8-21-2012 12:00 AM

“Winds of Change”: Explaining Support for Wind Energy Developments in Ontario, Canada

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A thesis submitted in partial fulfillment of the requirements for the Master of Arts degree in Geography

“Winds of Change”: Explaining Support for Wind Energy Developments in Ontario, Canada

Explaining Support For Wind Energy

(Thesis format: Monograph)

by

Chad Walker

Graduate Program in Geography

A thesis submitted in partial fulfillment
of the requirements for the degree of
Masters of Arts

The School of Graduate and Postdoctoral Studies
The University of Western Ontario
London, Ontario, Canada

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"Winds of Change": Explaining Support for Wind Energy Developments in Ontario, Canada

is accepted in partial fulfillment of the
requirements for the degree of
Degree Masters of Arts

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Date

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Chair of the Thesis Examination Board

Abstract

This thesis addresses a major gap in the wind turbine and risk assessment literatures. It explains local support for wind energy in some areas in spite of vocal opposition in others. Findings from Port Burwell and Clear Creek, Ontario indicate that social and contextual forces may help explain much of the difference in opinion between the two communities. The case study was focused through 21 in-depth interviews. The interviews were analyzed verbatim using NVIVO 9 software. The findings were found to be consistent with Kasperson's theory of the Social Amplification of Risk and seem to explain why Port Burwell is an area of high support for wind turbines while other places, like Clear Creek to an extent are not nearly as supportive. Ultimately the thesis calls for a policy change and rededication to promote effective green energy policy in Ontario.

Keywords

Wind Turbines, green energy, Green Energy Act, opposition, environmental risk, climate change, air pollution, community well-being, conflict

Acknowledgements

I feel as though I need to acknowledge a countless number of people for their unique roles in the past two years. First of all, this research would not have been made possible without the guidance and support of Dr. Jamie Baxter. Thank you so much- I cannot imagine a better supervisor to work under than you. My family also deserves great credit for the support and love they have shown me over my lifetime. Mom and Dad, you are truly special and have more to do with this degree than you may ever realize. Jace, I want to thank you being a perfect older brother and a generous host during my two reading weeks in Arizona. To Papa, you are a great role model and someone who I look up to- thank you for supporting my dreams. To Aunts Charlene, Sally and Vera and Uncles Don, Jim and Wade thank you for your love and encouragement. Special thanks all my teammates in the EHHL for providing great examples of the type of academic I wish to become one day. To ALL of the Geograds- the last two years has been so much fun largely because of you. The fun we have had during our time together makes this degree even sweeter. Particularly, Victoria, Kassandra, Spencer, Marg, Ollie, Danny, Chris Z, you guys are awesome! Finally thanks also goes to the 21 people I spoke with during the research. Without your time, none of this would have been possible.

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Chapter 1:

Introduction

Of all of the problems facing the world today, human-induced climate change poses one of the biggest threats – but policy responses can have unintended impacts. For example, in order to address climate change, governments are under pressure to reduce greenhouse gas emissions and pursue sustainable energy alternatives. In Ontario, Liberal Premier Dalton McGuinty has mandated that the province begin to move away from the use of fossil fuels for electricity generation, largely because coal burning threatens human health directly. A recent study conducted for the government of Ontario suggesting that human health related damages from coal-fired electricity production in the province could be up to three billion dollars annually (DSS, 2005). In order to address these issues, renewable energy sources including wind, solar and geothermal have been increasing around the world. In Canada, wind energy has seen the most development in recent years, with an over 40x increase in total megawatts (MW) capacity between the years 2000-2012 (see figure 1.1; CanWEA, 2012). Ontario has been leading the charge in this increase. As of June 2012, Ontario had over 1,969 MW of

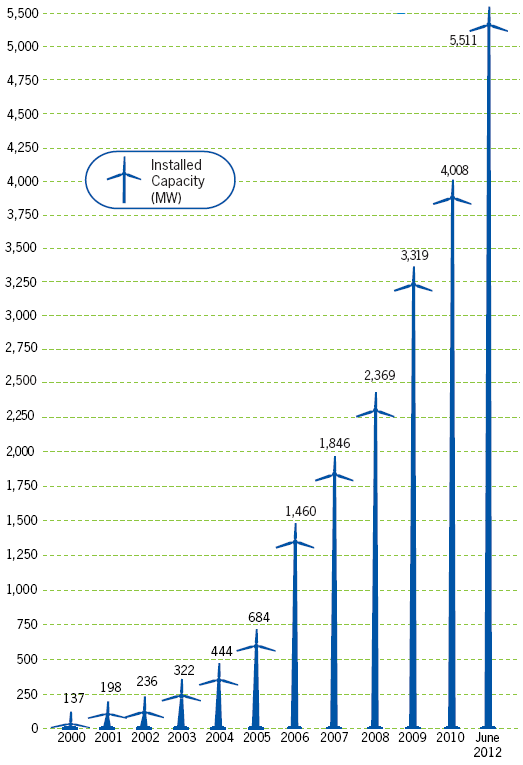


Figure 1.1 - Growth in Canadian wind energy (CanWEA, 2012)

capacity- making up 36% of the country's total (CanWEA, 2012). Looking forward, the Canadian Wind Energy Association (CanWEA) has set a goal of 55 000 MW (~22 000 turbines) of electricity generated by wind power by the year 2025(CanWEA, 2008). In Ontario, the provincial government has promoted renewable energy through the Green Energy Act (GEA); an initiative that aims to make Ontario a "...global leader in the development of renewable energy...while creating thousands of jobs" (Green Energy Act, 2009). The largest component of the GEA is the Feed-In-Tariff (FIT) system where public or private interests receive guaranteed rates for generation of renewable energy. Wind power has increased the most as a result of the program. As of 2010, approximately 2% of the electricity generated in the province was through wind turbines and by 2030 it is projected that this will increase to 10% (Government of Ontario, 2011). This rapid development has resulted in a total of 14 large-scale wind farms in the province as of February 2012 (see figure 1.2; IESO, 2012).

