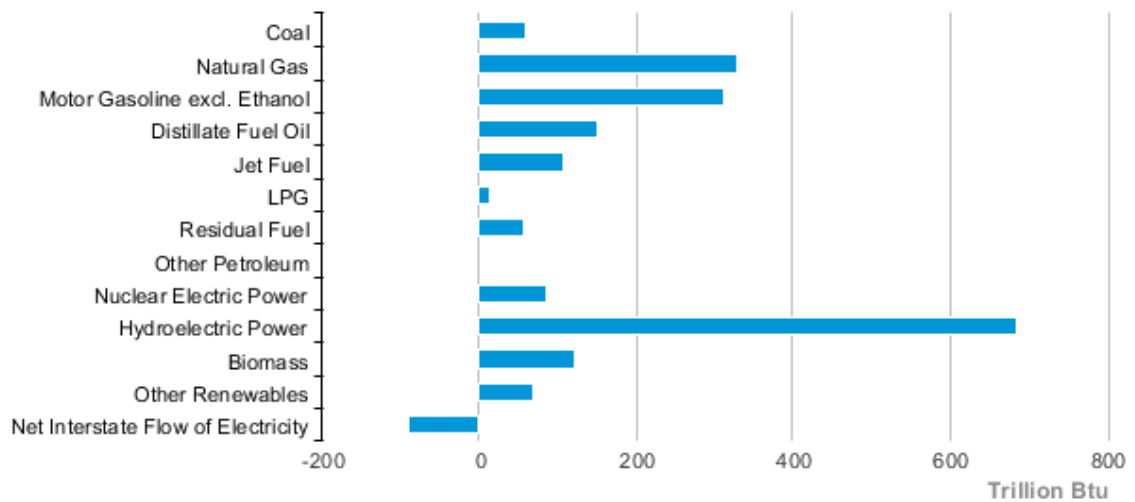
Figure 4. Washington State energy consumption estimates for 2015 by source (EIA, 2017 (2))

Climate change impacts are affecting the energy infrastructure of Washington State by changing available energy resources. As shown, hydroelectric power is extremely important in Washington but with recent droughts brought on by climate change, this energy source is less predictable. Reduced snowpack during the winter months is impacting hydroelectric production during the snow runoff seasons and it is uncertain which years in the future may be impacted by low hydroelectric production (ECY, 2017 (1); Fosu et al., 2016). This uncertainty about hydroelectric production means there needs to be a backup power source when snow runoff is not producing enough energy. Currently, fossil fuel and nuclear energy sources are used when hydroelectric power does not produce the same amount of energy being consumed (CTED & ECY, 2006). Wind energy can be an option for substituting hydroelectric power across Washington, instead of turning towards nonrenewable energy sources when hydroelectric energy is unavailable. Implementing new energy sources as other options, like hydroelectric power, stop being as productive can be challenging because of

decision-making processes and knowing if local communities want new energy sources in their area.

Collaborative Decision Making

One of the main focuses of this study is collaborative decision making. Collaboration has a wide range of possible definitions when looking at decision making. For this study collaborative decision making means giving ample opportunities for anyone who has a stake in the final project to give input and be active in the decision-making process. This means that people are part of the decision-making process and have a more active role in the process than just getting information and being able to comment on the project. In order for collaboration to be part of the decision-making process people must be able to make a difference in the final decision for wind energy projects. This could be in the form of getting the project design changed, the site for the wind energy project changed or moved, or making sure certain important concerns are adequately addressed in the environmental impact statement (EIS).

Public Participation Requirements in Washington State

There are policy requirements for public participation to happen during decision-making processes. These policies instruct decision makers on where to include public participation but also what type of participation needs to occur during certain steps. Federally, there is the National Environmental Policy Act (NEPA) which has certain public participation requirements during the environmental impact assessment process for wind energy projects. Then at the level of Washington State there is the State Environmental Policy Act (SEPA) which is similar to NEPA regarding public participation. Washington also has another layer of public participation requirements if

wind energy projects go through the Energy Facility Site Evaluation Council (EFSEC) decision-making process. All three of these, NEPA, SEPA, and EFSEC, are important for decision makers when addressing public participation.

NEPA requires that the public participate in environmental decision making in two distinct parts of the process. Decision makers are required to include the public during scoping for a project and after the draft environmental impact assessment has been published, which means it is available for public comment. Through NEPA, the scoping process is when citizens can provide input at the beginning of the decision-making process so that decision makers have issues to address in the Environmental Impact Statement (EIS) (EPA, 2017). The methods used for scoping include public meetings, conference calls, formal hearings, informal workshops, and opportunities to submit written comments. The other part of NEPA that includes public participation is when the draft environmental impact statement is published. There is a comment period with a minimum of 45 days where agencies conduct public meetings and the public can send in comments through email (EPA, 2017).

Washington's SEPA process is similar and requires the same amount of public participation during environmental impact statements. SEPA also requires public participation during scoping and after the draft environmental impact statement has been released. Public participation is taken a bit further with SEPA and agencies are encouraged to push beyond the requirements to create a public participation plan. The public participation plan can include different outreach methods, like newsletters, project updates, public notices, radio announcements, internet web pages, and public hearings during scoping and draft EIS comment periods (ECY, 2017 (2)). The plan should also

include methods that are innovative in order to reach community members that may not be reached by the more traditional methods.

Siting councils, such as EFSEC, are unique to only Washington, Oregon, and West Virginia (Ottinger et al., 2014). EFSEC is mandatory for projects over 350MW and if local governments deny a permit then developers can go to EFSEC for approval. Once part of the EFSEC decision-making process, an adjudicative proceeding will happen. The adjudicative proceeding happens parallel to the public participation already required through NEPA and SEPA but is an added public participation requirement only to EFSEC. Adjudicative proceedings are similar to court hearings though, and they allow for people with expertise to be heard (Ottinger et al., 2014). After the proceedings occur, the siting council makes the final decision on the proposed project. By having states control the siting decisions and not local governments the process is quicker and is often seen as the best way to approve projects besides state voting (Ottinger et al., 2014).

Research Question and the Significance of the Study

There has been significant research assessing general concerns with wind energy projects around the United States and the world. These studies typically address community concerns by asking community members about their experience with wind energy projects and the decision-making processes used. Studies also look at specific decision-making processes that are often used and critique those processes in various ways. All of the existing studies lack one critical component that is extremely important in addressing community concerns and decision-making processes, which is discussing these issues with actual decision makers. The people who are part of the decision-making process often are left out of research conducted about wind energy projects. The

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perspectives of decision makers are crucial in understanding decision-making processes, determining how collaborative the processes are, and addressing constraints that affect collaborative decision making.

This thesis specifically looks at the research question asking, "what have been prominent concerns for community members during wind energy projects in the Washington and how could agencies and public utilities create more collaborative decision-making processes for future wind energy projects?" Asking this question is important because wind energy is growing steadily in Washington State and decision-making processes have been the same for many years. With multiple ways to make wind energy project decisions there is added tension about how collaborative different processes are and how to expand collaboration with constraints affecting the implementation of wind energy projects. There are many ways to answer these questions. Interviewing decision makers and looking at written records from past wind energy projects are one such way to find answers.

This thesis found that the most prominent concerns community members have had in Washington are negative scenery changes, natural habitat loss, bird and bat mortality, bird and bat habitat and migration loss, and noise. Also, it was found that there was a lot of support for wind energy projects because of community benefits. It was also found that decision makers try to be collaborative for wind energy projects and that constraints exist that sometimes prevent the best collaboration possible, like time and money. Decision makers believe that collaboration is important and want to give community members opportunities for public involvement during the environmental impact statement (EIS) process so that concerns are addressed.

Roadmap of Thesis

This thesis will be comprised of five main chapters. Chapter 2 will delve into the past literature and studies concerned with community concerns and decision-making processes of wind energy projects. The chapter is divided into four sections. The first section looks at the role of Not In My Backyard (NIMBY) and how using the term NIMBY is not relevant for current projects. The second section goes into the theoretical frameworks of distributive and procedural justice issues associated with wind energy development. The third section looks at community concerns and reasons for support of wind energy projects. The concerns that are discussed in-depth are landscape change concerns, bird and bat concerns, and noise concerns. The reason for support that is discussed is community benefits. The fourth section talks about actual decision-making processes and assessments that can be used for wind energy projects, as well as what is usually found in those processes.

Chapter 3 will consist of the methodology used to conduct this thesis research. The methodology that will be described is qualitative content analysis and semi-structured interviews. Qualitative content analysis was used to determine what have been prominent concerns for community members during past wind energy projects in Washington State. Semi-structured interviews were used to find out from decision makers what decision-making processes were used for wind energy projects and if those processes were collaborative. This chapter will also discuss the limitations of the study and how those limitations were addressed.

Chapter 4 discusses the results of the thesis research and connects the findings with existing literature. This section will explore the study findings, dominant themes,

and discuss how community concerns and decision-making processes are connected. The chapter will be separated into three sections. The first section will include the results and discussion from the qualitative content analysis study looking at community concerns from past wind energy projects in Washington State. The second section will look at the results and discussion from the semi-structured interviews. The third section ties together the results from the qualitative content analysis study and the semi-structured interviews.

Lastly, chapter 5 will provide conclusions for this thesis research. This chapter will provide broader implications of this study that are relevant to Washington, the United States, and around the world.

CHAPTER 2: LITERATURE REVIEW

To begin looking at the thesis question, "what have been prominent concerns for community members during wind energy projects in Washington State and how could agencies and public utilities create more collaborative decision making for future wind energy projects?" it is important to delve into past literature. The literature review for this study is divided into four sections that address the concept of Not in My Backyard (NIMBY), theoretical perspectives, community concerns and support, and practical applications. These four sections aid in understanding how to address the more general question asking what community concerns are important during wind energy projects and what processes decision makers have used to assess wind energy projects. There will also be a conclusion that ties in the research for this thesis and how it fits within the literature that has been presented. By understanding this general question addressed by past literature, my research will be backed by theoretical perspectives and practical applications that can help answer my thesis research question.

The first section of the literature review focuses on the concept of NIMBY, or Not In My Backyard. The concept of NIMBY is explored because this is often the reason given for people not accepting wind projects even though there is more complex reasoning behind the views people have. NIMBY has been a term used by decision makers in the past and needs to be explored in more depth to fully understand why it has been used in the past and how it is not as relevant anymore.

The second section of the literature review looks at theoretical perspectives of decision making. This section will be examining theories of justice and how community concerns often occur during decision making for wind energy projects because aspects of

justice are not being adequately addressed. Two important theories of justice, distributive justice and procedural justice, will be discussed as well as how knowledge, perception, and fear play into these theories.

The third section of the literature review looks at concerns and support for wind energy project that has been found throughout the literature. The section is separated between main concerns found in the literature and the main influence for support of wind energy. The community concerns that are discussed are landscape change concerns, bird and bat concerns, and noise concerns. The reason for support that is discussed is community benefits and how those community benefits can increase support.

The fourth section of the literature review will discuss practical applications of decision making. Topics to be discussed in detail are public participation in environmental decision making, how decision-making processes or assessments address varying community concerns, what actual processes and assessments exist that decision makers can use, and the reasoning behind using certain processes or assessments for wind energy project decision making.

Finally, there will be a conclusion that connects the literature that has been presented with the topic of this thesis. This conclusion will describe how the literature ties into this thesis research and what gaps in the literature are being addressed by this thesis.

The Concept of NIMBY in Wind Energy Decision Making

Not In My Backyard (NIMBY) is a term often used in renewable energy decision making and in social acceptance issues. For wind energy projects, NIMBY is defined as

people being in support of wind energy in general but not locally (Wolsink, 2000).

NIMBY is used to describe why people do not want a project, like wind energy projects

in their area (van der Horst, 2007; Wolsink, 2000; Wolsink, 2006; Devine-Wright, 2005;

Swofford & Slattery, 2010) The reason NIMBY is problematic is because people oppose

projects they do not want so they will not feel the impacts from the project in their areas.

Having concerns about local impacts from proposed projects are completely valid and

should be seen as such, but the problem that occurs with NIMBY is that people do not

necessarily see that if the project is going to be moved to another community then those

impacts will be felt somewhere else. The community that the project moves to may not

have the resources or ability to fully oppose and have the project denied in their area.

NIMBY was originally used to describe why people opposed environmentally

harmful projects in their backyards, such as landfills and toxic waste factories, but is now

used to describe any environmental project that people might have concerns about (van

der Horst, 2007). Wind energy projects are one such environmental project that labels

community concerns as NIMBY instead of addressing the deeper concerns about the

project. For renewable energy projects, NIMBYism usually is used to describe people

who are in favor of renewable energy projects but have opposition or concerns about a

project that is being proposed in their 'backyards.' Using NIMBYism to describe

people's opposition to renewable energy projects is often portrayed negatively and as

selfish reasoning for opposing renewable energy in their own backyards but not in other

people's backyards (van der Horst, 2007).

Benjamin Walker et al. (2014) argues that NIMBYism can still be a valid term for

discussing social acceptance of renewable energy projects because communities usually

are concerned with their own self-interest. Renewable energy projects that make sure to address this self-interest and offer community benefits from projects can receive greater social acceptance for proposed projects. But, self-interest and NIMBY are constantly being contested because there are many reasons for people to oppose renewable energy projects. NIMBYism more often occurs from perceived risk and worry about core values related to who makes the decisions during renewable energy projects (Wolsink, 2007). Selfishness can still be a motivation behind NIMBYism, but a deeper understanding about why people oppose renewable energy projects locally is necessary.

Many studies contest the idea that NIMBY should be used to describe why community members are opposing wind energy projects. One of the main reasons found throughout the literature for why people oppose wind energy projects is proximity and how close the project will be to their area (Devine-Wright, 2005; Devine-Wright, 2009; van der Horst, 2007; Swofford & Slattery, 2010). Van der Horst (2007) found that proximity strongly influences how people feel about wind energy projects, but that there are other factors that influence public opinions. How people value the land is extremely important in how people will reach to wind projects being proposed in their areas, according to van der Horst (2007), and decision makers need to understand these land values before pursuing development. Devine-Wright (2009) supports these findings and goes farther to suggest that place attachment theory is important in understanding the real reasons people oppose a project instead of using NIMBY.

Bidwell (2013), and many other researchers, bring up the point that NIMBY is an outdated reason for opposition of wind energy projects and people have deeper reasons for opposing projects (Devine-Wright, 2005; Devine-Wright, 2009; van der Horst, 2007;

Swofford & Slattery, 2010). In a study by Gross (2007), she found that the deeper reasons for people to oppose projects stemmed from justice issues. She found that instead of NIMBY as a reason for opposing projects, people generally had issues around the distribution of impacts or how the decision-making process was conducted. These findings are backed up by van der Horst (2007) who concluded that people oppose wind projects because of the proximity of the project and based on what kind of values the people who live in the area have. People are not necessarily opposing the project for self-interest reasons but instead because they are in opposition of the wind project in general (Wolsink, 2000).

Using NIMBYism to explain why people oppose renewable energy projects in their communities oversimplifies why people actually oppose projects and takes the focus away from the root causes behind why people feel the way they do about projects (Friedl & Reichl, 2016). Recently, there has been a shift from using NIMBYism to explain opposition and there are even instances where the negative connotations of NIMBYism are being shifted to express positive attitudes about renewable energy projects. Different terminology is starting to be used such as "POOL (Please On Our Land)" (Klein, 2014, p. 132) and PIMBY (Please In My Backyard) (Stigka et al., 2014) to describe people that want renewable energy projects in their backyards. These changes are attempting to destigmatize the use of NIMBY and give positive meanings to renewable energy projects.

Even with the move to destigmatize the use of NIMBY, local opposition of wind energy projects are still being labeled as NIMBY by decision makers instead of trying to further understand the concerns community members have. This is an ongoing issue with energy project but specifically wind energy projects in Washington. Wind energy projects

receive a lot of opposition because there is lower energy output but higher visual impacts

(Wustenhagen, 2007). The visual impact concerns easily convert into NIMBY concerns

because local communities do not want to see the turbines in their backyards. Decision

makers must fully understand all concerns local communities have about wind energy

projects in order to make decisions that are collaborative. Defining concerns as NIMBY

does not allow for community members to adequately be part of the decision-making

process for wind energy projects. This thesis looks at those deeper community concerns

that arise instead of using NIMBY as the reason for opposition.

Theoretical Perspectives of Decision Making

Introduction to Theories of Justice

Justice issues have been at the forefront of many development projects, but

especially wind energy projects (Gross, 2007 & Walker, Wiersma & Bailey, 2014). Wind

energy projects have a history of justice issues, and understanding theories of justice can

aid in addressing these concerns before decision making. Though issues of justice have

been known for a long time, they are still very important to understand and address

(Gross, 2007). Theories of justice have changed and adapted through the years to better

understand how justice concerns have changed. For wind energy projects and decision

making, environmental justice is the most relevant theory of justice to use to understand

the complex relationships between environmental impacts and social justice.

