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Changing Actors and Discourse: An Analysis of Ten Years of Media Coverage In Vermont's Wind Power Debate

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**Changing Actors and Discourse: An Analysis of Ten Years
of Media Coverage In Vermont's Wind Power Debate**



The wind farm is built along a Vermont ridgeline.

Photo courtesy of First Wind

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Environmental Studies Major, Philosophy Minor
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TABLE OF CONTENTS

Acknowledgements	2
Abstract	3
Introduction	3
Literature Review	6
Introduction	6
1. Wind Power Overview	7
Advantages and Disadvantages of Wind Power	7
Vermont’s Energy Challenges	7
Wind Power Controversy	8
2. Media Analysis.....	10
Purpose.....	10
Frames	10
Coding Software in Qualitative Content Analysis	12
Results	13
Methods	14
Introduction	14
Key Terms in Content Analysis	15
Gathering Articles	16
Coding Articles.....	17
Findings	19
Introduction	19
Articles	20
Position.....	21
Sources	22
Frames	25
Comparing Sources	29
Comparing Outlets.....	31
Discussion	34
Conclusion	39
Literature Referenced	40
Articles and Documents Referenced	43
Appendix A	46

TABLE OF FIGURES

Figure 1: Annual Article Count Over Time	20
Figure 2: Changing Position Codes Over Time	21
Figure 3: Total Source Codes By Percentage	22
Figure 4: Changing Annual Source Codes Over Time	24
Figure 5: Total Frame Codes By Percentage	25
Figure 6: Total Supporting and Opposing Frame Codes, By Percentage	27
Figure 7: Changing Annual Supporting and Opposing Frames Over Time.....	27-28
Figure 8: Comparing Position Codes By Source Codes	29
Figure 9: Comparing Frame Codes by Source Codes	30
Figure 10: Comparing Source Codes Between Outlets.....	32
Figure 11: Comparing Frame Codes Between Outlets	33
Figure 12: Key Events in Vermont’s Wind Power Development.....	34

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Abstract

This research project examines the changing frames and actors appearing in news media coverage of Vermont's ongoing wind power debate over the past ten years. In the last few years, the construction of utility-scale turbines on Vermont's ridgelines has led to an increasingly contested debate about the future of wind-power in the state. On one side, supporters argue about the critical importance of renewable energy in confronting global climate change. On the other side, opponents argue against scarring Vermont's mountains with "industrial scale" turbines. In this research, I collected 477 news articles between 2003-2013 from three Vermont news sources; the state's largest newspaper (*The Burlington Free Press*), the state's leading news wire service (*The Associated Press*), and a local newspaper printed near several of the proposed and finished projects (*The Caledonian Record*). I analyzed the news media for both frames (Gamson, 2005) and the presence of actors, comparing changes over time within and across outlets. Findings indicate that certain frames gained traction over time (e.g. human health impacts), while others declined (aesthetics). Similarly, the prevalence of actors changed over time as well; pro-wind organizations were cited less frequently and Vermont citizens cited more frequently as projects moved from planning to completion. The results of this research contribute to a greater understanding of the successes and failures of advocates using anthropogenic climate change arguments to argue for wind energy development.

Introduction

The way that media news outlets report on an issue can have a strong influence on public opinion. When specific actors and their preferred messages or "frames" supporting or opposing an issue are cited in the media, the resulting news articles suggest a stance to the readers (Gamson and Modigliani, 1989). By analyzing media news articles from several Vermont outlets, this thesis adds to the reader's understanding of the different factors contributing to the ridgeline wind debate in Vermont. Researching how the citations of different actor groups and their associated frames change over time allows us

to learn about what impacts Vermont's news reporting has had on public attitudes towards wind development in the state.

This thesis research addresses the following questions:

- How has the media framing of the issue of ridgeline wind in Vermont changed over the period of 2003-2013?
- How has the prevalence of related actors in the issue of ridgeline wind in Vermont changed over the same period?
- What is the relationship between the actors and frames in the issue of ridgeline wind in Vermont, and how has that relationship changed over time?

In 1941, the world's first large-scale wind turbine that designed to feed power into the electric grid was built on Grandpa's Knob mountaintop, near Castleton, Vermont (Renewable Energy Vermont, 2010). Today there are four utility scale wind projects in Vermont in Lowell, Sheffield, Searsburg, and on Georgia Mountain (Renewable Energy Vermont, 2010). The largest of these projects is on Lowell Mountain, which houses twenty-one turbines with a capacity of generating three megawatts each—totaling sixty-three megawatts in generation capacity. These turbines are the largest in Vermont, standing 459 feet (including the blades) (Vermont Environmental Research Associates, 2013). Because of Vermont's mountainous geography, the optimal siting location for large wind projects is on the ridgelines of tall mountains where wind speed is highest and most consistent.

Although Vermont produces a minimal amount of renewable energy in comparison to other states (in 2010, Vermont ranked 43rd of the 50 states for net renewable generation, with only 1.829 gigawatt-hours produced), many believe these wind projects are a necessary step toward a clean energy-based grid, and towards energy independence for Vermont (US Energy Information Administration, 2012). In contrast, others around the state are staunchly opposed to utility-scale wind projects, often due to their necessary mountaintop locations.

Wind power is currently a controversial issue in Vermont. Although polling data has shown that Vermonters support ridgeline wind projects (most recently, 69% of

Vermont residents polled would favor a project in their community), many of those who are opposed have strongly resisted the development of wind turbines along Vermont's mountains (Castleton Polling Institute, 2013). In 2011, Governor Peter Shumlin and the Vermont Public Service Department created a Comprehensive State Energy Plan calling for 90% renewable energy in the electricity, heating, and transportation sectors of energy use by the year 2050. This plan makes clear that the current administration takes the threat of global climate change seriously, and commits Vermont to an aggressive stance towards combatting climate change through appropriate mitigation strategies. The plan details strategies for reaching this goal, and outlines in-state wind, solar, and hydro generation as playing a crucial role in reaching 90% renewable in the electricity use sector. The authors specifically recommend increasing small-scale wind development in Vermont (which all existing Vermont ridgeline wind projects are categorized as, because their maximum output is less than 200 megawatts of electricity) in order to meet the goals set by the plan and to respond to the preferences of Vermonters expressed during the public engagement process during development of the plan. (Public Service Department, 2011).

In Vermont, the decision to allow a utility-scale wind project to begin construction is made by the Public Service Board (PSB). According to Act 248, if all permitting processes and criteria have been met, the PSB has the choice of whether or not to issue a Certificate of Public Good for the project. The PSB takes into consideration local opposition, usually if it is expressed by a majority town vote through the town meeting process. However, the PSB also considers other elements of the issue such as state-level energy policy like the 2011 Comprehensive State Energy Plan and its call for more utility-scale wind development in Vermont (Prescott, 2012).

By addressing the research questions and building on previous research in the field of media analysis, this thesis examines the relationships between changes in the media framing and actors around wind in Vermont. The results of this research demonstrate how the frames and positions attributed to groups of actors changed over time from 2003-2013, and how the location of the outlets studied affected the representation of sources, position, and frames in the news media. The end result is a

study that gives the reader a better understanding of Vermont's wind debate and analyzes the impacts of news reporting on public attitudes towards wind.

This thesis makes an original contribution in the field by researching the issue of ridgeline wind and its relation to media discourse on a state scale that has not been previously analyzed. I used similar methodological approaches as other research in the field of media analysis on energy issues, and focused on finding similar trends in data over time. However, the research differs by thoroughly examining media from a small geographical location, and offers a statistical advantage by coding data from multiple news outlets. Instead of creating a state comparison analysis, this thesis works towards filling a gap in understanding the relationship between media discourse and public opinion in a single state: Vermont. It takes into account the discourse in multiple media outlets; searches for the dominant frames, and analyzes the roles actors have played in the statewide wind debate. Understanding how the media has framed this issue and how actors gained and lost media traction over time is crucial to understanding the successes in Vermont wind development from 2003-2013, as well as the roadblocks that have slowed it down.

Literature Review

Introduction

This literature review focuses on providing deep understanding of the issues of wind controversy and media discourse analysis, and an overview of previous work within the communications and public policy fields. It aims to give the reader a useful background of information that closely relates to the research and analysis methods of this thesis. The literature is discussed in several thematic sections, beginning with a narrative background about wind power and energy in general. The other sections explain the concepts used in media analysis research, and introduce relevant case studies that pertain to the purpose and methodology of this thesis.

1. Wind Power Overview

Advantages and Disadvantages of Wind Power

As a widely used technology for producing utility-scale renewable electricity, wind power has both advantages and drawbacks. The largest benefit of renewable power is that it provides reliable electricity generation while simultaneously reducing greenhouse gas emissions. Wind is cited as one of the primary renewable energy sources that can supply high amounts of carbon-free electricity and that has the potential for commercialization on a large scale (Hoffert et. al, 2002). In the face of a warming global climate, wind turbine technology can play the crucial role of providing the status quo of electricity generation without further contributing greenhouse gas emissions to the atmosphere. Wind does not produce local emissions while generating power, and health impacts associated with conventional coal-fired power production (such as asthma, premature deaths, heart attacks, bronchitis, and more) are avoided (Schneider & Banks, 2010). These advantages lead many in the U.S. to support wind power in particular as a viable renewable energy source for domestic power (Krohn & Damburg, 1999).

No type of energy production is without disadvantages. All wind projects require construction and involve a level of impact on wildlife, landscape, and the environment. Other drawbacks of wind include the visual and noise impacts on people in close proximity to projects, which are frequently referenced in protests against wind power (Lew, 2002-2011). Another issue with wind power is its intermittent nature: while other energy sources like coal and nuclear provide constant and stable energy while in operation, wind turbines only produce power while the wind is blowing and causing the blades to spin. Although intermittency can be improved by siting projects in locations with high and consistent wind patterns, it's impossible for wind turbines to constantly produce an even amount of energy year-round like its conventional alternatives (Albadi & El-Saadany, 2010). Understanding both the advantages and disadvantages of wind helps place arguments for or against wind in context for Vermont's wind debate.

Vermont's Energy Challenges

Vermont's electric grid is powered by a variety of energy sources. The 2011 Comprehensive State Energy Plan shows that Vermont's 2009 electric portfolio

(calculated from a combination of in-state electric utility portfolios) is comprised of 55%-60% electric resources that were generated in-state. At the time, Vermont Yankee Nuclear Plant accounted for the majority of in-state electricity production, at 38% of the total. After a long and heated debate, Vermont Yankee Nuclear Plant's parent company Entergy Louisiana announced that the plant will be slated to close in 2014 (Wald, 2013). In the 2009 electric portfolio, local hydropower generated 10% of the total power, and 2% of the total was attributed to a category called "other renewables," which encompasses all Vermont solar, wind, and biomass renewable electricity production. Other major sources of electricity used in Vermont include the regional grids System A and System B, as well as a large hydropower facility in Canada, HydroQuebec (Public Service Department, 2011).

