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The Battle For Cape Wind: An Analysis of Massachusetts Newspapers and Their Framing of Offshore Wind Energy

by John Alessi

a thesis submitted
in partial fulfillment of the requirements
of a Bachelor of Arts

Political Science
&
Environmental Studies

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2017

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To my grandparents,

Joan Cunningham Sleeper
September 6, 1930 -
February 14, 2017

and

Myron Simpson Sleeper
June 27, 1932 -
January 13, 2017

The unconditional love and
support you both gave me
will never be forgotten.

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Abstract

The United States is considered a global leader in terms of land based wind power, yet its offshore wind potential remains greatly untapped (Gilman et al., 2016). Cape Wind, a proposed offshore wind farm for the Nantucket Sound of Massachusetts, was meant to be the first of its kind in the nation. Since 2001 the project has undergone much debate over its anticipated benefits and risks to the communities surrounding it. Public opinion trends evidence a shift from majority opposition to support for Cape Wind by 2009, but the factors that contributed to this change are unknown. Researchers suggest that media outlets may have played an important role in educating the public on its impacts. In this research project I performed a media analysis of 198 newspaper articles from the *Boston Globe*, *Boston Herald*, and *Cape Cod Times* to assess their framing of Cape Wind from 2003 to 2009. These newspaper outlets were chosen because they represent liberal, conservative, and local perspectives, and may have differed in their reporting of Cape Wind. A codebook of risk and benefit frames was adopted to categorize information presented in the studied articles. Then, correlations were identified between the newspapers' framing from year to year with trends in local public opinion. Differences in reporting across the newspaper outlets were also assessed. The use of aesthetic & cultural, health & safety, and political frames paralleled with changes in citizens' overall perceptions of Cape Wind. Also, the *Boston Globe* was found to have a statistically significant greater number of articles with benefit frames compared to the *Boston Herald* and *Cape Cod Times*. The results indicate that the newspaper outlets contrasted slightly in their reporting of benefits and risk to Cape Wind, and their collective framing trends did not correlate entirely with the findings of local public opinion studies.

Keywords

Cape Wind, offshore wind, media analysis, framing, media effects, Massachusetts, newspapers, public opinion

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Introduction

I. Introduction

The United States is considered a global leader in terms of its land-based wind power, but its offshore wind potential remains greatly untapped (Gilman et al., 2016). This is due in large part to the resistance displayed by communities that would find the projects in their neighborhoods (Devine-Wright, 2015). In 2001 the offshore wind project, Cape Wind, was proposed to be the first of its kind in the nation. Yet over the past decade and a half the wind farm has faced an uphill battle. The Cape Wind debate is unique in that the project sharply divided the public into polarized realms of opposition and support. Interest groups developed comprehensive, well-financed campaigns to attack each other from both ends. Researchers believe these groups dramatized the proposal and instilled public doubt over its benefits, despite the availability of favorable scientific knowledge towards it (Bush & Hoagland, 2016). Cape Wind has been considered a failed project, but a recent renewal of the developers' lease payment to the Bureau of Ocean Energy Management in January 2017 suggests otherwise (Norton, 2017). The project thus appears to be on hold for the moment, and it is unclear whether or not construction of Cape Wind will take place in the near future.

II. Background on Project

Cape Wind Associates, the developers of the project, first entered the public eye in 2001 when their plans to build the offshore wind farm spread amongst the media (Layzer, 2012). Jim Gordon, the group's president, announced that he and his colleagues hoped to build 170 Siemens 3.6 megawatt offshore wind turbines in the Nantucket Sound (Cape Wind Associates, 2014a). Cape Wind Associates reduced the number offshore wind turbines from 170 to 130 in January 2002, due to the availability of new, more energy efficient technologies (Layzer, 2012). The Nantucket Sound is found off the coast of Massachusetts and lies at the intersection of Cape Cod, Martha's Vineyard, and Nantucket. The proposed location can be seen on Map I, which is recreated from Cape Wind Associates (2014c). The offshore wind turbines would be located in the Horseshoe Shoal of Nantucket Sound, a shallow bar with an average water depth of forty to fifty feet and steady wind speeds (Layzer, 2012). It would encompass a total of 28 square miles in

federally controlled waters (Layzer, 2012). Subsea cables would be laid underneath the seabed and travel to the town of West Yarmouth, which would then connect to the electrical grid at the Barnstable substation (Cape Wind Associates, 2014a).

Map I



Cape Wind Associates (2014c) [Google Earth Map of Cape Wind Site.] *Cape Wind*. Retrieved from <https://www.capewind.org/where/maps>

III. The Cape Wind Debate

The Cape Wind debate ensued shortly after the project's announcement when the predominant opposition group, the Alliance to Protect Nantucket Sound, formed and mobilized a united front against the developers (Layzer, 2012). Their overarching statement, 'Save Our Sound,' rallied citizens, businesses, and legislators against the proposed wind farm they claimed could harm the oceanic environment, negatively impact bird and marine life, and obstruct the natural, 'pristine' views of the Nantucket Sound (Layzer, 2012). The group raised additional concerns over potential effects to Cape Cod's tourism industry, encompassing fishing, yachting, and recreational boating (Layzer, 2012). Another facet to their campaign consisted of attacking the 'flawed' permitting process of Cape Wind, which predominantly fell under federal control because of its location outside of state waters (Layzer, 2012). Subsequently, they argued that the state

and local governments were unfairly excluded from the regulatory process (Layzer, 2012).

Proponents of Cape Wind claimed that the project would come with a myriad of societal benefits to the Cape and Islands, as well as the rest of the country (Cape Wind Associates, 2014b). Cape Wind Associates (2014b) argued that the project would provide $\frac{3}{4}$ of Cape Cod's energy needs, all using a free, renewable, and non-polluting energy source. They insisted this would lead to decreased electricity rates among users (Cape Wind Associates, 2014b). The planning, construction, and management of the turbines were used as an incentive to develop the local economy and create long-term jobs (Cape Wind Associates, 2014b). Finally, they viewed Cape Wind as an important step for the country to solve the issue of climate change and move towards a renewable energy future (Cape Wind Associates, 2014b).

IV. Federal Permitting Process

Cape Wind's permitting and regulatory processes fell predominantly under federal oversight, seeing that the wind turbines would be placed in federal waters. In August 2002 the US Army Corps of Engineers gave approval for Cape Wind Associates to erect a test tower in the Nantucket Sound to assess wind speeds, and soon afterward the agency began drafting the project's Environmental Impact Statement (EIS) (Bureau of Ocean Energy Management, n.d). The Army Corp released in November 2004 a favorable draft EIS in which found the project to have little to no harm on bird or marine life, no effects on property values, and positive impacts to the local economy and public health, but it determined that the project would indeed obscure views of Nantucket Sound (Layzer, 2012).

Later in July 2005, the Minerals Management Service (MMS) of the Department of the Interior took control of Cape Wind oversight when President George W. Bush signed a comprehensive energy bill into law that shifted power away from the Army Corps (Layzer, 2012). This resulted in the need for a new EIS, which the agency planned to release by May 2006 (Layzer, 2012). Meanwhile, Senator Ted Stevens (R-Alaska) proposed an amendment to a bill in April 2006 that would have given Massachusetts state leaders the power to veto Cape Wind if the project was found to negatively impact

navigation (Layzer, 2012). By May 2006 Senator Stevens, along with Senator Ted Kennedy (D-Massachusetts), faced considerable opposition from interest groups and other legislators, leading them to give this veto power solely to the US Coast Guard (Layzer, 2012). Later that year the Pentagon requested information regarding Cape Wind's impact to military radar systems, adding further doubt to the project's effects on safety (Layzer, 2012).

In January 2008 the MMS released their draft EIS, in which it found the same impacts from the project as the Army Corps of Engineers, but the following year the agency published its final EIS (U.S Department, 2009). It found Cape Wind to have negligible to minor effects on the environment, public safety, and fisheries (U.S Department, 2009). Moderate impacts would be seen amongst bird and marine life, but the US Fish and Wildlife Service declared no impact to any endangered species (U.S Department, 2009). The Coast Guard decided that the project would not negatively impact marine radar or traffic (U.S Department, 2009). However, the MMS found considerable negative impacts to the cultural practices of the Aquinnah and Mashpee Wampanoag tribes, who have traditions tied directly to the views and aesthetics of Nantucket Sound (U.S Department, 2009). Regardless, in 2010 the Department of the Interior ultimately gave approval of the project (Bureau of Ocean, n.d).

V. State and Local Permitting Process

The federal government held control over reviewing the EIS of Cape Wind, but the state held jurisdiction over the subsea cables that would connect the wind farm to the Massachusetts electrical grid. The Massachusetts Energy Facility Siting Board (EFSB) voted in May 2005 to allow the placement of Cape Wind's underwater transmission lines in the Nantucket Sound, despite disapproval from Governor Mitt Romney and his administration (Layzer, 2012). However, the gubernatorial election of November 2006 served as a victory to Cape Wind when the incoming governor, Deval Patrick, pledged support to the project throughout his campaign (Layzer, 2012). The Massachusetts Executive Office of Environmental Affairs then received a final environmental impact report (FEIR) from Cape Wind Associates in February 2007, and the state's new Secretary of Energy and Environmental Affairs approved it (Layzer, 2012).

Review of further permits then shifted to the Massachusetts Office of Coastal Management, the town of Yarmouth, and the Cape Cod Commission (Layzer, 2012). Several of these groups raised concerns over the lack of information regarding the project's overall environmental impacts, though the state was only supposed to assess the effects of the subsea cables (Layzer, 2012). In receiving a denial for a permit by the Cape Cod Commission, a planning entity for Massachusetts's Barnstable County, Cape Wind Associates sought a composite permit from the Massachusetts ESFB to grant them a Development of Regional Impact permit (Layzer, 2012). This would provide them with approval of all but one of the state's remaining permits, which remained with the Massachusetts Office of Coastal Zone Management (Layzer, 2012). The Massachusetts ESFB approved the request for a composite permit in May 2009, and afterward granted Cape Wind a Certificate of Environmental Impact and Public Interest for completing the state's permitting process (Layzer, 2012). At this point, Cape Wind Associates had gained approval of twenty total permits across federal, state, and local agencies, thus completing the entire review process (Layzer, 2012).

VI. Research Questions

Over the course of the Cape Wind debate the project underwent substantial overview by federal, state, and local agencies. Available EIS statements found that many of the risks associated with the project would be non-existent or minimal, indicating that its benefits would outweigh the risks. Researchers have searched for the factors that contributed to Cape Wind's set backs, and many hypothesize that early citizen opposition and the plethora of permitting hurdles and legal battles may have created long-lasting complications for the developers. But information is still unavailable as to how citizens learned about the project throughout the debate, and if this could have contributed to negative public opinion towards the project. It has been established that the media plays an influential role in shaping the public's perception of issues through their framing (Boykoff & Boykoff, 2014; Stephens, Rand, & Melnick, 2009; Wilson & Stephens, 2009; Delshad & Raymond, 2013; Thompson, 2005; Blair, Heikkila, & Weible, 2015). Massachusetts media outlets could have then affected citizens' perceptions and overall

opinions of the offshore wind farm. Consequently, public opinion might have had a positive or negative effect upon the vitality of Cape Wind.

There will be three main questions that my thesis will attempt to address regarding Cape Wind:

- Are there trends in Massachusetts newspapers' framing of Cape Wind between 2003 and 2009?
- Are there correlations between the newspaper outlets' framing of Cape Wind and existing public opinion trends regarding the project?
- Did Massachusetts newspapers with contrasting political ideologies frame Cape Wind differently?

Literature Review

I. Introduction

A thorough background on offshore wind energy, existing public opinion polls regarding Cape Wind, and related media analyses is necessary in understanding the viability of wind energy in the United States and Nantucket Sound, the advantages and disadvantages associated with it, and the controversies that arise in building projects such as this. The findings of existing public opinion polls display how Cape Cod citizens perceived the project over time. Finally, the results of similar media analyses are discussed.