Environmental justice is the most relevant theory of justice to use because it brings

together other theories of justice under the scope of the environment.

Dr. Catherine Gross is a Visiting Fellow at the Fenner School of Environment and

Society in Australian National University and is the author of the book *Fairness and*

Justice in Environmental Decision Making. She has written extensively about

environmental justice and has been cited extensively for the work she has done.

Environmental justice, as defined by Gross (2007), is the "inequitable distribution of

environmental impacts" (p. 2729) and is concerned with distributive justice and

procedural justice issues. Distributive justice "focuses on equitable distribution of

outcomes, which can be either public goods or public 'burdens'" (Gross, 2007, p. 2729)

and procedural justice is "concerned with the processes by which decision are made"

(Gross, 2007, p. 2729). Originally, environmental justice scholars were concerned

primarily with distributive justice but now also focuses on procedural justice issues

(Gross, 2007). Focusing on both distributive justice and procedural justice is important to

decision making because decision-making processes determine the outcome of wind

energy projects making both justice issues relevant. Distributive justice and procedural

justice will be discussed in more detail in the next sections.

Environmental policies dictate decision-making processes that are used in wind

energy projects. Justice issues should inform the environmental policies and decision-

making processes that are used. Historic precedent in decision making has made it

difficult to proactively address justice issues and policy requirements, such as

environmental impact assessments, often work against theories of justice by reactively

addressing justice issues (Gross, 2007). Gross (2007) found in her study that communities

do not see decision-making processes as being fair because concerns are addressed after

decision have been made. This same problem has appeared in other studies, such as a

study done by D'Souza and Yiridoe (2014) that found community members believed

decision makers did not want to address concerns people had about proposed wind

projects until after the decisions had been made. Community concerns are addressed later in the decision-making process because the environmental policies that have dictated how decision are made have been the same for decades. While decision makers can address justice issues earlier in the decision-making process, it is often difficult to address all community concerns proactively unless there has been adequate public participation early in the process.

Distributive Justice and Wind Energy Projects

As mentioned in the previous section, distributive justice is defined as "equitable distribution of outcomes, which can be either public goods or public 'burdens'" (Gross, 2007, p. 2729). Addressing distributive justice issues is important because individual community members can feel like winners or losers depending on what the impacts of the wind projects end up being (Gross, 2007 & Hall et al, 2013). Distributive justice can be separated into negative and positive impacts of wind projects on community members. Some examples of negative impacts from wind energy projects are landscape changes, bird and bat mortality, and noise irritation. Examples of positive impacts from wind energy projects are community benefits and lower overall environmental impacts from wind opposed to other energy sources. These impacts and community concerns will be addressed more fully later in the chapter.

Procedural Justice and Wind Energy Projects

Procedural justice is "concerned with the processes by which decision are made" (Gross, 2007, p. 2729), as was stated in an earlier section. It is often found that procedural justice is more important than distributive justice (Schweizer-Ries, 2008) because the decision-making process determines the outcomes of wind energy projects.

Community members will have concerns with how the decision making happened that affects all other aspects of wind energy projects, like environmental, economic, and social impacts. These concerns are important to understand so that procedural justice issues can be addressed early in the decision-making process instead of after decisions have been made.

Decision-making processes that are fair are more important than just using public participation techniques that meet certain policy requirements (Gross, 2007). There are different participation stages that decision makers use, and they are information, consultation, cooperation, and self-empowerment (Friedl & Reichl, 2016). Schweizer-Ries (2008) offered a different interpretation of participation stages and put them in the order of information sharing, consultation, shared decision making, and initiating action (p. 4133). These ideas are very similar and just use different words to convey how lower participation is just providing communities with information or consulting people within a community about the wind energy project. More active participation goes beyond this to include community members in decision making and for the community to be empowered to create their own wind energy projects without outside organizations bringing the idea to communities.

It is important to understand the different stages of participation because decision-making processes require different levels of participation. Some processes only require information sharing with community members and some consultation, such as environmental impact assessments (Frield & Reichl, 2016). When these processes are used, there can be more conflict than originally planned by decision makers because environmental groups know about decision making processes and procedural justice.

Since environmental groups know about procedural justice they are often loud in their opposition of wind energy projects (Walker, 1995). People want more participatory decision making and communities that are not part of the process early can develop very negative perceptions about projects (Walker, Wiersma & Bailey, 2014; Simcock, 2016).

Though people want more participatory decision making locally, there is a disconnect between planning and siting wind energy projects. This occurs because national policies often require certain planning to take place, but more local decisions determine siting of wind energy projects (Wustenhagen, Wolsink & Burer, 2007 & Barboza, 2015). "Political institutions that do not support local collaborative approaches can all act to reduce the success of national wind power" (Wolsink, 2007, p. 2694). Decision makers should use more participatory and collaborative approaches so that community members believe procedural justice is being addressed and thus promoting "a positive attitude towards the project" (Frield & Reichl, 2016, p. 190). When community members are not part of the decision-making process people feel like they are being left out of the process, which can damage community well-being and create more opposition to wind projects (D'Souza & Yiridoe, 2014). Being part of the decision-making process creates a difference in how people feel about projects and can be influential in wind energy projects getting built (Gross, 2007 & Hall et al, 2013).

Many studies found that community members want to be part of the decision-making process for wind energy projects in their areas (Frield & Reichl, 2016; Gross, 2007; Hall et al, 2013; Swofford & Slattery, 2010). Community members see the value of being part of the process for many reasons. Gross (2007) had found that it can be damaging to the well-being of a community if people are not part of the decision-making

process. This finding has been backed up by other research that looked at how communities felt about projects that were built in their areas. D'Souza and Yiridoe (2014) confirmed community well-being was lowered from not being included in the decision-making process. Including community members can benefit the community as a whole, especially since community members want to be part of the process (Swofford & Slattery, 2010).

Knowledge, Perception, and Fear

Knowledge, perception, and fear tie directly into theories of justice because knowledge levels relate to perceptions and fears people have about processes or outcomes of wind energy projects. G. Assefa and B. Frostell (2007) found that the public has a difficult time discussing energy technology when they do not have information about the technology, like wind energy, and that decision makers need to education community members about the technology in order to be part of the decision-making process. Along this same line of thinking, policymakers think that improving knowledge will create better attitudes about wind energy projects (Wolsink, 2007). But, education about projects does not mean community members will support them because opposition goes beyond knowledge about wind energy (Walker, 1995). More knowledge can create more opposition because community members realize that procedural justice or distributive justice issues are not being adequately addressed.

Perceptions also play a huge role in how community members view projects. Community member's perceptions throughout wind energy projects can be described by using a U-shaped curve, according to Maarten Wolsink (2007). People have positive perceptions about wind energy in general when first learning about potential wind power

in the community, then people become more critical about the actual project being planned and develop negative perceptions, but eventually people have more positive perceptions after some time has passed after the construction of the wind energy project (Wolsink, 2007). These negative perceptions begin to develop during project planning because community members begin to see the process as unfair (Gross, 2007). Perceived risks and core values start becoming strong influences when people begin to perceive the decision-making process as not addressing justice issues that are of high concern to communities (Wolsink, 2007).

Another important factor to consider with community member perceptions of wind energy projects during decision making is that people have different perceptions about what is defined as their "backyard" (van der Horst, 2007). People can define their backyards as their physical backyards, communities, counties, and all the way extending to the entire country. This adds an extra component to determining who will have concerns related to distributive justice and procedural justice issues of wind energy projects. Understanding and defining backyards also relates to the "Proximity Hypothesis" which states that the closer someone is to a proposed wind energy project, the more negative their perceptions will be (van der Horst, 2007, p. 2707). This hypothesis has not been proven because there are so many factors that influence negative perceptions of wind energy projects and proximity is just one factor. Dan van der Horst (2007) also found that often people further away from existing wind energy projects see more risk in wind projects because these people have not witnessed actual impacts to communities after projects were finished. These negative perceptions of projects stem

from fears about potential impacts to communities from wind energy projects that may or may not happen depending on the decision-making process.

Understanding the complex relationships between knowledge, perception, and fear is difficult because "perceptions are complex and conflicting viewpoints are to a large degree only to be expected" (Walker, 1995, p. 58). Decision making processes that are fair matter for trust to be built in communities and so community members feel like their concerns matter. Decision makers are often outsiders in a community and need to build trust because wind energy decisions are loaded with potential risk to community members (Wustenhagen, Wolsink & Burer, 2007). Distributive justice and procedural justice issues need to be fully addressed before projects are decided on for decision makers to create collaborative wind energy projects.

Methodologies Used for Theoretical Perspectives

To answer the question about what concerns are priorities to community members during wind energy projects in general and how theories of justice play into decision-making processes that address or do not address these community concerns, there are certain methodologies that are used throughout the literature. Case studies, interviews, surveys, and deeper analysis of existing literature are common methodologies used to answer questions about wind energy project development and justice. Often, methodologies are used together to form better understandings about how theories of justice work theoretically but also practically.

Methodological approaches such as the "adaptive theory" that Gross (2007) used to conduct their research, suggests that "social research can be enhanced by the adoption of a research method that encourages the continued interaction of the theoretical aspects

of the research with the practical" (Gross, 2007, p. 2728). This methodology is interesting

because it is useful for studies that go between theoretical and practical aspects of

research problems. Gross (2007) also conducted semi-structured interviews to gain a

deeper understanding about the perspectives of community members about the decision-

making process. There are gaps in this research method though because while community

members could voice their perspectives there is still the missing voice of the decision

makers. Throughout the studies that were discussed, the voice of the decision maker has

been left out when looking at justice issues and decision making. Studies use community

members voices for their research, but the decision makers are not part of many studies.

The decision maker is an important voice to capture since they are the ones deciding

which process or assessment to use in developing wind energy projects.

Community Concerns and Reasons for Support

Community Concerns for Wind Energy Projects

Landscape Change Concerns

Landscape change is one of the most important concerns that community

members have during wind energy projects because people have deep rooted connections

and values for the areas they live near (Baxter et al, 2013; Bidwell, 2013; Olson-Hazboun

et al, 2016; Schweizer-Ries, 2008; Swofford & Slattery, 2010). People value the

landscapes that are meaningful to them and when a landscape is changed for a wind

energy project people can feel like the outcome was unfairly distributed. Visual

landscape changes are dominant concerns community members have but auditory,

olfactory, and haptic senses also matter to people (Schweizer-Ries, 2008 & Wolsink,

2007). Wind energy projects usually need to be on certain landscapes that offer the most

available wind generation potential and decision makers need to understand the dynamics between these landscapes and how community members feel about landscape changes.

Petra Schweizer-Ries (2008) showed that people prefer natural and untouched landscapes which is one reason people will oppose wind energy projects on certain landscapes. Types of landscapes matter to people and certain landscapes, such as mountains and pristine areas, people will fight for to protect from development (Wolsink, 2007). Places that have had industry or other energy infrastructure are less likely to oppose projects because the project is not changing an undeveloped landscape (van der Horst, 2007). Walker (1995) presents the idea that smaller wind energy projects are better than wind farms because visual impacts to landscapes will be less and landscape change will be reduced. While landscape change is important, the decision-making process must be fair because every wind energy project will be different, and the community members will have different concerns related to landscape change.

Research on landscape changes and place attachment have shown that community members value the land around them and do not want those places changed. As Hall et al. (2013) found, it is important to understand the local area before deciding on wind energy projects because the project should "ideally enhance the characteristics of a place or be compatible with its history" (p. 206). When people are attached to their landscapes then they are more likely to oppose wind development if it does not match their values. Being able to see the wind energy project relates to how supportive or not community members may be (Olson-Hazboun et al, 2016). If people could not see the wind projects, then their landscape values were not in danger of being changed. Place attachment is strong in places that wind energy projects are being built because the landscapes are often

undeveloped and rural. This means it is important that decision makers understand the communities they are trying to build these projects in so that the projects aren't in opposition of the values of the community.

Bird and Bat Concerns

One of the most important concerns community members have for wind energy project development are the impacts to birds and bats (Barclay et al., 2007; Barrios & Rodriguez, 2004; Mulvaney et al., 2013 (2); Rand & Hoen, 2017; Slattery et al., 2012; Zerrahn, 2017). The concern for birds and bats occurs for wind energy projects because these projects do change the natural landscape and habitat. With this landscape and habitat change, studies have shown that there is an increase in bird and bat fatalities in North America (Barclay et al., 2007; Barrios & Rodriguez, 2004; Zerrahn, 2017). Barrios & Rodriguez (2004) found that bird and bat fatality studies are still not accurate and there is still not a good understanding of how many birds and bats get killed each year from wind energy projects. Research is continuing to be pursued to fully understand the impact of wind energy projects on bird and bat fatality, as well as habitat loss and migration loss.

Community members concern over birds and bats affect how they feel about wind energy development in the area they live. It has been found in many studies that community members believe wind turbines are dangerous to birds and bats (Mulvaney et al., 2013 (2); Rand & Hoen, 2017; Slattery et al., 2012). Since wind energy is built in undeveloped and rural areas there are more concerns about how the birds and bats will react to development. Community members care about the wildlife in their areas and have concerns over what will happen with increased development. Rand and Hoen (2017) looked at research spanning over thirty years about wind energy development and found

that community members are less likely to support wind projects if they believe harm will come to birds and bats. This is supported by other research that addresses opposition and support of wind energy projects based on bird and bat impacts (Mulvaney et al., 2013 & Slattery et al., 2012).

Noise Concerns

Noise is one of the top concerns that community members have about wind energy projects being built in their areas (Bakker et al., 2012; Baxter et al., 2013; Groth & Vogt, 2014; Onakpoya et al., 2015; Shepherd et al., 2011). The main reason noise is a concern to people is that it creates annoyance, which in turn disrupts quality of life and health. Bakker et al. (2012) found that noise annoyance from turbines can cause people to have sleep disturbance and even psychological stress. These impacts are not felt by people who do not hear noise from turbines. These results are consistent with other findings that concluded noise from turbines reduced quality of life, sleep, and health (Bakker et al., 2012; Baxter et al., 2013; Groth & Vogt, 2014; Onakpoya et al., 2015; Shepherd et al., 2011). Community members are less likely to support a wind energy project if they have concerns about the noise that will be generated from the wind turbines (Baxter et al., 2013).

Reasons for Supporting Wind Energy Projects

Community Benefits

Decision makers often try to find ways to reduce concerns for wind energy projects. One such way to reduce potential burdens that communities may have during the development of a wind energy project is to provide community benefits (Hall et al.,

2013; Liljenfeldt & Pettersson, 2017; Walker, Wiersma & Bailey, 2014; Walker, 1995). Community benefits can be offered in many different forms, such as payments to community members, payments to community investments, and funds for future projects in the community. An increase in support for wind projects has been seen when community benefits are part of the wind project design (Bidwell, 2013; Hall et al., 2013; Mulvaney et al., 2013 (1); Bakker et al., 2012; Aitken, 2010; Olson-Hazboun et al., 2016).

Community benefits, especially economic benefits, are important to community members because oftentimes wind energy projects are being developed in rural areas that have been hit hard economically (Mulvaney et al., 2013 (1)). Economic benefits can go to the surrounding communities but also to individual people. Individual economic benefits are usually provided as income for people who have wind turbines on their properties. Farmers, and other property owners, have increased support of wind energy projects if they get income from hosting wind turbines on their land (Hall et al., 2013). While the individual economic benefits are important for support of wind projects, benefits to the widespread community are more important for overall support. Bakker et al. (2012) and Aitken (2010) both found in their studies that community benefits need to go to surrounding communities instead of just to individual people. This increases the community support of projects and not just support of individual people. Aitken (2010) also found that community benefits need to go to all surrounding communities and not just the community that is nearest to the wind energy project. Along with this finding, he also found that community benefits must continue even after the project is finished so that the community feels like they are being compensated for the wind project impacts.

Community benefits can be perceived as bribery by the decision makers to gain support for wind energy projects and to reduce the amount of opposition (Bakker et al., 2012). Bribes can be seen as paying communities off for negative impacts in the future that will be felt from the project implementation (Walker, Wiersma & Bailey, 2014). Community members who think bribery is happening instead of community benefits can think the decision-making process is not fair and potentially biased (Walker, Wiersma & Bailey, 2014). This potential bribery issue can negatively affect how the community members perceive the decision-making process of wind energy projects. As long as decision makers are creating community benefits that are personalized and address what the local communities need, bribery does not have to be an issue with wind energy development and support will increase (Olson-Hazboun et al., 2016).