Vermont faces the challenge set by the 2011 Comprehensive State Energy Plan of reaching 90% renewable electricity usage in-state by 2050. The Public Service Department outlines the development of new renewable generation facilities as playing a large role in reaching this goal, and writes of the advantages of in-state development in the plan: "A ripple effect of direct benefits results from development, including jobs, potential land-lease payments and increased tax revenues, indirect benefits from businesses that support the facility, and induced benefits from additional spending on goods and services (e.g., restaurants, retail establishments, and child-care providers) in the surrounding area," (Public Service Department, 2011). Long-term price stability, energy security, Vermonter preference, and a growing need for zero-emission electricity are among other benefits of renewable generation in particular that the plan lists in its recommendation for more renewable development. In this context, wind development (as well as solar, hydro, and biomass) has the potential to play a large role in helping Vermont meet its energy challenges and the goals set by the current administration.

Wind Power Controversy

Historically, wind has been a controversial form of renewable energy worldwide. Researchers have found that there is strong public support for wind in general, but local controversy and opposition often arises around a proposed project. One frequently used characterization of local opposition is the phrase "NIMBY," which stands for "Not In My

Backyard.” This type of opposition focuses on the local visual, environmental, and health impacts associated with wind turbines. NIMBY opposition frequently cites disruption of local landscape aesthetics as a main concern. In “Beyond NIMBYism: towards an Integrated Framework for Understanding Public Perceptions of Wind Energy,” author Patrick Devine-Wright (2005) examines existing research on opposition to wind and notes that there is not a popular consensus on causes or significant contributing factors for local opposition to wind. He recommends that future studies use multidisciplinary approaches and alternative methodological tools to better understand local wind power controversy (Devine-Wright, 2005). This finding is reinforced by other studies, which also concluded that local opposition to wind power is multi-faceted (Wolsink, 2000; Jones et. al, 2009).

Another acronym used by land-use planners to represent local opposition to projects is “LULU,” or Locally Unwanted Land Use. This term reflects the difficulties met by planners when siting wind projects. Some of the more effective methods to alleviating local concerns about wind have been focused on public engagement. Public dialogue allows for more transparency and accessibility to wind projects. Examples of public dialogue opportunities include events or hearings that offer a chance for the public to express their opinion, learn about the project, and speak with representatives from the wind developers. In certain cases, local governments have used top-down policy approaches that give priority to installation of wind projects over local municipality veto-power, but these approaches have been known to breed resentment towards the projects (Holtz, 2013). One study illustrates how a small protest group succeeded in deterring wind project development on the basis that the public participation process did not adequately address local concerns (Anderson, 2013). Another study suggests that increased local involvement leads to conditional support of wind projects, and that wind development rates are higher in areas with more local involvement opportunities (Toke et al., 2008). Researchers have found a variety of ways to characterize opposition to wind development, and although there is overlap between cases it is difficult to put all local opposition under the umbrella titles of “NIMBY” or “LULU.”

2. Media Analysis

Purpose

Why study media to understand public perceptions and policy issues? Public discourse is captured in news media, and the way that information is presented has an effect on people's perceptions of the events or issues at hand (Gamson and Modigliani, 1989). Research has shown that when news media is changed or distorted to reflect a certain point of view, the impressions formed by viewers are affected (Gibson and Zillmann, 1994). Other researchers have discovered that when media viewers are presented with new information, they form opinions about it based on their past perceptions of previous news media stories (Kepplinger and Daschmann, 1997). Since news media affects formulation of opinions and impressions of events, studying media discourse allows us to understand the influencing forces inherent in media. These forces are often key factors in policy debates and public perceptions of pressing issues (Gamson, 1989). Researchers in the field of media analysis are often able to correlate findings with key policy and media events to draw conclusions on how specific events altered media discourse (Gamson, 1989; Stephens, 2009; Szarka, 2004; Watts & Maddison, 2012).

Frames

A common approach in media analysis studies is to identify arguments, or frames, that actors use to support their position in a debate. Understanding how specific frames gain or lose media traction over time allows the researcher to understand which actor groups succeeded in inserting their preferred position into the media (Gamson and Modigliani, 1989; Steensland, 2008; Layzer, 2012). Framing analysis has become considered to be a highly useful tool in understanding the core values in social movements (Benford & Snow, 2000). Researchers often refer to existing literature when choosing frames to study (Gamson and Modigliani, 1989).

Watts and Maddison (2012) offers an analysis of changing frames and actors in the debate over whether to renew an operating license for Vermont's only nuclear power plant, Vermont Yankee. The researchers identified three supporting frames: environmental progress, fair progress, and economic progress. These three progress frames focus on different benefits of nuclear power. The environmental progress frame

refers to the low greenhouse gas emissions associated with nuclear power, fair progress signifies the safety and regulation involved in the nuclear industry, and the economic progress frame indicates local financial gain from nuclear plant operation. By referencing the economic progress frame (which was cited in Gamson [1989] as the prevailing frame in media coverage of nuclear power) and adding other frames that have emerged since, the researchers accurately capture a spread of supporting arguments that appear in the media. They also searched for appearances of three opposing frames: alternatives, runaway, and public accountability (Watts and Maddison, 2012). The alternatives frame represents arguments for cleaner and safer alternatives to nuclear power, the runaway frame depicts Vermont Yankee as an unsafe, aging facility, and the public accountability frame refers to a lack of trustworthiness in the plant ownership.

Stephens et al. (2009) used coding software to search media news articles for "...the frequency and type of frames used to describe wind power's risks and benefits," (Stephens et. al, 2009). Their approach identified six frame categories (technical, economic, environmental, health and safety, political, cultural) that could be either coded as a risk or benefit frame depending on the context. For example, the environmental frame could be identified as a risk if it displayed "negative environmental consequences (bird-kills, habitat loss)" or a benefit if it displayed "positive environmental consequences (reduce carbon emission, reduce air pollution)," (Stephens et. al, 2009). This approach of splitting frames into risks and benefits arose from Luhmann's social theory of ecological communication (Luhmann, 1989).

A third study, Fischlein et al. (2010), also used coding software to search for frames about the issue of carbon capture and storage technology in transcripts of interviews with state-level policy stakeholders in four states. They discovered that while political, economic, and technical frames were dominant, environmental, aesthetic, and health frames appeared less frequently. Another key finding of the frame analysis is how preferred frames differed between states. For example, the states examined that have policies targeting greenhouse gas emissions (Massachusetts and Minnesota) focused more on the avoided emissions involved with carbon capture and storage (the environmental frame), but the other states (Montana and Texas) displayed interest in the economic and political opportunities of carbon capture and storage development (the

economic and political frames). Through this framing analysis, the researchers were able to conclude that location and in-state resources affected attitudes about carbon capture and storage technology (Fischlein et al., 2010).

Pairing frames with the groups of actors that display them allow researchers to examine which actors have had success in garnering media attention, and which frames contribute to that success. In one case study, the researcher interviewed actors in an international wind debate and discovered that both supporters and opponents of wind used an “environmental” frame to back up their arguments (Szarka, 2004). Watts and Maddison (2012) examined the prevalence of environmental interest groups, Vermont citizens, government figures, Vermont legislators, and Vermont Yankee industry representatives in their study. The researchers paired each actor category with their displayed position codes, and successfully found that while the majority of government actors supported Vermont Yankee Nuclear Plant, only a small minority of Vermont legislators and citizens were in support (Watts & Maddison, 2012).

Coding Software in Qualitative Content Analysis

Many researchers studying media documents use a qualitative content analysis methodology. Qualitative content analysis is accepted as a strong methodology because it allows the researcher to examine similarities and differences between categories, and to compare recurring opinions and concepts (Graneheim & Lundman, 2004). However, it does require the researcher to interpret the text as he or she conducts the analysis. The creation of a set of rules, or “code book” if coding software is being used in the research, is a method to keep the researcher objective throughout the study and to justify all research decisions, (Graneheim & Lundman, 2004). Watts and Maddison (2012) focus their methodology on qualitative content analysis of 25 interviews and 346 news articles. In order to perform statistical comparisons of prevalence between frames and actors (termed as “sponsors” in the study, the researchers use a content analysis coding software called HyperResearch. This program enabled them to assign codes to each thought element within the documents, and to create a corresponding “code book” of sponsors, frames, and positions. Upon coding completion, statistical analyses of trends over time were compared with a timeline of events, and the results were correlated with local

nuclear events to indicate how specific events (such as a water cooling tower collapsing at Vermont Yankee) influenced the prevalence of opposition frames in the media (Watts & Maddison, 2012).

Coding software for qualitative content analysis was also used by the researchers in the Stephens et. al. (2009) study. The researchers examined 678 articles from a 27-year timespan, and used NVIVO 7.0 text analysis software to code for frames. The researchers discovered that for their risk frames (aesthetic & cultural, environmental, health & safety, and technical), the results were varied. For each frame there was a significant discrepancy between the news outlets, and trends did not emerge. However, the benefit frames had more correlation between the outlets—for each, the “environmental” frame held the largest percentage in articles gathered, and the “health” frame held the lowest percentage (Stephens et al., 2009).

A third study, Fischlein et al. (2013) used coding software to analyze 84 interviews with policy stakeholders. The researchers conceptually developed frames before beginning to code, instead of allowing frame definitions to emerge from the data. This approach is called *a priori* coding. The researchers used the software to compare the prevalence of political, economic, environmental, health and safety, and technical frames against each other and between the four states studied (Fischlein et al., 2013).

Results

The energy media analysis studies referenced in this literature review yielded useful findings. Gamson and Modigliani’s 1989 study found that the key event of Chernobyl’s nuclear disaster correlated with media frames shifting from a positive “progress” frame towards a negative “runaway” frame (Gamson & Modigliani, 1989). Similarly, Watts and Maddison discovered that when events such as a collapsing cooling tower occurred at Vermont Yankee Nuclear Plant, media frames such as runaway (depicting an old, unsafe nuclear plant) gained media traction while progress frames dwindled (Watts & Maddison, 2012). The researchers in the Stephens et. al (2009) study successfully proved that wind technology was frequently explicitly linked to climate change in the media of the three states studied, and while the benefit frames tended to correlate between states, risk frames differed based on location and number of local wind

projects (Stephens et. al, 2009). In the Fischlein et al. (2013) study, the researchers concluded that location affected policy stakeholder attitudes towards carbon sequestration and storage. For example, actors in Texas saw the carbon sequestration and storage technology as an economic opportunity, while actors in Massachusetts viewed it as an environmental solution (Fischlein et al., 2013). The findings of media analysis studies often examine trends over time and compare results by the location of the outlets studied. Furthermore, correlating trends that emerge in media studies with key energy development or policy events allows the researchers to generate further conclusions from their data.

Methods

Introduction

These are the research questions that this thesis addresses:

- How has the media framing of the issue of ridgeline wind in Vermont changed over the period of 2003-2013?
- How has the prevalence of related actors in the issue of ridgeline wind in Vermont changed over the same period?
- What is the relationship between the actors and frames in the issue of ridgeline wind in Vermont, and how has that relationship changed over time?

In this methodology section, I explain the terms and conceptual definitions used in my research. Several subsections detail the exact methods used in gathering and coding articles, as well as the rationale for my research decisions. I also provide the reader with an understanding of the content captured in the frames and actor groups that were coded in this study. The research conducted in this thesis involves analyzing 477 individual news articles in order to better understand the dynamics of Vermont's debate over wind power development. The results of the media analysis research in this thesis can be correlated with literature and key events to provide insight into public perceptions of wind power generation in Vermont.