II. Offshore Wind

A. *Offshore Wind Viability*

The greatest viability for the placement of offshore wind farms in the United States is in the Pacific Northwest, the Great Lakes, the Northern East Coast, and off the coast of New England (Rogers, Manwell, & McGowan, 2003). A study by Dvorak, Corcoran, Ten Hoeve, McIntyre, and Jacobson (2013) was determined whether certain locations along the east coast of the country would be able to successfully add to the electrical grid. The results were dependent on wind resources, bathymetry (the depth of the ocean at the location), hurricane risk, and peak time generation potential. The study determined that the coastal region between Virginia and Maine has the greatest viability for the placement of offshore wind farms on the east coast of the United States (Dvorak et al., 2013). However, the authors found that offshore wind energy developments between Long Island, New York and Cape Cod, Massachusetts during the summer time would produce the most energy due to the area's regional upwelling, which creates additional sea breeze (Dvorak et al., 2013). This area is where the Cape Wind project is located, indicating its great energy potential. Previous scientific research has also identified Cape Wind's location as highly promising for energy production and the possibility of competitive electrical prices (Manwell, Rogers, & McGowan, 2002; Ozkan, 2011; Rogers et al., 2003).

B. Advantages

Wind technologies, including offshore wind farms, provide an array of environmental, public health, and economic benefits that can positively impact both local communities and society at large. One of the most widely known advantages of wind energy is its ability to help mitigate the issue of climate change (IPCC, 2014). As a naturally occurring, renewable resource found in the environment, wind is capable of producing great amounts of electricity through wind turbine technologies. Unlike fossil fuel energy resources, the direct production of energy from wind does not involve the emission of harmful greenhouse gases into the atmosphere. Consequently, researchers believe wind energy is a viable option to shift dependence away from fossil-fueled power plants and the associated pollutants that are detrimental to the global environment (Buonocore, Luckow, Fisher, Kempton, & Levy, 2016; Levitt, Kempton, Smith, Musial, & Firestone, 2011; Ozkan & Duffey, 2011).

Emissions derived from the combustion of fossil fuels are also connected to air pollution and negative human health impacts, predominantly from SO₂, NO_x, and PM_{2.5} pollutants (IPCC, 2014; Buonocore et al., 2016). When released into the environment, the particulate matter of these chemicals negatively affects those exposed to them (Bao et al., 2016). Adverse health effects include issues like respiratory or cardiometabolic diseases, changes in lung tissues and functionality, and respiratory mortality in children (Tambo, Duo-quan, & Zhou, 2016; Bao et al., 2016). An unintended consequence of these effects is the increased economic costs of healthcare on impacted communities (Bao et al., 2016). These issues can be avoided, though, when relying on non-emitting energy sources like wind energy. Thus, it has been determined that wind energy can benefit public health by replacing fossil fuel powered plants that emit harmful pollutants into the environment (Buonocore et al., 2016; Levitt et al., 2011).

Offshore wind farms are expected to bring about many economic benefits to the areas in which they are built (Levitt et al., 2011; Musial, 2007; Fischlein, Feldpausch-Parker, Peterson, Stephens, & Wilson, 2014; Sooriyaarachchi, Tsai, El Khatib, Farid, & Mezher, 2015). These are seen through the manufacture, installation, and construction of the farms, along with the subsequent jobs created (Musial, 2007; Sooriyaarachchi et al., 2015). In addition, permanent positions are created in order to maintain and operate the

facilities after construction is completed (Musial, 2007). The National Renewable Energy Laboratory's preliminary Jobs and Economic Development Impact Model indicates that offshore wind farms will involve more labor than projects located onshore, due to the more complex technologies needed to maintain them (Musial, 2007). The United States is also considered 'active' on the value chain of renewable energy job creation, meaning that it has extensive investment in renewable energy technology deployment, industries, and research (Sooriyaarachchi et al., 2015). This indicates that renewable energy, including offshore wind, is capable of providing economic development through the construction, manufacturing, and management of these projects.

Though onshore and offshore wind farms are similar in most respects, the latter is more advantageous in terms of large-scale energy needs. Sea winds off the coast are found to be strong, steady, and suitable for producing great amounts of energy (Bisbee, 2004; Toonen & Lindeboom, 2015; Rogers et al., 2003). This allows the scale of electricity production to increase, as wind turbines are capable of producing greater amounts farther from shore (Toonen & Lindeboom, 2015). Researchers have found this to be beneficial in meeting the energy demands of densely populated areas (Bisbee, 2004; Rogers et al., 2003). Since these areas have less space for terrestrial wind farm developments, offshore wind is advantageous because turbines can be placed in the ocean (Bisbee, 2004; Rogers et al., 2003). These offshore wind farms can be of larger size, higher numbers, and produce greater amounts of energy for the communities around which they are located (Bisbee, 2004; Rogers et al., 2003).

C. Disadvantages

Offshore wind farms are associated with various societal benefits, but they also come with their disadvantages. The most widely known fault of offshore wind is the high cost of installation. This is because the offshore wind industry is in the early stages of development, meaning that technologies are costlier to produce and maintain (Toonen & Lindeboom, 2015; Levitt et al., 2011). Building offshore also involves a higher overall investment cost when taking into account the difficult conditions for constructing and managing wind turbines (Green & Vasilakos, 2011). This involves substantial labor to

place them in the ocean, connect them to subsea electrical grid cables, and carry out regular maintenance (Green & Vasilakos, 2011).

The electricity generated from offshore wind tends to cost more than that derived from fossil fuels, potentially making this form of renewable energy non-competitive in the United States electrical market (Levitt et al., 2011). This issue is exacerbated by uncertain wind patterns surrounding offshore wind farms, meaning that electrical generation is not always guaranteed or even available (Stephens et al., 2009; Schiller, 2010). Researchers stress the need for governments to provide subsidies to offshore wind electrical generation in order to help its success (Toonen & Lindeboom, 2015; Levitt et al., 2011; Green & Vasilakos, 2011; Musial, 2007). Otherwise, fossil fuels must become more expensive in order for offshore wind to compete on its own with other forms of energy (Green & Vasilakos, 2011). The National Renewable Energy Laboratory foresees the levelized cost of offshore wind in the United States, based off of European technologies and experiences that have led to their own cost reduction (Smith, Stehly, & Musial, 2015). The authors believes this trend can translate to the US market, but they point out the need for more accurate revenue mechanisms to determine the near and long term viability of projects (Smith et al., 2015).

D. Controversy

The developmental stages in creating offshore wind farms are often met with great resistance from locals for a variety of reasons. The term ‘NIMBY’ (Not In My Backyard) has become a popular term used to describe, “any form of local opposition to almost any development,” including wind farms (Jones & Eiser, 2009; Wolsink, 2007). Although the issue of NIMBY is prevalent among studies regarding offshore wind farms and public opinion, many social scientists have recently found it overly vague (Petrova, 2013). They find that NIMBY as an issue of siting to be over simplistic, calling for future research to specify the reasoning behind opposition (Petrova, 2013). According to Wolsnick (2007), resistance to wind energy projects needs to be viewed in a “multi-dimensional” way, allowing one to determine the various factors that ultimately block projects from succeeding. Other studies have even found a negative correlation between NIMBY and opposition to specific developments, revealing that there is actually a

relationship between people supporting wind energy on both the national level and the local level (Devine-Wright, 2005). Nonetheless, the controversy over wind farms has come to include concerns over the visual impact, noise problems, perceived unreliability, high cost, dangerous impact upon birds and wildlife, ineffectiveness compared to fossil fuels, and the trustworthiness of the developers (Devine-Wright, 2005; Toonen & Lindeboom, 2015).

III. Cape Wind Public Opinion Studies

A. Wind Energy Public Opinion

According to a 2016 study by the Pew Research Center, strong bipartisan support exists for the development of wind energy, with 83% of Americans in favor and 14% in opposition (Funk & Kennedy, 2016). This statistic relates to Gallup Polls from 2013 and 2015 regarding energy use in the United States, whereas 71% and 70% of citizens believe the country should focus more on wind power, respectively (Gallup, Inc., 2017). These statistics differ throughout the country, though, and depend on the state and local context. Consequently, social scientists have called for greater research on site-specific offshore wind developments and the associated impacts on public opinion (Bush & Hoagland, 2016).

B. Early Public Opinion Polls

Researchers have studied Massachusetts residents' opinions on Cape Wind to better understand societal resistance or support to the project, as well as broader implications for the deployment of similar offshore wind farms. Three surveys were conducted during the early planning stages of Cape Wind in order to assess initial views of the project. In September 2002 Cape Wind Associates used Opinion Dynamics Corporation to survey 600 Massachusetts voters, 400 of which were chosen randomly from the Cape and Islands, and 200 more throughout the rest of the state. The results found that 55% of residents from the Cape and Islands supported the project, with 35% in opposition (Cape Wind Associates, 2002). Throughout Massachusetts the level of favorability was higher, with a margin of 64% to 22% (Cape Wind Associates, 2002).

The following year the Alliance to Protect Nantucket Sound conducted an in-person survey of residents and visiting tourists in six Cape Cod towns. Questions were focused on the economic impacts of the project, with 22% of respondents saying they would pay \$286 to prevent construction, while 9% would pay \$112 to encourage its deployment (Haughton, Giuffre, & Barrett, 2003). Finally, in 2004 the Cape Cod Times and WCAI Radio surveyed a random sample of 588 voters on Cape Cod and the Islands, revealing that 44% of respondents opposed the project, 36% were in favor, and 20% declined to answer (Desantis & Reid, 2004). These three surveys provide an original understanding of Cape Wind public opinion, but they do not necessarily encompass the complex debate and concerns that develop years later (Bush & Hoagland, 2016; Kempton, Firestone, Lilley, Rouleau, & Whitaker, 2005). Future studies place greater emphasis on discovering the underlying causes for support or opposition of Cape Wind, instead of solely its favorability ratings.

C. Original Impressions

Throughout the course of the Cape Wind debate numerous research studies took place in order to assess the public's knowledge and perception of the project. Kempton et al. (2005) carried out twenty-four intensive, semi-structured interviews of random Cape Cod residents in 2003 and 2004 to assess the beliefs, values, and logic of supporters and opponents. Respondents' arguments against the project related to the ocean being a sacred place, confusion over why it would be located offshore instead of onshore, and the associated visual and aesthetic impacts towards Nantucket Sound (Kempton et al., 2005). Supporters cited Cape Wind's ability to replace air pollution from fossil fuels and contribute to the country's energy security during the Iraq war, with many also pointing out offshore wind's success amongst European nations (Kempton et al., 2005). These interviews were not representative of Cape Cod residents' overall opinion of Cape Wind, but the study provides original impressions of the project that previous public opinion studies did not assess.

D. Major Research Studies

Firestone and Kempton (2007) build upon this research in 2005 through a mail-in survey of 1500 randomly selected Cape Cod residents that questioned whether or not they supported the project, their understanding of the project's impacts, and new knowledge that would cause them to change their opinion. The authors found that of 504 respondents, 55.5% opposed the project and 43.8% supported it (Firestone & Kempton, 2007). The leading causes for support were benefits to the environment, improved electricity rates, energy independence, and the use of renewable energy (Firestone & Kempton, 2007). Reasons for opposition included negative effects to the environment, visual aesthetics, and recreational fishing and boating (Firestone & Kempton, 2007). A majority of respondents indicated that Cape Wind would have negative impacts on visual aesthetics, community harmony, the local fishing industry, and fishing & yachting, with over 40% also stating effects towards tourism, property values, and bird and marine life (Firestone & Kempton, 2007). Improvements from Cape Wind were far less cited than negative ones, with positive impacts to air quality, electricity rates, and job creation all being chosen by less than 40% of respondents (Firestone & Kempton, 2007). New facts that would influence individuals to switch towards opposition were harm to bird & marine life, increased electricity rates, and job losses (Firestone & Kempton, 2007). Opponents would give their support to the project if the Cape and Islands received all of the electricity produced, electrical rates dropped, support was given to the local fishing industry, and if air quality improved (Firestone & Kempton, 2007). In addition to these results, Firestone and Kempton (2007) mention that the public may be unaware of climate change and the ability of offshore wind to help mitigate this issue, with 41% of respondents indicating that large-scale wind energy would have no impact on stabilizing global climate change. This indicates a disconnect between scientific literature and public knowledge, suggesting that the positive impacts of offshore wind, and specifically Cape Wind, may be understated (Firestone & Kempton, 2007).