There are some solutions to the different issues that arise from using community benefits to address concerns. Benjamin Walker et al. (2014) suggest that decision makers need to be strategic about community benefits so that community members do not think they are being bribed into not opposing wind energy projects. One strategic method suggested is to put the money in funds for the community and to not pay community members until after the wind energy project has been implemented (Walker, Wiersma & Bailey, 2014). These methods of community benefits are still not completely addressing the problem though. Community benefits do address certain outcomes from concerns but often these outcomes could be reduced from the decision-making process being more collaborative, so community members have a say in the outcomes.

Practical Applications of Decision Making

Public Participation in Decision Making

Public participation for environmental decision making, especially with wind energy decision making, is an important part of the decision-making process. Almost all countries with environmental impact assessments require public participation (Glucker et al., 2013). Public participation is a vital tool for environmental impact assessments but hasn't been as effective as possible because participation processes are often seen as ineffective, costly, and time consuming (Doelle & Sinclair, 2006). This often happens because public participation is not adequately defined because researchers and decision makers define it differently, using words like 'participation' and 'consultation' interchangeably even though they explain different things (Glucker et al., 2013). O'Faircheallaigh (2010) defines public participation as "any form of interaction between government and corporate actors and the public that occurs as part of EIA processes" (p. 20). But, that still doesn't clearly define public participation or who the public is that should be part of the participation process, causing ambiguity.

Why include the public in decision-making processes to begin with? Shepherd and Bowler (1997) discuss four basic reasons for including the public in the decision-making process. These four reasons are 1) public participation is regarded as proper, fair conduct of democratic government in public decision-making activities; 2) public participation is widely accepted as a way to ensure that projects meet citizens' needs and are suitable to the affected public; 3) the project carries more legitimacy, and less hostility, if potentially affected parties can influence the decision-making process; and 4) the final decision is 'better' when local knowledge and values are included and when

expert knowledge is publicly examined (Shepherd & Bowler, 1997; O'Faircheallaigh, 2010; Glucker et al., 2013). But, others may argue that not including the public is quicker and more cost-effective (Shepherd & Bowler, 1997; O'Faircheallaigh, 2010; Doelle & Sinclair, 2006). Including the public in decision making is required but there is a purpose and benefits to including the public.

Including the public in decision making is extremely important for the reasons listed above but it is also important because these projects are going to exist in areas with people. Those people should be part of the process and have a say in the final project. Beyond just having more knowledge about the local area, people in surrounding communities genuinely want to be part of the decision-making process (Swofford & Slattery, 2010). Studies have shown that people are concerned about wind energy projects being developed because they do not think decision makers will address community concerns (D'Souza & Yiridoe, 2014). D'Souza & Yiridoe (2014) also found that community engagement and participation can be vastly important in getting community support for wind energy projects. By including community members in the decision-making process, the overall process can be smoother and community members are more inclined to support a project that they are part of.

As public participation becomes more important in decision-making processes, people are beginning to view participation differently. "Participation in environmental decision-making is increasingly becoming regarded as a democratic right" (Reed, 2008, p. 2418) and something that must be included in environmental decision making. Public participation is moving away from just being a tool to gather information and disseminate knowledge about a planned project and is becoming a part of community involvement.

This is changing how communities view and react to projects in their local areas. One benefit of participation is that "stakeholder participation may increase the likelihood that environmental decisions are perceived to be holistic and fair" (Reed, 2008, p. 2420). Also, engagement with stakeholders early on can increase the "likelihood that local needs and priorities are successfully met" (Reed, 2008, p. 2420), can create a sense of ownership over the project implementation (Shepherd & Bowler, 1997), and create community empowerment from participating (O'Faircheallaigh, 2010). If public participation is done well, marginalized groups can feel empowered by having a voice in the decision-making process (O'Faircheallaigh, 2010).

There are a few different metaphors used to describe public participation, such as a ladder or a wheel. The ladder metaphor shows that each rung of the ladder is a form of participation and the higher up the ladder you go the better the participation is (Reed, 2008). An example is that a lower rung would be passive dissemination of information to the public and a higher rung would be active engagement in the decision-making process. The ladder metaphor has recently been replaced with the wheel because a wheel shows that multiple participation types can be used during the decision-making process (Reed, 2008). During the decision-making process it is important to use different participation types depending on the project that is being implemented and the desired outcomes. Different forms of participation aren't in a vacuum, they are connected and work together (O'Faircheallaigh, 2010).

Public participation processes continuously change and look different to be more successful. Doelle and Sinclair (2006) suggest that there needs to be legislation requiring public participation before project design has been decided on but also an independent

review panel that assesses how meaningful the public participation was. Institutionalizing that public participation must happen at even more points in the decision making is important so that decision makers do include the public (De Santo, 2016 & Reed, 2008). Including the public during the part of the decision making even for decisions like what participation techniques to be used during the process since not all techniques work for everyone or every community. "It is important to note that early participation would not add to the time it takes to make decisions" (Doelle & Sinclair, 2006, p. 7) which is a concern with public participation processes.

The literature suggests that there also needs to be more work done in defining what public participation means at the onset of any decision-making process. Using words such as 'public,' 'stakeholders,' and 'citizens' interchangeably creates confusion as to who should be involved (Glucker et al., 2013). Clearly articulating who the public is can make beginning public participation processes much easier in the long run. "The process used to incorporate stakeholders is important, it needs to start as early as possible, have clear objectives from the outset, excellent facilitation, be underpinned by strong science incorporating both ecological and socioeconomic parameters" (De Santo, 2016, p. 92 & Reed, 2008) in order to be effective. Public participation is so important in decision-making processes and with greater care can reach the full potential.

Throughout the literature there is a call for more participation and for decision makers to include the public at more stages of project planning and development. This is incredibly important for wind energy projects because community members have many concerns with wind projects and need to have those concerns addressed. Even though public participation is required, there needs to be effort put in to make sure the public is

included in the process. Including the public will make for wind projects to be better and have more support from community members. The rest of this thesis will look at what those community concerns are for people in Washington State and how collaborative the decision-making processes are for wind energy projects.

Processes and Assessments for Decision Making

This next section looks at the actual process and assessments that are used to make decision for wind energy projects. Different processes and assessments will be discussed for a better understanding of what the strengths and weaknesses are for each of the processes and assessments. Along with the discussion, each process or assessment will be looked at regarding what is included in the process or assessment. The triple bottom line is important to understand when looking at decision-making processes and assessments. The triple bottom line is broken up into ecological/environmental, economic, and social (Assefa & Frostell, 2007). These three dimensions are important to consider when developing wind energy projects and need to have equal consideration in the decision-making process. Since wind energy projects have plenty of pros and cons, decision makers need to use processes that assess all three aspects of the triple bottom line (Barboza, 2015).

Processes and assessments that are used to decide wind energy projects are important because they lay out the foundation of what will be addressed during the decision-making process. While there are policy requirements that determine which assessments should be used, there are options for decision makers regarding how in depth they want to assess projects. Sustainability assessments in general are tools "that can help decision-makers and policy-makers decide which actions they should or should not take

in an attempt to make societies more sustainable" (Ness et al., 2007, p. 499). Wind energy projects have many reasons for being developed but a main reason is to create more sustainable energy infrastructures. There are many different types of decision making processes and assessments that are used by decision makers to determine if wind energy projects should be developed and I will briefly discuss some common processes and assessments that have been highlighted in past literature.

Environmental impact assessments or EIAs are often required through policy to develop wind energy projects. As the name suggests, EIAs are supposed to evaluate potential environmental impacts of projects, usually large development projects (Ness et al., 2007). The large development part of this requirement is important because not all wind energy projects require EIAs and smaller projects can be exempt from producing an EIA or any kind of assessment. If wind energy projects are large enough to require an EIA, there is a requirement for public participation and stakeholder engagement but often not enough participation to address distributive justice or procedural justice issues that may arise (Ness et al., 2007). Also, Wiek and Binder (2005) determined that EIAs do not go far enough into the social side of complex renewable energy projects and mostly focus on the systemic requirements for projects. This concern can be addressed by using other assessments to enhance the EIA that is required by policy and expand upon other aspects of sustainability that EIAs fall short on.

One way to expand upon the required EIA is to also conduct a Social Impact Assessment or SIA. By using a SIA, decision makers can look at different aspects of societies that might be changed from wind energy projects. SIAs involve looking at the wellbeing of individuals but also interactions between individuals in a community

(Assefa & Frostell, 2007). Conducting a SIA requires looking at changes to people's way of life, culture, community, political systems, environment, health and wellbeing, personal and property rights, and fears and aspirations (Assefa & Frostell, 2007). Using an assessment like this can address potential justice issues that arise from using an EIA and not assessing social impacts of wind energy projects. The main purpose of conducting an SIA "is to bring about a more sustainable and equitable biophysical and human environment" (Assefa & Frostell, 2007, p. 68).

While EIAs do allow for some level of social assessments, those assessments are often not included or are not adequate. Decision makers can decide how in-depth they want to go for the social assessments and depending on the decisions maker, social assessments are not the most important part of the EIA. EIAs usually assess environmental and economic impacts of wind energy project in much more detail than social impacts. Each state has their own set of guidelines and policies that dictate what impacts must be assessed for wind energy projects. Depending on the priorities of the state and decision makers, different impacts are analyzed. Often decision makers chose to only analyze certain impacts that are going to be the biggest concerns because of time and money constraints.

Multi-criteria decision making or MCDM is another assessment type that encompasses many different decision-making processes (Gumus, Kucukuar & Tatari, 2016). Two different MCDM analyses are multi-criteria analysis and cost-benefit analysis. Multi-criteria analysis, or MCA, uses different criteria that address environmental, economic, and social aspects of projects. MCAs have the goal of identifying the best alternatives for projects using quantitative and qualitative data (Ness

et al., 2007). While implementing MCAs may produce a more holistic wind energy project that focuses on multiple aspects of the project, there is the concern that this analysis can be subjective because decision makers pick which criteria to analyze and could pick criteria that does not address community concerns. Public participation is important in this instance because the public can voice which criteria is important to them to have analyzed in a MCA. Cost-benefit analysis (CBA) is more economic assessment tool to use. CBAs allow for effective weighing of costs and benefits of wind energy projects and alternatives, but monetize the costs and benefits (Ness et al., 2007). Monetizing certain aspects of wind energy projects can be problematic since environmental and social impacts are different depending on who is asked.

A way to address some of these missing and problematic parts of MCDM methods is to add an extra component to the assessments. Using fuzzy set theory in combination with MCDM methods may produce more holistic sustainability assessments that address all aspects of the triple bottom line. Fuzzy sets theory addresses the uncertainties with quantifying certain sustainability measures, such as environmental and social impacts, by creating ranges for impacts that have slightly fuzzy edges (Gumus, Kucukuar & Tatari, 2016). Gumus, Kucukuar and Tatari (2016) did find that using fuzzy sets theory can make it difficult to compare alternatives for wind energy projects though because the ranges are different, which makes them hard to compare side by side. While using fuzzy sets can create more holistic projects that address the triple bottom line, more work needs to be done in order to make comparing alternatives easier for decision makers and community members involved in the decision making.

Life Cycle Analysis (LCA) can also be a useful process to assess wind energy projects and community concerns. LCAs are a "systemic method for assessing potential environmental impacts of products and services" (Vaisanen et al., 2016, p. 1332). Wind energy projects can use LCAs to better understand the total life of these projects. In the past, LCAs only took into consideration ecological and economic aspects of projects but now is including social aspects (Assefa & Frostell, 2007). The Renewable Energy Decision Making Model uses LCA processes to fully assess wind energy projects by using different assessment tools for each of the three aspects (Barboza, 2015). The economic aspects get assessed by using after tax analysis, which looks at lifecycle costs of the entire project and makes it possible to see what the top economic priorities are for the project. Environmental aspects as assessed using a streamlined LCA instead of the full length LCA commonly used. Using a streamlined version makes the results more user friendly and easier to determine if technology is harmful or sustainable. Lastly, social aspects are assessed using stakeholder analysis so that stakeholders are part of the decision-making process (Barboza, 2015). This decision-making process address all three aspects of the triple bottom line and is more participatory with stakeholder engagement.

The last two decision-making processes that can be used to create more participatory and collaborative decision making are Analytical Hierarchy Process (AHP) and Sustainability Solution Space for Decision-Making (SSP). AHP is a "technique for quantifying subjective preferences expressed in expert judgements concerning entities or objects" (Vaisanen et al., 2016, p. 1333) and is used primarily for participatory decision making in the energy sector. It is another method to create more participatory decision making while also making decisions using expert knowledge. AHP can be incorporated

into other assessment tools to create a space for participatory decision making (Vaisanen et al., 2016). SSP is currently just at a theoretical level right now and has not been put into practice. There is a participatory approach that "enables 'affected persons'…to articulate and discuss their perspectives" (Wiek & Binder, 2005, p. 593) and an expert approach that is "appropriate if the problem is too complex to be tackled with laypersons or requires a deeper professional insight" (Wiek & Binder, 2005, p. 593) that work together to create collaborative decisions for wind energy projects. Both AHP and SSP are not being used widespread yet but have the potential to be a useful tool that offers more participatory and collaborative decision making in the future.

All the decision-making processes mentioned have different priorities and criteria that are used to make a decision. They each assess some or all the environmental, economic, and social impacts that can come up during wind energy projects. Depending on the concerns that communities have, different impacts should be assessed. Each wind energy project will have different impacts and different community concerns that need to be addressed. Relying on one type of decision-making process can have the potential to leave out certain impacts that are important to address. Having a deeper understanding about the many processes that exist can help decision makers use a decision-making process that encompasses all the impacts and concerns that will come up for wind energy projects. By using a decision-making process that addresses community concerns and impacts of the project, the overall wind energy project can be better and include the community throughout the process.

Methodologies Used for Practical Applications

Research methodologies often used for practical applications of decision-making processes are often case studies in which researchers use specific decision-making processes and analyze if that process achieved the desired result. Other methodologies include using survey data to quantify findings and conducting in depth literature reviews of past decision-making processes and assessments. Using a research methodology in which I would look at a case study of a wind energy project going through the decision-making process is difficult with the time limitation of this study.

CONCLUSION

Theories of justice are important to understand before decision makers determine what processes or assessments to use for wind energy projects. They can also be used as a theoretical framework to better understand existing decision-making processes (Gross, 2007). The "'decide-announce-defend' approach to siting with minimal public involvement has been shown to repeatedly antagonize and create public mistrust, concern and ultimately conflict" (Walker, 1995, p. 57) with wind energy projects. Including social impacts of projects in decision-making processes can create more effective and meaningful public involvement (Walker, 1995 & Schweizer-Ries, 2008). Not all decision-making processes or assessments address environmental, economic, and social impacts of wind energy projects. Including all these impacts in the decision-making process is important for creating a better project that fully addresses community concerns.

When applying decision-making processes and assessments to wind energy projects, it is very important for decision makers to address key concerns community

members have that are unique to that community and use a process that allows for collaborative approaches (Wolsink, 2007). It is also important to consider whether procedural justice issues are only an issue with top-down decision making and that with more collaboration decision making reduces community concerns (Walker, Wiersma & Bailey, 2014). Decision makers also must note that even with collaborative decision making there will always be people who are "fundamentally anti-wind" (Wolsink, 2007, p. 2694) and will not support projects no matter what and "negatively affect collaborative approaches because such groups are not inclined to cooperate" (Wolsink, 2007, p. 2694). Understanding prominent community concerns and how these concerns are framed within theories of justice, especially distributive justice and procedural justice, is extremely important for decision makers who are deciding which process or assessment to use for wind energy projects. Collaborative decision making through community involvement can create wind energy projects that are more meaningful to the community, decision makers, and beyond.

Throughout all the literature that has been presented in this chapter there is a gap in really connecting the community concerns that arise during wind energy projects and the decision-making processes that were used. These topics have been addressed separately but rarely have they been brought together to get a better understanding for how the community concerns and decision-making processes are connected. My research looks at the community concerns that have been brought up during past wind energy projects in Washington State and if those decision-making processes were collaborative or not. Another gap throughout the literature is interviewing decision makers who worked on wind energy projects. I first used qualitative content analysis to find out what

prominent concerns have been brought during past wind energy projects and then I

interviewed decision makers to understand what decision-making processes were used.

By using these methodological approaches, I am adding to the literature about

community concerns during wind energy projects and expanding the decision-making

process literature by including the voice of the decision makers.