Key Terms in Content Analysis

The use of frames is common in the analysis of media communications. The framing of an issue in the media refers to the “spin” or inherent point of view expressed in a news story by a specific reporter or media outlet. Media frames have been defined differently for various studies—for the purpose of this thesis, I used the definition put forth by Gamson and Modigliani, which states that a frame is, “A central organizing idea or story line that provides meaning to an unfolding strip of events...The frame suggests what the controversy is about, the essence of the issue,” (Gamson & Modigliani, 1987). Gamson and Modigliani’s conceptual definition of framing has been widely accepted and frequently referenced in similar studies (Scheufele, 1999; Benford & Snow, 2000).

Another important term in media analysis is “actor.” Actors are generally defined in a literal sense for a media discussion; that is, groups or individuals that are relevant to the topic discussed and play roles in the media’s portrayal of the issue (Gamson & Modigliani, 1989). For the purpose of this thesis, actors include Vermont government figures, industry representatives, public interest groups, individuals, and others involved in Vermont’s wind debate. For some studies, the term “actor” refers to a category of individuals or groups. For example, one study identifies four categories of actors: science, media/public opinion, business, and politics. Within each category there are numerous examples, such as government research institutions, universities, and hospitals for the science category, which is referring to the individual actors within each institution that act as scientists (Matthes 2008).

This thesis incorporates a frame-based analysis that makes conceptual use of Gamson and Modigliani’s explanation of how understanding frames provides insight into policy debates. I examine the prevalence of seven frames, and split them into supporting and opposing categories in a way that mirrors the approaches taken in both Watts and Maddison (2012), and Stephens et al. (2009). I chose to use seven unique frames instead of using the same frames for both sides, as in Stephens et al. (2009), Fischlein et al. (2013) and Szarka (2008) studies, in order to capture the independent arguments for and against wind power. In this research I searched for the prevalence of actors (termed as “sources” in the study), and connected them with the frames that they were most frequently cited with. In other words, I examined the prevalence of frames and actors

independently, and then analyzed the cases in which they are co-referenced in order to better understand the relationship between the two. Linking frames and actors is a relatively recent methodology in media analysis—a 2008 study claims to advance the study of communications by linking the two, creating a basis for changing media discourse over time (Steensland, 2008).

Gathering Articles

This thesis uses a case study methodology approach, with a content analysis of all the news media documents gathered in my research. I gathered 477 articles from three Vermont newspaper outlets: *The Burlington Free Press*, *The Caledonian Record*, and *The Associated Press*. I chose these three as they represent both statewide and local media, and provide an opportunity for rich detail and deep understanding. *The Burlington Free Press* is a statewide newspaper that represents Chittenden County, which currently hosts only one ridgeline wind project. *The Caledonian Record* is a local newspaper that represents Caledonia County and the Northeast Kingdom of Vermont, which houses multiple ridgeline wind projects. *The Associated Press* is statewide and location-neutral wire service, originally chosen to stand as a control outlet for comparisons. I gathered all articles from January 1st, 2003 through May 31st 2013 from these outlets. This 10-year time period was chosen in order to give an analysis of change in frames and actors over time. I chose to end the time period on May 31st in order to capture the 2012-2013 legislative session in which a three-year wind moratorium was introduced, but ultimately failed to pass.

I searched through the archives of each outlet for the keywords “wind power” and collected articles that were over 300 words and that pertain to the discussion of Vermont wind power. Articles pertaining to wind power debates in other states and countries or articles about other types of renewable energy were not collected. Furthermore, only articles about utility-scale wind projects were gathered, and articles about domestic-scale wind projects were not used in the study. *The Burlington Free Press* and *The Associated Press* archives were available through the LexisNexus database via UVM’s library webpage. In order to access *The Caledonian Record* archives, I applied for and received an Undergraduate Research Reidel Mini-Grant, which awarded me funding to access the

online archives. For each article that met the criteria, I collected the title, author, date, and text in a document, and created a database of collected articles (using a spreadsheet to organize each outlet by year). I gathered all articles that met the criteria within the given timeframe in order to comprehensively capture the media discourse.

Coding Articles

This thesis uses qualitative content analysis methodology to research the text in Vermont news articles. It relies on the aforementioned previous research that has established the effectiveness of content analysis for explaining and understanding trends in media documents. I used the HyperResearch coding software that was used in Watts & Maddison (2012), which allowed me to create statistical reports of the coding data to understand how the frame and actor relationship changed over time and between the outlets studied.

After compiling the article database, the analysis portion included examining the data to look for the occurrence of several specific frames and actors. The actor categories, or “sources” as referred to in the findings section, are as follows: State government, local government, Vermont legislators, pro-wind organizations, anti-wind organizations, Vermont citizens, wind industry representatives, and other. All people cited who worked in any branch of Vermont’s state government was coded under the state government category (such as members of the Public Service Board, the administration, or any of the state departments). Any source that was cited in the media as a local government figure (for example, a town board member or selectman, or the head of a local government department) was coded under the local government category. The pro-wind and anti-wind organizations were often self-defined in the articles, and I kept a list of each as I placed certain organizations into either category. I coded any Vermonter who was not speaking in a formal capacity (that is to say, anyone who was not introduced in the media as having a government, industry, expert, or organizational title) as a Vermont citizen. The Vermont legislator category was used for sources that were cited in the media as state legislators (both Senators and House Representatives). I placed all spokesmen, officials, and workers for wind industry companies in the wind industry category. Electric utility companies and sources representing them were also coded as

sources in the wind industry category. All sources that did not fit into any of the aforementioned categories were grouped as “other.” For example, any out-of-state citizens, businesses, government figures, organizations or legislators were coded in the other source category. For more information about how sources were coded, please refer to Appendix A at the end of this thesis.

The following frames in support of wind were coded for in the study: “climate change”, “energy independence”, and “local economic gain.” I coded for the following opposing frames: “industrial,” “human health impact,” “environmental impact,” and “aesthetics.” I have chosen these frames to represent various talking points and arguments on either side for the debate—there are three frames for the “pro-wind” viewpoint and four frames for the “anti-wind” viewpoint. The climate change frame represents all comments supporting wind on the basis of combatting global climate change and reducing greenhouse gas emissions. I coded arguments supporting wind for the purpose of increasing domestic energy production and both national and state energy independence as the energy independence frame. The local economic gain frame was used to capture all sources supporting wind on the basis of financial benefit for towns that host projects or are near them. This also included economic gain from jobs created during the construction of projects. The opposing industrial frame represents statements about wind projects being “industrial scale,” as well as concerns about declining property values and corporate wind developers taking advantage of small host towns. I coded all comments about negative human health symptoms from proximity to wind turbines as the human health impact frame. The environmental impact frame was used to capture worries about the damage to the natural environment that constructing wind projects caused, as well as comments about how wind projects disturb pristine or pure ridgelines. Lastly, the aesthetics frame captured comments about visual impacts of wind turbines and concerns about declining tourism as a result of wind development.

Several of these frames were derived from previous research; environmental impact, human health impact, and climate change were frame categories in other energy media analysis studies (Stephens et. al, 2009; Watts & Maddison, 2012, Szarka, 2004). The local economic gain frame is based on a more general progress frame that has played a key role in media analysis studies for years (Gamson & Modigliani, 1989). Aesthetics,

energy independence, and industrial were chosen because they reflect more specific arguments for and against wind power in Vermont that have not been previously examined in media analysis studies. In contrast to the framing approach taken in Fischlein et al. (2013), the frames were not conceptually developed *a priori*. Instead, the frames arose from prior literature and developed more clearly throughout the coding process. All research decisions about what to include under each frame was justified in my code book (Appendix A). Under the “Frames” section of Appendix A, I list all framing research justifications in the description section for each frame.

I used a coding software program called HyperResearch Version 3.5.2 to search the text of my collected articles for these frames and actors. The program was available as a free download from UVM’s software page. I read each article and assigned each thought element (the unit of analysis) within the text a corresponding code (or codes). In total, I created 8,963 codes indicating sources, position, frames, and articles. I used a reporting program within HyperResearch to analyze these results in order to discover changes in the prevalence of actors and frames over time, and to pair actors with their associated frames and position. The information yielded by these reports is discussed below in the “Findings” section.

Findings

Introduction

In this section I discuss the statistical findings of the research study, using visual aids to help represent important relationships. First, I examine trends in the articles gathered between the three outlets over the years studied. Next, the aggregate position codes supporting or opposing wind power are displayed. The following sections focus on trends displayed in source codes and frame codes, both in aggregate and annual totals from 2003-2012. Then, I match source codes with frame codes and position codes, to show which frames and positions can be attributed to specific actor groups. In the final section, I compare both source codes and frame codes between outlets. A narrative describing noteworthy trends to the reader accompanies each visual aid.

Articles

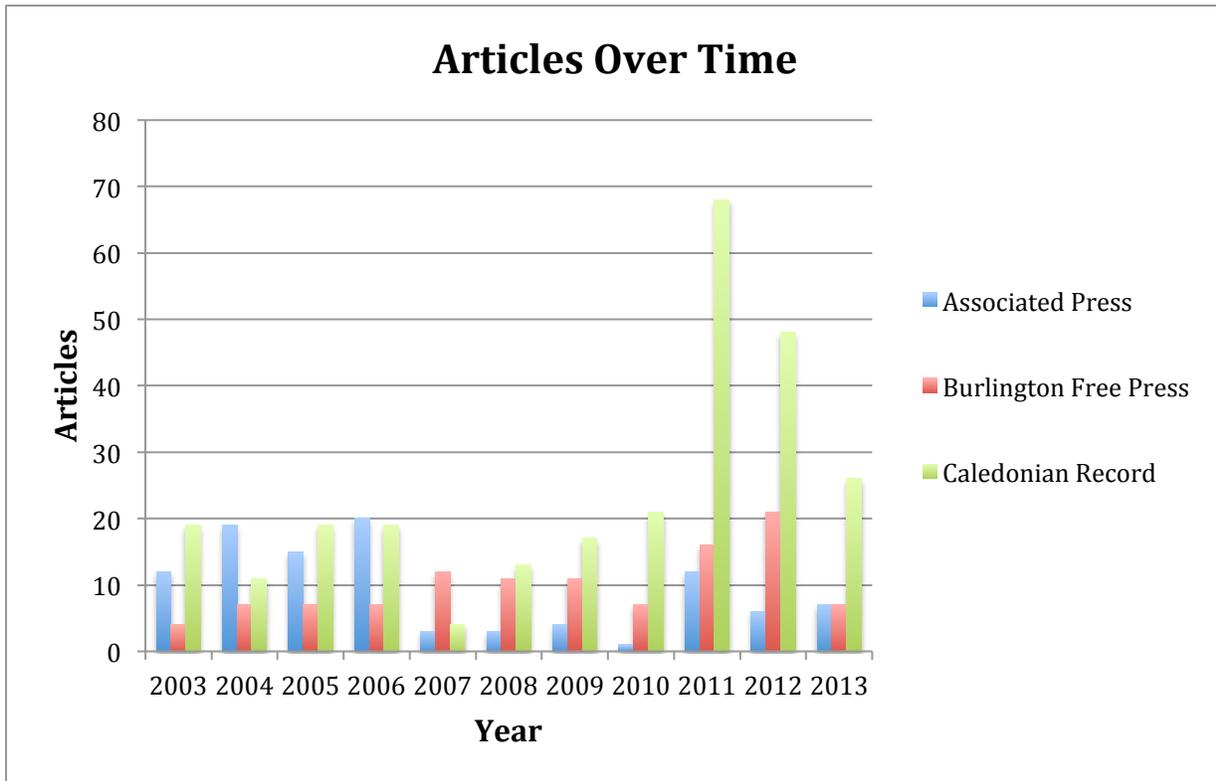


Figure 1: Annual Article Count Over Time

Note: Articles totals for the 2013 year do not reflect the entire year, only 5 months worth of articles