Firestone and Kempton's (2007) mail-in survey of Cape Cod and Island residents was repeated again in 2009 by Firestone et al. (2012) to assess changes in the public's perception of Cape Wind over the four year time period. In addition to the before-mentioned survey questions from 2005, respondents were also asked if they had changed

sides at any point with respect to the argument, and if applicable, what caused them to do so. The authors found an overall increase in support, from 44% in 2005 to 57% in 2009 (Firestone et al., 2012). Respondents anticipated negative effects to aesthetics (lowered from 72% in 2005 to 57% in 2009), the fishing industry, recreational boating and fishing, and navigational safety (Firestone et al., 2012). Positive impacts from Cape Wind were not assessed in this study. Negative impacts on fishing and boating, as well as visual aesthetics, were the two categories chosen as the leading causes for opposition, yet both witnessed changes from 2005 to 2009 (Firestone et al., 2012). The former choice rose from 46% to 63%, while the latter decreased from 57% to 52%, respectively (Firestone et al., 2012). Firestone et al. (2012) found this to be an important shift away from the preeminent NIMBY claim, which mimics Wolsink (2007) and Petrova's (2013) claims that other factors play a role in opposition to the siting of projects like Cape Wind. A similar trend occurred for individuals' reasoning for support, whereas electrical rates and the need for energy independence were the top choices, yet the former remained constant and the latter rose from 30% to 59% (Firestone et al., 2012). Opponents also cited these two positive impacts when explaining which factors motivated them to ultimately give their support to Cape Wind (Firestone et al., 2012). Conversely, supporters claimed that new information on environmental effects, electricity rates, aesthetics, and boating safety influenced them to oppose the project (Firestone et al., 2012). It is important to note, though, that the number of expected negative effects chosen by respondents had decreased between 2005 and 2009 (Firestone et al., 2012). Firestone et al. (2012) hypothesize that this occurred due to the increased awareness of Cape Wind and the established impacts various studies determined it would have.

E. Public Opinion Trends Between 2005 and 2009

Bush and Hoagland (2016) build upon Firestone et al. (2012) and identify a movement towards support throughout the Cape Wind debate, due in large part to the increased availability and publicity of scientific research on the project. Through an extensive literature review of available public opinion polls and research studies regarding Cape Wind, Bush and Hoagland (2016) found that the public became more educated regarding the impacts of bird and marine life, electricity rates, air quality, fossil

fuel dependence, and climate. They claim that ‘extremist stakeholders’ from both sides continued to instill doubt in the public’s mind over the project’s impacts, even with the availability of numerous stakeholder meetings and environmental impact statements (Bush & Hoagland, 2016). Nonetheless, Bush and Hoagland (2016) conclude that individuals who were unaware or even undecided eventually gave their support to it.

IV. Media Analyses

A. Media Framing

Research on media effects have revealed that news coverage is the most accepted form of legitimacy and trusted the most among audiences (Luhmann, 2000). This suggests that news outlets’ ‘framing effects’ can have a significant impact upon the way individuals conceptualize issues and how they think about them (Chong & Druckman, 2007). More specifically, this effect occurs when, “in the course of describing an issue or event, a speaker’s emphasis on a subset of potentially relevant considerations causes individuals to focus on these considerations when constructing their opinions” (Druckman, 2001). Consequently, these ideas play a role in shaping the discourse of public policy debates (Gamson & Modigliani, 1989).

Thorough studies have been performed to detect the effects of media framing. Cacciatore, Scheufele, and Iyengar (2016) identify four original patterns in media effects research that have developed since the 1930s: the magic-bullet models, limited effects models, a return to the concept of powerful mass media effects, and the construction of reality model. The authors call for a shift in the definition of ‘framing’ in future research because they believe a fifth paradigm of media effects has emerged (Cacciatore et al., 2016). They define this as ‘preference-based reinforcement’ and ‘tailored persuasion’ (Cacciatore et al., 2016). They attribute these effects to the increased availability of media through the internet, ultimately creating what they refer to as a ‘fragmented news environment’ (Cacciatore et al., 2016). With information more accessible, this leads individuals to choose stories from news outlets that align with their personal beliefs (Cacciatore et al., 2016). Subsequently, Cacciatore et al. (2016) believe this has resulted in media outlets “narrowcasting” their information and moving towards ideologically based news coverage. Their solution is to look at media framing as either a ‘manipulation

of the context of a communication,’ or the ‘manipulation of the presentation of logically equivalent information’ (Cacciatore et al., 2016).

B. Media Analyses & Impacts

Media analyses performed to determine the framing of hydraulic fracturing, biofuels, global warming, and wind energy suggest that media outlets can have an impact upon the public’s opinion of these issues and developments (Boykoff & Boykoff, 2014; Stephens et al., 2009; Wilson & Stephens, 2009; Delshad & Raymond, 2013; Thompson, 2005; Blair et al., 2015). Blair et al. (2015) illustrate that media outlets with different political leanings can vary in their framing of environmental issues. The authors analyzed a liberal, conservative, and moderate Colorado newspaper to assess whether the outlets differed in their coverage of hydraulic fracturing in the state. They found clear differences in the framing of risks and benefits between the three newspapers, with the liberal outlet focusing on risks to public health, while the conservative and moderate outlets placed more emphasis on economic gains (Blair et al., 2015). This study did not assess the media’s effect on public opinion, but the authors suggest that the varying newspapers’ coverage between outlets could have created inconsistent viewpoints on hydraulic fracturing (Blair et al., 2015).

Delshad and Raymond (2013) carried out a media analysis of major newspaper outlets in the country to determine whether the media’s framing of biofuels changed from 1999 to 2008, and whether or not they shaped the public’s attitudes towards this new environmental technology. Through a content analysis of newspaper articles, along with data from a 2010 internet survey of the US public, the authors determined that the media’s negative framing of biofuels influenced the public’s opposition to it (Delshad & Raymond, 2013). These results illustrate the important role media framing plays in shaping the public’s opinion on new environmental developments.

Boykoff and Boykoff (2014) have determined that unbiased reporting can be just as influential as negative or positive framing. They performed a content analysis of major newspaper outlets in the United States to find out whether or not they reported both sides of the global warming debate. Their results concluded that the journalists’ ‘balanced reporting’ of global warming swayed a disproportionate percentage of people towards

denying global warming, despite the large consensus supporting it among the scientific community (Boykoff & Boykoff, 2014). This reveals how the media's framing of environmental ideas, even in a seemingly balanced manner, can result in public discourse that shifts away from scientific knowledge (Boykoff & Boykoff, 2014).

Similar media analyses have been performed to analyze newspaper articles' framing of wind energy and the subsequent developments that occur based off of coverage. A study done by Stephens et al. (2009) looked at state-level public discourse about wind technology through a comparative content and frame analysis of the major newspaper outlets in Massachusetts, Texas, and Minnesota. The authors found that each state had different framing issues behind wind energy technology, with the *Boston Globe* in Massachusetts largely focusing on the controversy behind the Cape Wind project (Stephens et al., 2009). Although coverage of wind energy was the highest in Massachusetts, the authors emphasized how this did not translate into more wind energy developments, as it did in other states (Stephens et al., 2009).

This compliments the results of a similar study made by Wilson and Stephens (2009) where the socio-political context of wind energy was analyzed to explain the varying degrees of wind deployment. After looking into the issues related to wind energy, they discovered that the specific frames used by the media outlets differed, and the media's coverage of wind energy was both negatively and positively correlated with deployment from state to state (Wilson & Stephens, 2009). These studies emphasize the importance of media analyses looking into the context of wind energy deployment in localities and regions. Doing so allows future research to specify the media frames that are most relevant to the areas where wind energy developments are occurring (Stephens et al., 2009; Wilson & Stephens, 2009).

C. Cape Wind Media Analysis

The research of Thompson (2005) serves as the only existing media analysis performed regarding newspaper coverage of the Cape Wind debate. Thompson (2005) collected 110 newspaper articles from the *Cape Cod Times*, *Boston Globe*, and *Providence Journal* between December 2001 and April 2004 and coded them for how they framed the Cape Wind project. This date range encompasses the early years of the

debate and provides insights into how newspapers originally framed the project. Thompson (2005) discovered that the newspaper outlets provided much coverage of Cape Wind, but their articles failed to delve into the myriad of issues behind the project at question. He emphasized how negative impacts on the aesthetics of Nantucket Sound were mentioned significantly more than any environmental, regulatory, economic, or social issue (Thompson, 2005). In addition, the newspapers placed greater emphasis on covering the associated ‘celebrities’ who opposed the project (Senator Edward Kennedy, Walter Cronkite, etc.), than stakeholders or average citizens (Thompson, 2005). He concludes that the analyzed newspaper outlets failed to inform the public about the complexity of the Cape Wind debate, ultimately focusing coverage on the visual aesthetics and celebrity opponents of the project (Thompson, 2005).

V. Research Significance

It remains unclear how Massachusetts’s media outlets have framed Cape Wind since Thompson’s (2005) analysis of the project’s newspaper coverage. Stephens et al. (2009) and Wilson and Stephens (2009) found that Cape Wind dominated the Boston Globe’s discussion of Massachusetts wind energy years later, but these studies did not examine coverage of the project exclusively, nor did they choose to analyze other newspaper outlets in the state. The latter is an acknowledged limitation of Stephens et al. (2009), who recognize the importance of analyzing newspapers with different ideologies, perspectives, and circulations. This idea is consistent with the research of Cacciatore et al. (2016) and Blair et al. (2015), because the ‘fragmented news environment’ has led to individuals choosing media outlets that align with their personal beliefs, creating audiences that may have separate understandings and positions on an issue. Thompson (2005) partially employs this method by including the Cape Cod Times and the Boston Globe as liberal and local news perspectives, but an outlet with a more conservative readership is not taken into consideration. These factors indicate that newspaper outlets in Massachusetts with contrasting ideologies could have framed Cape Wind differently throughout the rest of the debate, potentially resulting in divided public opinion over the project.

Firestone et al. (2012) and Bush and Hoagland (2016) present evidence of a trend towards support of Cape Wind as the public became more educated about its impacts. But the authors' focus was solely on Cape Cod citizens' perceptions of the project, leaving no indication of what factors brought about this change in attitude. Seeing that media outlets greatly affect the formation of individuals' opinions on ideas and issues, this suggests that Massachusetts's newspapers could have facilitated education about Cape Wind and informed the public as the debate progressed (Boykoff & Boykoff, 2014; Stephens et al., 2009; Wilson & Stephens, 2009; Delshad & Raymond, 2013; Blair et al., 2015). In building upon the original findings of Thompson (2005), a media analysis of newspaper outlets is needed to go beyond the findings of Firestone et al. (2012) and Bush and Hoagland (2016) to assess if changes in public opinion correlated with the newspaper outlets' framing of the project.

This research project will contribute to the field of media studies and provide insights into the framing of offshore wind in a local context. The current literature is deficient in explaining the media's effects on local public opinion and the subsequent viability of renewable energy technologies. Furthermore, previous research does not explain how newspapers with contrasting political ideologies view wind energy. By focusing on Cape Wind, this thesis will provide more in-depth knowledge on how newspaper outlets within a state may frame a specific offshore wind development. This differs from state to state media analyses that focus on wind energy in general, and not individual projects. Correlations made between newspaper framing and public opinion studies will address gaps in previous literature that strive to identify the faults that contributed to Cape Wind's setbacks. In addition, analyzing newspaper outlets with contrasting political ideologies and perspectives will help in understanding how different political groups perceive offshore wind developments in their communities. The results of this thesis will hopefully shed light on the Cape Wind debate and expose the difficulties in framing offshore wind energy.

Methodology

I. Introduction

This section explains the process of gathering newspaper articles, the terms and definitions used in coding them, and how the data were analyzed. This research relied upon a case study methodology involving qualitative content analysis of newspaper articles from several Massachusetts media outlets between January 2003 and December 2009. The newspaper article archives of three different outlets were used in this analysis, representing different ends of the political spectrum and covering statewide, regional, and local newspapers. The frames and actors referenced in these newspaper articles were used to examine trends in the media's framing of Cape Wind, which were then compared to existing public opinion polls regarding the project to identify correlations between them.

II. Gathering Articles

Three different newspaper outlets distributed throughout Cape Cod were used to carry out this media analysis. These included the *Boston Globe*, the *Boston Herald*, and the *Cape Cod Times*. The *Boston Globe* is a statewide newspaper with a daily readership of 571,000 adults (Boston Globe, n.d.). The *Boston Herald* is a regional newspaper with a daily readership of 387,800 adults (Boston Herald, n.d.). The *Cape Cod Times* is the most prominent local newspaper found on Cape Cod, with a readership of 177,500 adults (Cape Cod Media, 2017). These outlets were chosen for their statewide and local perspectives, contrasting political ideologies, and high daily circulation rates on Cape Cod.