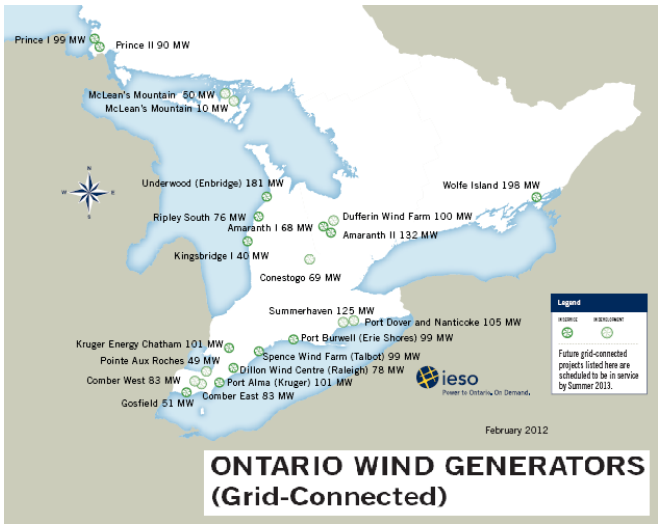


Figure 1.2 – Map of Wind Farms in Ontario (IESO, 2012)

Coinciding with expansion of wind power has been a debate surrounding the wide range of possible negative impacts that accompany wind turbines including: human health problems, bird deaths, and poor aesthetics. Because of the infancy of large-scale wind generation in Ontario, and perhaps the relative lack of controversy in most other parts of the world most of these proposed impacts have not been investigated to a great extent.

This may be because aesthetics is assumed to be at the core in other jurisdictions and considered an intractable policy problem. Despite the lack of literature, there is good reason to believe that impacts are interconnected with the policy context through socially constructed risk perception processes and may be causing stress-inducing intra-community social conflict (Baxter 2009, Hill and Knott 2010; Kasperson et al., 1988). For example, the siting process in Ontario and these debates have run in parallel. Prior to the establishment of the GEA in 2009, those opposed to wind energy in their communities could, through long-standing environmental assessment procedures, delay or cancel plans based on a wide range of suspected impacts including the aesthetic (dis)value of the turbines. In efforts to streamline siting and to move the province's alternative energy plan forward Premier McGuinty explained in 2010 that the GEA makes it clear that "NIMBYism will no longer prevail when it comes to putting up wind turbines..." and that "[m]unicipalities will no longer be able to reject wind turbines because they don't like them" (Ferguson & Ferenc, 2009). Under the GEA, arguments against wind energy development would only be heard if they were shown to: a) "[cause] serious harm to human health" or b) "[cause] serious and irreversible harm to plant life, animal life, or the natural environment" (GEA, 58). Additionally, in June 2009 the province created set of setback guidelines that varies based the number of turbines in the area and the sound level produced but was set at a minimum of 550 metres from the

nearest house (Hill and Knott, 2010).

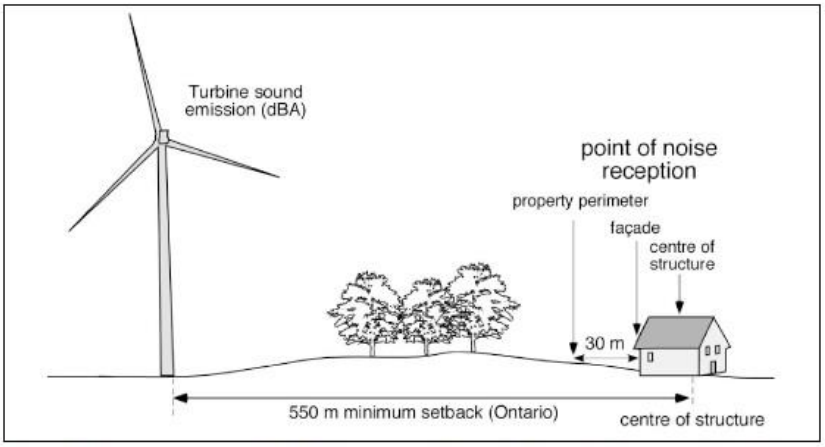


Figure 3. Showing a conceptual drawing with turbine noise, sound propagation across the landscape, and a point of reception.
Source: Authors.

Figure 1.3 - Minimum wind turbine setback distance in Ontario (Hill and Knott, 2010)

Creating this minimum setback was yet another way in which the Ontario government streamlined the process of wind turbine approval process yet reactions were mixed. Some argued that the setback was too conservative while others thought it was far too small (Hill and Knott, 2010, p. 163). Together, the GEA has severely limited the number of arguments deemed acceptable by the government to reject new turbine installations and because of this objectors may be highlighting only a small portion of impacts in their complaints about turbines (Bosley and Bosley, 1988; Gipe, 1995). Thus, what reaches the news likely only tells part of the story, in particular how policy itself can shape wind turbine impacts.

1.1 Autobiography

As is stated in the methods section of this thesis, I decided to include a brief autobiography in order to reveal the potential bias that I may have and how it could affect the research. According to Lincoln and Guba (1985, pg.) including information about

the researcher in this way helps the confirmability of the research by helping to define to what extent "biases, motivations or interests…influence interpretations". Though stating it does not eliminate all subjective factors, I believe it helps the reader understand the motivations of the research.

My interest in the current research on wind energy and more generally renewable energies has developed from a love of good environmental stewardship. I believe that the majority of green energy installations today including wind turbines are overwhelmingly a positive thing for southern Ontario, Canada and the world as a whole. During my undergraduate years, I majored in Environmental Policy and Analysis with a specialization in International Perspectives. This program was very interdisciplinary but still focused on the science and political aspects of global environmental problems. Of course this included arguably the greatest problem of our time, global climate change in which I took great interest. I found there were apparent disconnects between climate change science and policy and enjoyed studying the many proposed solutions designed to marry the two.

If we wish to reduce our contribution to climate change, an obvious solution would be to reduce CO_2 emissions associated with the generation of electricity. Renewable energy systems like wind farms have been shown to produce no greenhouse gases during their normal operation. I feel as though the introduction of wind energy in Ontario and around the world is a good thing for that reason would say that before the research began, I was undoubtedly on the "pro-wind" side of the debate. As the research progressed, I became much more aware that turbines may bring problems to the areas which they are introduced and no doubt, I became much more sympathetic to the

problems facing the people I spoke with who are facing difficulties. Included in this may be general annoyances to the people living near them, small increases in bird and bat deaths, and/or cases of community conflict. In my opinion however, the claims of human health, ecological, or social problems have not been proven to the extent that climate change and other environmental problems have. In the end, I feel that any type of problem created with the introduction of wind turbines into a particular area appear to be smaller in comparison with the ecological, human health, and social impacts associated with a continued reliance on GHG-rich sources of electricity including coal-fired power generation.