The Burlington Free Press is based in Chittenden County and is the state’s largest newspaper. *The Associated Press* is Vermont’s leading wire service, and covers statewide issues. *The Caledonian Record* is based in St. Johnsbury, Vermont and features lots of local coverage on wind turbines in Caledonian County. In Fig. 1, the graph documents the number of articles per year used in the study, and indicates the annual differences between the three news outlets. *The Burlington Free Press* has a general increasing trend of articles per year as time goes on, whereas the number of articles in *The Associated Press* peaks in 2006, and remains low through 2010 until it increases again in 2011. *The Burlington Free Press* and *The Associated Press* account for less than half of the total articles (212 combined). *The Caledonian Record* is responsible for the highest number of annual articles 8 of the 11 years.

This difference in reporting frequency stems from the high amount of local coverage by *The Caledonian Record*. Both *The Burlington Free Press* and *The*

Associated Press featured less reporting on meetings and public hearings about the permitting process for wind projects, and instead tended to cover the larger events. While the annual totals remained close between *The Caledonian Record* and the other two outlets until 2009, it dwarfed both of the others in 2010, 2011, 2012 and 2013. The highest number of annual articles between all outlets occurred in 2011, totaling 96 articles. This correlates with an influx of events related to the wind permitting process and Vermont wind projects coming online (See Fig. 12 in “Discussion” section for a timeline of key Vermont wind events). When viewing Fig.1, please note that the bars for 2013 only represent articles for 5 months of the year, while all other bars represent the full 12 months each year (and so the data for 2013 does not necessarily confirm that any trends from previous years continue). I have added the 2013 articles to Fig. 1, but the coding data from them is not included in the rest of the figures in this findings section.

Position

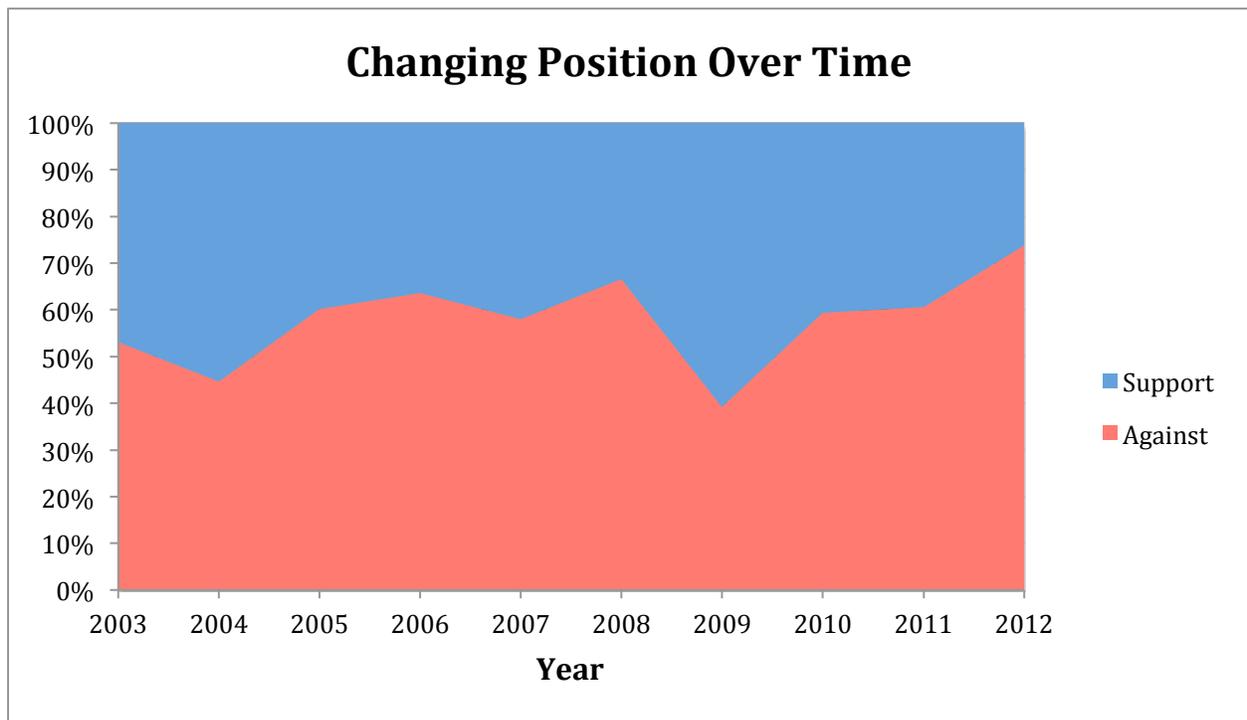


Figure 2: Changing Position Codes Over Time

An important aspect of this study is the change of position codes for and against ridgeline wind projects (from all sources) between 2003 and 2012. The “Support”

position code was used to capture all statements in support of ridgeline wind in general, or a specific ridgeline wind project. For all statements that were opposing either ridgeline wind in general or a specific project, the “Against” code was used. In many cases, sources did not display a position. Furthermore, the position codes were only used in reference to ridgeline wind; while sources occasionally displayed support or opposition to small-scale wind turbines or other renewables, these statements did not receive position codes.

Fig. 2 shows by percentage the total annual position codes, assigned to sources that indicated a position either in support of or against utility-scale wind power. The data indicates that the majority of sources displayed the “Against” position in every year except for 2004 and 2009. In addition, the percentage for supporting sources changed from a near majority of 47% in 2003 to a mere 26% ten years later, in 2012. Conversely, the percentage of those opposed changed from 53% to 74% over the same timeframe. The trend in Fig. 2 shows that over time, support waned and opposition grew, with the greatest increase in “Against” percentages from 2009-2012. In total, the 477 articles yielded 1,511 position codes—38% were “Support” codes and 62% were “Against.” Between 2004 and 2012, only two years recorded an increase in support (2006-2007 and 2008-2009), while all other years indicated an increase in opposition.

Sources

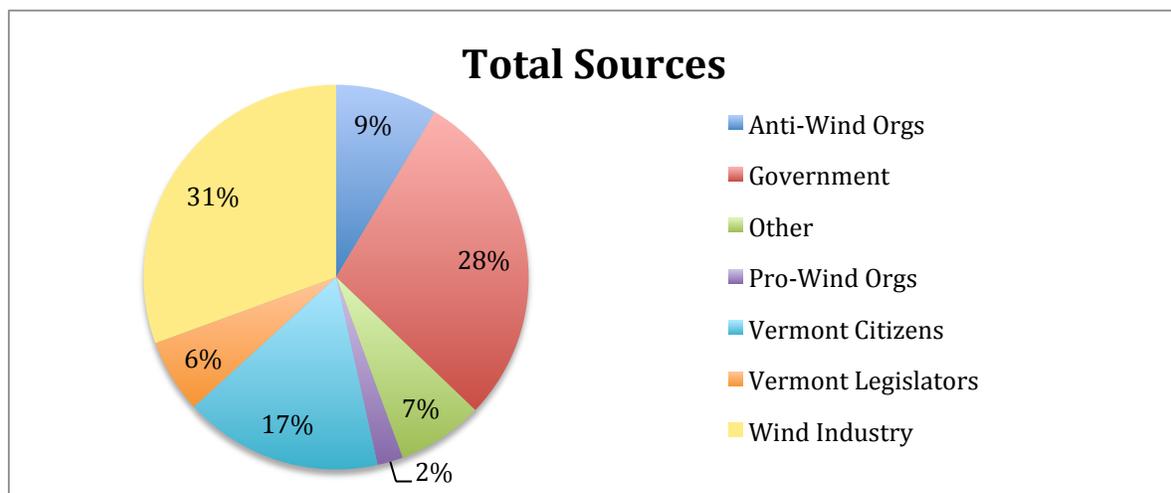


Figure 3: Total Source Codes By Percentage

In Fig. 3, the aggregate total of different actor groups, or sources, is shown in a pie chart. In total, there are 6,041 source codes in the study, and the different segments represent the percentage of the total source citations are attributed to each specific source. As I coded sources throughout the study, I kept track of individual actors that were frequently cited. For the anti-wind organization source category, the Vermonters for a Clean Environment, Lowell Mountain Group, and Energize Vermont groups appeared often. In the state government category, members of the Public Service Board were heavily cited, while the Lowell, Sheffield, East Haven, and Georgia select board members were frequently coded in the local government category. The “Other” category captured a wide range of sources that didn’t fit into any of the existing source categories, including several Vermont gubernatorial candidates. Some of the pro-wind organizations with high citations rates were the Conservation Law Foundation, VPIRG, and Renewable Energy Vermont. Over 250 different Vermont citizens were cited in the study, and some were cited numerous times. Nearly 60 different Vermont legislators were cited, with a high citation rate for legislators in the Northeast Kingdom of Vermont. A variety of wind companies and electric utility companies were cited under the wind industry source category, with Green Mountain Power, First Wind, EnXco, NRG Systems, Iberdrola, and Vermont Electric Co-op as some of the most frequently cited wind industry sources.

Fig. 3 shows that wind industry has the highest citation percentage at 31%, while state government, Vermont citizens, and anti-wind organizations are the next highest (28%, 17%, and 9% respectively). All sources that fall into the “Other” category are cited 7% of the time and Vermont legislators are cited at 6%. The least-cited group of actors in the study is pro-wind organizations, at only 2% of all sources. Wind industry sources likely hold the highest citation percentage because all wind companies and electric utility actors were captured under the wind industry source code, and these actors were heavily involved in numerous articles about the lengthy permitting and application processes for various wind projects.