There exist several limitations to the newspaper outlets analyzed in this research project. First, the *Cape Cod Times* does not have full circulation on Martha's Vineyard or Nantucket. These islands have more popular newspapers found specific to their island communities, such as the *Vineyard Gazette* or *The Inquirer and Mirror*. Consequently, the residents of these islands may not have been exposed to the *Cape Cod Times's* perspectives on Cape Wind. There are also several other local newspapers found on Cape Cod, like the *Barnstable Patriot*, which may have differing perspectives than the *Cape Cod Times*. Regardless, this outlet was chosen over others because its newspaper

coverage encompasses the majority of Cape Cod, has one of the highest circulation rates in the state, and is not associated with a specific town.

The political leanings of the *Boston Globe* and *Boston Herald* were assessed from their editorial boards' contrasting endorsements of presidential candidates in the previous two elections (Blair et al., 2015). The *Cape Cod Times* is used as a local, neutral perspective, as it did not endorse any candidates in these elections. In 2012 the *Boston Globe* endorsed President Barack Obama for a second term, while the *Boston Herald* chose the former governor of Massachusetts, Mitt Romney (Viser, 2012). The *Boston Globe* continued its liberal endorsements in 2016 when it supported Hillary Clinton (Boston Globe Editorial, 2016). The *Boston Herald* originally endorsed Chris Christie and Marco Rubio at different points during the 2016 Republican primaries, but ultimately endorsed no candidate in the general election, predominantly due to opposition towards Donald Trump (Boston Herald Staff, 2016). Regardless, the *Boston Herald's* endorsement of Republican candidates in presidential elections suggests that it has a conservative leaning ideology.

The published articles studied in this media analysis ranged from January 1, 2003 to December 31, 2009. This time period was chosen because it overlaps with the public opinion studies carried out by Firestone and Kempton (2007) and Firestone et al. (2012), which began in January 2005 and June 2009, respectively. The starting date of data collection was 2003 to ensure that respondents of Firestone and Kempton's (2007) survey from 2005 would have sufficient time to form an opinion of Cape Wind. The end of 2009 was used so that comparisons in framing could be made from year to year.

The newspapers' archives were accessed and a search was performed for the keyword 'Cape Wind' through all available articles and editorials. Several studies chose to exclude editorials from their media analyses because they are not official news stories, but they were included in this search like Wilson and Stephens (2009) and Thompson (2005) because they more often than not reflect the official opinion of the news source and can influence audiences' perceptions of an issue. 'Articles' and 'editorials' will be grouped together and referred hereafter as 'articles,' 'newspaper texts,' or 'texts.'

The *Boston Herald* and The *Cape Cod Time's* archives were available through the Infotrac Newsstand database, and The *Boston Globe's* archives were available through

the Proquest Newsstream database. All of these databases were accessible from the University of Vermont Library. The search yielded a population of 386 articles, with 214 from *The Boston Globe*, 87 from *The Boston Herald*, and 85 from *The Cape Cod Times*. In replicating the methodology of Blair et al. (2015), 66 articles were then randomly sampled from the full population of each newspaper outlet using a random number generator, creating a total of 198 articles.

There occurred various instances where an article from the random sample was not chosen as a part of this study. First, letters to the editor were omitted from this search because they do not have an explicit connection to the editors or managers of a newspaper outlet, and may not share their perspective. This was an issue with the *Boston Globe*'s Proquest Newsstream database, as letters to the editor could not be excluded from the search population. The Infotrac Newsstand database was capable of omitting this type of article from the search populations of the *Boston Herald* and the *Cape Cod Times*. Second, articles without Cape Wind as the main subject of their stories were not selected. This occurred when an article would include one or several statements referencing Cape Wind in the context of a different story and not present information that described the project. The following excerpt is found in a *Boston Globe* (2006) article and only includes a single statement regarding Cape Wind:

Deval Patrick, a former assistant US attorney general, showed some breadth of vision by linking his response to the housing crisis with transportation and regional planning issues, but the debate format allowed little room for detail. Patrick, the only candidate to support the Cape Wind project, made sure to remind viewers of that stand. But he lost points for ducking the question on whether New Bedford officials are right to challenge the MCAS graduation requirement for high schoolers.

This newspaper text referenced Cape Wind only once in the larger context of the 2006 Massachusetts gubernatorial debate. It is clear that the central theme of the article was to communicate candidates' positions on issues, and not to report on the project itself. Similarly, a recurrent article type from the *Boston Herald*, titled 'Business In Brief,' was not selected for this study. These texts would include one to several sentences

reporting on a wide variety of issues and not focus on a single story. As such, articles like this from the *Boston Herald* and *Boston Globe* were not approved for the article population. If a text from the random sample did not meet the before mentioned criteria, then the subsequent article in order of date was selected. This occurred 29 times in the *Boston Globe*, 14 times in the *Boston Herald*, and 3 times in the *Cape Cod Times*.

III. Coding Articles

A. Background on Coding

One of the methods used in qualitative content analyses is coding, when researchers, “interpret what they see, read, or find and then state their experiences in the formal terms of an analysis” (Krippendorff, 2004). A ‘code’ is identified and selected from a predetermined ‘codebook,’ which collectively helps recognize underlining themes that are relevant to the text(s) (Krippendorff & Bock, 2009). In this thesis, the collected articles were manually coded for the associated ‘frames’ and ‘actors’ that were relevant to the Cape Wind debate. As stated earlier, the ‘frame’ is a, “speaker’s emphasis on a subset of potentially relevant considerations [that] causes individuals to focus on these considerations when constructing their opinions” (Druckman, 2001). ‘Actors’ are used in a general sense to designate any individual or group that is involved with or has a position on an issue, thus associating them with positive or negative frames (Blair et al, 2015; Blair et al., 2016). Following the assignment of codes to a studied population, data can be collectively analyzed to identify trends.

B. Codebook

In relying upon the methodology of existing media analyses and the findings of Cape Wind public opinion polls, a codebook was developed to identify the predominant frames and actors involved in the debate. Stephens et al. (2009) use the ‘functional subsystems of society’ in Luhmann’s (1989) theory of ecological communication as the structure of their codebook. Luhmann (1989) defines these six categories as education, religion, politics, science, law, and economy. Applying these classifications to the context of wind energy deployment, Stephens et al. (2009) created the following distinct framing categories for their own content analysis of wind energy coverage in United States

newspapers: technical, economic, environmental, health/safety, political, and aesthetic/cultural.

Each framing category was divided into risk or benefit frames and included specific sub-frames within them (Stephens et al., 2009). For example, under the economic category, a sub-frame risk would be ‘reduced tourism’, and a benefit would be ‘job creation.’ The risk and benefit frames used by Stephens et al. (2009) served as the basis for my codebook. Table I is recreated from Stephens et al. (2009) and summarizes the risk and benefit sub-frames associated with each framing category. In addition, existing sub-frames in each category were supplemented with information found specific to the Cape Wind debate, as identified in Firestone et al. (2012), Bush and Hoagland (2016), and the newspaper texts.

Frames	Risks	Benefits
Technical	Technological limitations and uncertainty of wind energy. Turbines not capable of supporting Cape Cod energy needs. Scarcity of wind in Nantucket Sound.	Technological reliability, sophistication, and advancements of wind energy. Turbines capable of supporting Cape Cod energy needs. Abundance of wind in Nantucket Sound.
Economic	Expensive electricity rates. Destabilizes local economy (reduces tourism, creates weaker fishing industry, decreases property values).	Cheaper electricity rates. Strengthens economy (jobs, increases tourism, etc.). Wind energy beneficial as a free resource. No harm to economy.
Environmental	Negative environmental consequences (harm to bird and marine life, habitat loss, etc.)	Positive environmental consequences (reduces carbon emissions, reduces air pollution, mitigates climate change).
Health and Safety	Health or safety concerns (recreational boating safety, navigation, worker safety).	Health and safety improvements (i.e., reduces respiratory problems from better air quality).
Political	Negative political ramifications (reputation of state or political leaders). Threat to military or political security. Allowing private use of public land. Lack of substantial and legitimate governmental agency review.	Positive political ramifications (i.e., being a leader, closer to renewable energy targets, energy independence / security). Reviewed thoroughly by governmental agencies.
Aesthetic and Cultural	Negative visual impacts. Negative impacts on cultural,	Positive visual impacts (i.e., positive community impact,

historical, or recreational sites. Negative community impact.	enhances local culture, brings community together).
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Table I. Risks & Benefits Framing Categories, along with the sub-frames within each.

The actors referenced in the newspaper texts were also coded to identify them with risk or benefit frames. Direct quotations or other references that relate to the framing categories found in Table I were used to assess this. The following actor categories are similar to that of Blair et al. (2015) and were supplemented to characterize the individuals and groups applicable to the Cape Wind debate: (i) federal government; (ii) state agencies; (iii) local governments; (iv) legislators (v) Cape Wind Associates representatives; (vi) Alliance to Protect Nantucket Sound representatives (vii) environmental advocacy groups or organizations; (viii) electrical utility representatives; (ix) wind industry representatives; (x) individual citizens; (xi) other / none. When mentioned in an article, the actor was coded under the appropriate category along with the associated risk or benefit sub-frame. Actors that did not have a clear position linked to the risk or benefit sub-frames were not coded.

Each newspaper text was read and statements associated with the risk and benefit sub-frames were coded. Passages with multiple sub-frames had codes applied to each of them. Sub-frames that did not make a connection to Cape Wind were not included in my analysis. For example, vague statements regarding offshore wind not placed in the context of Cape Wind were not recorded. Actors were coded under each sub-frame that represented their direct quotation or reference. If an individual is cited speaking on behalf of another, then they were coded under the category of the person or group they were representing. The ATLAS.ti Version 1.0.50 qualitative data analysis software was used to store and code the collected newspaper articles.

IV. Analysis

Identifying the predominant frames that existed throughout the Cape Wind debate by merging data from all of the newspapers was expected to provide a general understanding of the total frames identified in the articles, how the use of these frames changed overtime, and what differences in reporting exist across the newspaper

outlets. Determining how the newspapers changed in their reporting of benefits and risks from year to year was done allow identification of trends in framing between 2003 and 2009, which would be important to establishing correlations between media framing and Cape Cod citizens' perceived impacts from Cape Wind. The results of Firestone and Kempton (2007) and Firestone et al. (2012) provides a baseline for comparing trends in media framing with the findings of public opinion polls, modeled on the approach taken by Delshad and Raymond (2013) regarding biofuels. The research question is whether the media's framing of Cape Wind impacted Cape Cod citizens' perceptions of it. To identify trends in the framing of Cape Wind's benefits and risks and correlations between these trends and the changes in public opinion from 2005 and 2009, the criteria for analysis included the public's anticipated positive and negative impacts, reasons for support and opposition, and causes for switching position.

To compare the newspaper outlets in their reporting of benefit and risk frames, as well as their actor citations, a χ^2 test was used to find statistically significant differences in framing within and across the newspaper outlets. This method is important for determining whether newspapers with contrasting political ideologies have framed Cape Wind differently. Examining whether the major actor groups cited by the newspaper outlets relied upon sources that focused on Cape Wind's benefits or risks was expected to provide additional insights into the differences in framing across the newspaper outlets.

Delshad and Raymond (2013) evidence a correlation between the media's negative framing of biofuels and the public's opposition to them. This indicates that Massachusetts newspapers could have had a similar effect on citizens' overall perceptions of Cape Wind. However, a conjecture in previous Cape Wind research suggests that reliable, accessible information regarding the project could have been overshadowed by campaigns that fought to support and oppose it (Firestone et al., 2012; Bush & Hoagland, 2016). Bush and Hoagland (2016) come to this conclusion after discovering that the public anticipated negative environmental consequences from Cape Wind even when positive environmental impact statements from the government were released. Learning whether the newspapers reported information like environmental impacts would thus be important, as it may reveal a possible disconnect between reporting, scientific knowledge, and public opinion.

There does not exist thorough information regarding the framing of environmental developments by different political ideologies, but current literature suggests that the newspapers in this study could have varied in their reporting. Blair et al. (2015) provide evidence that Colorado newspapers with different political associations framed hydraulic fracturing differently in their newspaper texts. But the authors emphasize that the outlets reported similarly on several themes, indicating that there were not overly significant distinctions between them (Blair et al., 2015). Although this study focuses on a separate, site-specific environmental development, similar differences in reporting were expected between the *Boston Globe*, *Boston Herald*, and *Cape Cod Times*.

Results

I. Introduction

In this section the framing codes applied to the newspaper texts are examined. These included a total of 1,685 codes, with 533 benefit frames, 638 risk frames, and 514 actors cited alongside them. First, the total number of benefit, risk, and actor frames throughout the six-year time period are assessed. The following segment identifies trends in benefit and risk framing across the newspapers from year to year. Finally, comparisons are made within and across the newspaper outlets based off of the prevalence of frames and actors in their articles.