Chapter 2:

Literature Review

2.1 Theoretical Frameworks of Risk Perception

The focus of much of this research examines reasons people and communities support (or oppose) wind energy developments. It is presumed that those people who are against wind projects perceive turbines to pose a 'risk'- either to their health, the environment, the economy or a multitude of other sources. Indeed the fact that the feeling of risk appears to be varied from site to site despite very similar conditions (i.e. wind turbine size, setback distance, etc.) indicates that risk may be at least partially socially constructed. Watt (1983) believes that indeed "...different responses to the same hazard [can be] attributed to social context and political economy". Others like Susan Cutter (1993) take the idea a bit further. In her 1993 book *Living with Risk* she goes as far as to say "...behavioural effects of risk estimation or evaluation are secondary to contextual or situational forces". While it is difficult to quantify the balance between actual risk and what is socially constructed, it is almost certain that the latter will play a role in our research project. The following paragraphs introduce some of the fundamental theories in the risk analysis literature that may be relevant to the case study of Port Burwell and Clear Creek, Ontario. They are from different schools and perspectives including Geography, Sociology and Anthropology.

Economic dependence theory has been cited by many in the geographic literature as playing an important role in the formation of risk perception. Its major argument is that

economic benefits may have an influence on how people form their opinions on potential risks (Bourke, 1994; Albercht et al. 1996, Spies et al., 1998; Groothuis and Miller, 1994; Timmons, 1997) such as hazardous waste facilities. For example, financial benefits through job creation or tax revenues may lead people to be more supportive of a 'risky' project than they otherwise would be. This may play a vital role in the case of wind energy projects because in most cases local jobs, tax revenues and tourism opportunities can be gained from development.

Also applying to wind energy developments is the idea that *dread* may enhance the perception of risk amongst the public. Lee (1999, pg. 2) believes that projects that are seen as involuntary, inequitable or have a lack of control are often seen as posing more risk. Particularly since the passing of the Green Energy Act in 2009, the wind energy assessment process has been streamlined- often leading to the above criteria. As well, it has been shown that when a new risk or one where the effects are not understood by science is introduced into an area, it will be perceived as posing a greater risk (Fischhoff et al., 1978; Slovic et al., 1982; Slovic, 1987). As large-scale wind energy developments in Ontario goes back only to 2006, our understanding of the technology and its possible risks may be lacking- once again leading to this higher perception of risk.

Relating to the political backdrop of wind energy projects in Ontario are cultural theories founded within sociological perspectives. According to Lee (1999) trust (or lack-thereof) of political leaders, authorities or experts may heavily influence people's perceptions of risk. It is likely then therefore that the political beliefs and values of individuals are important in determining the perception of risk of a development. Indeed Groothuis and Miller (1997) have shown that those who distrust government, media and

business tend to exhibit higher levels of perceived risk of a hazardous waste disposal facility. The polarizing nature of the wind turbine debate in Ontario may have some relevance to this idea. While the provincially-leading Liberals have initiated the 'green energy movement' and not surprisingly support the objectives of it, the rural-dominating Progressive Conservative Party is largely against it, with leader Tim Hudak once calling the GEA a "rip-off for Ontario" (Schmidt and Pearson, 2011). More detail regarding the political landscape of Port Burwell (Elgin County) and Clear Creek (Norfolk County) can be found within the Methods chapter (re: community profile). Ultimately the importance of the political backdrop relates to the ability of it to significantly affect the perception of risk in areas surrounding wind turbines. According to Baxter (1997) "No amount of evidence can convince people [from either side] if it is not from a trusted source".

Social interaction on the community level may also play a role in determining the sense of risk felt by individuals near wind turbines. This cultural theory was developed from the sociological perspective and recognizes the role that groups, organizations, and networks of which people belong may act to reinforce or counteract views (Johnson and Covello, 1987). Relationships with neighbours, within religious organizations, or community groups therefore may help shape the perception of risk. In the same way, even day-to-day experiences may have the potential to change how people perceive the wind turbines in their area. Douglas and Wildavsky (1982) explain this concept as one that always biases risk through, among other things ordinary social interaction. Special attention to this concept will be given through the interviews with residents of Port Burwell and Clear Creek. Questions posed will attempt to examine their support or opposition to wind turbines within the context of their community and/or neighbours.

Perhaps possessing the most promise within the context of our research is Kasperson's commonly cited theory of the Social Amplification of Risk. The premise of the theory is that risks may be amplified or attenuated by the complex interplay of psychological, institutional and cultural factors (Kasperson et al., 1988). Although he recognizes real or inherent risk (e.g. through a catastrophic event) it is through individuals or institutions, like the media, that certain characteristics of a risk can be amplified or attenuated. Both processes may well be at work in the context of Ontario and this is explored more through a media analysis within the community profile section. The biggest criticism of this theory is that it may lead risk managers to begin to use the model to address what would be labelled 'exaggerated' or 'irrational' fears (Rip, 1988). As Baxter (1997) notes, this erroneous way of thinking may ignore the bigger issue of the threat of the hazard itself. With these issues in mind, we will use Kasperson's theory to help explain why some areas support and others oppose wind projects. The application of this theory may hold great promise to contribute to the explanation in Ontario.

2.2 The Health Impact Debate

The results from wind turbine impact studies have been mixed thus far and the resulting void partially fuels the debate between opponents and supporters of wind energy. Yet it may be the seemingly narrow scope of the debate in Ontario itself - centred mainly on health impacts - that is part of the problem.

As far as the health impact debate go, one of the most prominent researchers who believes turbines are a health risk is Dr. Nina Pierpont who coined the phrase "wind turbine syndrome" (Pierpont, 2009). Through her research, she has concluded that large

industrial wind turbines are associated a number of symptoms including "sleep disturbance and deprivation, headache, tinnitus (ringing in the ears), ear pressure, dizziness, vertigo, nausea, visual blurring, tachycardia (fast heart rate), irritability, problems with concentration and memory, and panic episodes..." (Pierpont, 2009). Many of these impacts are supported by other researchers including Harry (2007) who has claimed that the sound and shadow flicker from wind turbines can produce headaches, nausea, sleep disturbances, stress and depression. Within the province of Ontario, one of the most cited studies claiming turbine-related health effects was conducted by Gillis, Krogh and Kouwen (2009) and endorsed by Dr. Robert McMurtry. Like the Pierpont and Harry studies, this study is also based on voluntary symptom reporting – in this through an online system. It claims that the number of people reporting health effects from wind turbines is on the rise and that sleep disturbance is the most common complaint. The authors conclude by saying that until further, more rigourous health studies with built in control variables are conducted, the Government of Ontario should "...invoke the precautionary principle and declare a moratorium regarding the building of more turbines".