CHAPTER 3: METHODOLOGY

This chapter is comprised of a detailed description of the research methodology that was conducted. The research question being answered is: what have been prominent concerns for community members during wind energy projects in Washington State and how could agencies and public utilities create more collaborative decision making for future wind energy projects? Qualitative content analysis and semi-structured interviews were the chosen research methodologies. Qualitative content analysis was chosen because it allowed a more in-depth look at past wind energy projects in Washington and what community members were commenting about at that time. The qualitative content analysis was conducted by looking at Environmental Impact Statements (EIS) from wind energy projects in Washington. Semi-structured interviews were chosen because they allowed for decision makers to speak with their own voices about the decision-making processes being used for wind energy projects and how collaborative those processes are. The following sections of the chapter go in-depth about the methodologies used, limitations of these methodologies, and how limitations were addressed for this study.

Wind Energy in Washington State

Washington State was chosen for this study for a few reasons. The first was that it was local, and I was interested in learning more about how wind energy projects and decision-making processes work in Washington. The next reason is that there have been wind energy projects in Washington long enough to find the necessary documents and decision makers to do this study. There were enough environmental impact statements (EIS) that it was possible to find ones that could be used for the qualitative content analysis. Selecting Washington also allowed for there to be people to interview who had

past and current experiences working on wind energy projects. The entire state was selected so that decision making at different levels could be looked at, such as local or state level decision making. The original study design was for the Pacific Northwest but due to time constraints the study site was scaled down to Washington.

Wind energy in Washington is concentrated to geographic areas that have higher wind potential, particularly areas with higher ridges. Wind energy is found primarily east of the Cascade Mountains and in the southern part of the state (Figure 5). The first utility-scale project was launched in 2001 (AWEA, 2016). For this thesis, some of the larger wind energy facilities were analyzed for the qualitative content analysis portion of the study because they often have more public comments than smaller projects that may not have required public comment periods for implementation. Below is a map showing the locations of wind energy facilities in Washington, in different phases of development. The phases of development are "in development," "under construction," and "operational." "In development" means that the project is still going through the environmental impact statement (EIS) process and hasn't been approved yet.
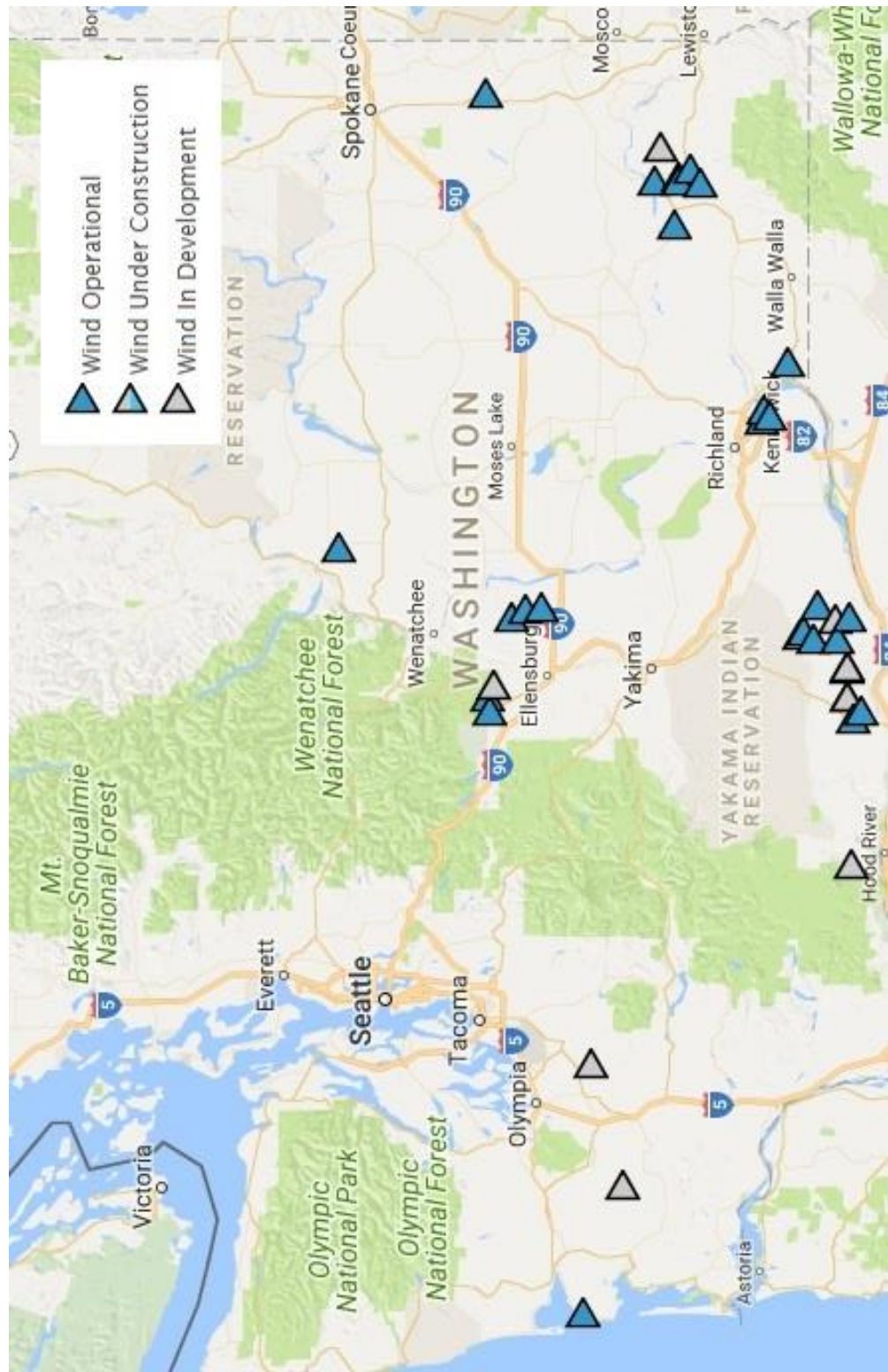
Figure 5. Map of Washington State wind energy facilities (RNP, 2009)

The following wind energy projects were chosen to be analyzed at for the qualitative content analysis portion of this research: Wild Horse Wind Power Project, Desert Claim Wind Power Project, Whistling Ridge Energy Project, Lower Snake River Wind Energy Project, and Maiden Wind Farm. These five were chosen because an environmental impact assessment was required and the report with public comments was available. The purpose of conducting a qualitative content analysis is to answer the first part of the thesis research question which is: What have been prominent concerns for community members during wind energy projects in Washington? Public comments submitted regarding wind energy projects in Washington will be used to answer this question using qualitative content analysis. Also, wind projects that were in different counties were looked at. Different counties were chosen because it allowed for a wider variety of public comments than just focusing on one county. Looking at multiple counties gave room for more community member concerns, support, and opposition to be analyzed.

The Wild Horse Wind Power Project is located in Kittitas County, in the center of Washington State. The first phase was completed in 2006 with 127 turbines and an energy capacity of 229 MW and the final project consists of 149 turbines and an energy capacity of 273 MW (EFSEC, 2012). Wild Horse Wind Power Project is on open range land consisting of about 9,560 acres in Kittitas County (EFSEC, 2012). The purpose of the project was described as "to construct and operate a new electrical generation resource using wind energy that would meet a portion of the projected growing regional demands for electricity" and "to provide low cost renewable electric energy to meet the growing needs of the Northwest" (Wild Horse FEIS, 2005, p. 1-2). The application for

the project was submitted by Bonneville Power Administration (BPA) and Puget Sound Energy (PSE) to EFSEC for review.

The Desert Claim Wind Power Project is also located in Kittitas County, in the center of Washington State. The total project will have 95 turbines and a maximum of 190 MW of power produced (EFSEC, 2012). Currently, the project is still not constructed and there are no immediate plans to begin construction. This project will be located on 5,200 acres that include purchased land, leased land from private landowners, and leased land from public landowners (EFSEC, 2012). EFSEC is the lead agency for the Desert Claim Wind Power Project.

The Whistling Ridge Energy Project is located in Skamania County, which is at the southern edge of Washington State next to the Columbia River. This project will produce around 75 MW of energy (EFSEC, 2012). Currently, this project is still being constructed and will soon be completed. The project will be on 1,152 acres of land (EFSEC, 2012). The purpose of the project is "intended to provide both a new source of non-polluting renewable energy in the State of Washington, and to provide much-needed economic development in Skamania County fully compatible with existing land use" (Whistling Ridge Application, 2009, p. I-1). The energy produced will connect to BPA transmission lines and the lead agency on the project is EFSEC.

The Lower Snake River Wind Energy Project is located in Garfield County and Columbia County, which is in the southeast corner of Washington State (Lower Snake FEIS, 2009). The project has 795 wind turbines, totaling 1,432 MW of energy, which is built on approximately 124,000 acres (Lower Snake FEIS, 2009). The lead agency is Garfield County Public Works Department and the applicant for the wind project is PSE.

The purpose of building the Lower Snake River Wind Energy Project is to increase the use of wind power for future generation but also aid in economic growth and supply new energy contracts as old contracts expire (Lower Snake FEIS, 2009).

The Maiden Wind Farm is located in Benton County and Yakima County, which is center and south near the Columbia River in Washington State. There are approximately 594 small turbines creating about 494 MW of energy (Maiden FEIS, 2002). The project is on public and private land in both Benton and Yakima County, totaling about 251 acres of land being used (Maiden FEIS, 2002). The lead agency is Benton County and the applicant is BPA.

Qualitative Content Analysis Methodology

The first stage of this thesis research was to conduct a qualitative content analysis of Environmental Impact Statements (EIS) from past wind energy projects in Washington. Qualitative content analyses take existing documents and literature but analyze these works in a way that is different than what has already been done. By taking a different approach to looking at existing studies and documents, new data and conclusions can be drawn. For this study, qualitative content analysis was chosen to gather new data from existing EIS documents, specifically the sections that discuss decision making and the public comments. The public comments found in the EIS documents appeared in a few different forms. Comments were in the form of scanned hard copy letters that were sent to the lead agency, copies of emails of letters sent to the lead agency, transcriptions of phone calls from people wanting to make public comments, and transcriptions of public meetings where people were able to verbally comment on the

EIS. Some of the public comments were form letters that had the same comments addressed but different people signed and put their address on those form letters.

Since anybody can comment on EIS reports, a distinction had to be made to separate out local community members and other people who commented. The different groups of people who commented on EIS reports were local community members, people outside the community, and people writing comments on behalf of an agency, organization, and non-profits. For the purposes of this study, community members were anyone who lived within a 100-mile radius of the final project. This 100-mile radius was determined by the addresses people provided on their public comments. Comments that did not provide the address were not counted as local community members because it could not be determined that they were local community members. Using Google Maps, I looked up the addresses provided to determine if they were within the 100-mile radius. The last section of people commenting on the EIS reports were people writing comments for the agency, organization, and non-profits they worked for. Since these did not qualify as community concerns they were not analyzed.

The process of conducting a qualitative content analysis began by finding any complete EIS reports that included all the public comments. I began with the Wild Horse Wind Power Project EIS and began reading through the public comments from community members. I coded the comments based on concerns people brought up and reasons for supporting or opposing the project. I specifically focused on the language being used by the community members and created *in vivo* codes, which are codes "that come directly from the statements of subjects or are common phrases found in the texts being examined" (Hay, 2010, p. 283). This was the beginning of my code list, and when

new concerns, support reasons, and opposition reasons appeared in other public

comments, those were added to the code list (see below for code list). Once each EIS

public comment section for a wind project was coded, the codes were put in numerical

order by how many times the code was used in order to determine which codes appeared

the most from community members. Then I analyzed the codes and wrote the results for

the qualitative content analysis portion of the methodology. The results will discuss

which codes were the most prominent for each wind project then the most prominent

codes overall. The results will also present comments that local community members

made and the code that that comment fell under.

List of Codes for Qualitative Content Analysis

- Public Access

- Recreation Loss

- Natural Habitat Loss

- Bird and Bat Habitat and Migration Loss

- Elk and Deer Habitat and Migration Loss

- Negative Scenery Changes

- In Support because Wind Power has Low Impacts

- In Support because Community Benefits

- Wind Production Concerns

- Health and Safety Concerns

- Historical/Cultural Concerns

- Noise

- Aircraft Safety

- Bird and Bat Mortality

- Fire Hazard Concerns

- Community Economic Loss

- Reduced Property Values

- Concern over Consultation Process

Limitations of Qualitative Content Analysis

There are some limitations with conducting a qualitative content analysis study. Public comments do not always show the true concerns that community members have because many people do not comment on EIS reports. There are many reasons why community members do not comment on an EIS and those can be reasons such as people do not understand the public participation process, they forget to comment during the comment period, or they did not even hear about the project. While only a small percentage of community members comment on an EIS, this study was looking specifically at those who expressed concerns over the wind energy projects and what concerns they had at the time.

The limitations were addressed by backing up my findings with past literature and research dealing with community concerns of wind energy projects. The EIS reports that were looked at will provide results for what community concerns are present in Washington, based on the reports used. These results are compared to past research that uses content analysis and other types of methodologies looking at community concerns

for wind energy projects found around the world in a later chapter. I addressed these limitations by connecting my findings to results other researchers have produced so that the passive voices are included. Also, by using public comments there is more possibility to hear other voices. It is easier for different types of people to make comments since comments can be made verbally through public meetings or sent in as written comments.

Another important limitation and consideration of conducting a qualitative content analysis study is that coding documents in this style leaves room for how the researcher perceives and interprets the comments that were analyzed. This perception and interpretation of public comments can be influenced by past knowledge on the topic of wind power projects and community concerns. These limitations and considerations need extra care and attention for the research to be unbiased.

I addressed these limitations and considerations by approaching the EIS documents with an open mind. I understand that people who sent in public comments or attended the public meetings had valid feelings and emotions about the wind projects being proposed in their areas and I tried to respect how people felt. I coded the comments that are against and for the projects so that I obtained data and results from both sides of the project. When I had confusion about language used in a comment I read it a few times to better understand the concerns. I followed the convention about objectivity that is laid out in Iain Hay's *Qualitative Research Methods in Human Geography* book (2010, p.35). Objectivity means that I had to step back from my personal feelings or opinions about the public comments when I read and coded them. Since the comments had been made in the past, it was easier to be objective. Also, analyzing public comments made being objective possible because there was no social interaction in which my personal opinions may have

created bias. By following this convention, I was able to be as objective as possible when analyzing the public comments. I know that as a researcher, I must step back and make sure I am being open and mindful to the people who were involved in these wind power projects.

There were some limitations to conducting the qualitative content analysis portion of this study that were not foreseen at the beginning of this thesis. A huge limitation was that it was difficult to find draft or final environmental impact statements that included the public comments. Many of the wind energy projects in Washington did not have electronic versions of the public comments and/or I could not get the hard copies. This made it difficult to find a variety of wind energy project public comments to analyze for this study. Another limitation was the low number of public comments for some of the environmental impact statements, such as the Lower Snake River Wind Energy Project which had only 22 comments submitted and the Maiden Wind Farm which had 35 comments submitted. A larger number of public comments would have given this study more data to work with.

Semi-Structured Interview Methodology

The second qualitative research methodology that was used is semi-structured interviews. This research methodology was chosen after careful consideration of methodology often used to conduct this type of research. Interviews were chosen so that individual voices of people are heard who are involved in the decision making of wind energy projects. Other methodologies do not adequately allow for individual voices to be heard and can often turn individual voices into generic data points.

I performed the semi-structured interviews after the submission and approval of a Human Subjects Review (HSR) application. The interviews occurred between the dates of 03/09/17 and 9/19/17. A total of five interviews were conducted and varied in length from 20 minutes to an hour. An audio recorder was used to record all interviews for digitally storing and transcribing at a later time. I provided a set of previously prepared questions for the interview subjects to look over before the scheduled interviews, as well as a consent form. The previously prepared questions were asked but also questions that spontaneously occurred during the interviews. Questions were mostly open-ended to allow for the interview subject to answer however they felt they should. I did not influence or attempt to restrict the responses of interview subjects. Interviews were confidential so that interview subjects could be honest about wind energy decision making.

Interview subjects were determined by identifying people who were part of the decision making of wind energy projects in the past and currently. After contacting people, I was able to narrow down my list of interview subjects based on certain information I had received. Many people I contacted declined to be interviewed and others said they had not been part of wind energy projects because they were new to their positions. I asked people if they knew anyone who could talk to me and again received many no's. The five interview subjects I did interview varied in their location, level of decision making, and projects that they have worked on. All the interview subjects had different perspectives to share with me about collaborative decision making with wind energy projects.