II. Article Counts

The random sample of 66 articles from the *Boston Globe*, *Boston Herald*, and *Cape Cod Times* between January 1, 2003 and December 31, 2009 produced 198 articles. The number of articles represented by the outlets in each year differed, and the data is summarized in table II below.

	Boston Globe	Boston Herald	Cape Cod Times	Total
2003	8	18	3	29
2004	14	12	5	31
2005	10	5	4	19
2006	15	14	2	31
2007	6	8	15	29
2008	5	2	12	19
2009	8	7	25	31

Table II. Article Counts. Number of articles randomly selected from each newspaper outlet between 2003 and 2009.

II. Total Frames Identified In Articles

A. Total Benefit & Risk Frames

Figure I provides a visual of the aggregate percentages of benefit and risk sub-frames cited throughout the newspaper texts. This totaled to 1,171 codes, with 45.5% as benefit frames, and 54.5% as risk frames. The three most widely cited sub-frames were political risks (16%), political benefits (15%), and environmental benefits (14%), while aesthetic & cultural risks and environmental risks followed at 12% and 10%,

respectively. The remaining sub-frames all ranged from 1% to 8%. Besides the aesthetic & cultural category, each of the linked sub-frames totals were within 1% to 4% of each other. Table III compares the percentages of each category's sub-frame totals and includes the net difference between the two. Categories with a majority of benefit frames are highlighted.

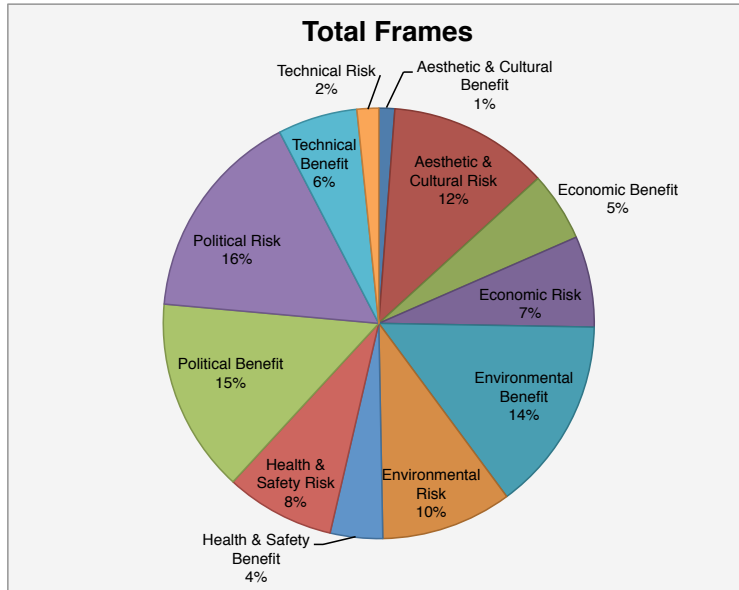


Figure I. Total percentage of benefit and risk sub-frames.

	Benefit %	Risk %	Net Difference % (Benefit % - Risk %)
Technical	6	2	+4
Political	15	16	-1
Health & Safety	4	8	-4
Environmental	14	10	+4
Economic	5	7	-2
Aesthetic & Cultural	1	12	-11

Table III. Net difference between framing categories' total benefit and risk frame percentages. Categories with a higher percentage of benefit frames are highlighted.

Figure II displays the percentages of the benefit and risk sub-frames found in the two framing categories. The benefit category's environmental and political sub-frames were both used 32% of the time, together accounting for nearly 2/3 of all benefit frames. The remaining sub-frames were used far less frequently, all ranging from 3% to 13%. For risks, the political and aesthetic & cultural sub-frames made up a little over half of all cited in the category, at 29% and 22%, respectively. Environmental (18%), health &

safety (15%), economic (13%), and technical (3%) risk sub-frames followed, but they did not account for a majority when combined.

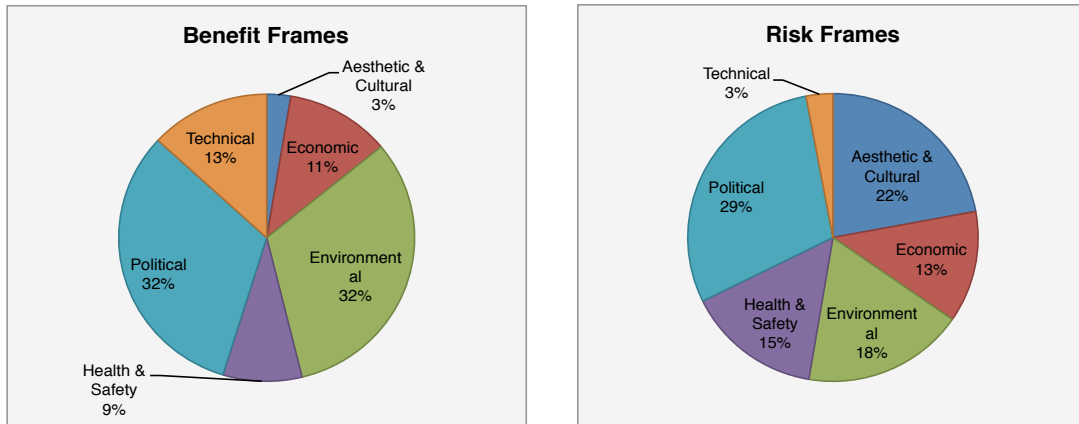


Figure II. Sub-frame percentages out of total benefit (left) and risk (right) frames.

B. Total Actor Citations

Out of the 1,685 codes identified in this study, 514 of them accounted for actors that were associated directly with benefit or risk frames. Figure III provides a visual of the aggregate total percentages of each actor group found in the newspaper texts. The four most widely cited actor groups in the study were the Alliance to Protect Nantucket Sound (17%), the federal government (16%), Cape Wind Associates (15%), and other / none (15%). Combined, these groups accounted for nearly 2/3 of the total actors referenced in the articles. Many differed, though, in their connections with benefit or risk frames. Table IV displays each group's percentage of associations with the total benefit and risk frames, along with the net difference between the two. Groups most associated with benefit frames were Cape Wind Associates, the federal government, environmental advocacy organizations or groups, and the state agencies. Conversely, the Alliance to Protect Nantucket Sound, legislators, others / none, and local governments were connected most with risk frames. Individual citizens, electrical utility representatives, and wind industry representatives were cited far less in the newspaper texts, and there did not appear to be a difference between their associations with benefit or risk framing.

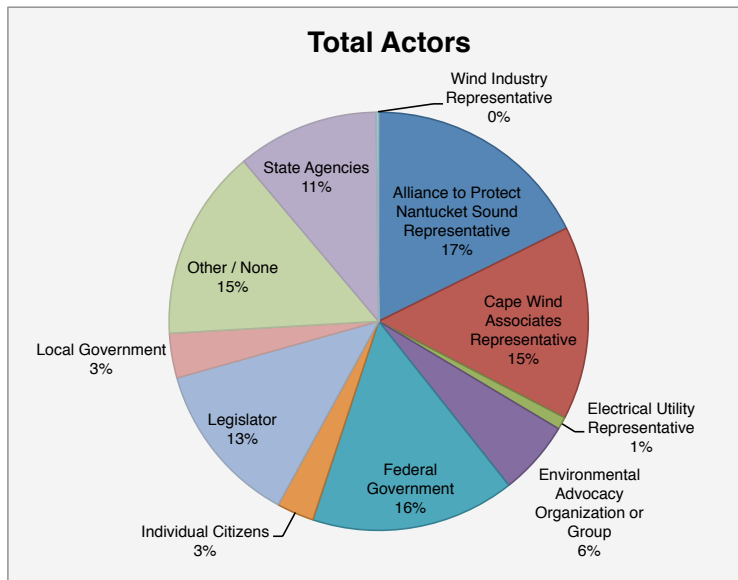


Figure III. Total percentage of actor citations.

	Benefit %	Risk %	Net Difference % (Benefit % - Risk %)
Alliance to Protect Nantucket Sound	0.7	31.2	-30.5
Federal Government	20.4	8.6	11.8
Cape Wind Associates	33	1.1	31.9
Other / None	10.5	17.3	-6.8
Legislators	5.4	18.9	-13.5
State Agencies	16.7	11.1	5.6
Environmental Advocacy Organization or Group	9.2	2.2	7
Individual Citizens	2.4	3.9	-1.5
Local Government	0	5.3	-5.3
Electrical Utility Representative	1.4	0.3	1.1
Wind Industry Representative	0.3	0	0.3

Table IV. Total actor citations alongside benefit and risk frames. Actor groups with a majority of benefit frame associations are highlighted.

III. Changes In Framing Overtime

Changes occurred in the total percentage of benefit and risk frames used by the newspaper outlets throughout the six-year period. In 2003, risk frames were used 57.6% of the time, while benefit frames accounted for less at 42.4%. Benefit and risk frames appeared to even out in 2004 at 50.6% and 49.4%, respectively. However, the year 2005 witnessed a sharp increase in risk frames, which remained relatively constant into 2006.

Benefit frames gradually rose each year from 2007 to 2009, ultimately making up the majority at 53.2% of the total frames in 2009. Table V displays the benefit and risk frame percentages by year, along with the net difference between the two. Highlighted sections indicate years when benefit frames were in the majority.

	Benefit %	Risk %	Net Difference (Benefit % - Risk %)
2003	42.4	57.6	-15.2
2004	50.6	49.4	+1.2
2005	37.4	62.6	- 25.2
2006	37.6	62.4	- 24.8
2007	47.1	52.9	- 5.8
2008	49.6	50.4	- 0.8
2009	53.2	46.8	+ 6.4

Table V. Net difference between total percentage of benefit and risk frames in each year. Years with a majority of benefit frames are highlighted.

Figure IV displays the changing percentages of benefit sub-frames in newspaper texts compared to the total number of frames in this category from year to year. Throughout the six-year time period the presence of political and environmental benefit sub-frames increased the most. In 2003 both sub-frames represented 23.6% of the benefit frames, encompassing almost half of the total number. The environmental benefit sub-frame rose after 2003, but dropped from 34.6% to 23.9% between 2005 and 2006, and again from 45.0% to 33.3% between 2008 and 2009. The political benefit sub-frame remained fairly constant from 2004 to 2007 between 35.8% and 36.6%, but in 2008 it fell to 21.7%. Though the values of the environmental and political benefit sub-frames did not show a consistent increase in percentages, they ended in 2009 at 33.3% and 32.4%, respectively. This accounted for nearly 2/3 of all benefit frames used in that year. The aesthetic & cultural benefit sub-frame increased as well, but its range of values was low and spanned from only 0% to 7%, ultimately ending at 4.6% in 2009.

The health & safety, economic, and technical benefit sub-frames all declined from 2003 to 2009, but the former two witnessed the greatest differences. Technical benefits were originally cited the most at 25% in 2003, but the following year it decreased to 9.9%. The sub-frame gradually declined from 15.4% to 13.5% between 2005 and 2007, experienced a sudden drop to 5% in 2008, and ultimately ended at 10.2% in 2009. This

represented an overall decrease in 14.8% from 2003 to 2009. Economic benefit sub-frames began at 18.1% in 2003, but in 2005 it saw a large drop to 3.8%. It experienced increases in 2006 and 2008 to 11.3% and 11.7%, respectively, and in 2009 it accounted for 12% of all benefit sub-frames. The health & safety benefit sub-frame started at 9.7% and fluctuated between 6.2% and 9.6% from 2004 to 2007, but it dropped from 13.3% in 2008 to 7.4% in 2009. By 2009 the health & safety, economic, technical, and aesthetic & cultural benefit sub-frames made up a little over 1/3 of the total benefit frames used.