In contrast with the studies above, there are researchers who claim wind turbines do not produce health impacts on those living within their vicinity. Looking specifically in Ontario, the majority of government officials including Chief Medical Officer, Dr. Arlene King believe that the link between wind turbines and negative human health impacts simply does not exist. She explains that "the scientific evidence available to date does not demonstrate a direct causal link between wind turbine noise and adverse health effects..." (2009). Sharing the same view as King is Colby et al. In their report prepared

for the American Wind Energy Association (AWEA) and the Canadian Wind Energy Association (CANWEA), they a) do not recognize the sounds emitted by wind turbines to be unique and b) find that the accumulated knowledge about sound and health provides no evidence that audible or sub-audible noise emitted by wind turbines has any direct adverse physiological effects (2009). This finding is cited by many wind advocates as being the most credible study conducted on the impacts of wind turbines to date.

What is ironic about the health impact debate is that in some cases, both sides are saying the same thing- that the science is incomplete and that rigourous health studies need to be done. Where the sides differ however is their use of the precautionary principle. Harry, Pierpont and others would argue that the little evidence we have to points to negative human health impacts and that the uncertainty regarding these means we should avoid building turbines until a credible study is done. Meanwhile, King and the Ontario government suggest that the preliminary evidence does not show causation of health problems. Further, they frame the uncertainty of impacts against the certainty of climate change and local air pollution problems created by conventional sources of electricity. In this way, those who advocate for wind are bringing a different precautionary approach to the issue. Clearly, the two sides are not close to reaching any agreement and it is

Primary arguments deployed to oppose windfarm developments, synthesized from numerous sources

Landscape impacts from construction, turbines, access roads and new power transmission lines; possible planning blight
Adverse effects on tourism through loss of scenic value
Impacts on fauna and flora, especially through bird strikes on turbines
Noise pollution and vibration during construction and operation, including infrasound
Intermittent electricity generation (weather-dependent): results in low output, requiring extra capacity, plus back up from conventional power stations (fossil fuel, nuclear)
Insignificant power contribution: could only generate a small percentage of society's needs
Few local socio-economic benefits: limited job-creation, and few local benefits
Military objections: windfarms opposed by Ministry of Defence in low-fly training zones (collision potential) and close to air-defence radar facilities due to interference problems
Inappropriate policy for emissions reduction: better to focus on reducing energy use, e.g. energy efficiency measures; reducing road and air traffic. Better to promote other, less visually intrusive renewable technologies, e.g. underwater tidal turbines
Indirect emissions: once operational, windfarms produce clean energy, but the production, transport and installation of turbines produce emissions

Note: The most influential objectors to wind power developments in the UK are local authority planning departments, conservationists and the Ministry of Defence (*SCENES*, 2004a).

Figure 2.1 - Warren et al. (2005)

therefore likely that the debate will continue until much more is understood about wind turbines and their impacts.

Although wind power has created debate around the world, the magnitude of the health impact debate has been somewhat unique to the North American experience (Pederson and Waye, 2007). In parts of Europe, where turbines have been prevalent for years, the controversy over perceived health impacts is much smaller. This point is illustrated in figures 2.1 and 2.2, charts showing the "typical" claims opponents cite in the European context (Warren et al., 2005; Devlin, 2005). The chart is from a 2005 Swedish study, one which found the visual effect on the landscape to be "the most troublesome effect" (Devlin, 2005). This finding is in contrast to the 2010 Ontario survey that determined sound was the most notable impact of wind turbines. More importantly absent in the figure is a direct reference to human health impacts- something that would likely be prominent in some Canadian reports.

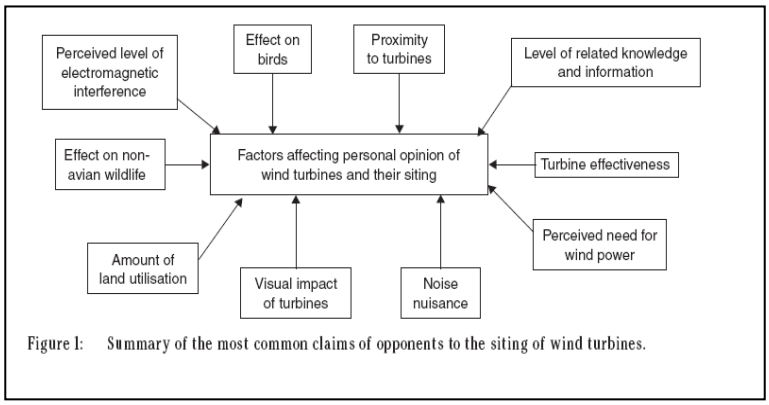


Figure 2.2 - Devlin (2005)

Several quantitative studies sidestep the health impacts issue and instead look at the determinants of opposition to wind turbine development. Many "predictor" variables

have been identified including most broadly the geophysical, political, cultural and socio-economic conditions of an area. For example, Pedersen and Waye (2007) in a cross-sectional study of seven wind turbine areas in Sweden found that living in a rural areas, hilly or rocky terrain and being able to see turbines all increased the risk of perception and annoyance . More complex factors also have been shown to have an effect on the perception of wind turbine impacts. Pedersen and Persson Waye (2008) postulate that annoyance of wind power can stem from a general negative attitude toward the source, aesthetic characteristics of the structures, and/or the unique sound characteristics turbines produce.

2.3 Sound and sleep disturbance

Sound is beginning to seem increasingly relevant in the context of Ontario, where a July 2010 poll identified noise as the key drawback of wind energy. In the survey, 23% of Ontario residents found noise to be disadvantage of wind turbines; ranking it higher than other issues such as aesthetics, financial costs, and environmental risks (Ipos-Reid, 2010). More evidence of the unique tendency for wind turbine noise to affect people is found in another study by Pedersen and Persson Waye (2004). As shown in figure 3, even when other sources such as aircraft and road traffic noise are louder, a much higher percentage of those asked found wind turbines to be annoying. The researchers describe

the “lapping, swishing, and whistling sounds” as being responsible for results.