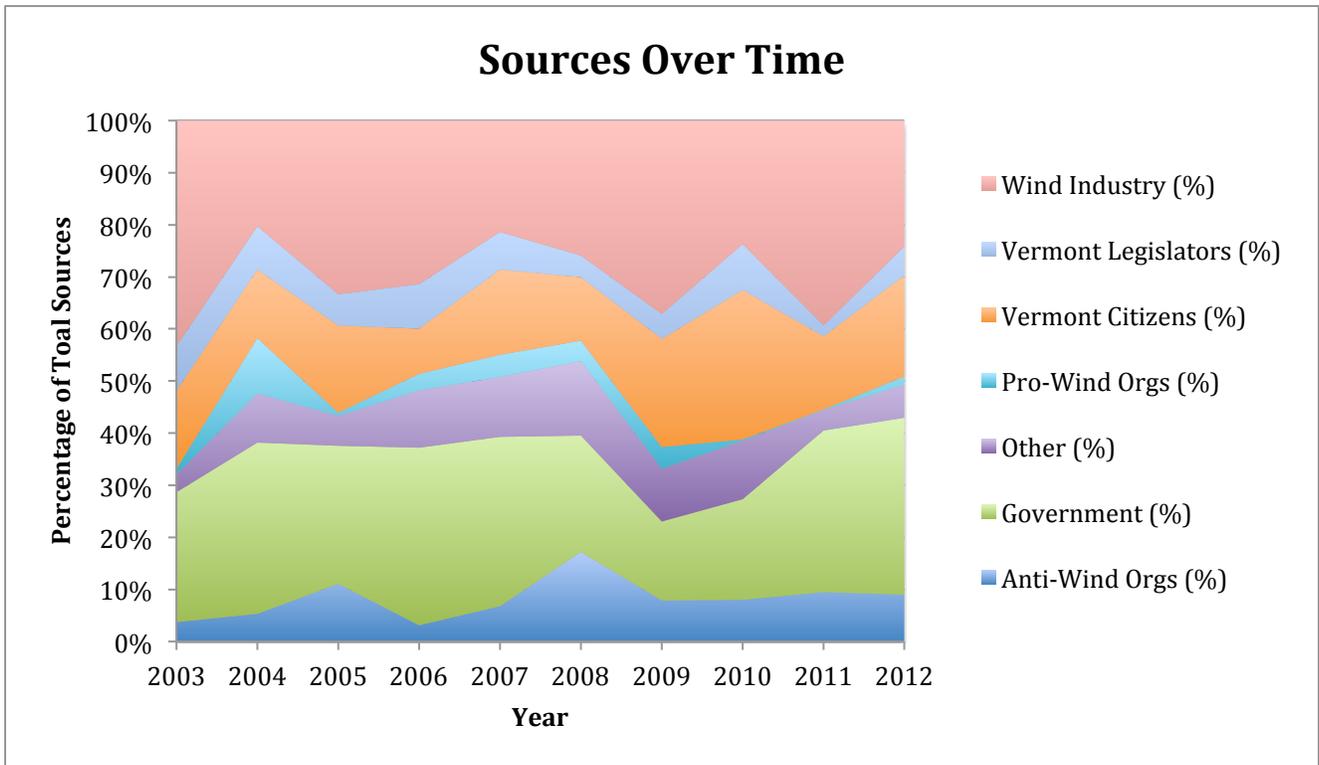


Figure 4: Changing Annual Source Codes Over Time

While the chart in Fig. 3 shows the source citation totals, Fig. 4 indicates the citation breakdown by year. As shown in Fig. 4, all sources were cited annually to some degree. Vermont legislators were cited consistently, ranging from 2%-9%. Wind industry was initially cited at 43% in 2003, and citations remained high throughout the study (over 20% each year) concluding at 24% in 2012. Anti-wind organizations began with a small citation of 4% in 2003, peaking twice at 11% in 2005 and 17% in 2008, and remained consistently between 8% and 9% from 2009-2012. Government sources were also consistently cited annually, at 25% in 2003, peaking at 34% in 2006 and 2012, and reaching a low of 15% in 2009. In 2012, government sources were 27% of the total for the year. "Other" sources began in 2003 with 3%, peaked in 2008 at 14%, and ended with 6% in 2012. Pro-wind organizations were cited at least once each year, but often were such a low percentage of the total citations that there is no discernable line for some years in Fig. 4. In 2003, Pro-wind organizations were 1% of all sources, peaking at 10% in 2004, and finishing at 1% in 2012.

Frames

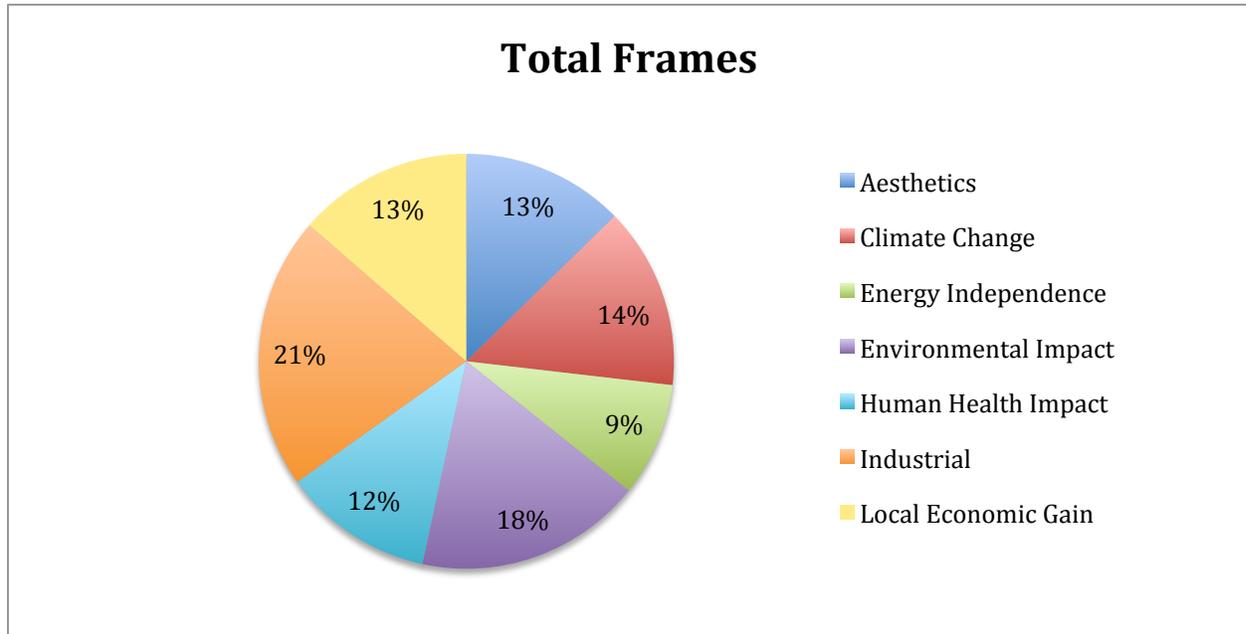


Figure 5: Total Frame Codes By Percentage

In the study, there are 734 total codes for specific frames, both supporting and opposing wind power. To better illustrate the content of each of seven frames, I've included here quotations from different sources displaying the separate frames. Vermont citizen Dhyam Nirmegh displayed the opposing aesthetics frame in a 2008 article, saying, *"You can't put a price tag on aesthetics. You can see the tower from anywhere in Huntington Center. I feel it has changed the character of the town. It rattles and awakens something in me,"* (Baird, 2008). One quotation from Vermont governor Peter Shumlin illustrates the supporting climate change frame: *"Climate change is the biggest threat to our children and to our grandchildren's future, and we in Vermont must lead, get off our addiction to oil, harness the wind and the sun and the woods and the water and our fields. This project [Sheffield Wind] is an example of how to do it right,"* (Ring, 2011). An example of the supporting energy independence frame shown by Vermont citizen Jim Harrison, who said in reference to wind in a 2008 article, *"We believe what the state needs is power, independent power, not something we have to depend on Iran or Iraq for,"* (Page, 2008).

Vermont citizen Marilyn Healey displayed the opposing environmental impact frame in a letter to the PSB protesting a proposed wind project near Newark, writing, *“Tourists come from around the world. I’ve met some. It’s not like being far out in desert many miles away from everything...no, the essence of what Vermont stands for is at stake. Someone thinks it doesn’t matter if the GREEN MOUNTAIN RIDGELINES ARE BLOWN UP FOREVER with massive roads built destroying the surrounding ecosystems. How can this be? The impact of destroying what Vermont is revered for is beyond my comprehension,”* (Nixon, 2012). Another Vermont citizen and frequently cited wind opponent Shirley Nelson displayed the opposing human health impact frame in a 2013 quote: *“Homeowners living around these existing projects have been tossed head first into the role of the guinea pigs as the health impact of the noise from ridgeline development is being experienced for the first time,”* (Smith & Nixon, 2013).

An example of the opposing industrial frame is illustrated by Vermont citizen Rob Pforzheimer, who says in regards to a proposed project in a 2010 article, *“My reaction is sad, disgust, and anger. I don’t think industrialization is suitable for the tops of mountains in Vermont,”* (Sutkoski, 2010). Matt Kearns, a wind industry representative from developer First Wind, displays the supporting local economic gain frame in reference to the Sheffield wind project: *“This project will not only help provide some stability to Vermont power prices, but will also bring jobs and economic benefits to the Northeast Kingdom. This will be an exciting project for First Wind and for Vermont,”* (Nixon, 2009). These quotations have been included to add context and provide perspective to Figures 5, 6 and 7. For more information about the content covered under each frame, please refer to the “Methods” section and Appendix A.

Fig. 5 represents the total amount each frame was cited, by percentage of the total frame codes. The opposition frames (aesthetics, environmental impact, human health impact, and industrial) are more prevalent than the supporting frames at 13%, 18%, 12%, and 21% respectively, totaling 64% of all frames in the study. In contrast, the supporting frames (climate change, energy independence, and local economic gain) are 14%, 9%, and 13% respectively, totaling the remaining 36%. The most prevalent frame was “Industrial”, while the least prevalent was “Energy Independence.” Each frame code is double-coded with a position code, though not all position codes had accompanying

frames. When taking that into account, the trend shown that the opposition frames were the majority of the total is not surprising, given that 62% of the position codes were in opposition as well (as discussed in the “Position” section of the analysis).