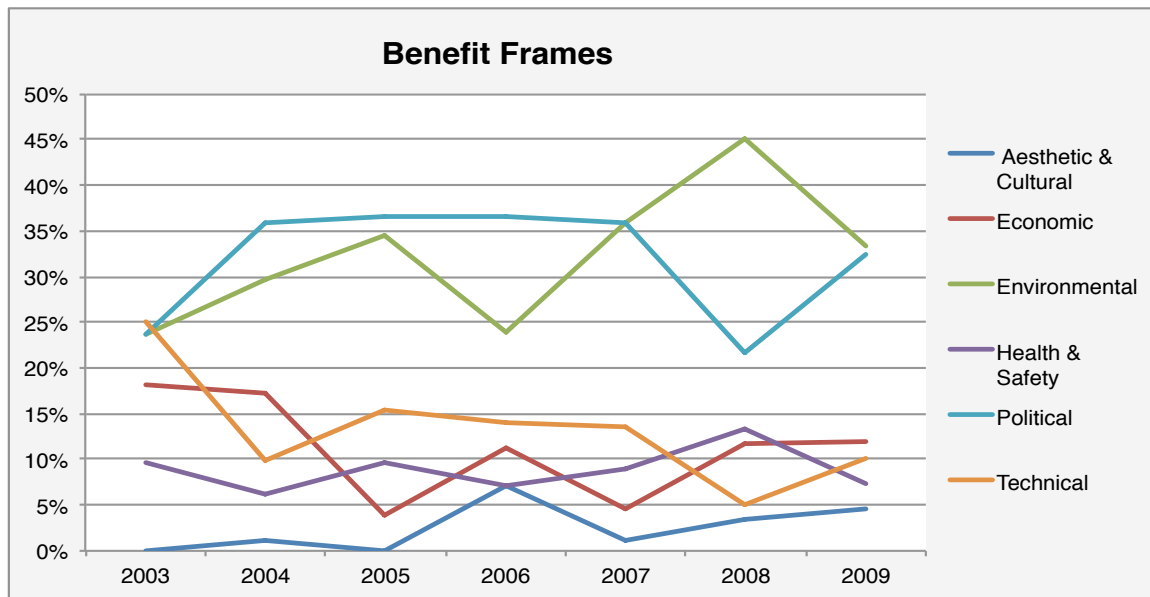


Figure IV. Changes in total benefit sub-frame percentages by year.

Figure V depicts the changing percentages of risk sub-frames in newspaper texts in this category from year to year. The environmental and political risk sub-frames witnessed the greatest decline, while the economic and health & safety risk sub-frames rose. In 2003 the environmental and political sub-frames made up about 60% of the newspaper outlets' total risk frames. By 2009, the value of these two dropped to a little under 1/3 of the total. The political risk sub-frame began at 36.7% in 2003 and rose to 39.2% the following year, but from 2004 to 2006 it declined to 23.7%. It gradually increased to 27.9% in 2008, only to drop to 24.2% in 2009. The environmental risk sub-frame witnessed sharp declines and spikes after starting at 23.5% in 2003. In 2005 the sub-frame rose to 29.9% and dramatically fell to 8.5% the following year, but in 2007 it

rose again to 20%. After this the presence of environmental risk sub-frames dropped until it reached 7.4% in 2009.

The presence of economic and health & safety risk sub-frames in newspaper texts increased from 2003 to 2009. Both of these risk sub-frames began at 5.1% and gradually increased into 2006 when the economic sub-frame reached 18.6% and the health & safety sub-frame peaked at 28%. The latter experienced peaks and troughs when it decreased to 14% in 2007, rose to 27.9% in 2008, and then dropped again to 17.9% in 2009. Following 2006 the economic sub-frame fell slightly from 18.6% to 17% in 2007, and in 2008 it dropped to 8.2%, then increasing to 20% by 2009. Although the aesthetic & cultural risk sub-frame gradually decreased from 26.5% in 2003 to 11.5% in 2008, it sharply increased to 27.4% in 2009. This accounted for the most risk sub-frames in the final year of the study. The technical risk sub-frame remained constant throughout the six-year period and ranged from 0.8% to 6.6%, ultimately accounting for 3.2% of the total risk sub-frames in 2009.

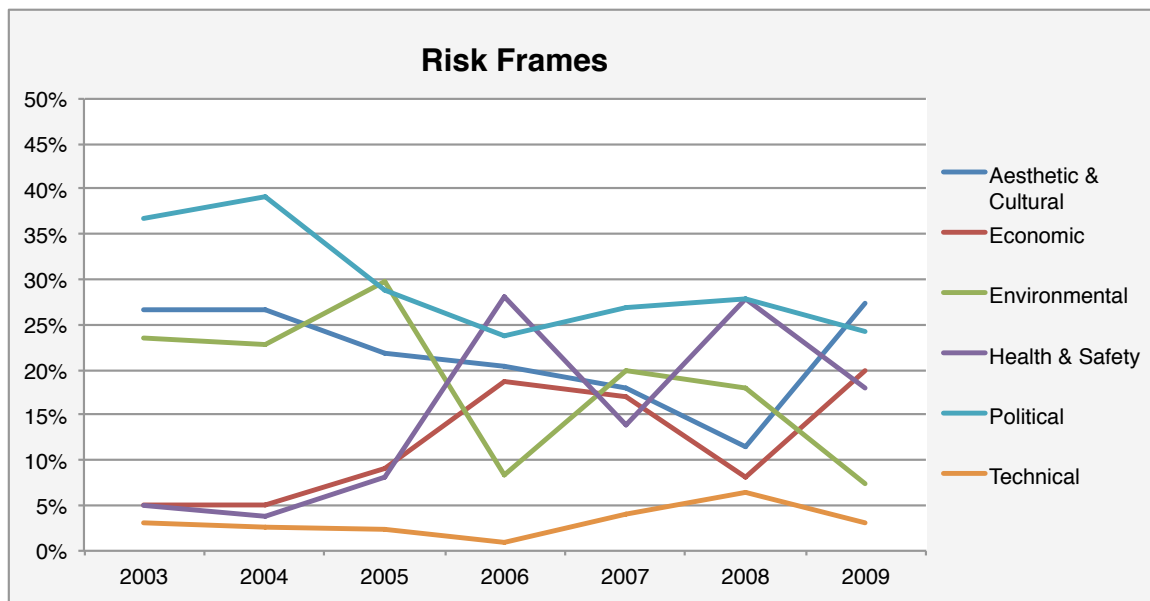


Figure V. Changes in total risk sub-frame percentages by year.

Figure VI compares the net differences between each category's linked sub-frames in order to help visualize their changes in benefit and risk framing throughout the six-year time period. The environmental and political sub-frames start in 2003 at -3.5%

and -11.2%, respectively, but both show and an upward trend towards more positive framing. By 2009, environmental sub-frame benefits were found in 14.3% more articles than the linked risk sub-frames. The political sub-frame benefits also switched to a majority in 2009 at a 5.9% difference. The economic and health & safety sub-frames witnessed trends that moved from more benefit framing to risk framing. In 2003 the health & safety sub-frame was cited as a benefit 1.2% more of the time, but after 2005 its percentage dropped to negative integers and continued this trend until finishing at -4.4% in 2009. Economic sub-frames were associated with more benefit in 2003 at 4.7%, but from 2005 to 2007 the sub-frame changed to risk frames. In 2008 it witnessed a brief jump to 1.7%, but in 2009 it dropped again to -3%. The technical sub-frame began at 8.8% in 2003, decreased to 3.8% the following year, and continued at a steady trend into 2007. The sub-frame briefly dropped to slightly more risk frames in 2008 at -0.8%, but it concluded the study at 3.9%. Aesthetic & cultural sub-frames started with the highest risk margin at -15.3% in 2003, and it witnessed an increasing trend towards more positive framing until 2008 when it reached -4.1%. However, in 2009 it dropped again to -10.3%, making up the sub-frame category with the most risk frames at the end of the study.

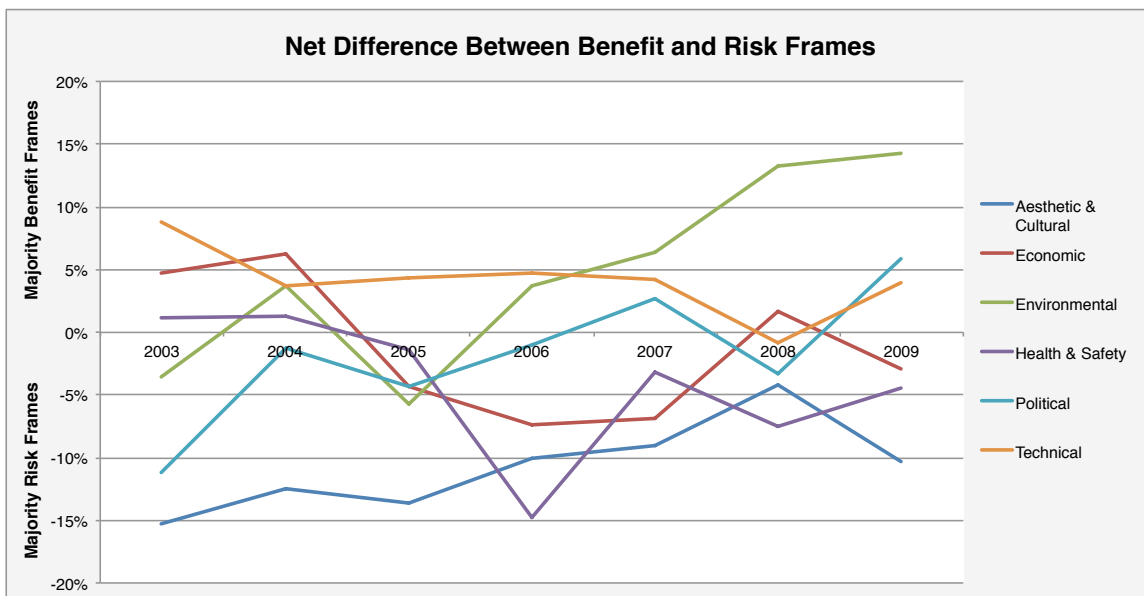


Figure VI. Net difference between total benefit and risk sub-frame percentages by year. Positive integers represent majority benefit framing, and negative integers represent majority risk framing.

IV. Differences Between Newspaper Outlets

A. Differences In Framing Within Newspaper Outlets

Within each newspaper outlet there exist no statistically significant differences between the number of their articles that include benefit and risk frames. Table VI shows the percentage and number of articles out of the 66 total from each newspaper outlet that contained benefit or risk frames. For example, benefit frames are found in 63 out of 66 articles from the *Boston Globe*, accounting for 95.5% of the total population. A χ^2 test was performed to find statistical significance between the benefit and risk frame values.

	Benefit Frames % (n)	Risk Frames % (n)	χ^2	Significance (p)
Boston Globe	95.5 (63)	87.9 (58)	0.2066	0.6494
Boston Herald	60.6 (40)	75.8 (50)	1.1111	0.2918
Cape Cod Times	62.1 (41)	72.7 (48)	0.5506	0.4581

Table VI. Difference in use of benefit and risk frames within newspaper outlets. Percentages and article counts with benefit and risk frames present, along with χ^2 value and significance (p).

There exist no statistically significant differences between each newspaper outlets' number of articles with benefit and risk frames present, but they do contrast in the frames they relied upon most. The *Boston Globe* included more articles with benefit frames (95.5%) than risk frames (87.9%), accounting for a 7.6% difference. The *Boston Herald* and *Cape Cod Times* both used more risk frames than benefits, making a difference of 15.2% and 7%, respectively.

B. Differences In Framing Across Outlets

Differences in reporting between the *Boston Globe*, *Boston Herald*, and *Cape Cod Times* were determined by comparing the total number of articles with benefit or risk themes present in them. Table VII transposes the information found in table [x] and compares the percentage and number of articles out of the 66 from each newspaper that included the benefit and risk frames. A χ^2 test was performed again to find statistical significance between the newspaper outlets' values. Statistically significant values (≤ 0.05) are highlighted.

	Boston Globe % (n)	Boston Herald % (n)	Cape Cod Times % (n)	χ^2	Significance (p)
Benefit Frames	95.5 (63)	60.6 (40)	62.1 (41)	7.0147	0.0296
Risk Frames	87.9 (58)	75.8 (50)	72.7 (48)	1.0769	0.5836

Table VII. Difference in use of benefit and risk frames across newspaper outlets. Percentages and article counts with benefit and risk frames present, along with χ^2 value and significance (p). Statistically significant values (≤ 0.05) are highlighted.

No statistical significance was found between the newspaper outlets' use of risk frames. The *Boston Globe* included the most at 87.9%, followed by the *Boston Herald* and *Cape Cod Times* at 75.8% and 72.7%, respectively. However, the newspaper outlets did contrast in the number of articles with benefit frames present, with the *Boston Globe* at a statistically significant value compared to the other two newspapers. While the *Boston Globe* included benefit frames in 95.5% of articles, the *Cape Cod Times* (62.1%) and *Boston Herald* (60.6%) did so at a much lower percentage.