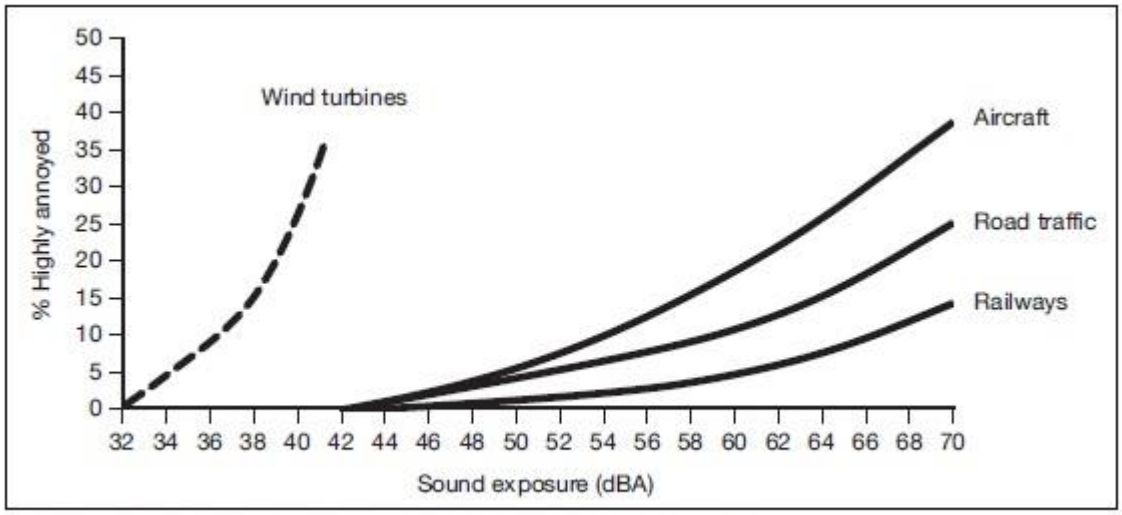


Figure 2. Wind Turbine Noise and Annoyance, Relative to Transportation Noise.[38]

Figure 2.3 - (Pedersen and Persson-Waye, 2004)

Another aspect of the health impact debate is that annoyance and sleep disturbance are often discredited as health impacts (Colby et al., 2009). In 1948, the World Health Organization (WHO) extended its traditional bio-medical idea of health, claiming it is the “state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (United Nations, 1984). This new definition has allowed for a number of conditions previously not considered “health effects” to be categorized as such. In the WHO’s, *Guidelines for Community Noise* (Berglund, 2000) it was stated certain annoyances (including from the sound produced by turbines) may be considered a negative health effect. In this way it may be argued that any annoyance, be it from the sound or visual appearance of wind turbines may be affecting the health of those in the vicinity of them. Despite the understanding of the nature of wind turbine annoyance, many argue that the only reasonable forms of health effects must be somatic or biologically-based. For example, King (2010) does not consider the feelings of stress

associated with turbines to be an adverse health effect. In response to these types of criticisms, researchers are working toward ways to prove that there is a somatic link between wind turbines and negative health effects. Dr. Pierpont is one of these researchers and claims that the susceptibility factors associated with wind turbine syndrome (e.g. migraine disorder, motion sensitivity) is a major sign that WTS has pathophysiologic grounding (2009). Despite the personal conviction of Pierpont's work, the legitimacy of the debate may be dependent on the social values and ideas of "health" individual people hold.

2.4 Opposition to wind turbines

Some reports attempt to discredit those concerned about wind turbines by invoking the NIMBY (Not In My Back Yard) explanation (Colby et al., 2009) The concept of NIMBY most broadly refers to "the protectionist attitudes of an oppositional tactics adopted by community groups facing unwelcome development in their neighbourhood" (Dear, 1992, p.288).. Even in Ontario politics there was a feeling that NIMBY was responsible for the resistance to turbines. The reason for the introduction of the Green Energy Act in 2009, Premier Dalton McGuinty once explained was so that "...NIMBYism [would] no longer prevail" (Ferguson & Ferenc, 2009).Yet despite the popularity of theory, there is little evidence to support the NIMBY explanation (Wolsink, 2000). Researchers including Bell et al. (2005) argue that the "self-interest" explanation may be only responsible for a fraction of all opposition. According to Wolsink (2006), there is also a danger in using NIMBY to describe those who oppose wind energy. He explains that the employment of NIMBY to characterize public responses may not only be inaccurate but, as seen in similar siting processes, it may also "[hamper] the vision of

planners, investors, and policy makers". The author argues that continuing to focus on NIMBY motives as being primarily responsible for opposition is inefficient and is not the best way to study wind turbine impacts. Instead of "backyard" motives, Wolsink explains that visual evaluation and feelings of fairness and equity are the best determinants of opposition. Relating to renewable energy in general, Devine-Wright (2005) explains that a wide range of predictor variables including: personal (e.g. age, gender), psychological (e.g. political beliefs), and contextual factors (e.g. ownership structures, fairness) may in fact influence public acceptability far more than NIMBY motives.

According to Wolsink (2007), opposition to turbines is also often misunderstood by the general public because of the 'gap' between the high levels of overall support for wind and low acceptance rates in communities that are potential hosts to wind farms. Bell et al., (2005) elaborates on this idea and claims that in fact there are two 'social gaps' that exist. He explains that because people are less likely to come forward with positive responses, there is often over-representation of wind energy opponents during the planning stages. Secondly, in what he calls the 'qualified support' explanation, we learn that although people may support wind in general terms, they will often oppose under certain conditions or circumstances.

2.5 Economic impact of wind turbines: Job creation

As far as actual job creation goes, there is debate as to whether green energy actually creates or destroys more jobs than from more traditional energy sources. In a study by Alvarez et al., (2010) it was concluded that the development of green energy has

only created less than 50,200 jobs in Spain since 2000 and that the U.S. should expect approximately a loss of 2.2 jobs lost for each one created in the green economy. Adding to the debate is more research that states wind development creates more jobs per dollar invested and per kilowatt-hour generated than fossil fuel power generation (Singh and Fehrs, 2001; Kammen & Pacca, 2004) . What is understood is that jobs relating to wind energy are typically created in three areas: manufacturing of wind power equipment, constructing and installing the wind projects, and operating and maintaining the projects over their lifetime (Lewis and Wiser, 2007).