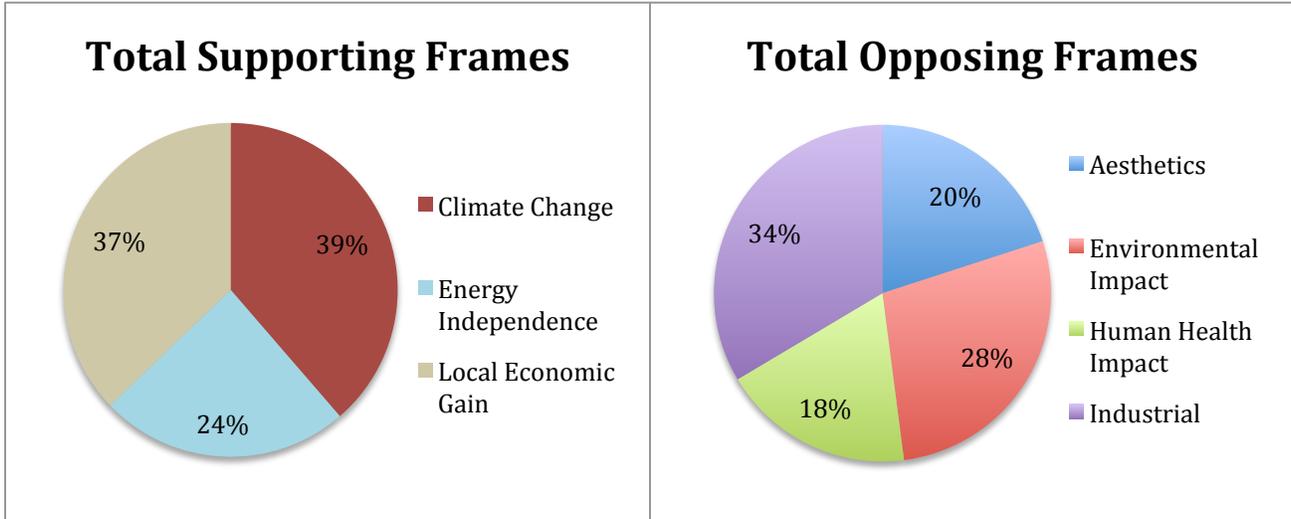
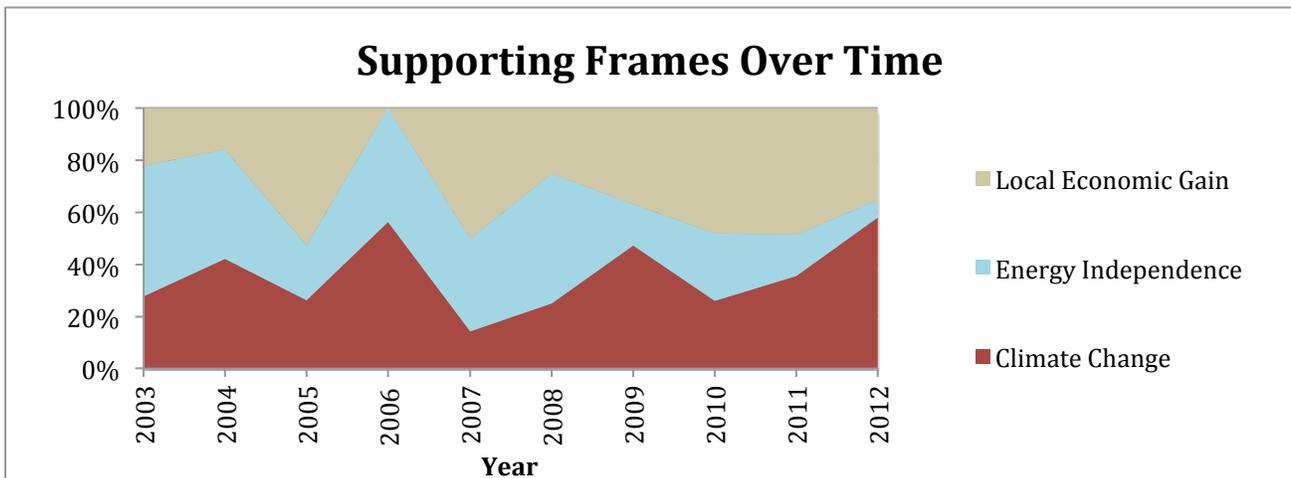


Figure 6: Total Supporting and Opposing Frame Codes, By Percentage

Figure 6 displays the breakdown of frame codes for both supporting and opposing actors. For supporting sources, climate change was attributed most frequently at 39%, followed closely by local economic gain at 27%. The energy independence frame appeared less often, at only 24% of the total. Opposing sources displayed the industrial frame most often, at 34% and the environmental impact frame next with 28%. The aesthetics frame was shown at 20% of the total opposing frames, and human health impact occurred least frequently at 18%.



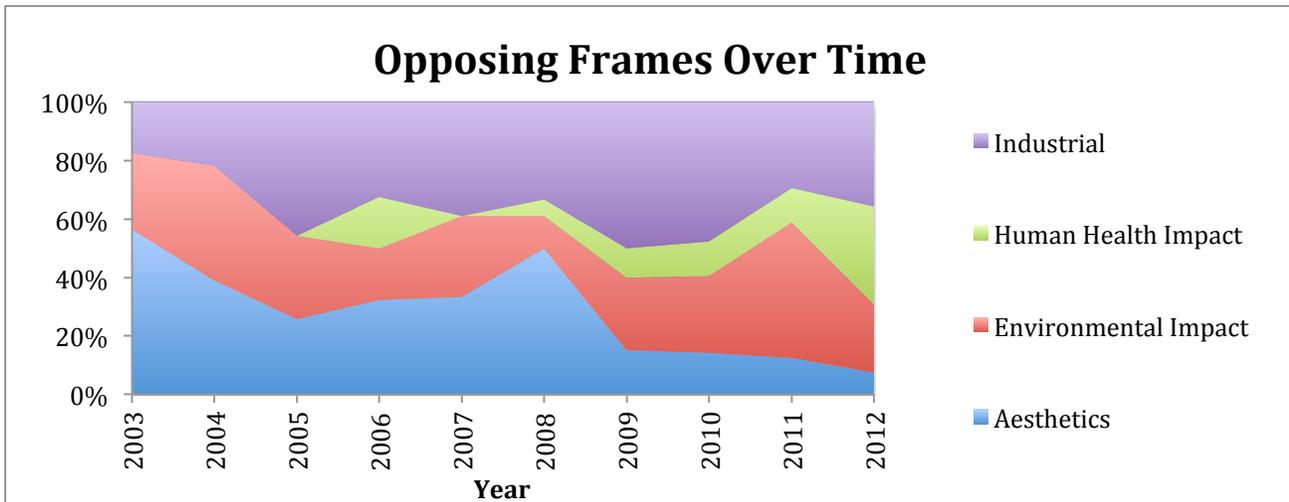


Figure 7: Changing Annual Supporting and Opposing Frames Over Time

Fig. 7 compares how the supporting and opposing frames examined in the study changed from 2003-2012. The opposing industrial frame was cited more frequently over time, rising from 17% in 2003 to 25% in 2012. It peaked in 2009 and 2010, accounting for 50% and 48% of the respective totals for those years. For opponents, the aesthetics frame was displayed at a drastic overall downward trend over time. It began as the dominant opposing frame at 57% in 2003, and ended at only 12% in 2012, with a spike 50% in 2008 leading to a sharp decline from 2009-2012. The environmental impact frame remained a consistent opposing frame throughout the study, beginning at 26% in 2003 and ending at 23% in 2012, with a trough of 11% in 2008 and a peak of 46% in 2011. The human health impact frame was not cited until 2006, in which it accounted for 18% of the total opposing frames. It remained below 13% through 2011, and then nearly tripled to 33% in 2012.

For supporters, the climate change frame was the most consistently displayed frame annually, reaching its lowest trough at 14% in 2007. It began at 28% in 2003, reached a near majority of 47% in 2009, and then finished as the dominant supporting frame at 58% in 2012. Conversely, the energy independence frame began at 50% in 2003, remained above 20% every year until hitting 50% again in 2008, and sharply declined from 2009-2012. It was the least cited supporting frame in 2011 and 2012, concluding the study at only 6% in 2012. The local economic gain frame was displayed at a significant percentage every year except 2006, in which it was never cited. It began at 22%, peaked

as the dominant frame at 52% in 2005, and reached 48% or higher in 2007, 2009, and 2010. In 2012, it accounted for 29% of the supporting frames displayed.

Comparing Sources



Figure 8: Comparing Position Codes By Source Codes

This section focuses on how both position and frames differ between the seven groups of sources in this study. By providing frame comparison between sources, the charts indicate to the reader which arguments gained media traction for each source category. Fig. 8 shows the distribution of position codes by source in a percentage stacked column format. One hundred percent (100%) of the citations in which anti-wind organizations displayed a position were against ridgeline wind power, while 100% of pro-wind organization position codes were in support. Vermont citizens predominantly

displayed the opposing position, with 77% against and 23% supporting. Government (both local and state combined) was more evenly split, with a majority 54% against and 46% in support. Most wind industry position codes were supporting, with only 5% against. Finally, the majority (67%) of Vermont legislator position codes were against, while only 33% were in support.

Frames	Anti-Wind Orgs.	Pro-Wind Orgs.	Local Government	State Government	Vermont Citizens	Vermont Legislators
Aesthetics	18.00%	0%	9%	13%	15%	16%
Environmental Impact	42.00%	0%	11%	16%	18%	21%
Human Health Impact	9%	0%	12%	0%	22%	5%
Industrial	31.00%	0%	24%	25%	25%	27%
Climate Change	0%	67%	12%	22%	10%	16%
Energy Independence	0%	17%	3%	13%	3%	11%
Local Economic Gain	0%	17%	28%	10%	5%	3%
Totals may not equal 100% due to rounding						

Figure 9: Comparing Frame Codes by Source Codes

The chart in Fig. 9 shows how frequently specific frames were used by different sources (by percentage of total frames coded for each source). Anti-wind organizations primarily displayed the environmental impact and industrial frames (42% and 31% respectively), while being attributed to the aesthetics frame only 18% of the time and were only rarely cited with the human health impact frame (9% of the total). Since all position codes for anti-wind organizations were against, there were no citations for supporting frames from anti-wind organization sources. Pro-wind organizations mainly displayed the climate change frame, at 67% of the total. They were cited with energy independence and local economic gain equally, at 17% each. There were no citations for any of the four anti-wind frames, because all of the pro-wind organization sources were only cited in support of wind power. For local government, the top two prevailing frames were for opposite positions: the opposing industrial frame was cited 24% of the time, and the supporting local economic gain frame was cited 28% of the time. The rest of the local

government frames were fairly evenly cited between 9%-12%, except the energy independence frame, which was only used 3% of the time. The two most frequently cited frames for state government were also in contrast, with 25% for the industrial frame and 22% for the climate change frame. Following those was the environmental impact frame, at 16%, both aesthetics and energy independence at 13% each, and local economic gain at 10%. The human health impact frame was never cited by the state government sources.

Vermont citizens predominately displayed the four opposing frames, with the industrial frame at 25%, human health impact at 22%, environmental impact at 18%, and aesthetics at 15%. The climate change frame was cited 10% of the time, while the other two supporting frames were cited at only 5% and 3%. Vermont legislators most frequently displayed the opposing industrial frame at 27%, and the environmental impact frame at 21%. They were cited with the aesthetics and climate change frames equally at 16%, then the energy independence frame at 11%. Human health impact and local economic gain were least cited, at 5% and 3% respectively.

Comparing Outlets

This section focuses on comparing how trends differ between the three outlets in the study. Due to the distribution of articles (see Fig. 1 in “Results”), the comparisons in this section will be between *The Caledonian Record* data (265 total articles) and *The Burlington Free Press* and *The Associated Press* combined data (222 combined total articles). This allows for stronger comparisons because the total sample sizes of codes and articles are closer in number than if all three outlets were compared individually. Additionally, these comparisons focus on how location affects news reporting about wind power. *The Burlington Free Press* represents an area with only one utility scale wind project and *The Associated Press* is a state-wide outlet, while *The Caledonian Record* represents the Northeast Kingdom which houses several wind projects including the state’s largest, Kingdom Community Wind in Lowell. By grouping the two outlets that are not based near the majority of wind projects and comparing it against an outlet that represents an area with almost all of Vermont’s wind development, the results show how

location and proximity to the projects affects media representation of the wind power debate.