Table VIII shows the percentage and number of articles out of the 66 from each newspaper outlet that included the benefit and risk sub-frames. Statistically significant (≤ 0.05) differences in values across the newspaper outlets are highlighted. The results indicate that six out of the twelve sub-frames identified in this study were found to have statistically significant values, indicating that the newspaper outlets contrasted in their use of benefit and risk sub-frames. For risks, the use of aesthetic & cultural and environmental sub-frames differed across the three newspaper outlets. In the *Boston Globe*, aesthetic & cultural risks were cited in 51.5% of the articles, followed by the *Boston Herald* (34.8%) and the *Cape Cod Times* (24.2%) at lower citation rates. Environmental risks were found in 42.4% of *Boston Globe* articles and 30.3% of *Cape Cod Times* articles, with the *Boston Herald* (18.2%) at a lesser value compared to the former two.

There exist more statistically significant differences between the newspaper outlets' use of benefit sub-frames, with the environmental, health & safety, political, and technical benefits all having p-values below 0.05. In each of these sub-frames the *Boston Globe* included more citations compared to both the *Boston Herald* and *Cape Cod Times*. The health & safety category had the highest degree of significance with the *Boston*

Globe at 33.3%, while the *Boston Herald* (4.5%) and *Cape Cod Times* (13.6%) were both lower in value. Political benefits had higher overall rates compared to the other outlets, but the *Boston Globe* cited them at 74.2% and the *Boston Herald* and *Cape Cod Times* at 34.8% and 33.3%, respectively. With environmental benefits, the *Boston Globe* included them in 66.7% of newspaper texts, followed by the *Cape Cod Times* at 42.4% and the *Boston Herald* at 25.8%. Technical benefits were found in 40.9% of *Boston Globe* articles, followed by 18.2% in the *Cape Cod Times* and 13.6% in the *Boston Herald*.

	Boston Globe % (n)	Boston Herald % (n)	Cape Cod Times % (n)	χ^2	Significance (p)
Aesthetic & Cultural Benefit	7.6 (5)	0.0 (0)	7.6 (5)	5	0.0821
Aesthetic & Cultural Risk	51.5 (34)	34.8 (23)	24.2 (16)	6.7671	0.0339
Economic Benefit	27.3 (18)	15.2 (10)	15.2 (10)	3.3684	0.1856
Economic Risk	30.3 (20)	24.2 (16)	21.2 (14)	1.12	0.5712
Environmental Benefit	66.7 (44)	25.8 (17)	42.4 (28)	12.4277	0.0020
Environmental Risk	42.4 (28)	18.2 (12)	30.3 (20)	6.4	0.0408
Health & Safety Benefit	33.3 (22)	4.5 (3)	13.6 (9)	16.6471	0.0002
Health & Safety Risk	30.3 (20)	19.7 (13)	33.3 (22)	2.4364	0.2958
Political Benefit	74.2 (49)	34.8 (23)	33.3 (22)	14.9574	0.0006
Political Risk	54.5 (36)	47.0 (31)	39.4 (26)	3.3933	0.1833
Technical Benefit	40.9 (27)	13.6 (9)	18.2 (12)	11.625	0.0030
Technical Risk	3.0 (2)	9.1 (6)	7.6 (5)	2	0.3679

Table VIII. Difference in use of benefit and risk sub-frames across newspaper outlets. Percentages and article counts with benefit and risk frames present, along with χ^2 value and significance (p). Statistically significant values (≤ 0.05) are highlighted.

C. Differences in Actor Citations

While Table IV establishes connections between the actor groups to the benefit and risk frames, table IX displays the overall percentage of actor group citations throughout the three newspaper outlets' article populations. The *Boston Globe* cited the federal government (20%) the most, followed by Cape Wind Associates (17.1%) and the Alliance to Protect Nantucket Sound (15.4%). For the *Boston Herald*, legislators (23.3%)

received the highest overall references, with the Alliance to Protect Nantucket Sound at 18.6% and Cape Wind Associates at 10.9%. The Alliance to Protect Nantucket Sound and the other / none category were both cited at 20.4% in the *Cape Cod Times*, with the federal government (16.4%) and Cape Wind Associates (15.1%) coming afterward.

There exist differences between the percentages of actor citations across the three newspaper outlets. While the *Boston Herald* and *Cape Cod Times* referenced the Alliance to Protect Nantucket Sound at 18.6% and 20.4%, respectively, the *Boston Globe* cited it the least at 15.4%. Contrasting, the *Boston Globe* covered Cape Wind Associates the most at 17.1%, while the *Cape Cod Times* did closely at 15.1%, but the *Boston Herald* was lower at 10.9%. For the federal government, the *Boston Globe* and *Cape Cod Times* referenced this group far more at 20% and 16.4%, respectively, while the *Boston Herald* was at 7%. Those placed in the other / none category were covered the most by the *Cape Cod Times* at 20.4% and the *Boston Herald* at 19.4%, whereas the *Boston Globe* included them far less at 8.8% of the time. Legislators were cited more by the *Boston Herald* (23.3%) than did the *Boston Globe* (11.7%) or *Cape Cod Times* (5.3%). The *Boston Globe* and *Boston Herald* included slightly more references to state agencies than the *Cape Cod Times*, at 11.7%, 13.2%, and 7.9%, respectively. But in terms of local government, this group was cited more frequently by the *Cape Cod Times* (5.9%) than the *Boston Globe* (3.3%) or the *Boston Herald* (0.8%). Environmental advocacy organizations or groups were referenced less than the other actor groups, but the *Boston Globe* included them most at 8.8%, about 5% more than the other two newspapers.

	Boston Globe %	Boston Herald %	Cape Cod Times %
Alliance to Protect Nantucket Sound	15.4	18.6	20.4
Federal Government	20	7	16.4
Cape Wind Associates	17.1	10.9	15.1
Other / None	8.8	19.4	20.4
Legislators	11.7	23.3	5.3
State Agencies	11.7	13.2	7.9
Environmental Advocacy Organization or Group	8.8	3.1	3.3
Individual Citizens	2.1	1.6	5.3
Local Government	3.3	0.8	5.9
Electrical Utility Representative	0.8	2.3	0

Wind Industry Representative	0.4	0	0
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Table IX. Percentage of actor citations within newspaper outlets.

Discussion

I. Introduction

In this section the results derived from the media analysis are interpreted and the overarching research questions regarding Cape Wind are addressed. First, the newspaper outlets' framing trends from January 2003 to December 2009 are analyzed and compared to Firestone and Kempton (2007) and Firestone et al. (2012) public opinion polls performed in 2005 and 2009, respectively. This will help in understanding if the newspapers' framing of Cape Wind correlated with the public's understanding of its benefits and risks, and subsequently if they could have been a factor in educating the public. Then, comparisons between the *Boston Globe*, *Boston Herald*, and *Cape Cod Times* are made to assess if these ideologically contrasting newspapers framed Cape Wind differently. Table X, found in the appendix, summarizes the public opinion survey findings of Firestone and Kempton (2007) and Firestone et al. (2012). The information found in this table includes the criteria used to find relations between public opinion changes and framing trends.

II. Framing Trends Compared to Public Opinion Polls

A. Environmental

The environmental sub-frame witnessed the greatest upward trend towards more benefit frames from 2003 to 2009, but this does not appear to equate to citizens' perceived environmental impacts from Cape Wind. In 2005, over 40% of respondents to Firestone and Kempton's (2007) survey anticipated negative impacts to bird & marine life, and it was also a leading reason for opposition to the project. But respondents also cited environmental benefits as top reason for support (Firestone & Kempton, 2007). By 2009 environmental benefits were no longer a top reason for support, along with anticipated negative effects to bird life cited over 40% and harm to marine life as a top reason for opposition (Firestone et al., 2012). Environmental effects were also chosen as the rationale for respondents switching from support to opposition (Firestone et al., 2012).

It appears that the public continued to view Cape Wind as a risk to the environment from 2003 to 2009, despite the media's increased use of benefit frames

throughout the time period. Between 2003 and 2005 the environmental sub-frame was cited predominantly as risks, but from 2006 to 2009 it began to include far more benefit frames each year. The disparity in framing and public opinion may be from the newspaper outlets beginning to report favorable Environmental Impact Statements about Cape Wind. This began in 2004 when the US Army Corp released a favorable draft EIS that found little to no harm to bird or marine life, and again in 2008 when the MMS released a similar EIS draft. It's interesting, though, that respondents anticipated negative impacts to bird life in 2009 at over 40%, when in 2006 the Massachusetts Audubon Society gave support to Cape Wind (Layzer, 2012). This suggests that the newspaper outlets reported Cape Wind alongside favorable environmental statements, but this did not equate to the public having a more favorable view of the project in terms of environmental impacts.

B. Political

Throughout the study political sub-frames gradually transitioned from being associated with a majority of risk frames to a majority of benefit frames. In 2003 the political sub-frame was associated with 11.2% more risk frames, but by 2009 it ultimately increased to 5.9% more benefit frames. Though the political sub-frame witnessed ups and downs from year to year, it ultimately had an increasing trend towards more benefit framing. Firestone and Kempton (2007) found that energy independence and the development of renewable energy were two of the top reasons for support of Cape Wind in 2005. By 2009, the former choice almost doubled from 30% to 59%, and it was cited as a reason why opponents ultimately gave their support to it (Firestone et al., 2012). The gradual transition of the political sub-frame from less risk frames to more benefit frames from 2003 to 2009 appears to relate to the spike in energy independence as a reason for supporting Cape Wind. This shift in public opinion may have derived from the newspapers' reporting of energy independence as a benefit from Cape Wind, rather than other political risks that were associated with the project.

C. Aesthetic & Cultural

The aesthetic & cultural sub-frame was associated with a majority of risks every year in this study. However, it did evidence a trend towards less risk framing starting in 2003 and ending in 2008, but in 2009 this movement changed back towards a greater margin of risk framing over benefit framing. This suggests that the aesthetic & cultural risk may have become less important later in the Cape Wind debate, as a myriad of other issues were raised later on. In 2005 visual aesthetics were cited in Firestone and Kempton (2007) as the top anticipated negative impact from the project, as well as the leading reason for opposition. The values of these responses decreased in 2009, though, when Firestone et al. (2012) found that visual aesthetics as a reason for opposition decreased from 57% to 52%, and that the anticipated negative impact on aesthetics dropped from 75% to 57%. This also accounted for a reason why supporters switched to opposition (Firestone et al., 2012).

The public opinion studies and media analysis results indicate that the risks to visual aesthetics always remained a leading reason for opposition towards Cape Wind. But the narrowing margin of aesthetic & cultural framing between 2003 and 2008 may explain the drop in visual aesthetics as an anticipated negative impact. The newspaper outlets could have reported less risks to visual aesthetics as the debate continued compared to other issues, potentially reducing it as a perceived risk to Cape Cod residents. A correlation like this is not overly strong, though, because in 2009 visual aesthetics were still a reason for opposing Cape Wind, as well as an issue that caused citizens to switch from support to opposition (Firestone et al., 2012). Regardless, it is possible that the newspapers downplayed the aesthetic & cultural risk frame overtime, which could have corresponded to the reduced number of anticipated negative impacts from visual aesthetics chosen by respondents. This indicates a major shift from Thompson (2005), in which he addresses the issue of newspapers reporting the negative effects of visual aesthetics more than others.

D. Economic

There does not exist strong evidence that the economic sub-frame's reporting by the newspaper outlets correlated with public opinion trends. The economic sub-frame was

associated with more benefit frames from 2003 to 2004, and again briefly in 2008, but it was ultimately found with 3% more risk frames by 2009. Similar to the narrow margin between economic benefit and risk frames throughout the study, it seems that public opinion in 2005 and 2009 was divided about the economic impacts of Cape Wind as well. In 2005 anticipated negative economic impacts were to the local fishing industry, tourism, and property values, while positive impacts would be seen with better electricity rates and job creation (Firestone & Kempton, 2007). Respondents would switch to opposition if electricity rates increased or if jobs were lost, but reduced electrical rates and support to the local fishing industry would cause one to give support to the project (Firestone & Kempton, 2007). By 2009 anticipated negative impacts to the fishing industry had dropped by about 10%, and improved electricity rates was a top reason to support the project (Firestone et al., 2012). It appears that there is not substantial evidence to suggest that the newspapers framing of economic benefits or risks correlated with the findings of the public opinion studies. Seeing that the public found both positive and negative economic impacts in 2005 and 2009, it is difficult to make relations between these findings and the newspapers' reporting, which was also not found to be significant in terms of its use of benefit frames compared to risk frames.