Following the types of sample selection laid out by Hay (2010), I used two different types of sampling. When determining who to choose as interview subjects, I used criterion sampling with the criterion being someone who had been or is a decision maker for wind energy projects in Washington State. I was able to narrow down a list of people to interview and from that list I got one interview and had to move towards snowball sampling. Snowball sampling allowed me to ask people who did not want to be interviewed or who did not qualify for an interview to give me names of people who I could interview. I found 4 out of the 5 interview subjects by using snowball sampling and 1 from criterion sampling. I was able to get a wider variety of interview subjects from snowball sampling than I would have with criterion sampling because I found people that did not come up in my initial search. This allowed me to get a wider range of interview subjects and experience with wind energy decision making. I was able to interview people at the state level, county level, private developer level, and city level. Each interview subject had different experiences with decision making which gave a depth of information that could have been missed. Interview subjects did not have to have been part of the wind energy projects that were used for the qualitative content analysis study. One of the interview subjects had worked on one of the qualitative content analysis wind projects but that was purely coincidental. I did not require the decision makers interviewed be part of the five wind projects I analyzed because many of the decision makers who were part of those projects are no longer available to be interviewed. I had to extend the scope of interview subjects beyond those five wind projects in order to get a wider range of interview subjects.

Once interviews were completed, I transcribed the interviews using Microsoft Word. After thoroughly going through the transcriptions, I coded the interviews by the interview questions I had developed earlier (see below). Within each question I was able to further separate out codes based on the responses given by the interview subjects. The codes were broad and were often in the form of phrases instead of words. Code phrases included "processes used for decision making," "process changes," "no process changes," "processes are collaborative," "processes are not collaborative," etc. These code phrases were then used to develop themes in the interviews.

Interview Questions

1. What is your name and position title?

2. What wind energy projects have you worked on?

3. What part(s) of the decision-making process for the project(s) were you involved with?

4. Would you please describe the specific decision-making processes that you used for these projects?

5. How were these processes decided on?

6. Was there anything you would have liked to do differently in regards to the decision-making processes of the wind energy projects you were part of?

7. Would you say that these decision-making processes were collaborative? To what extent?

8. If not, then would you recommend that they become more collaborative in the future? In what ways? How might that be possible?

9. And if yes, in what ways were the decision-making processes you used collaborative?

10. How possible is it to be collaborative on wind energy projects with real world demands affecting decision making?

11. Are there limits to how collaborative you can be on projects because of real world demands?

12. Do these limitations exist for a specific reason in the decision-making process?

13. Are there any practical ways to get past these limitations in order to be more collaborative?

Limitations of Semi-Structured Interviews

Conducting semi-structured interviews as a qualitative research methodology has a few limitations. One limitation of interviews is that the researcher is limited to the results from the questions that were asked during the interview. A limited amount of questions is asked during an interview and depending on the circumstances, more questions about the research topic cannot be asked at a later time. This means that researchers must be certain about the questions being asked during an interview and to ask any related questions during that time. I addressed this limitation by giving my interview questions to my interview subjects before the interview, so they had time to think about the questions. This allowed for all questions to be answered in a timely fashion and this gave me more time to ask other questions that came up from the answers to the pre-written interview questions.

Another limitation of conducting semi-structured interviews is the concern about the biases a research may have and how data interpretation occurs based on the bias. All researchers have past experiences that have influenced why they are researching a topic and these experiences may have created a bias. It is important for researchers to be reflexive when doing qualitative research and step back occasionally and check for potential bias. I addressed this limitation by being as aware of my positionality as I possibly could be. When I talked to interview subjects I asked questions to make sure I was fully understanding the issues and what the interview subject wanted me to understand. I took care to hear what the interview subjects were saying about the topic of wind energy decision making so that I could get many sides of the discussion about decision making.

Conducting the semi-structured interviews for this thesis also encountered a few limitations. One of the limitations for the semi-structured interviews was that, during the time of conducting my research and doing interviews, many decision makers were busy working on current projects that took up most of their time. When setting up interviews many people were unavailable during the winter and spring months but were available to be interviewed during the summer months. Another limitation was in finding the people who were part of the decision making of past wind projects and/or who were working on current wind projects. Upon contacting many people, I found out that there had been a lot of turnover in recent years and that no one currently had experience working with wind energy projects. This made it difficult to find interview subjects for this study.

CHAPTER 4: RESULTS AND DISCUSSION

This chapter consists of the results from the qualitative content analysis and the semi-structured interviews. The research question being asked is what have been prominent concerns for community members during wind energy projects in Washington State and how could agencies and public utilities create more collaborative decision making for future wind energy projects? This study found that the prominent concerns community members had were negative scenery changes, natural habitat loss, bird and bat mortality, bird and bat habitat and migration loss, and noise. It was also found that community members were in support of wind projects because there would be benefits to the community. Also, decision makers try to be as collaborative as possible but there are constraints to being collaborative, such as time and money.

First, there will be a presentation of the qualitative content analysis results, followed by a discussion. Then there will be a presentation of the semi-structured interview results, which will also be followed by a discussion. Lastly, the results for both part of the study are discussed in relation to the literature that has been presented in an earlier chapter. The results and discussion add to the literature on social acceptance of wind energy projects by looking at what prominent concerns community members had about past wind energy projects, comparing those concerns to what has been found in the literature. Also, the field of public participation and decision making is advanced by this research because most of the existing literature focuses on how the public feels about decision-making process. My research asks decision makers instead of the public to get a better understanding of collaborative decision making from the perspective of the people making the decisions.

Prominent Concerns Found in Environmental Impact Statements

The following results and discussion look at five different environmental impact statements for wind energy projects in the state of Washington. The sections are separated by the specific wind energy project and conclude with a section on the most prominent concerns overall. The comments were either emailed, mailed, or from the public hearing. Not all the comments were analyzed because they were not from community members. Community members had either one main comment they were discussing or many comments. Each comment received a code based on what was discussed (see list of codes in Methodology Chapter). The comments given by community members were about support for the wind energy project or concerns about the wind energy project. The following sections are broken up by each wind energy project analyzed and will include the number of comments received; the number of comments analyzed; the ratio of individual comments in support of the project compared to individual comments expressing concerns about the project; the results from the analysis; and a discussion of the results. Lastly, there is a section looking at the overall results from all the wind energy projects.

Wild Horse Wind Power Project

A total of 49 comments were received, 27 of which were judged to be from members of the local community. Out of the 27 comments read and coded, there were 14 codes used. There were 2 codes in support of the Wild Horse Wind Power Project and 12 were concerns about the impacts from the project. Community concerns were centered around losing access to roads near and on the wind energy site and a variety of negative environmental impacts. The following table lists the codes that were found in the public

comments and how many times each of the codes appeared. The column labeled "# of Commenters" represents how many individual comments mentioned each of the codes. Multiple codes were counted per comment but if a commenter discussed a concern multiple times then it was only counted once.

Table 1. List of Codes Found in the Wild Horse Wind Power Project Public Comments

Qualitative Content Analysis Code	# of Commenters
Public Access	11
Recreation Loss	8
Natural Habitat Loss	7
Bird and Bat Habitat and Migration Loss	6
Elk and Deer Habitat and Migration Loss	5
Bird and Bat Mortality	5
Negative Scenery Changes	5
In Support because Wind has Low Impacts	3
In Support because Community Benefits	2
Wind Production Concerns	2
Health and Safety Concerns	1
Historical/Cultural Concerns	1
Noise	1
Aircraft Safety	1

The code that appeared most often was "public access." This had to do specifically with the access to Beacon Ridge Road and the land that the wind energy project was going to be on. People were concerned that they would lose their access to

the road and land if the wind project was built. Loss of access also was connected to "recreation loss" because the areas people feared they would lose access too are recreation areas. One community member who had always used Beacon Ridge Road commented saying:

> "This looks to many of us like the open access on Beacon is about to be eliminated."

Many other comments reiterated this same concern about this road and others that would be closed temporarily during the construction and permanently after the wind project was complete.

This also tied into the recreational concerns as well because the roads that would lose access allowed people to get to their favorite recreation areas. The following comment lists the recreational activities that would be lost from the wind energy project being completed:

> "There is also great recreational activities that would be lost forever. If this project continues, these activities include outdoor photography, hiking camping, wildlife viewing, hunting, listening to utter silence, and viewing miles of scenic landscape."

These recreational activities listed came up in other comments as well and showed how important recreation is to community members. The concern over losing recreational opportunities made people speak out against building the Wild Horse Wind Power Project.

Another concern that community members showed about the Wild Horse Wind Power Project was about birds and bats. There were concerns over the loss of habitat and migration routes but also concerns about bird and bat mortality. Many comments talked about how these concerns were important to community members but that those concerns were not discussed in the EIS. A community member who had lived in the area since 1941 wrote:

"Loss of Wildlife habitat for birds and bats is not addressed as a major priority."

While community members cared about impacts to birds and bats, the concern was not being adequately addressed in the EIS. There were also similar comments that stated elk and deer habitat and migration was not being taken seriously in the EIS.

Often community members had multiple concerns that tied into each other. One example of this was the concern over the amount of power actually produced by wind turbines and if that production was worth the impacts the community faced, such as negative scenery changes. A resident of Ellensburg, Washington commented about this by saying:

"The level of generated power listed shows that these monstrosity turbines generate only a miniscule amount of power. The beauty of a scenic valley is not worth destroying for so little power generation."

Some community members did not think that the Wild Horse Wind Power Project had benefits that outweighed the costs of the project.

There were also comments in support of the Wild Horse Wind Project as well as comments that brought up concerns. Support of the project came in two different forms

for the Wild Horse Wind Power Project. There were comments that discussed how wind energy has lower impacts than other energy sources and that there are added community benefits with putting in wind energy in the community. One community member brought up that the project would bring economic benefits that the county really needed. They commented:

> "The whole support of this is the economical benefits to this county through jobs and tax dollars. We are a county drying up of money, and this will help industrial money come in that does not drain money out. It creates good paying, family-wage jobs."

Another community member, who is a retired Senior Science Instruction Tech in Biological Sciences, talked about how moving to wind power is good for the environment. Their comment was:

> "My interest in wind energy is not for personal economic gain. It is a response to my longstanding concern about the degradation of our environment."

Overall, there were many concerns about the Wild Horse Wind Power Project but there were also people in support of the project. Many of the concerns stemmed from community members not feeling like their concerns were adequately addressed in the EIS and that certain impacts needed to have more analysis done before the project could be approved. Other concerns were overlapping and caused community members to worry about losses that the area may face. Some of these losses were recreation loss, bird and bat habitat and migration loss, elk and deer habitat and migration loss, and scenery loss.

Desert Claim Wind Power Project

A total of 82 comments were received, 56 of which were judged to be from members of the local community. Out of the 56 comments read and coded, there were 16 codes used. There were 2 codes in support of the Desert Claim Wind Power Project and 14 were concerns about the impacts from the project. Community concerns were centered primarily around impacts that would be personally felt, such as scenery changes, property value changes, noise, and potential for more fires. There were also a variety of negative environmental impacts that were seen as concerns to community members. The following table lists the codes that were found in the public comments and how many times each of the codes appeared. The column labeled "# of Commenters" represents how many individual comments mentioned each of the codes. Multiple codes were counted per comment but if a commenter discussed a concern multiple times then it was only counted once.

Table 2. List of Codes Found in the Desert Claim Wind Power Project Public Comments

Qualitative Content Analysis Code	# of Commenters
Negative Scenery Changes	27
Reduced Property Values	19
Noise	16
Fire Hazard Concerns	14
Bird and Bat Mortality	13
Wind Production Concerns	13
Elk and Deer Habitat and Migration Loss	7
Bird and Bat Habitat and Migration Loss	7
Health and Safety Concerns	6
Recreation Loss	5
Natural Habitat Loss	5
Community Economic Loss	5
Aircraft Safety	3
Historical/Cultural Concerns	2
In Support because Community Benefits	2
In Support because Wind has Low Impact	1

Negative scenery change was the most important concern shown in the public comments for the Desert Claim Wind Power Project. Community members had many concerns related to scenery change and visual impacts. People did not want their view taken away by the turbines, but they also were concerned with the lights and shadow flicker from the turbines. One community member stated:

"The problem of the location of these wind towers which calls for placement in front of our beautiful Cascades."

This person did not want to lose their view of the mountains and preferred the placement of the turbines to be away from their view. Along with this concern over losing beautiful views, there was concern for the economic impact of losing those views. This ties into other concerns such as lowering property values and even health and safety concerns. During a public hearing, one community member said the following:

"The visual effect is going to ruin the views and it's gonna lower property values."

Looking deeper at the community members concerns you can see that they may be saying they don't want to lose their beautiful views, but they are also worried that they may suffer economic loss.

Another huge concern community members expressed in the public comments was noise. Noise is an issue when wind moving the turbine blades create vibrations that cause problems for some people. Noise concerns are also connected to some of the visual concerns like shadow flicker because these only happen when the blades are moving. Many community members expressed multiple concerns at once and one example of multiple concerns is this statement:

"They are noise generating, they have extensive blinking lights & shadow flickering, & they will kill the birds of prey."

Community members rarely have one concern about wind energy projects. Health and safety concerns are often brought up with noise concerns because there are health risks

from bothersome noises, but also from other potentially harmful aspects of wind turbines like blade throw, ice throw, and impacts on wildlife. Another community member made this comment:

> "It seems abundantly clear that these things HURT people who are forced to live near them. How can you even consider approving something so harmful to humans, let alone animals and birds."

Fire hazard concern was also a concern many community members had about the Desert Claim Wind Power Project. This concern also ties into the last few concerns because it has deeper impacts such as economic loss and health and safety concerns. Community members had concerns that since the area is already fire prone there might be more instances of fire with the turbines. This concern was made worse from learning about the project and reading the EIS. After reading the Draft EIS one community member said this:

> "The Desert Claim DEIS made me afraid my house will burn down from wind farm created fires."

A concern like this can create added concerns about the wind project for community members, such as lowering property values, health and safety concerns, and concerns about the wildlife that would be impacted by fires.

There were also community members who were in support of the Desert Claim Wind Power Project. People were in support of the project because they thought wind energy is a good energy source compared to the other options and that the community would benefit from the development of wind energy. The people in support of the project

were looking at long term positive impacts from the project, such as less environmental degradation, community benefits, and relationship with the developer of the project. During the public hearing, a community member said:

> "We feel the developer is a responsible developer and will add value to the community in the long run."

This person believed that the developer of the project was there for the best interest of the community and that in the long run the community would gain value.

Whistling Ridge Energy Project

A total of 319 comments were received, 103 of which were judged to be from members of the local community. Out of the 103 comments read and coded, there were 14 codes used. There were 2 codes in support of the Whistling Ridge Energy Project and 12 were concerns about the project. Community concerns were primarily centered around negative scenery change and the impact on the Columbia River Gorge National Scenic Area. Other concerns were raised by community members regarding other negative environmental impacts. There were also community members in support of the project. The following table lists the codes that were found in the public comments and how many times each of the codes appeared. The column labeled "# of Commenters" represents how many individual comments mentioned each of the codes. Multiple codes were counted per comment but if a commenter discussed a concern multiple times then it was only counted once.

Table 3. List of Codes Found in the Whistling Ridge Energy Project Public Comments

Qualitative Content Analysis Code	# of Commenters
Negative Scenery Changes	47
In Support because Community Benefits	22
In Support because Wind has Low Impacts	20
Concern over Consultation Process	17
Natural Habitat Loss	16
Bird and Bat Habitat and Migration Loss	13
Bird and Bat Mortality	12
Elk and Deer Habitat and Migration Loss	11
Wind Production Concerns	8
Noise	8
Community Economic Loss	5
Reduced Property Values	5
Recreation Loss	5
Fire Hazard Concerns	1

The biggest concern community members had for the Whistling Ridge Energy Project was how close it would be to the Columbia River Gorge National Scenic Area and the negative scenery changes that would occur from the project being in that location. The comments about negative scenery changes appeared 47 times, which is much higher than the next most prominent code (see table above). One local community member commented saying:

"This is not an appropriate site for a large-scale wind project. The 426 foot turbines will be seen in the center of the Columbia River Gorge National Scenic Area during the day and also at night because of the red blinking lights on the top of the turbines."

This type of comment was seen many times throughout the public comments for the Whistling Ridge Energy Project. People who live around the project area did not want their landscapes changed by a wind project being put in. There were also other types of comments about the scenery being changed for the negative and one such comment said:

"What an eyesore! It looks like "War of the Worlds." Wind energy is great, but why paint them glaring white? They should be a color that blends with the hills."

The landscape is important to local community members and even people who are supportive of wind energy did not want the negative scenery changes that would occur from the project.

There were also many comments in support of the project because the Whistling Ridge Energy Project would bring benefits to the local communities. Some of the benefits that were brought up in the comments were an increase in jobs, funding for the local schools, and infrastructure improvement projects. Many people in the local communities commented that they were excited about the wind project and the opportunities that communities would receive. One person was in support of the project because of the community benefits wrote:

"I fully support the Whistling Ridge energy project in Skamania County. We need to have the economic boost to help fund our schools and road department."