2.6 Defense of viewpoints: The 'relative evils' argument

An emerging theory in wind turbine research is deals with the nuances of personal preference. Found prevalently within the research was the tendency for people dealing with multiple options to choose the one which they find to be the 'lesser of two evils'. The theme was inspired by the work of Lee (1999) who found that while people were able to see some flaws in a local hazardous waste facility, they saw it as a better alternative to traditional ways of storing or buying waste. Work by Gray (2012) also hints at this theory with specific reference to wind turbines. In what the author calls imaginative comparison, when a person is forced to choose between two undesirable options, he/she will choose the one (he suggests this is wind turbines over nuclear power) that brings with it less problems. Empirical research has also hinted at this theory at work in somewhat related energy studies. In a study by Bickerstaff et al., (2002) it was seen that only when people were forced to choose between nuclear power and the impacts of climate change (associated with fossil-fuel generated electricity) did they reluctantly accept nuclear power.

The use of this theory within the scope of our research will most likely be applied to those who support wind turbines in their area. People that are accepting or supportive of wind turbines for example, may be so because of their negative perceptions of nuclear or coal-fired power, for example.

2.7 Cultural theories: Social well-being and existing divides

The cultural theories of risk help us to understand how risk is socially constructed through various means. Some of these include social groups/memberships, institutional influences and everyday interactions with friends, family, and colleges (Douglas and Wildavsky, 1982). This is to say that risk and conflict over risk is mediated by the different cultural factors that mean different things under different scenarios (Dake, 1992). In Douglas and Wildavsky's Risk and Culture (1982), one of the main ideas is that based on their cultural biases, societies will actively seek and concentrate on certain risks while ignoring others. The threat of danger therefore is not only related to the 'scientific' threat of danger but also the cultural factors that may amplify or attenuate a risk. In the empirical literature, Marris et al., (1998) found statistically significant relationships between cultural biases and risk perception across 13 risk issues. The effect of "cliques" also may play a role in the research. Phadke (2011) found that different ideas of the rural landscape in the American West can cause divides. Newcomers to an area he found are typically from urban areas and searching for a "pastoral ideal" to contrast their former life. Long time residents on the other hand, have traditionally valued the landscape for its resource potential. Special attention will be given in this research to see if such a divide pervades. In addition, similar theories from the geographic literature give special attention to the importance of space and place in individuals' lives- two of the major

concerns of human geography (McKillrcik and Peake, 2005). The application of this theory in the context of the research will be used to give some perspective to potential responses from those who live close to wind turbines. In the community profile (Chapter 3) for example, certain socio-economic and political characteristics of the Municipality of Bayham (Port Burwell) and the County of Norfolk (Clear Creek) are identified. While the results from this profile are not intended to accurately predict how each community will receive the turbines, it is expected to inform the research and give more context to support or opposition we may see in the two communities.

2.8 Community-based wind development

Some scholars have hypothesized the reason why there is more opposition to turbines in North America is because of the European system of wind turbine development (Bollinger, 2001). In Denmark and Sweden for example, most wind turbine projects are community owned, where individuals or groups invest equity to purchase turbines and then selling the generated electricity to a local utility at a profit (Bolinger, 2001). In this type of system, all residents involved in the wind turbine project earn a financial incentive. These incentives range depending on the project but traditionally involve community members having a

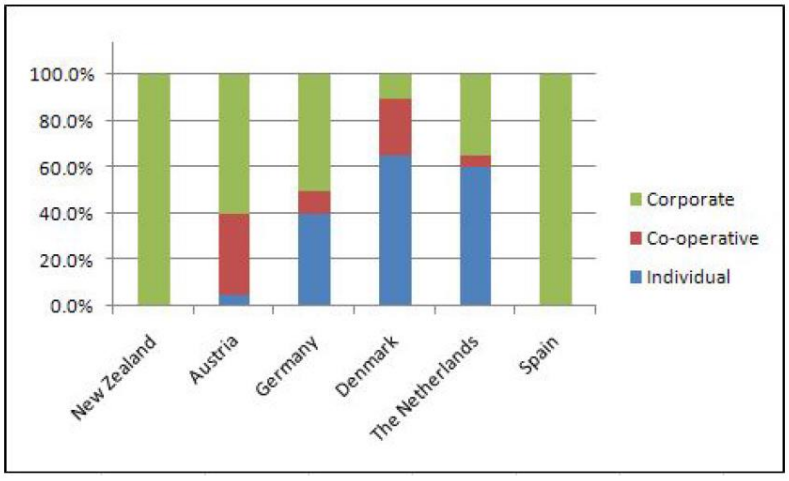


Figure 2.4 – Ownership structures in European Nations (Thomas, 2008)

"significant direct financial stake in the project" (Bolinger, 2005, p. 558). In contrast to the European system, in Ontario turbines are almost exclusively placed on private rural land. In exchange for a lease of part of their land, people receive up to $13,000 per MW produced whereas other community members in the area receive little or nothing (Etcheverry et al., 2004). In my research it was commonly believed, though not revealed explicitly, that landowners were receiving between $7-10,000 per year/per turbine. Figure 2.4 (Thomson, 2008) shows the degree of community-led (through individual and cooperative) ownership in some European countries (Bolinger, 2001). Some have suggested that this discrepancy seen in Ontario violates basic principles of fairness given that impacts (e.g., visual, noise) extend well beyond the landowner's property (Hvelplund, 2001; Wolsink, 2007). It has also been shown that community-owned wind farms are much more likely to be seen as acceptable within the local context (Bolinger, 2001, Maruyama et. al, 2007). One of the features of community ownership is typically a sharing of costs and benefits; including financial compensation. Perhaps the most progressive example of community wind farm ownership in the world today is found in Japan. There, investors in some community wind turbine projects are all given a certificate; those that wish are also able to have their name inscribed on the tower, and often times the turbine is given a nickname that was submitted by an investor (Maruyama, 2007). These types of policies may promote a sense of ownership and congeniality with other investors. The current policies in place in Ontario do not support community-owned wind projects. In fact, as of 2011 over 99% of all wind power projects in the province were privately owned (Ferguson-Martin and Hill, 2011).

The idea of compensation appears to relate to an important concept in community well-being. Justice may also play an important role in communities where wind turbines are placed. According to Gross (2007) protests, divided communities, and damaged relationships can result when outcomes are perceived to be unfair, "particularly when decisions are made which benefit some sections of the communities at the expense of others". (p. 2727) This type of situation can be seen in Ontario wind energy policy today where many of the costs of wind turbines are shared amongst rural residents, while the benefits (mainly financial) are given only to a small percentage of the population.