Sources	<i>The Caledonian Record</i>	<i>The Burlington Free Press and The Associated Press</i>
Anti-Wind Organizations	10%	8%
Pro-Wind Organizations	0%	6%
Local Government	14%	8%
State Government	16%	21%
Vermont Citizens	16%	19%
Vermont Legislators	6%	7%
Wind Industry	34%	28%
Other	4%	3%

Figure 10: Comparing Source Codes Between Outlets

In Fig. 10, the total sources coded for *The Associated Press* (AP) and *The Burlington Free Press* (BFP) are compared against the total sources coded for *The Caledonian Record* (CR). As shown in the chart, anti-wind organizations were cited as 10% of the total sources in *The Caledonian Record*, and 8% for *The Burlington Free Press* and *The Associated Press*. Pro-wind organizations were cited less than 1% of the time in *The Caledonian Record*, while they account for 6% of total sources in *The Burlington Free Press* and *The Associated Press*. Wind industry and Vermont legislator citations are fairly constant between both charts, differing by 3% and 1% respectively. *The Associated Press* and *The Burlington Free Press* cite state government 21% of the time and local government only 8%, while *The Caledonian Record* cites state government less frequently (16%) and local government more frequently (14%). Vermont citizens are more frequently cited in *The Associated Press* and *The Burlington Free Press* at 19%, with citizen sources accounting for 16% of the total for *The Caledonian Record*. Electric utility companies are cited at 20% for *The Caledonian Record* and 11% for *The Associated Press* and *The Burlington Free Press*. For both outlet groups, sources in the “other” category were a low percentage of the total, at 3-4%.

Origin Group Frames	Frames	<i>The Caledonian Record</i>	<i>The Burlington Free Press and The Associated Press</i>
Supporting Frames	Climate Change	13%	16%
	Energy Independence	4%	15%
	Local Economic Gain	17%	9%
Opposing Frames	Aesthetics	12%	14%
	Environmental Impact	17%	19%
	Human Health Impact	14%	9%
	Industrial	24%	18%
*Totals may not equal 100% due to rounding			

Figure 11: Comparing Frame Codes Between Outlets

Fig. 11 contrasts frame citation prevalence between *The Caledonian Record* (CR) and the combined total frames for *The Associated Press* (AP) and *The Burlington Free Press* (BFP). For both outlet groups, the opposition frames are dominant. The industrial frame is the most cited in *The Caledonian Record* at 24%, compared to 18% in *The Associated Press* and *The Burlington Free Press*. The most cited frame for *The Associated Press* and *The Burlington Free Press* is environmental impact, at 19%, while it appears 17% of the time in *The Caledonian Record*. The human health impact frame accounts for 14% of the total for *The Caledonian Record*, and 9% for *The Associated Press* and *The Burlington Free Press*. The aesthetics frame is more prevalent in *The Associated Press* and *The Burlington Free Press* at 14%, showing slightly less in *The Caledonian Record* at 12%.

The supporting frames account for 33% of the total for *The Caledonian Record*, and 40% of the total for *The Associated Press* and *The Burlington Free Press*. The local economic gain frame is the largest of the supporting frames for *The Caledonian Record* at 17%, while it is the least cited supporting frame *The Associated Press* and *The Burlington Free Press* at only 9%. The climate change frame is cited 16% of the time for *The Associated Press* and *The Burlington Free Press*, and 12% of the time for *The Caledonian Record*. The energy independence frame is the least cited frame for *The*

Caledonian Record at 4%, but occurs more frequently for *The Associated Press* and *The Burlington Free Press* at 15%.

Discussion

Here I discuss how the findings of the analysis performed relate to key wind-related events in Vermont, as well as other media analysis studies about controversial energy sources. I chose to focus on several important trends that emerged in my research, and describe what they may indicate when compared to other relevant data. To begin, I've included a timeline of major events that occurred for each of Vermont's operating wind farms (Figure 12, below).

Key Events in Vermont's Wind Power Development			
Project	Applied for Permit	Received Permit	Began Generating Power
Searsburg Wind	5/5/95	4/1/96	1997
Sheffield Wind	2/22/06	8/7/09	10/1/11
Kingdom Community Wind in Lowell	5/21/10	5/31/11	11/1/11
Georgia Mountain Community Wind	2/2/09	6/11/10	12/1/12

Figure 12: Key Events in Vermont's Wind Power Development

Note: Dates in Figure 12 are from news database sources listed in Articles and Documents Referenced

A major pattern that emerged after conducting several initial analysis reports was the one-sided weight of position codes in the study. In total, 62% (a large majority) of sources displayed the “Against” position, while only 38% displayed the “Support” position. Furthermore, the “Support” codes reached a peak of 61% of the annual total in 2009, then drastically declined throughout the rest of the study down to a mere 21% in 2013. In comparison, the “Against” codes rose from 59% to a massive 79% of annual totals from 2010-2013. These findings show that in the media outlets studied, opposing points of view were more frequently cited, and the contrast between supporting and opposing positions grew especially high in the later years of the study. The growth in

displayed opposition correlates with the dates that three of Vermont's four wind projects began generating power; Sheffield Wind and Kingdom Community Wind began producing power in 2011, and Georgia Mountain Community Wind began in 2012 (see Fig. 12). This resonates strongly with Watts and Maddison (2012) study, which found that opposition narratives in the media documents analyzed became increasingly dominant over supporting narratives towards the later years of the study after a well-publicized accident occurred at Vermont Yankee nuclear plant (Watts & Maddison, 2012). Gamson and Modigliani also found that after a specific nuclear event (Chernobyl), support for nuclear power was replaced by opposition (Gamson and Modigliani, 1989).

While the "Against" codes made up a large majority of position in Vermont's media in 2012-2013, polls suggest that the majority of Vermonters support wind power development in-state. In 2012, a WCAX poll of 607 respondents indicated that 70% of those surveyed support ridgeline wind power in Vermont, 17% were against, and 13% remained undecided (McGilvery, 2012). In the same year, Senator Bill Doyle conducted an informal survey of 12,300 voters, and found that 58% support ridgeline wind and 23% were opposed (Bromage, 2013). Most recently the Castleton Polling Institute polled 617 Vermonters about the issue, and found 66% in support, 19% opposed and 14% undecided (Castleton Polling Institute, 2013). When comparing these poll statistics to the "Against" code percentages of 74% in 2012 and 78% in 2013, it's apparent that there is a significant disparity between position displayed in the media, and position indicated by Vermonters when polled on the issue of ridgeline wind for the same years. It's important to consider that most of these polls were conducted after three wind projects were operating, and one was conducted after all four were. This suggests that while Vermont's news media displayed increased opposition when projects began to come online, polls indicated that for Vermonters, the opposition attitude remained a minority.

Another noteworthy trend is the change shown in opposition frames over time. As depicted in Fig. 7, the industrial and environmental impact frames remained mostly consistent throughout the study; while peaks and troughs do occur, they show no significant overall trends of increase or decrease in citations over time. The aesthetics frame begins the study as the dominant opposition frame, cited at 57% in the first year,

then remains consistently cited as 25% or more of opposition frames annually until it reclaims its spot as the dominant frame in 2008 at 50%. However, from 2009-2013, the citation percentage for aesthetic frame drastically declines annually, ending at only 12% in 2013, 45% lower than at the beginning of the study. This decline correlates with the applications for permits by Kingdom Community Wind and Georgia Mountain Community Wind, and with the issuing of permits for Sheffield Wind, Kingdom Community Wind, and Georgia Mountain Community Wind.

If the aesthetics frame quickly declined for opposing sources once wind projects began applying for and receiving permits, what other opposing frame increased to fill its once-dominant role? Fig. 7 shows that the human health impact frame was not cited until 2006, returned to 0% of total citations in 2007, then began to increase for the rest of the study. Citations of the human health impact frame increased every year between 2008-2013, except for 2010 and 2011 where it remained nearly constant at 12%. Furthermore, citation prevalence drastically increased each year from 2011-2013, rising from 12% to 33% to a dominant 54% at the end of the study. While the aesthetics frame was displayed less over time, the human health impacts frame quickly rose to take its place. A similar change in opposing frames over time is displayed in a chart in Watts and Maddison (2012), in which the public accountability frame begins around 18% of total frame citations and ends near 30% while the runaway frames begins near 35% and ends closer to 20% (Watts & Maddison, 2012).

Why might the human health impact frame gain media traction so suddenly? The greatest increases from year-to-year correlate directly to the years when Vermont's three biggest wind projects, Sheffield Wind, Kingdom Community Wind, and Georgia Mountain Wind began generating power. Because the larger of these two projects are located in the Northeast Kingdom, articles from *The Caledonian Record* often captured complaints about turbine noise from Vermont citizens who live in towns near the turbines. In total, the human health impact frame contributed 23% of the total frames displayed by Vermont citizens. In *The Caledonian Record* alone, the citation rate was higher: human health impact was cited at 26% of total frames attributed to Vermont citizens. While turbine noise is often attributed to human health impacts, a recent study shows that noise produced by proximity to wind turbines is well below the threshold of

audibility, and comparable to noise levels in urban or coastal environments (Turnbull et al., 2012). Another study found that in Australia, complaints about turbines increased and focused more on health concerns after new media sources began documenting anti-wind organizations advocating against wind projects on the basis of human health impacts. Before this campaign, complaints about health impacts were much fewer, despite similar exposure to wind turbines. The researchers reference other studies in which there are perceived or psychosomatic health impacts, termed “the nocebo effect,” (Chapman et al., 2013). In light of this research, one possible cause for the increase over time in the human health impact frame could be influence by anti-wind organizations, although this study lacks adequate precision to draw a direct link between the two. It could also be the case that while scientific studies have failed to find a direct correlation between wind turbines and human health impacts, those in close proximity to projects may be experiencing health effects that have not yet been confirmed by the medical profession.

This study finds that media stories have focused on Vermont citizens and legislators who display an opposing position to wind power. Figure 8 shows that the majority of Vermont legislator position codes (67%) were against wind, while only 33% were in support. For Vermont citizens, the gap is even larger: 77% of position codes were against, and 23% were supporting. The tendency for legislators and citizens to be attributed to an opposing position on a Vermont energy project is reinforced in Watts and Maddison (2012), where the large majority of both Vermont citizens and Vermont legislators are cited as being opposed to Vermont Yankee Nuclear Plant (Watts & Maddison, 2012).

What factors could contribute to such an overwhelming majority of opposing position codes for these sources? When examining *The Caledonian Record* alone, the outlet studied that represents the area with the largest wind projects in Vermont, the percentage of citizens and legislators opposed is even greater than the aggregate of all outlets. *The Caledonian Record* had 80% of citizen position codes and 85% of legislator position codes against, with only 20% and 15% in support (respectively). While some researchers have attributed local opposition to wind projects to a “Not in my backyard” or NIMBY attitude, a recent study indicates that there is not a popular consensus on the driving forces for the opposition (Devine-Wright, 2005). Other studies corroborate this

finding, and conclude that local opposition to renewable energy development is multifaceted and based on more than a knee-jerk NIMBY reaction (Wolsink, 2000; Jones et al., 2009). It seems that although we can conclude that citizen opposition to wind is greatest locally, there is not a specific contributing factor like NIMBY that can be directly linked to the opposition. Furthermore, studies show that in the US, legislative decisions are in accordance with public opinion a majority of the time (Monroe, 1998; Burstein, 2003). Since the Vermont citizens in this study were generally opposed to wind, it follows logically that their elected representatives adopt a similar stance in order to faithfully represent their constituents and gain support for re-election. This explains why the Vermont legislator sources cited in *The Caledonian Record* displayed greater opposition than in the other outlets, because Vermont citizens in the same outlet displayed increased opposition as well.