E. Health & Safety

The health & safety frame's prevalence in newspapers appears to have correlated most with the changes in public opinion. In 2005 negative impacts to recreational boating and fishing were anticipated by over 50% of respondents, and this was also cited as a top reason to oppose Cape Wind (Firestone & Kempton, 2007). By 2009 the anticipated negative impacts to recreational boating and fishing had dropped to just above 40%, along with navigational safety, but the former dramatically increased as a reason for opposition from 46% to 63% (Firestone et al., 2012). In addition, it was a major rationale for those to switch from support to opposition (Firestone et al., 2012). This trend is similar to the sudden increase in risk frames from 2006 that gave it a 15% margin over benefit frames. Although the margin of risk and benefit frames appeared to narrow slightly between 2007 and 2009, there still exists an overall increase in health & safety risk frames throughout the studied period. This suggests that the newspaper outlet's use

of health & safety risk frames could have accounted for the spike in public concern over negative impacts to recreational boating and fishing in the Nantucket Sound.

F. Technical

Technical benefit and risk frames represented 8% of the total frames identified in this study and were cited least amongst the newspaper outlets. The net difference between benefit and risk frames witnessed a slight downward trend, but overall it was associated with more benefit frames every year, except in 2008. This trend derives from a 2003 drop in technical benefit frames from 25% to about 10%, while the percentage of risk frames remained fairly constant throughout the study. Firestone and Kempton (2007) and Firestone et al. (2012) found no significant trends in their studies that related to the technical category. This indicates that the technical frame was covered much less compared to the other framing categories, and may not have been a significant part of the Cape Wind Debate.

G. Summary of Correlations

Throughout the study there occurred a narrowing gap between the number of benefit and risk frames identified in the articles. This changed in 2009 when the newspapers' use of benefit frames surpassed their use of risk frames for the first time since 2004. It is unclear, though, whether or not this trend equates to the findings of the public opinion studies. Firestone et al. (2012) evidence an overall decrease in anticipated negative impacts from the public in their research. In addition, support for Cape Wind increased from 43.8% in 2005 to 57% in 2009 (Firestone & Kempton, 2007; Firestone et al., 2012). But these results do not seem to equate entirely to the newspaper outlets' framing trends. Even with majority benefit framing in 2009 by the newspapers, anticipated negative impacts still outweighed positive ones in the 2009 public opinion study (Firestone et al., 2012). It is thus important to analyze correlations between the framing categories and specific public opinion results, as they help in narrowing down the potential impacts newspapers had on public knowledge.

Several framing categories appear to correlate with Cape Cod citizens' understanding of Cape Wind, but it is not an indicator that the studied newspaper outlets

had a significant, independent role in educating the public. Political (31%) and environmental (24%) frames encompassed over half of the total frames identified in the study, yet both contrasted in their correlations with public opinion. Respondents' belief in energy independence spiked from 2005 to 2009 and related to the increasing political benefit frames throughout the media analysis. The environmental frame experienced a different trend, whereas the public still felt uncertain over environmental risks even when the newspaper outlets began to report more benefit frames.

Overall, I find that the studied newspaper outlets did play a partial role in educating the public about Cape Wind. There are limitations to the extent of their effect, though, as this cannot be quantified through social science research. The political, aesthetic & cultural, and health & safety framing categories appeared to have a relationship with public opinion trends, but the environmental frame seemed to have an opposite effect. Since this was one of the top two framing categories in the study, it hints that the newspapers' influence on public opinion may not have been substantial. This appears to be an indicator that Cape Wind's environmental benefits may have been overshadowed by conflicting information. The public may have obtained information about the project from a myriad of sources throughout the debate. What accounts for this is unknown, but it could have derived from other forms of media like television, radio, or the internet.

III. Assessing Differences In Framing Across Outlets

This media analysis analyzed a liberal (*Boston Globe*), conservative (*Boston Herald*), and local (*Cape Cod Times*) newspaper to assess if they contrasted in their framing of Cape Wind, and the results suggest that differences in reporting did take place throughout the debate. The outlets were first analyzed individually to compare the number of articles each had with benefit and risk frames present, and there existed no statistically significant differences for each of them. But it is important to note that the *Boston Globe* included more articles with benefit frames, while the *Boston Herald* and *Cape Cod Times* relied upon a greater number of articles with risk frames. This begs the question of whether or not the newspapers balanced their reporting of benefits and risks. As Boykoff and Boykoff (2014) suggest in their research, unbiased reporting can result in

public discourse that diverts from proven scientific knowledge regarding an issue. This research project did not assess balance between risk and benefit frames, but it is possible that it occurred amongst the newspaper outlets. Subsequently, this could have altered the Cape Wind debate and perpetuated uncertainty over the project's impacts.

In comparing the newspaper outlets based off of the same criteria mentioned above, the *Boston Globe* differed in its use of benefit frames compared to the *Boston Herald* and *Cape Cod Times*. This appears to have divided the newspaper outlets by political ideologies, and the *Cape Cod Times* as a local, neutral perspective was found to relate most to the *Boston Herald*. But if political ideology split the newspapers in their support of Cape Wind, then there would most likely be a significant difference between the newspapers' use of risk frames as well. This study found no statistical significance across the outlets in terms of their use of risk frames, and the *Boston Globe* even had the greatest number of articles with risk frames present. Regardless, there still exists a distinction between the *Boston Globe* and the other two papers. The *Boston Globe* was more likely to report the benefits of Cape Wind, yet it was still found to cover the project's risks similarly to the *Boston Herald* and *Cape Cod Times*. This suggests that the liberal leaning newspaper tended to look upon Cape Wind slightly more favorably than the conservative and local ones, but it is not a sharp contrast because they still had similar numbers of articles with risk frames present.

Half of the sub-frame categories were found to have statistical significance when compared across outlets, suggesting that the newspapers did place emphasis on different frames throughout their articles. The presence of environmental, health & safety, political, and technical benefit frames differed across the newspapers, as well as the environmental and health & safety risk frames. In each of these sub-frame categories the *Boston Globe* had the greatest number of articles that included them. Among the benefit frames with statistical significance, it appears that the *Boston Globe* stood alone compared to the *Boston Herald* and *Cape Cod Times*. All of these categories were found to have higher degrees of significance compared to the risk frames, as their p-values were all below 0.01. This advances the idea that the *Boston Globe* was more likely to frame Cape Wind in terms of its benefits. But as mentioned previously, the *Boston Globe* was still found to have the greatest number of articles amongst the risk sub-frames with

statistical significance. This is an indication that the *Boston Globe* did not rely solely upon benefit frames throughout its articles, and how its degree of positive reporting is not entirely distinct from the *Boston Herald* and *Cape Cod Times*.

The most predominantly cited actor groups and their associations with benefit and risk frames also help in finding differences between the newspaper outlets. The Alliance to Protect Nantucket Sound and other / none groups were linked to more risk frames, and they were cited most in the *Cape Cod Times* and the *Boston Herald*. Contrasting, the federal government and Cape Wind Associates were grouped with more benefit frames, and found most in the *Boston Globe*. These distinctions help in understanding the sources used by the newspapers to report about Cape Wind. The results indicate that the *Boston Globe* tended to cite actor groups that looked favorably upon the project, whereas the *Boston Herald* and *Cape Cod Times* placed emphasis on groups that underlined its risks. The data was not analyzed with a statistical test to assess significance between the newspaper outlets, but it still emphasizes the differences that exist in the papers' reporting of benefits and risks.

The liberal leaning *Boston Globe* was found to frame Cape Wind in terms of its benefits more than the conservative *Boston Herald* and local *Cape Cod Times*, but this does not mean that the outlets were polarized in their reporting. In this media analysis I detect a similar result from Blair et al. (2015). Although the *Boston Globe* was found to have more benefit frames within its articles, there existed no statistically significant difference in comparing all of the outlets' use of risk frames. I find that the liberal paper tended to focus on several benefits frames more than the conservative and local ones. But it does not mean that the other papers preferred reporting Cape Wind's risks more, since their article counts with risk frames present were not statistically significant from the *Boston Globe*. This difference in reporting could have resulted in *Boston Globe* readers understanding more benefits to the project than the *Boston Herald* and *Cape Cod Times*' audiences, potentially causing readers of the latter two outlets to have a different perspective on Cape Wind.

Conclusion

The Cape Wind debate serves as an opportunity to study the complexities in developing offshore wind and the factors that influence community resistance. Existing literature evidences that support for the project reached a majority for the first time in 2009, but researchers are unsure of what caused this change in public opinion. This research project builds upon previous media analyses to determine whether or not Massachusetts newspapers' framing of Cape Wind could have brought about this trend. The *Boston Globe*, *Boston Herald*, and *Cape Cod Times* gradually began reporting more of Cape Wind's benefits each year between 2003 and 2009. Several of the framing categories did not evidence trends that equated to Cape Cod citizens' perceived risks and benefits of the project, though, suggesting that the newspapers may not have had a considerable, independent role in educating the public. Differences in reporting across the outlets also indicate that individuals' understanding of Cape Wind may have differed based off of the sources that covered the project.

The results provide general insights into the framing of offshore wind energy and the potential biases that exist in reporting. Since framing is not site-specific and can be studied in a wide range of topics, this research helps in understanding how offshore wind energy can be framed both domestically and internationally. Previous media analyses have also reviewed the reporting of wind energy in a state-to-state context. As such, studying the framing of Cape Wind also displays another facet to the debate that could have contributed to its setbacks. Furthermore, studying newspapers with contrasting political ideologies also reveals how different groups perceive and respond to offshore wind. This is an important aspect of the research, as it uncovers whether or not support for this environmental development is split along party lines and how they may differ in their framing.

Further research could be performed to analyze the newspapers' balancing of benefits and risks. Boykoff and Boykoff (2014) found that the media's reporting of climate change as a two-sided issue created a disproportionate percentage of people who disagree with shared scientific beliefs. This could have also been an issue in the framing of Cape Wind, as people may have viewed the project as a risk even when the benefits were proven to outweigh them. Also, with the completion of the United State's first

offshore wind farm, Deepwater Wind, it would be beneficial to perform a case study comparing this project with Cape Wind. Doing so can reveal differences in the development of both these projects, as well as the factors that ultimately led to their success and failure. Although the likelihood of Cape Wind's resurgence is improbable, there are lessons to be learnt so that other offshore wind projects can be completed in the future.

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Appendix

Source	Year Research Performed	Findings	
Firestone and Kempton (2007)	2005	Support = 43.8%	Oppose = 55.5%
		<i>Anticipated Negative Impacts (50%+):</i> Visual aesthetics, community harmony, local fishing industry, recreational boating / fishing	
		<i>Other Negative Impacts (40%+):</i> Tourism, property values, bird & marine life	
		<i>Anticipated Positive Impacts (40%+):</i> Air quality, electricity rates, job creation	
		<i>Top Reasons For Support:</i> Environmental benefits, electricity rates, energy independence & renewable energy	
		<i>Top Reasons For Opposition:</i> Environmental effects, visual aesthetics, fishing & boating	
		<i>Reasons to Change From Support to Opposition:</i> Harm to bird & marine life, increased electricity rates, job losses	
<i>Reasons to Change From Opposition to Support:</i> Cape Cod receives all electricity, electricity rates drop, support given to local fishing industry, air quality improvements			
Firestone et al. (2012)	2009	Support = 57%	Oppose = 41%
		<i>Anticipated Negative Impacts* (50%+):</i> Visual aesthetics (75% in 2005 to 57% in 2009)	
		<i>Other Negative Impacts (40%+):</i> Fishing industry, bird life, recreational boating / fishing, navigational safety	
		*Overall decrease in anticipated negative impacts from 2005 to 2009	
		<i>Anticipated Positive Impacts:</i> (Not assessed in this study – but authors argue positive impacts were seen more favorably as anticipated negative impacts dropped)	
<i>Top Reasons For Support:</i> Electricity rates, energy independence (30% in 2005 to 59% in 2009)			
<i>Top Reasons For Opposition:</i> Recreational boating / fishing (46% in 2005 to 63% in 2009), marine life impacts, visual aesthetics (57% in 2005 to 52% in 2009)			

		<i>Reasons Why Switched From Support to Opposition:</i> Environmental effects, electrical rates, visual aesthetics, boating safety
		<i>Reasons Why Switched From Opposition to Support:</i> Electrical rates, energy independence

Table X. Summaries of the public opinion survey findings of Firestone and Kempton (2007) and Firestone et al. (2012).