People provided many comments about the local economies and how the project would benefit the overall local economy but also personal benefits that would eventually trickle down to the community. Another community member in support of the project said:

> "Not only does it give a alternative source of clean energy, but it also will provide new jobs and tax revenues to our county which has been devastated with so many land set asides and regulations that our children have to leave the area in order to find jobs."

Along with people being in support of the Whistling Ridge Energy Project because of the community benefits, people also commented on how they support the project because wind energy has a lower impact overall than other energy sources. People who live in the local communities commented about how the project wouldn't have significant impacts and that there are worse energy projects that would have significant impacts. One person commented saying:

> "The project has gone through the EIS process and found no significant impacts to wildlife, the scenic value of the Columbia Gorge Corridor or to other resources."

Many people saw the Whistling Ridge Energy Project as a good project because the EIS found no significant impacts. While many people who commented had opposing views on the impacts of the project, there was a significant amount of people commenting in support of the project.

The other concern that appeared in many of the comments was the concern over the consultation process for the EIS. There were many of the public comments that

mentioned the DEIS not having an unbiased analysis of the project impacts. Community members thought that the people who were involved in the EIS process did not consult the right people or include enough in the document. There were many letters saying:

> "I am concerned that the DEIS is fundamentally flawed because it fails to provide a fair and balanced alternative analysis."

This concern was found in many of the public comments submitted. Community members thought that the DEIS needed a better analysis that included more findings about the impacts that the project could have. Comments also discussed that more alternatives should have been considered to make sure the DEIS was in fact fair and balanced.

Lower Snake River Wind Energy Project

A total of 22 comments were received, 16 of which were judged to be from members of the local community. Out of the 16 comments read and coded, there were 9 codes used. There was 1 code in support of the Lower Snake River Wind Energy Project and 8 were concerns about the project. Community comments were centered around being in support of the project but also negative environmental impacts that would occur from the project. The following table lists the codes that were found in the public comments and how many times each of the codes appeared. The column labeled "# of Commenters" represents how many individual comments mentioned each of the codes. Multiple codes were counted per comment but if a commenter discussed a concern multiple times then it was only counted once.

Table 4. List of Codes Found in the Lower Snake River Wind Energy Project Public

Comments

Qualitative Content Analysis Code	# of Commenters
In Support because Community Benefits	7
Negative Scenery Changes	6
Noise	6
Community Economic Loss	5
Concern Over Consultation Process	4
Bird and Bat Habitat and Migration Loss	3
Bird and Bat Mortality	3
Wind Production Concerns	2
Recreation Loss	2

The comment that came up the most for the Lower Snake River Wind Energy

Project was in support of the project. Many people in the local community were in favor

of the project for many reasons but primarily because the project would have benefits to

the community. There were comments that discussed how this project would bring more

employment opportunities to the local towns but also extra income for farmers and

ranchers. One local rancher stated:

"The project will lower property taxes in our counties, create new jobs and bring

new revenue to businesses. Wind power is a new crop option for the family farm."

Along those same comments, another local community member commented saying:

"A project such as this will provide immediate and long-term employment for many people in the area. The families it will support will, in turn, support our schools and hospitals."

Extra income is important to local community members and many people see the Lower Snake River Wind Energy Project as a way to get extra income. Many people saw how the project would produce community benefits at many levels, such as for landowners but also to community services like the schools and hospitals.

The concern that appeared in many of the public comments was about negative scenery changes in the local area. Many community members commented about their concerns for the views in the area. The comments addressed concerns about how people who live in the area do not want to lose their views and that turbines will take away the scenery that people have loved for a long time. In one comment, a community member addressed many changes that would occur from the wind project being built. They said:

"Visual impacts are important to residents and tourists alike. These towers aren't going away anytime soon….plus noise and lights will permeate your environment. People move here and visit here for open space, open vistas and peace and quiet."

Landscape changes were big contributors to community members not wanting wind projects in their area, based on these public comments. Especially for people who have lived in that area for most their lives or moved to a specific place for the scenery.

The last quoted public comment also mentioned noise as a concern. Noise is one of the concerns that gets brought up a lot in relation to wind energy projects. For the

Lower Snake River Wind Energy Project, noise is one of the top concerns. There were many comments stating that the noise section of the EIS was not thorough enough. Most the comments about noise were in relation to the EIS not providing enough studies and more information. There were also comments that included articles and other documentation looking at wind energy projects and noise concerns. The quoted comment in the previous paragraph best sums up what the comments about noise said throughout the public comment section of the Lower Snake River Wind Energy Project.

There were also many comments that brought up concerns about the consultation process for this wind project. Such as with the example of noise, many people thought that certain parts of the EIS were not thorough enough or that there were problems with the consultation process used for writing the EIS. Many comments had statements such as:

"The consultants have...returned a woefully inadequate document that is openly biased in favor of industrial wind development."

Local community members commented numerous times that the EIS did not have enough documentation for concerns that were important. There also was concern over bias in the consultation process because community members had concerns that were not addressed in the EIS. Community members wrote that the consultation process should have been expanded so that their concerns were addressed, and the project could have been presented with less bias.

Maiden Wind Farm

A total of 35 comments were received, 17 of which were judged to be from
members of the local community. Out of the 17 comments read and coded, there were 9
codes used. There were 2 codes in support of the Maiden Wind Farm and 5 were
concerns about the project. Community concerns were centered around losses that the
community may face from the wind project and whether wind energy was even needed in
the local community. Other important concerns to community members were negative
environmental impacts. The following table lists the codes that were found in the public
comments and how many times each of the codes appeared. The column labeled "# of
Commenters" represents how many individual comments mentioned each of the codes.
Multiple codes were counted per comment but if a commenter discussed a concern
multiple times then it was only counted once.

Table 5. List of Codes Found in the Maiden Wind Farm Public Comments

Qualitative Content Analysis Code	# of Commenters
Community Economic Loss	7
Natural Habitat Loss	6
Wind Production Concerns	5
Negative Scenery Changes	5
Concern Over Consultation Process	4
Bird and Bat Habitat and Migration	2
Bird and Bat Mortality	1
In Support because Wind has Low Impact	1
In Support because Community Benefits	1

The community concern that came up most often was about community economic loss from the Maiden Wind Farm. The concerns that people showed were that tax money was being used for the project and that people did not think it was worth the money. Many people were worried that the tax money was going to go to the wind project instead of to projects the community actually needed. One community member wrote about how the project was wasting tax money and said:

"This project is such a waste of taxpayer money. The tax subsidy of this project is wrong and causes great harm to the area."

There were similar comments like this throughout the public comments. People want projects in their communities that will benefit the community and many people did not feel like the Maiden Wind Farm would do that.

Another huge concern shown throughout the public comments was about natural habitat loss in the areas where the wind farm would be located. People talked about how the area was pristine and rural. A community member who had lived in the area for most their life said:

"We wish to go on record as being against the Maiden Wind farm project. This project will cause environmental harm to the area. As you know the land as is now is pretty much unmolested from development and sprawl."

People were very concerned that the wind project would damage the natural area but also create a precedent for allowing other building to occur. There were comments that went along with that last one on how the area is rural and untouched and that people wanted it to stay that way.

Building off the last few concerns about the Maiden Wind Farm, there was also concern over losing the natural beauty of the area with wind turbines. The turbines would visually impact the Rattlesnake Mountains and people did not want to lose their views. Along with being worried about economic loss and natural habitat loss people were concerned about losing their scenery. One person commented on this concern by saying:

> "I have admired Rattlesnake for the nine years we have lived here. I do not want that profile distorted by an unnecessary project, especially one that will have to use public funds in order to be built!"

Scenery changes are important to people, especially when people move to a particular place for the views.

Wind production concerns were also commented on many times. Community members were concerned that the Maiden Wind Farm was not needed because there are enough energy sources in Washington. People thought the project was not in the best interest of the community because community members had the experience that there were enough energy resources or that energy resources were being shut down around Washington and in the United States in general. One such comment that brought up this concern stated:

> "We are canceling gas-fired power plants all over the country and all over Washington and Oregon. So why do we need the windmill power?"

Community members did not see the point of building the Maiden Wind Farm because they perceived the potential wind power to be unnecessary for the area.

The last major concern that was commented on many times in the Maiden Wind Farm EIS was concern over the consultation process for the project. There were many comments that brought up that certain people or groups were not included in the consultation. This got community members to think that the project was missing major components or facts that would have made the EIS more complete. A community member who had previous experience working on other wind energy projects around the state addressed this concern by saying:

> "I tried my best to interact with the right people but the right people are the ones that are politically involved and think we want to go with wind and the people that are involved with the projects certainly want to see this project go. It is a serious mistake."

This comment shows how community members who have supported and worked on other wind projects had problems with the consultation for Maiden Wind Farm.

Most Prominent Concerns Overall

A total of 507 comments were received overall, 219 of which were judged to be from members of the local community for the wind projects in those areas. There were a total of 18 codes used throughout the public comments. There were 2 codes in support of the wind energy projects and 16 codes that were concerns about the projects. The community concern that appeared the most was negative scenery changes with a total of 90 appearances (see table below). The following table lists the codes that were found in total for all the public comments and how many times each of those codes appeared. The column labeled "# of Commenters" represents how many individual comments

mentioned each of the codes. Multiple codes were counted per comment but if a commenter discussed a concern multiple times then it was only counted once.

Table 6. List of Codes Found in all the Public Comments

Qualitative Content Analysis Code	Total # of Commenters
Negative Scenery Changes	90
In Support because Community Benefits	34
Natural Habitat Loss	34
Bird and Bat Mortality	33
Bird and Bat Habitat and Migration Loss	31
Noise	30
Wind Production Concerns	30
In Support because Wind has Low Impacts	25
Concern over Consultation Process	25
Reduced Property Values	24
Elk and Deer Habitat and Migration Loss	23
Community Economic Loss	22
Recreation Loss	20
Fire Hazard Concerns	14
Health and Safety Concerns	7
Public Access	6
Aircraft Safety	4
Historical/Cultural Concerns	3

The concern that came up the most in the public comments for all the wind energy projects analyzed was negative scenery changes. This code appeared in all the

environmental impact statements public comments. It was the top concern for both the Whistling Ridge Energy Project and the Desert Claim Wind Power Project. Local community members are concerned about their scenery being changed, which is a valid concern when community members are making comments about how they moved to the area for the visual aspects or that they have lived in that area for their whole lives and do not want to see the area changed.

The concern over scenery changes, or landscape changes, is one of the biggest concerns community members have throughout the literature. This often occurs because areas that are sited for wind energy projects are in locations that have certain landscapes that are pristine and untouched. People who live in those areas prefer the pristine and untouched landscapes, which means they often do not want anything disrupting that landscape (Schweizer-Ries, 2008, Wolsink, 2007). Finding that negative scenery changes was the most important community concern in Washington was not surprising due to the fact landscape changes are one of the biggest concern throughout the literature (Baxter et al, 2013; Bidwell, 2013; Olson-Hazboun et al, 2016; Schweizer-Ries, 2008; Swofford & Slattery, 2010). The findings from this study add to other research looking at prominent concerns community members have about wind energy projects and how landscapes are important to people living near project sites.

The next code that appeared most often was "in support because community benefits" with a total of 34 times it was used. This code also appeared in all the environmental impact statements public comments. It was the top code used for the Lower Snake River Wind Energy Project and was the second most used code in the Whistling Ridge Energy Project. Throughout the communities that had these wind

projects, many local people were in favor of the project because there would be benefits to the community. Some of the benefits that appeared in the public comments were job creation, tax money going to local schools, and infrastructure development.

As discussed in the Literature Review chapter, community benefits are a way to gain support for a wind energy project. Community benefits can be seen as bribery and paying the community off for the negative impacts that occur when building wind energy projects (Walker, Wiersma & Bailey, 2014; Bakker et al., 2012). This did not appear to be the case from the results of the qualitative content analysis study. The findings point out that local community members felt the benefits to the community were going to benefit the community as a whole. The benefits of job creation were a huge influencing factor to many people showing support for wind energy projects throughout Washington. Since people were in support of the wind projects because they believed there to be community benefits, this finding suggests that the decision makers for the projects were strategic in how they addressed the project benefits for local communities. This supports past findings that suggest community benefits do increase support of wind energy projects overall (Bidwell, 2013; Hall et al., 2013; Mulvaney et al., 2013 (1); Bakker et al., 2012; Aitken, 2010; Olson-Hazboun et al., 2016)).

Natural habitat loss was another code that appeared throughout the public comments for wind energy projects in Washington. The code appeared 34 times in total and one of the top codes that appeared in the Wild Horse Wind Power Project public comments. Local community members commented that they were concerned about the habitat of the surrounding areas being damaged or completely lost due to building wind energy projects. This particular code was often connected with other codes that were

concerns related to birds, bats, elk, and deer. People in the surrounding communities did not want to see anything built in these natural habitat areas for many reasons. Some of the reasons that appeared in the public comments were that the projects would fragment already fragmented shrub steppe habitat, the projects would take over areas that are used by different species, and that the project would take away the natural areas people always had around.

The results that natural habitat loss was a top concern is not uncommon and is connected to many other concerns. The natural landscapes in the areas where wind energy projects are sited is usually more rural areas that have less development. Local community members live in those areas for the natural habitats and are deeply concerned with any development that may occur in those places. Natural habitat loss appeared less often in the public comments for wind projects that were sited in areas that had experienced other industrial development or other energy projects, such as wind projects that were closer to Portland, Oregon and surrounding cities. This finding does support past literature looking at support and opposition of wind energy projects and the relationship between other industrial or development projects (van der Horst, 2007). Van der Horst (2008) had found that there is less opposition to wind projects when there are other industrial or energy projects in the area. These findings support that natural habitat loss was a more prominent concern in those areas with less existing development.

Another important concern local community members had in relation to wind energy projects were about birds and bats. People were concerned about mortality but also habitat and migration loss from putting in wind energy projects. The code "bird and bat mortality" appeared 33 times throughout the public comments and "bird and bat

habitat and migration loss" appeared 31 times. While these two codes were separated for this study, they are connected because people were often concerned about the overall survival of birds and bats. This overall survival of birds and bats was brought up by people because there was concern over wind turbines killing birds but also that the turbines would take away their habitat and migration zones.

Concern over birds and bats is supported by the literature and is a concern that appears during most wind energy projects. People are concerned about bird and bat mortality, habitat, and migration, which determines if people support or oppose a wind energy project. Community members who believe wind turbines are harmful to birds and bats are likely to oppose wind projects (Mulvaney et al., 2013 (2); Rand & Hoen, 2017; Slattery et al., 2012). These concerns are valid since there have been studies looking at bird and bat mortality and wind energy projects. The literature does support that bird and bat fatalities increase with wind energy development, so this concern is valid for community members to have (Barclay et al., 2007; Barrios & Rodriguez, 2004; Zerrahn, 2017). Overall, the findings of this study confirm what has been previously researched about community concerns related to birds and bats.

The last code that will be discussed is "noise." Noise appeared 30 times throughout the public comments and was mentioned in all but one of the wind energy projects (Maiden Wind Farm). It was one of the most important concerns to appear in the Lower Snake River Wind Energy Project public comments. Local community members were concerned about the noise that is produced by wind turbines and what impact that noise would have on people, animals, and the surrounding areas. People commented about noise in many different ways. There was concern shown over potential health

impacts from noise, such as insomnia, but also that noise studies were not adequately completed for the area. Noise was primarily a concern for people living near the wind energy sites, for people who would be around the turbines for recreational purposes, and for people concerned over animals that would hear the turbines.

These results are similar to what has been found throughout the literature about noise and community concerns. People oppose wind energy projects because impacts from noise, such as annoyance, sleep disruption, and health impacts (Bakker et al., 2012; Baxter et al., 2013; Groth & Vogt, 2014; Onakpoya et al., 2015; Shepherd et al., 2011). This study showed that people are concerned about the noise that will be generated from wind turbines. People are concerned that the noise will keep them from sleeping and eventually cause health impacts. These findings are the same as what has been found in the literature.

The codes discussed above were the ones that appeared the most throughout all the public comments. While the other codes are also important for understanding what the concerns were for local community members at the time that these wind energy projects were being proposed and the environmental impact statements were being released, only the most prominent concerns have been discussed. The most prominent concerns were negative scenery change, natural habitat loss, bird and bat mortality, bird and bat habitat and migration loss, and noise. There was also the code "in support because community benefits" that appeared many times throughout the public comments. While this is not a concern, it is important to show that not all the public comments from local community members were concerns about the wind energy projects.