Comparing source prevalence between outlets reveals that in *The Caledonian Record*, local government was cited more frequently and state government less frequently than in the other two outlets. Because *The Caledonian Record* is the only local newspaper in the study, it stands to reason that local government would have a higher citation prevalence than state government. The newspaper covered many public hearings and town meetings about wind, and often quoted local government figures such as town clerks and members of town select boards. In contrast, *The Associated Press* and *The Burlington Free Press* often reported on Public Service Board hearings and articles featuring Vermont's governor or administration, which led to a high citation prevalence for state government. One source comparison that is more surprising is that Vermont citizens were cited more frequently by *The Associated Press* and *The Burlington Free Press* (19% of the total sources), and less frequently by *The Caledonian Record* (16% of the total). This percentage difference results partly from the total number of source codes for the different outlets; *The Caledonian Record* had 3737 source codes, 609 of which were citizen codes while *The Associated Press* and *The Burlington Free Press* had 2056 total combined source codes, 398 of which were attributed to citizens. Despite the fact that *The Caledonian Record* had a larger aggregate total of Vermont citizen codes, the difference in citation prevalence by percentage between the local and state outlets raises the question of why the statewide outlets feature more citizen quotations in this study.

Conclusion

This research examined 477 news articles over ten years, developing 8,963 codes for frames, actors and source position. By focusing on ten years of media coverage of Vermont's wind debate, it provides rich detail about the major actors, dominant frames, and positions for and against wind. The changes in both supporting and opposing frames over time indicate how certain arguments gained and lost media traction. The relationships discovered between actors and their preferred frames show which arguments were relied on the most for each source. While certain frames gained traction, such as "Human Health Impact," others like the "Aesthetics" frame lost media attention over time. The results of this research also show how media reporting about energy issues in Vermont is influenced by location and proximity to energy generation sites. The local newspaper outlet displayed more local than state government sources, and featured more sources in opposition than the statewide outlets. The results of this research contribute to the field of media analysis and help the reader better understand the complexities of Vermont's ongoing wind power debate.

The analysis portion of this thesis research raises several questions. For future study, I would recommend researching why a gap exists between the media reporting of Vermont citizen positions towards wind power and the polling data, which indicates a drastically different stance. To better understand the nature of specific health impacts reported by residents near turbines, interviews with local citizens could add to research on the relationship between wind projects and human health. Interviews with the different reporters who authored the news media articles examined in this study have potential to contribute to future research focused on answering the question of why anti-wind organizations have a much higher citation prevalence than pro-wind organizations. I would also recommend interviews with staff from each of the three news outlets studied, to better understand the differences in source, frame, and position citation prevalence that emerge upon comparison.

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Appendix A

CODING APPROACH OVERVIEW

- Use this code book for any questions and add notes to it as needed. Also use keeping track of research decisions and your thoughts in the “code description.”
- Coding at the thought element level, which can be as short as one sentence or as long as several sentences, but is one contained thought. (Note that more than one thought element can be coded to a chunk of text).
- There are paragraphs that display no codes for certain categories. Do not code these. For example, when the journalist writes descriptive paragraphs about the legislative or permitting processes that do not feature sources, do not code.
- After coding the article head, code each thought element for source, wind position and frame (interior codes).
- First code for source or sponsor. **IMPORTANT:** Positions and Frame codes have to follow the same chunk of text as the sponsor/source. There may not always be position or frame codes. In general, there should be many more (say at least one-third, possibly more) source codes than position codes. Sources are not always indicating a position.
- Highlight the entire thought element and select the code for each category (if applicable) on each (details below).
- Be cautious not to overlap highlighting for coding of different paragraphs, such as over blank lines, which can distort data analysis.
- **Most important is coding the source of the quote or attribution and then assigning a few of the codes to that same statement.**

Five separate categories of coding

1. Coding the **article**- headline, date, journalist, media source
2. **Sources** cited in media (always pick one, dominant one).

3. **Position** as for or against ridgeline wind power (only pick when displayed).
4. **Frame (interior code) that describes more details about the position or the issue.**
5. Other codes as explained in the code book

1. CODING THE ARTICLE HEADLINE, DATE, JOURNALIST, MEDIA SOURCE

Make sure to capture all these elements into the one code. This is a marker that separates each article and quantifies the number of articles coded.

2. SOURCES

Eight categories: State government, Local government, Vermont legislators, Pro-wind advocacy groups/organizations, Anti-wind advocacy groups/organizations, Vermont citizens, Wind industry companies/representatives, and Other

1. One source per paragraph (which can be as short as one sentence.) Often, it's a statement then a source cited with a quote or it's a source cited and described and then the statement. These go together.
2. If two or more individuals- choose dominant
3. If multiple individuals are in the paragraph, but are in same category- code as that category (e.g. when a group of anti-tax groups are named).
4. Keep running track of every individual and group named as you have been with their full title. Write this into description.
5. Cite sources every time they are attributed to a quotation or paraphrased. If a source is cited for 5 paragraphs in a row, and displays a position and frame each time, cite all three (the source, the position, and the frame) for each instance.
6. Only cite current attributions. If an article is quoting someone from a past event, such as "GMP has said previously that it supports wind power," do not code. Assume that these previous attributions have already been coded when they were current.
7. Do not code "Box Idea" in some Burlington Free Press articles that is the journalist giving an overview of the article in the introduction.
8. Attorneys representing someone are coded as the person they represent. If Lawyer X is representing Vermont citizen John Farmer, code as Vermont citizen (and double code position/frame with it, if applicable).

The unit of analysis here is the thought element, or any statement or quotation about a single topic. When the topic changes, so does the thought element. Thought elements can range from a short sentence to a paragraph. They contain statements attributed to sources, and the sources are identified by name, or direct quote. Each paragraph receives a source code. Sources can be introduced in one paragraph and then referred to as "he/she said.", but they have to be named somewhere. The article will then usually go on to just quote one of the groups or one of the group's reports – so in that case following paragraphs are just coded to the source cited.

What is essential is that the source is the individual or group whose opinion is being displayed. In order for the source to be cited it should be a quote or a statement of opinion or fact from that source.

If an individual has multiple roles, which might place them in two source categories, choose the role that they are portraying for the purposes of the article and are cited as such. For example, if Rep. George Till, MD, is introducing a bill, the paragraph is coded as “legislator”.

When more than two groups are mentioned, code the dominant one if clear. If the multiple individuals or groups cited fall into the same source category, this source can be cited. For example if a paragraph quotes the governor and a senator by name, it is coded as “government”

If an individual is not cited by name or title, do not code. For example, “protestors said that the project is too big” does not get a code, as there is no name to attribute to the position.

List all sources coded in the “description” field.

3. Position: FOR OR AGAINST WIND POWER

1. One code per paragraph, if applicable
2. Options are “supports”, “against”, or not coded for this category
3. To receive a code for this category, the topic must take a stance on wind power

Evaluate the paragraph as to whether it is supportive or not of wind power in general, or a local wind project. It may not have a direct opinion. To be coded as either for or against, it must have statements closely related to the topic of wind power. Do not assume an opinion based on the speaker. A positive or negative projected result or opinion within these rules allows the paragraph to be coded as supports or against. For example, if someone says the local wind project will help Vermont reach energy independence, that would be supportive. A code from this category can be chosen for a paragraph even if the source is journalist. A conditional statement, such as “I would only support wind power (or the project in question) if..” is not coded as either for or against. A statement that refers to small scale wind is not necessarily supportive—for example, if a person said “small wind turbines are good for Vermont, but ridgeline wind farms ruin the aesthetics,” it would be marked as “against.” If there is a sentence that only refers to small-scale wind and not large-scale, do not code for or against. Discussion about appropriating revenue from wind projects is not coded for or against. Discussion about problems with the permitting process should not be coded against, unless the source specifically addresses wind power.

FRAMES (interior codes)

1. They must match with a source coded chunk of text.
2. Or in some cases if the text is not coded to a source, the journalist can get one of these codes.
3. Often, we will use these to compare/contrast, e.g. government supported wind power 90 percent of the time.
4. If more than one, choose the dominant frame.
5. Use the "description field" to explain criteria for choosing each frame. See below.

List of 7 Frames and their criteria:

- **Opposing Frames**

1. Aesthetics-DESCRIPTION: Any reference to visual impacts of ridgeline wind projects. Includes worries about tourism impacts as well. really focused on the views.
2. Environmental Impact-DESCRIPTION: Any reference to environmental or habitat impacts from construction of ridgeline wind projects. These range from water quality, deforestation, habitat fragmentation, ecosystem disruption, and more. Additionally, opinions that Vermont's mountains are precious, sacred, pure, etc. go here--as well as concerns about the ethics or morality of ridgeline development. Also comments about ridgelines as "common good" and about the exploitation of the commons. Any reference to "rape" of the ridgelines. Includes impact on hiking trails
3. Human Health Impact-DESCRIPTION: Any reference to human health impacts. Although scientific studies have proven that there are no physical health impacts from proximity to wind farms, some of the claimed health impacts are migraines, sleep disruption, and others. "ruining our home" and other concerns about having normal life disrupted fall here. Noise being "unbearable" counts
4. Industrial-DESCRIPTION: Any reference to ridgeline wind projects as industrial-scale. Referring to wind developer companies as "out-of-state corporations" also falls under this frame. Include worries about declining property values here. Includes reference to large size as a negative attribute (of turbines or project in general). Power being sold to out-of-state companies fits here too. Description of the wind companies as untrustworthy, greedy, coercing etc. goes here. Also

unreliability of turbines, efficiency problems, etc. Include community impact, dividing communities here

- **Supporting Frames**

1. Climate Change-DESCRIPTION: Any reference to Vermont's commitment to combatting global climate change, by constructing renewable energy projects (only code if the project in questions is a ridgeline wind project). If primary reason for support is that wind is "clean energy" or "renewable," use this code. Also include any reference to global environmental harm, as well as impacts of fossil-fuel based energy as a reason to develop renewables. Wind is "responsible" goes here. As well as thoughts of future generations. "Carbon footprint reduction"
2. Energy Independence-DESCRIPTION: Any reference towards ridgeline wind projects helping Vermont (or the US) to be an energy independent state (produce 100% of all electricity used in-state). Also include references towards supplying local power. Additionally, include references towards dependence on foreign oil, and references to cheap/local power. Also include comparisons to other, worse sources of power-ex HydroQuebec/VY
3. Local Economic Gain-DESCRIPTION: Any reference towards towns that host wind projects receiving economic benefits from the wind developers. Save local utilities money, jobs, in-state cheap power