The Green Party of Ontario is arguably the province's most passionate political advocate for environmental issues. However, the party's role in provincial politics has been limited because of a lack of popularity among voters. In the October 2011 election they received only approximately 3% of the total vote and won 0 of 107 possible seats. Because of this, the Green Party has essentially played the role of the observer in green energy policy over the past decade however they are not without their suggestions for policy change. Similar to much of the literature cited above (Bolinger 2001, Maruyama et al., 2007) they believe wind turbine projects should be implemented through increased community involvement at all stages of development. In their "Five-Point Plan for Ontario's Future" they explain that their plan "...moves Ontario away from big, centralized, expensive, and inflexible sources of generation [and that] the new energy era presents opportunities for every community to benefit from generating power..." (Green Party of Ontario, 2011). Implementation, they say, should be done through local ownership and decision making. Looking ahead, it will be interesting to see if the Green Party's policy recommendations will be used in mainstream provincial politics.

2.9 The Financial Compensation literature: Outside of Wind Turbines

The literature surrounding wind turbine policy in North America has yet to address to role of financial compensation and public acceptance. There is however plenty of research looking at the theory of compensation in general and its application in environmental hazards. In the siting of waste facilities for example, the normative theory of compensation (Kunreuther and Easterling, 1996, p. 604) states that individuals who expect to be affected by a proposed facility will determine their expected utility with and without the facility and then express a preference based on which value is greater. Often, when a person perceives the net impact to be negative, compensation toward local residents is needed until the perceived benefits outweigh the costs (Kunreuther and Easterling, 1996, O'Hare, 1977). In similar ways it can be argued that financial compensation is now being used to offset the negative utility of having wind turbines placed on private property.

There also may be some complications in using financial compensation to reduce feelings of risk and/or opposition to a proposed hazard. According to Frey and Oberholzer-Gee (1996), high levels of compensation may signal the implied risk of a facility as being too high for residents to accept. Indeed this presents a challenge for the use of financial compensation schemes designed to win community support of a development. In cases where compensation is aimed at increasing public acceptance, it may often be used by residents as a signal of the [high] level of risk and credibility of the people who offer it (Groothuis and Miller, 1997).

2.10 Wind turbine impact frameworks

There are few frameworks that adequately account for how wind turbines impact communities since the health debates have dominated. This study will be guided by Kasperson et al.'s (1988) Social Amplification of Risk. The social amplification and attenuation of risk framework seems consistent with recent research that states social context of individual places can have a profound effect on how wind turbines are perceived (Cass & Walker, 2009, Devine-Wright, 2005, Ferguson-Martin & Hill, 2011). The main theme of the framework is that technical risk perception is socially constructed in the sense that it is closely tied to the physiological, social, and cultural processes which can either heighten or attenuate the public perception of risk. It has its basis in communications theory and focuses on different stages of risk transmission including the prominent role of media to heighten or diminish risk but the core theme is that risk perception is socially/politically mediated. For example, Weinberg (1977) describes how the role of the media or community groups in certain areas may have the ability to change public opinion. He explains that the portrayal of a certain technology or activity as being dangerous, even when presented as part of a program that also highlights the positive aspects can have a profound effect on people because it is much easier to scare them than it is to "unscare" them. The theory holds promise for studying wind turbine risk perception (e.g., annoyance, perceived health threats) because it may help to explain why despite the similarity of technical risk between Europe and North America, risk/impact perception of wind turbines has varied so between the two continents.

Although Kasperson et al.'s theory also describes how risk can be attenuated his focus is much more on social amplification- in essence, describing how minor events

according to expert assessment, can lead to extraordinary public concern. In the same way, I originally planned my study to focus on the latter as well. From media reports and anecdotal evidence, I expected to find controversy and concern in all communities with wind turbines. While I believed it was possible that risk may have been lessened between individuals in the study, I decided to frame my analysis against the European experience; one which has produced most of the current literature while also generating much less public concern and debate, particularly with reference to health impacts. In the end, the majority of my interviews were with people supportive or accepting of local wind turbines. Others, who were purposively chosen, were vocally opposed. In order to be consistent, I applied each 'sub-theory' to the appropriate group; that is, attenuation to supporters in Port Burwell and amplification to those opposed in Clear Creek. Through this, I was able to focus on questions that align with Ontario's green energy policy while understanding how amplification/attenuation was generated.

2.11 Wind Turbines and Avian Deaths

Another important impact often noted in the wind turbine literature is the effect of farms on bird and bat deaths. Perhaps because wind turbines are a relatively new source of electricity generation and the number of studies has been relatively small, there is a general lack of understanding as to the degree of danger wind turbines pose to avian populations. For example in seven studies published between 1998 and 2007, the avian mortality rate

Figure 2.5 – Avian deaths by study (Sovacool, 2009)

Source	Location	Avian mortality (fatalities/turbine/year)
Kunz et al. (2007)	United States	1.3–38.2
Kuvlesky et al. (2007)	Europe and the United States	0–30
Winegrad (2004)	United States	1.8–7.5
Osborn et al. (2000)	United States	1.6
Lubbers (1988)	Denmark	0.8
Marsh (2007)	Spain	0.2
Lowther and Stewart (1998)	United Kingdom	0

(fatalities/turbine/year) ranged from 0 to 1.3-38.2 (figure 2.5; Sovacool, 2009). This huge discrepancy highlights two things. First, each wind farm site may have unique characteristics which may increase or decrease the likelihood of avian mortality. Total bird population, species type, weather, topography, as well as the layout and technology of the wind farm have all been shown to affect mortality rates (Kuvlesky et al, 2007). Secondly, there exists a difficulty in obtaining accurate and dependable measures of avian mortality. A recent display of the possible difficulties of obtaining reliable statistics on avian deaths is shown in the contrast in other studies. In 2010, the AWEA projected that only 2-4 birds are killed by wind turbines each year (SEI, 2012). The American Bird Conservancy estimated that 400,000 birds are killed in the United States annually (Fuller, 2010) and most recently the Spanish Society of Ornithology estimated that the average turbine in Spain is responsible for the deaths of 333-1,000 birds and bats per year- resulting in a total of 6 to 8 million deaths annually (SEI, 2012).