Collaborative Decision Making for Agencies and Public Utilities

The interview results are broken up in themes based on the findings from the interviews. A total of five interviews were conducted and the interview subjects varied between different roles in the decision-making process. All of the interview subjects had been part of the decision-making process for at least one wind energy project. The range of roles within the decision-making process were from being on the board that made the final decision about a project to someone who was part of the public participation as a local community member. Interview subjects' responses to the questions were dependent on the level of government or utilities at which the decisions were being made for wind energy projects. Levels of government were state or local counties and the utility level was people who worked within a utility in the state. The important themes that were found from conducting the semi-structured interviews were collaboration within the decision-making processes, the impacts of real world demands on collaboration, limitations to collaboration, and the importance of collaboration.

Collaboration Within the Decision-Making Processes

Throughout the interviews there was a common theme that collaboration was available in many areas of decision-making processes for wind energy projects. Everyone interviewed believed there were opportunities for the public to have their voices heard and be a part of the decision making. No one thought that the processes used to decide on wind energy projects did not have some component that allowed for collaboration. One interview subject stated that:

"I think [the process was] collaborative from the standpoint of there [being] opportunities for the public, tribes, other government agencies, non-government

organizations to provide input at multiple times throughout our process. So, I
think in that sense it is very collaborative."

Another interview subject discussed how they addressed collaboration a little differently
and tried to include agencies early on to get a sense of the issues that would need to be
looked at further during the decision-making process. They said during the interview:

"I did it different than a lot of other jurisdictions. When we did our scoping, I
invited all the agents, all the state agents who used to participate in the scoping
because I wanted to flush out the issues early. The water, and the birds, impacts,
the noise. So then, the issues we developed in the scoping that's what we did with
our mitigation. We addressed those through our environmental review."

So, even though all the interview subjects said they thought the decision-making
processes were collaborative, there was a small amount of difference in whether the
decision maker wanted to go beyond the level of collaboration that was required.

Another consensus between all the interview subjects was that collaborative
decision making is a challenge because there are many aspects that need to be addressed
in order for collaboration to work. During one interview, it was brought up that:

"I think that the more complex the projects are, the more collaborative you need
to be."

They also brought up an example of a wind energy project that they had worked on in
regards to how challenging and complex the project ended up being. About the project
they said:

"It was really challenging and involved a lot of collaboration because we were

with multiple utilities for the development part of the process and then we had to

work with the for-profit entities who could avail themselves with the production

tax credit. So, it was a really lengthy process that was loaded with collaborative

opportunities. Just working between cooperative electric utilities and public utility

districts was a challenge in and of itself because of different regulations."

Collaboration is work that must be done during the decision-making process and

depending on the specific wind energy project, the collaboration might be more

challenging. There is no easy way to be collaborative but by using any collaborative

opportunities available to decision makers the overall process can be smoother.

In Washington, the main decision-making process used is the environmental

impact statement (EIS) and there is required public participation that decision makers

must include. These results produce a few different findings. The first is that there is

collaboration within the EIS decision-making process and decision makers do make sure

the public is involved. There is consensus among decision makers that public

participation is important for an EIS to be effective and so that public concerns are

addressed (Glucker et al., 2013). Another key finding is that decision makers do go

beyond the public participation requirements if they can. Decision makers sometimes try

to think outside the box when addressing concerns that will appear throughout the wind

project in order to create a project that minimizes those concerns. This confirms past

literature that looks at the role of public participation in the decision-making process and

that including the public can offer opportunities to create a better wind energy project

(O'Faircheallaigh, 2010).

The Impact of Practical Considerations and Constraints on Collaboration

The two real-world demands that were discussed the most by interview subjects were time and cost. Collaboration is often seen as timely and costly because more people must be included in the wind energy project decision making. Time and project timelines were mentioned by three interview subjects as important real-world demands to consider with collaboration. When discussing the Energy Facility Site Evaluation Council (EFSEC), an interview subject discussed how time is a consideration for EFSEC projects:

> "We are constantly under pressure to complete our process. Our process usually takes awhile longer than many folks would like it to take and I think part of that is because we end up getting the largest of the large projects oftentimes."

This interview also brought up that because the projects EFSEC works with are larger there is often more public involvement, either in the form of comments submitted/sent or comments from public hearings, which causes the overall project to take longer.

Another impact timelines and time have on collaboration is that decision makers are not always able to include as many collaborative opportunities as they want. When projects have a timeline that must be followed then the required collaboration opportunities happen, but other opportunities might have to be left out. When talking about timelines and collaboration an interview subject responded with:

> "So, it's a fine balance and you are right, sometimes we have timelines where we don't have the luxury of getting the most ideal collaboration to get it done in the most cost-effective way."

Cost, or economic concerns, was also an important impact to collaborative decision making. This concern was mostly brought up in the local decision-making interviews because projects being completed at the state or utility level have more funding opportunities. When projects are being decided on locally, there is a different set of priorities than at larger levels. One interview subject brought up how projects often get decided on at the local level and said:

> "I think when it gets to the local jurisdiction it's economics. And economics can be an ugly stepchild to have control of the direction you're going in. It didn't come down to (in our area) it didn't come down to is this the right thing to do? It's embarrassing to say that, but it...really didn't come down to that."

They later brought up that economics was important for this decision because local people did get the benefit of having turbines on their property. The interview subject stated that:

> "Yeah it had nothing to do with whether we use the dam or the turbine. It was 'well I get money outta this.' I can't say I wouldn't have done the same thing."

Economics and costs of projects can have varying degrees of impacts depending on the level of the project, as was seen for this local wind energy project.

Time and cost of wind energy projects are important considerations for any decision maker. With a time constraint to finish a project, there often is less opportunity to include the public in the decision-making process. The comments made by the interview subjects confirm what has been said in past literature about public participation processes. Doelle and Sinclair (2006) found that while public participation is important it

is often not seen as very effective because the process can be costly and time consuming. When a wind project is already under a time and money limit, adding extra collaborative opportunities can be a challenge for decision makers. Based on these results, decision makers are trying to add as much public participation and collaboration as they can while also having to meet time and cost restrictions.

Limitations to Collaboration

Overall, interview subjects did not really think there were many limitations to collaboration. Most people believe that the decision-making processes were collaborative and that there was nothing preventing collaboration from happening. During one interview it was brought up that collaboration with the public can't happen in every part of the decision-making process because it is a hindrance to actually completing the project. This interview subject said:

> "I don't think there's really any other opportunities where the public [can participate], unless they come into every part of what we do and are involved. Which is not practical. I mean we have to do our work... We have opportunities to consider what their concerns are and then we sort of go back and put that into the blender of whatever we are doing and consider it but we can't, we can't continually every step of the way of the process be seeking input from the public to be collaborative if you will."

With this statement, the interview subject was reinforcing that there are ample opportunities for public input and collaboration during the decision-making process and to add more opportunities would not be practical.

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Another interview subject brought up that the only limitation they could see would be a legal limitation to adding more collaborative opportunities. This person stated that:

> "The limits would be maybe legally constricting but...you just have to be open-minded and try to see how to make it work. And sometimes it can't."

They believe that each wind energy project is unique in collaborative opportunities and limitations but that by having an open mind, projects can have more collaborative opportunities. During this interview it was also brought up that having more people on your team increases collaboration and the ability to have more open-minded people that have new or better ideas for project collaboration. Overall, it did not appear that decision makers thought there were limitations to collaboration for wind energy projects. Everyone believed there were plenty of opportunities for public participation and collaboration in the processes that were being used.

Importance of Collaboration

Everyone I interviewed sincerely believed that collaboration for wind energy projects is important and needs to be part of the decision-making process. One person brought up that collaboration and public input is required by law, but that collaboration is important beyond that. They said that:

> "I think it's important you know the rules are designed, I think in this state, I think it's important to get public input to the State Environmental Policy Act and you know the enabling statute even talks about that you know as far as the public comment meetings, the scoping meetings. The purpose being to seek input from

the public and other interested entities to sort of define the scope of the environmental analysis. That's real important. Because the agencies often, if there is a lead agency, EFSEC is a lead agency for the projects that fall under our jurisdiction. But we don't know it all. We rely on the input from the tribes, nongovernmental organizations, other state agencies, state and federal and local agencies as well as the public. You know we sort of want their input and need their input to help us get through the environmental analysis that we are required to do."

While collaboration is required legally, it is important because there is no way to know everything necessary for a project. This is especially true when wind projects are being implemented in different areas that have different populations, needs, resources, etc.

It was also mentioned by multiple people that collaboration is necessary when doing projects that are the size of wind energy projects. One person said:

"I think they need to have a lot of community involvement if they are just going to start putting things in communities."

Similarly, another person said:

"And that is where the collaboration is so important because you definitely don't want to put something of this magnitude someplace it isn't wanted."

Interview subjects made it very clear that they would not want to implement a wind energy project in a community that absolutely did not want it or where the community was not in any way part of the process. Public input and collaboration were seen as

extremely important parts of the decision-making process to all the people who were interviewed.

These findings support the literature that looks at the importance of including the public in the decision-making process. Interview subjects really do believe that the public have important concerns and ideas for wind projects. The findings presented here support what Shepherd and Bowler (1997) looked at, which was the four basic reasons to include the public in the decision-making process. Interview subjects confirmed that including the public is important because it is the right thing to do (legally and morally), it allows for community concerns to be addressed, the project is more legitimate and has less overall hostility, and the final project is better when local knowledge is used. Decision makers do see the value of including the public in the decision-making process in Washington.

Recommendations for Future Collaborative Decision Making

Everyone I spoke with had suggestions and recommendations for collaboration that should happen presently and in the future. Along with saying that collaboration needs to be a part of the decision-making process, many decision makers believe that there is opportunity to increase collaboration. During one interview, it was brought up that a good way to increase collaboration is to add to your decision-making team. They said that:

"A catch phrase you will probably hear it every single meeting, which is 'Expand the Team,' which just means be collaborative."

They discussed further that expanding the team is important because collaboration needs to happen within the agency or utility that is in charge of the project in order for collaboration to happen with the public. They explained this by saying:

> "So that's when [name removed] said "expand the team" so we try not to work in a vacuum. Once we have something laid out we then vet it through all these other departments and they, in their two cents, work for us. But when we have big steering committee meetings where representatives from even senior management, even the CEO, are present, they want to make sure we've done our homework. That again there's a large collaboration even within [name removed] for every project."

It was important for this person to make sure it is understood that for collaboration to be successful there needs to be collaboration at multiple levels. Collaboration with the public is easier when the team responsible for the project has already been collaborative and used all the resources they have available.

Another topic that was brought up by interview subjects was that if any decision maker is unsure how to be more collaborative on any energy project that there are resources available to people.

> "If they don't have obvious resources, to go to their local economic development group and have some sort of public discussion about the project and they will find collaboration."

This resource is extremely important so that projects can be discussed and if similar projects are being proposed then there can be collaboration between agencies and

utilities. Developing coping mechanisms is another resource utilization that was brought up. Having a coping mechanism at the ready for collaboration issues that come up helps encourage more collaboration during the decision-making process. One person said:

> "A utopia does not exist so they better be prepared for what they can realistically anticipate. You will never get 100% buy-in because people just don't always take the time to, no matter how hard you try to educate them about a particular venture they have their own preconceived biases and they will oppose you tooth and nail. So you have to make sure, like mentioned earlier, a built-in coping mechanism or an independent power agency or anyone trying to develop power. If the local government will not allow them to go forward, they can go to EFSEC and then trump that. That has happened in the past."

There are many options for decision makers to include more collaboration in decision making and by using resources available, or preparing resources so that, if something goes wrong, collaboration does not have to be limited.

The last recommendation made by many of the interview subjects was that the public should be part of the decision-making process no matter how complicated that makes the wind energy projects. One comment from an interview that really summed up how a decision maker felt about including the public was:

> "You know, you can't just make an administrative decision with staff then live with it. It has to be that way. It has to be collaborative. It has to go public. You have to have the letters to the editors. The ugly crying and battles in public hearings."

Along with this comment, they also discussed how important it is to have the decisions made at the local level with local people. They said:

> "I wrote down two or three comments. And they all came down to don't take the local decision making out of the local officials. There's no practical ways to get past being collaborative. There's no way to do it. We have to go through that process. I know it would be easier if the state said "Columbia County you're going to do 400 turbines this year." And then we'll decide where they are going to be. Now that would save a lot of time and effort for us. But it is a democracy and it is a bottom up approach supposedly. So, I felt like no, there's no ways to get past it. It's the way we've gotta do it."

Collaboration is extremely important at the local level because ultimately the decision made is going to be the decision local people will live with.

Public participation and collaboration are constantly changing and evolving. There is always room to improve upon public participation and decision makers are looking for ways to continue to include the public. The literature offers suggestions for improving public participation in ways such as institutionalizing the public participation process so that decision makers have to include the public in more parts of the decision-making process (De Santo, 2016 & Reed, 2008) and/or adding an independent review panel that reviews the public participation process used for wind energy projects (Doelle & Sinclair, 2006). While these suggestions may be something to look at in the future, current decision makers in Washington are actively looking for ways to increase public participation for current and future projects.

Connecting Community Concerns with Decision-Making Processes

Communities that are faced with wind energy projects will always have concerns about the projects. While concerns will always be raised by community members, decision makers are addressing these concerns by continuing to create more public participation and collaboration opportunities during the EIS process. The most prominent concerns that were raised for wind energy projects in Washington were negative scenery changes, natural habitat loss, bird and bat mortality, bird and bat habitat and migration loss, and noise. But, there was also a majority of the public comments in support of the wind projects because there would be community benefits from those projects. These results were supported by past literature looking at what concerns community members have about wind energy projects. Decision makers are aware of the concerns that most often appear when working on a wind energy project EIS. The decision-making processes used for wind energy projects in Washington do allow for public participation and collaboration so that decision makers can address community concerns throughout the process. After completing the interviews, it is apparent that decision makers do believe public participation and collaboration is an important part of the decision-making process and there is room for improvement for future projects.

Throughout the study many themes appeared. One of the themes was that decision makers do seek community involvement and collaboration because they see the importance in getting input from community members. Decision makers seek out community involvement so that community concerns can be addressed early on. This is important for a few reasons. Decision makers realize that these wind energy projects are going into communities and that local community members should want those projects in

their communities. Many of the interview subjects touched on this and made comments about how they do try to make the projects work for the community that will have the project. But, community involvement still usually begins after a project design has been decided on, such as a wind energy project instead of a solar project. While decision makers do try to include the public in the decision-making process it is often later in the process. With continued effort put in to address concerns early, decision makers can get more information about concerns and put adequate findings of significance in the EIS. By looking at the public comments on past EIS reports and hearing what decision makers had to say, it was apparent that community concerns are taken seriously for Washington wind energy projects, but they are not addressed early enough in the decision-making process.

Connecting with the previous theme, it was also found that while decision makers value public input there is room to address the important community concerns a bit earlier in the decision-making process. By addressing concerns a few steps earlier in the decision-making process more concerns could get adequate attention and there could be more work done to mitigate or completely avoid the impacts that are prominent concerns. Decision makers get public input at multiple stages of the project but often the project design has already been decided on and the public can comment on what is in the EIS. Getting public input before the project design could completely change what concerns are raised by local community members about the project. One interview subject even made the comment that:

> "What they should do is give the communities a choice of what types of
> renewable they want to deal with."

Sometimes the decision makers want to put in a wind energy project, but the community would prefer a different renewable energy project, such as solar. If the wind project has already been designed, then there is no opportunity to see if the community would prefer a different energy project altogether.

The last major theme found in this study was wind projects that include a lot of collaboration are more just overall. Projects that did address community concerns early on in the decision-making process had more comments in support of the project because people felt like the project design did address their issues. The comments that were about concerns fell into two main justice sections, distributive justice and procedural justice. People had concerns about where the project would be and how the impacts would affect people in the community (distributive justice) and how the EIS process happened for the individual projects (procedural justice). The most prominent concerns were centered around negative environmental impacts and how close the project was to local community members' properties.

The distribution of impacts was a huge concern for many people because they were worried about the scenery changes, noise, and even how the economic benefits would be distributed to the community. Wind projects that did not fully address these concerns did get a lot of opposition because people did not feel like the impacts of the project were just. One public comment in the Desert Claim Wind Power Project said:

"I think it could have been done in a cooperative and collaborative manner."

For this project, there wasn't enough collaboration and local community members did show concern that they could have been in support of the project if only there was more opportunity for people to be involved. In this instance the process for the EIS could have

been more inclusive and that would have given more opportunity for the distribution of impacts to be addressed by local community members.

Past wind energy projects in Washington have had a lot of community concerns because there will always be concerns raised over any new energy project. Decision makers include public participation and collaboration in the decision-making process so that they can address community concerns. Public participation and collaboration are constantly changing and growing with each new wind energy project. Currently, decision makers are including public participation wherever possible and looking to find new ways to include the public in the decision-making process. Collaboration will continue to be important for wind energy projects and decision makers are making sure collaboration is incorporated into every wind energy project.

CHAPTER 5: FUTURE RESEARCH AND CONCLUSION

This chapter focuses on bringing together the previous chapters and concluding this study. The chapter is broken up into three sections and those sections look at future research opportunities for collaborative decision making, the importance of collaborative decision making for wind energy projects, and the broader implications of collaborative decision making for energy projects in general. The research question that has been the focus of this study is: "what have been prominent concerns for community members during wind energy projects in Washington State and how could agencies and public utilities create more collaborative decision making for future wind energy projects?"

This study found that the most prominent concerns for community members in Washington were negative scenery changes, natural habitat loss, bird and bat mortality, bird and bat habitat and migration loss, and noise. But it was also found that community members were in support of wind projects because of community benefits the project would provide. It was also found that decision makers are trying to be as collaborative as possible for wind energy projects but that there are constraints to being collaborative, such as time and money. Decision makers address concerns from community members and give opportunities for public involvement during the environmental impact statement (EIS) process. There is a consensus among decision makers that collaboration is important for the success of wind energy projects in Washington. The following sections will address the broader scope of collaborative decision making for wind projects and beyond.

Future Research in Decision-Making Processes

This study focused on past community concerns for wind energy project in Washington State, how collaborative the decision-making processes were, and if decision-making processes can be more collaborative in the future. Future research in this field could take this study and add on to it. Some future research ideas could expand how many decision makers were interviewed as well as include more environmental impact statement public comment. A larger sample size could expand the findings from this study. Also, expanding the scope of the research location to include more wind energy projects and states to get a better understanding of overall community concerns.

Another future research idea would be to look at a case study of a wind energy project, or another type of renewable energy project, that is currently going through the decision-making process. This would allow for a better analysis of community concerns for the project and how those concerns relate to the decision-making process being used. Looking at a project as it is being decided on would give researchers a better idea about how collaborative decision-making processes are and what steps decision makers take to ensure there is collaboration. A case study would also allow for more information to be gathered about community concerns because researchers could talk to people in the community as the project is happening.

Importance of Collaborative Decision Making for Wind Energy Projects

As this study shows, collaborative decision making is important for wind energy projects in Washington State. Local community members feel that projects are fair and just when public participation processes are included at multiple points of the EIS process so that concerns can be addressed. Wind projects that do not include enough public input

have more push back because community members feel like decision makers are not looking out for the public interest when deciding project design. During interviews, decision makers did discuss how collaboration is important to them and that they prefer projects that include local community members because projects end up being better overall.

Wind projects create a lot of controversy in local communities because people have concerns that are important, such as not wanting to lose their scenery. When decision makers address concerns like these early in the EIS process then project design can be changed to address certain concerns. Not all concerns can be fully address because then wind energy projects would never be built. Getting community input early on though can give decision makers more information about what matters to local people so that projects can be designed to be the best for that community. Adding more collaboration to wind projects gives community members and decision makers more information to work with in designing a wind project.

It is also important to incorporate collaboration throughout the decision-making process for wind energy projects because each community will have different concerns about the project and by including the public early and often the project can be better tailored to that individual community. Creating a wind energy project that is tailored to individual communities allows for community needs to be addressed. Since each community has unique concerns about wind energy projects, it is important for decision makers to not use concerns and project designs from existing wind energy projects that are different from the one being designed. Each project is unique because the communities around the project are unique. While the results of this study showed certain

concerns are consistent around Washington, there were unique concerns that only occurred with certain projects. This did show that local communities around Washington have different concerns about projects. Collaboration is important so that these unique concerns are addressed.

Broader Implications of Collaborative Decision Making

Collaboration is important for any decision making, but especially with energy projects that will be in people's communities. As discussed in the previous sections, local community members will have concerns about projects being built in their communities and each community will have different concerns. Energy projects must have collaboration so that the best possible projects are being built in communities. Input from people is important so that the needs of the community are considered. This is especially true with renewable energy projects since not all energy forms work in all communities. Throughout this study people did show concern over wind energy in particular and would have liked to be part of the decision-making process earlier so that a different form of renewable energy could have been discussed. Collaboration allows for the right projects to be built in communities.

Another reason collaboration is important in decision-making processes is that it can empower people who participate. This empowerment can lead to people participating in other democratic processes, such as local government decisions and even federal government decisions. When people participate in decision-making processes, the overall decisions end up being better because there is more input for projects. People who feel empowered and like they can make a difference in their communities is important for society. A more participatory society means decisions being made will actually reflect

what people want in their communities. With more people participating the democratic process will be better overall in Washington and even the whole United States.

Collaborative decision-making processes can create opportunities for more people to be part of the process and create renewable energy projects that better their communities and the world. With more renewable energy projects that include public participation and collaborative decision-making, there will be more renewable energy projects getting developed around the world. Increasing renewable energy development in the long run will help reduce the impacts of nonrenewable energy sources for the entire world. By switching to more renewable energy sources and away from nonrenewable energy sources, the overall impacts of climate change can begin to be reduced.

References

Assefa, G. & Frostell, B. (2007). Social sustainability and social acceptance in technology assessment: A case study of energy technologies. *Technology in Society* 29 (1): 63-78.

Aitken, M. (2010). Wind power and community benefits: Challenges and opportunities. *Energy Policy* 38: 6066-6075.

AWEA. (2016). Washington Wind Energy. American Wind Energy Association. WEB. https://www.awea.com.

Bakker, R.H., Pedersen, E., van der Berg, G.P., Stewart, R.E., Lok, W., & Bouma, J. (2012). Impact of wind turbine sound on annoyance, self-reported sleep disturbance and psychological distress. *Science of The Total Environment* 425: 42-51.

Barboza, C. (2015). Towards a renewable energy decision making model. *Procedia Computer Science* 44: 568-577.

Barclay, R.M., Baerwals, E., & Gruver, J. (2007). Variation in bat and bird fatalities at wind energy facilities: Assessing the effects of rotor size and tower heights. *Canadian Journal of Zoology* 85: 381-387.

Barrios, I. & Rodriguez, A. (2004). Behavioural and environmental correlates of soaring bird mortality at on-shore wind turbines. *Journal of Applied Ecology* 41: 72-81.

Baxter, J., Morzaria, R., & Hirsch, R. (2013). A case-control study of support/opposition to wind turbines: Perceptions of health risk, economic benefits, and community conflict. *Energy Policy* 61: 931-943.

Bidwell, D. (2013). The role of values in public beliefs and attitudes towards commercial wind energy. *Energy Policy* 58: 189-199.

CTED & ECY. (2006). Impacts of Climate Change on Washington's Economy: A Preliminary Assessment of Risks and Opportunities. Department of Community, Trade, and Economic Development and Department of Ecology State of Washington. WEB. https://fortress.wa.gov/ecy/publications.

De Santo, E. M. (2016). Assessing public 'participation' in environmental decision-making: Lessons learned from the UK marine conservation zone (MCZ) site selection process. *Marine Policy* 64: 91–101.

Desert Claim FEIS. (2004). Desert Claim Wind Power Project Final Environmental Impact Statement. EFSEC. WEB. https://efsec.wa.gov.

Devine-Wright, P. (2005). Beyond NIMBYism: Towards an integrated framework for understanding public perceptions of wind energy. *Wind Energy* 8: 125-139.

Devine-Wright, P. (2009). Rethinking NIMBYism: The role of place attachment and place identity in explaining place-protective action. *Journal of Community and Applied Social Psychology* 19: 426-441.

D'Souza, C. & Yiridoe, E.K. (2014). Social acceptance of wind development and planning in rural communities of Australia: A consumer analysis. *Energy Policy* 74: 262-270.

Doelle, M., & Sinclair, A. J. (2006). Time for a new approach to public participation in EA: Promoting cooperation and consensus for sustainability. *Environmental Impact Assessment Review* 26 (2): 185-205.

EFSEC. (2012). Energy Facility Site Evaluation Council. EFSEC. WEB. https://efsec.wa.gov.

EIA. (2017) (1). Total Energy. U.S. Energy Information Administration. WEB. https://www.eia.gov.

EIA. (2017) (2). Washington State Energy Profile. U.S. Energy Information Administration. WEB. https://www.eia.gov.

EPA. (2017). How Citizens can Comment and Participate in the National Environmental Policy Act Process. Environmental Protection Agency. WEB. http://www.epa.gov.

ECY. (2017) (1). Reduced Snow Pack and Earlier Runoff. Washington State Department of Ecology. WEB. https://ecy.wa.gov.

ECY. (2017) (2). SEPA Online Handbook. Washington State Department of Ecology. WEB. https://www.ecy.wa.gov.

Friedl, C. & Reichl, J. (2016). Realizing energy infrastructure projects-A qualitative empirical analysis of local practices to address social acceptance. *Energy Policy* 89: 184-193.

Fosu, B.O., Simon Wang, S.Y., & Yoon, J.H. (2016). The 2014/15 snowpack drought in Washington State and its climate forcing. *Bulletin of the American Meteorological Society* 97 (12): 19-24.

Garfield Co. (2017). Lower Snake River Wind Energy Project - CUP #012609. Garfield County. WEB. https://co.garfield.wa.us.

Glucker, A. N., Driessen, P. P. J., Kolhoff, A., & Runhaar, H. A. C. (2013). Public participation in environmental impact assessment: Why, who and how? *Environmental Impact Assessment Review* 43: 104–111.

Gross, C. (2007). Community perspectives of wind energy in Australia: The application of a justice and community fairness framework to increase social acceptance. *Energy Policy* 35 (5): 2727-2736.

Groth, T.M. & Vogt, C. (2014). Residents' perceptions of wind turbines: An analysis of two townships in Michigan. *Energy Policy* 65: 251-260.

Gumus, S., Kucukvar, M., & Tatari, O. (2016). Intuitionistic fuzzy multi-criteria decision making framework based on life cycle environmental, economic and social impacts: The case of U.S. wind energy. *Sustainable Production and Consumption*: 1-15.

Hall, N., Ashworth, P., & Devine-Wright, P. (2013). Societal acceptance of wind farms: Analysis of four common themes across Australian case studies. *Energy Policy* 58: 200-208.

Hay, I. (2010). *Qualitative research methods in human geography*. Ontario, Canada. Oxford University Press.

IPCC. (2014). *Climate Change 2014: Synthesis Report*. Geneva, Switzerland. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

Klein, N. (2014). *This changes everything: Capitalism vs the climate.* New York, NY: Simon & Schuster Paperbacks.

Lilijenfeldt, J. & Pettersson, O. (2017). Distributional justice in Swedish wind power development- An odds ratio analysis of windmill localization and local residents' socio-economic characteristics. *Energy Policy*. 1-10.

Lower Snake FEIS. (2009). Lower Snake River Wind Energy Project Final Environmental Impact Statement. Garfield County. WEB. https://co.garfield.wa.us.

Maiden FEIS. (2002). Maiden Wind Farm Final Environmental Impact Statement. Benton County.

Mulvaney, K., Woodson, P., & Prokopy, L.S. (2013) (1). A tale of three counties: Understanding wind development in the rural Midwestern United States. *Energy Policy* 56: 322-330.

Mulvaney, K., Woodson, P., & Prokopy, L.S. (2013) (2). Different shades of green: A case study of support for wind farms in the rural Midwest. *Environmental Management* 51: 1012-1024.

Ness, B., Urbel-Piirsalu, E., Anderberg, S. & Olsson, L. (2007). Categorising tools for sustainability assessment. *Ecological Economics* 60: 498-508.

O'Faircheallaigh, C. (2010). Public participation and environmental impact assessment: Purposes, implications, and lessons for public policy making. *Environmental Impact Assessment Review* 30(1): 19-27.

Olson-Hazboun, S.K., Krannich, R.S., & Robertson, P.G. (2016). Public views on renewable energy in the Rocky Mountain region of the United States: Distinct attitudes, exposure, and other key predictors of wind energy. *Energy Research & Social Science (2016)*:1-13.

Onakpoya, I.J., O'Sullivan, J., Thompson, M.J., & Heneghan, C.J. (2015). The effect of wind turbine noise on sleep and quality of life: A systematic review and meta-analysis of observational studies. *Environment International* 82: 1-9.

Ottinger, G., Hargrave, T.J., & Hopson, E. (2014). Procedural justice in wind facility siting: Recommendations for state-led siting processes. *Energy Policy* 65: 662-669.

Rand, J. & Hoen, B. (2017). Thirty years of North American wind energy acceptance research: What have we learned? *Energy Research & Social Science* 29: 135-148.

Reed, M. (2008). Stakeholder participation for environmental management: A literature review. *Biological Conservation* 141(10): 2417–31.

REN21. (2017). *Renewables 2017: Global Status Report.* Paris, France. REN21 Secretariat.

RNP. (2009). Renewable Energy Projects. Renewable Northwest Project. WEB. http://www.rnp.org.

Schweizer-Ries, P. (2008). Energy sustainable communities: Environmental psychological investigations. *Energy Policy* 36 (11): 4126-4135.

Simcock, N. (2016). Procedural justice and the implementation of community wind energy projects: A case study from South Yorkshire, UK. *Land Use Policy* 59: 467-477.

Shepherd, A., and Bowler, C. (1997). Beyond the requirements: Improving public participation in EIA. *Journal of Environmental Planning and Management* 40(6): 725-738.

Shepherd, D., McBride, D., Welch, D., Dirks, K.N., & Hill, E.M. (2011). Evaluating the impact of wind turbine noise on health-related quality of life. *Noise Health* 13 (54): 333-339.

Slattery, M.C., Johnson, B.L., Swofford, J.A., & Pasqualetti, M.J. (2012). The predominance of economic development in the support for large-scale wind farms in the U.S. Great Plains. *Renewable and Sustainable Energy Review* 16 (6): 3690-3701.

Stigka, E.K., Paravantis, J.A. & Mihalakakou, G.K. (2014). Social acceptance of renewable energy sources: A review of contingent valuation application. *Renewable and Sustainable Energy Reviews* 32: 100-106.

Swofford, J. & Slattery, M. (2010). Public attitudes of wind energy in Texas: Local communities in close proximity to wind farms and their effect on decision-making. *Energy Policy* 38: 2508-2519.

TSP. (2014). Breakdown of Electricity Generation by Energy Source. The Shift Project Data Portal. WEB. http://www.tsp-data-portal.org.

Vaisanen, S., Mikkila, M., Havukainen, J., Sokka, L., & Luoranen, M. (2016). Using a multi-method approach for decision making about a sustainable local distrubted energy system: A case study from Finland. *Journal of Cleaner Production* 137: 1330-1338.

van der Horst, D. (2007). NIMBY or not? Exploring the relevance of location and the politics of voiced opinions in renewable energy siting controversies. *Energy Policy* 35: 2705-2714.

Walker, B.J.A., Wiersma, B. & Bailey, E. (2014). Community benefits, framing and the social acceptance of offshore wind farms: An experimental study in England. *Energy Research & Social Science* 3: 46-54.

Walker, G. (1995). Renewable energy and the public. *Land Use Policy* 12 (1): 49-59.

Whistling Ridge Application. (2009). Whistling Ridge Energy Project Application for Site Certification Agreement. EFSEC. WEB. https://efsec.wa.gov.

Wiek, A. & Binder, C. (2005). Solution spaces for decision-making---a sustainability assessment tool for city-regions. *Environmental Impact Assessment Review* 25: 589-608.

Wild Horse DEIS. (2004). Wild Horse Wind Power Project Draft Environmental Impact Statement. EFSEC. WEB. https://efsec.wa.gov.

Wild Horse FEIS. (2005). Wild Horse Wind Power Project Final Environmental Impact Statement. EFSEC. WEB. https://efsec.wa.gov.

Wolsink, M. (2000). Wind power and the NIMBY-myth: Institutional capacity and the limited significance of public support. *Renewable Energy* 21 (1): 49-64.

Wolsink, M. (2006). Invalid theory impedes our understanding: A critique on the persistence of the language of NIMBY. *Transactions of the Institute of British Geographers, New Series* 31 (1): 85-91.

Wolsink, M. (2007). Planning of renewables schemes: Deliberative and fair decision-making on landscape issues instead of reproachful accusations of non-cooperation. *Energy Policy* 35 (5): 2692-2704.

WorldWatch. (2017). U.S. Renewable Energy Growth Accelerates. WorldWatch Institute. WEB. https://worldwatch.org.

Wustenhagen, R., Wolsink, M. & Burer, M.J. (2007). Social acceptance of renewable energy innovation: An introduction to the concept. *Energy Policy* 35 (5): 2683-2691.

Zerrahn, A. (2017). Wind power and externalities. *Ecological Economics* 141: 245-260.