As noted by Sovacool (2009), there are three major problems with the current research on avian mortality. First, he asserts that current studies do not contextualize; that is, they rarely compare their results with the results from other wind farms. Next, most research does not compare avian deaths from wind energy with other sources and when they do, they most often do not use other energy sources. Most commonly, those supportive of wind energy will explain that in comparison to things like skyscrapers and automobile collisions, wind turbines kill relatively few numbers of birds. For example, the Canadian Wind Energy Association has estimated that 10, 000 migratory birds die each year in the city of Toronto between the hours of 11pm and 5am from collisions with brightly lit office towers (Marsh, 2007). This type of research fails to realize that just

because there are other sources that may be more harmful than wind turbines, they have no relevance to energy policy. Finally, none have attempted to calculate the number of avian deaths per Kilowatt/hour from energy sources- an important consideration which makes the measurements much more meaningful.

2.12 Environmental benefits, Climate Change and Erie Shores Wind Farm

Many proponents of wind energy developments will cite the environmental or 'green' benefits of wind turbines when discussing the list of advantages they bring with them. Despite the fact that most people see wind energy as good for the environment, there are legitimate 'green' reasons both for and against wind turbine development (Warren et al., 2005). While wind energy reduces environmental pollution and water consumption, it can contribute to noise pollution, visual interference, and have negative impacts on wildlife (Saidur et al., 2011). Figure 2.6 is taken from Saidur et al., (2011) and shows selected environmental impact by energy source.

Habitat impacts	Coal	Natural gas	Oil	Nuclear	Hydropower	Wind
Air and water pollution	√	√	√			
Global warming	√	√	√			
Thermal pollution of water				√		
Flooding of land					√	
Waste disposal	√			√		
Mining and drilling	√	√	√	√		
Construction of plants	√	√	√	√	√	√

Figure 2.6 - Selected negative environmental impacts by electricity source

According to the figure, wind energy has the least number of negative environmental impacts of the sources given- although notably absent is effects on local wildlife.

Human-induced climate change is now widely accepted as being caused in large part because of the accumulation of greenhouse gases in the atmosphere (Haines et al, 2006). Renewable energy (including wind power) has been touted as a solution to the problem through emission reductions associated with tradition sources of electricity generation. Guler (2009) developed an equation that calculates the amount of carbon dioxide (in tons) saved by wind energy developments:

$$CO_2 = A \times 0.3 \times 8760 \times 640 / 1000$$

The equation is based on A (the rated capacity of the wind farm, in megawatts), 0.3 (capacity factor; the typical percentage of output), and 8760/the number of hours in a year. Based on the formula, ESWF (A= 99 MW) has the ability to save 166510.08 tonnes of carbon dioxide emissions each year. In practical terms, this may be equated to the annual greenhouse gas emissions from 26,619 passenger vehicles, or the amount of carbon sequestered by 32,208 acres of softwood forest (EPA, 2011).

Because the problem is perhaps the biggest environmental problem of our time (Watson, 2003) it is likely that those in support of wind turbines for environmental reasons will cite climate change as the most important positive aspect.

Research investigating the different 'faces' of environmentalism has indicated that there are three value systems that appear to motivate people: egocentric, altruistic, and biosperhic (Schultz, 2001). Egocentric values relate to an individual's own benefit

they perceive from a development or activity, altruistic feelings value the welfare of others, while biospheric values would see benefit toward the living world. It is possible that during the interviews in Port Burwell, participants will reveal two or more reasons for environment support however it seems to make more intuitive sense that they will focus on only one.

2.13 Green Energy Act and the absence of community involvement

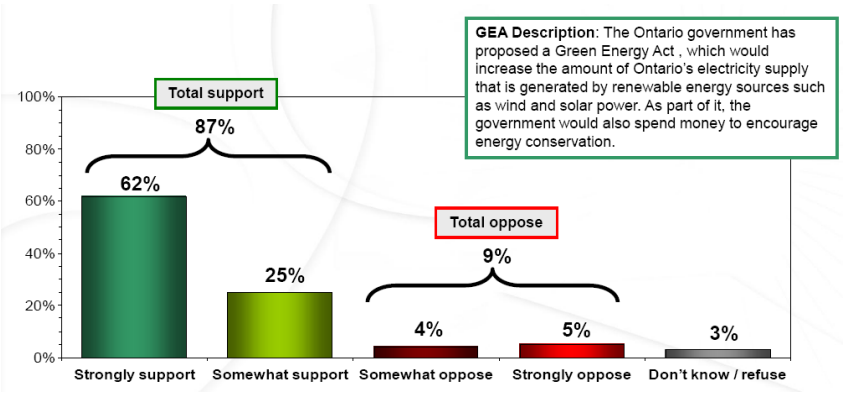


Figure 2.7 - Provincial poll showing support for the GEA

Written in 2009, the Green Energy and Economy Act (GEA) was brought forth by Ontario Premier Dalton McGuinty. It was an attempt to "…make Ontario a global leader in the development of renewable energy, clean distributed energy and conservation, while creating thousands of jobs, economic prosperity and energy security, and protecting the climate" (OGEA, 2009). Support for the act has been varied over time and space however it is generally thought of to be endorsed by the majority of Ontarians. In a 2009 survey, it was found that 87% of Ontarians supported the aims of the GEA (Figure 2.7, POLLARA, 2009). The variation relating to space is a particularly interesting development. Although the huge majority of people do support the GEA, a small percentage are actually living in the vicinity of them. That is to say the vast majority of the poll is actually made up of urban dwellers and this may be skewing the results. Not surprisingly, rural areas have shown higher rates of

opposition. From the same survey for example, strong support for the GEA is nearly 10% higher in Toronto than in Northern or Southwest Ontario (66% to 57%). Most of the opposition groups that have formed as part of Ontario Wind Resistance (formerly Wind Concerns Ontario) including Bruce County, Huron Perth, Chatham-Kent, and Haldimand are within the southwestern Ontario zone. In addition, much of the results from public opinion polling may be because of the aforementioned self-interest explanation, or perhaps more likely, the qualified support explanation. This is also brought forth by Bell et al., (2005) as to describe the social gap- that is the difference between widespread public support for wind turbines and the relatively high rates of failure these projects experience do to opposition.

A controversial component of the GEA is that is essentially eliminates a municipality's ability have a say when it comes to wind turbine development in their area. Found in Chapter 12, Part 2 of the GEA, the "Effect of designation" states that a renewable energy project (including a wind farm) may not be disallowed by a "…law that would otherwise prevent or restrict the activity, including a restriction established by municipal by-law, a condominium by-law, and encumbrance on real property or an agreement" (GEA, 2009). Particularly in recent months, much of the criticism of the GEA has been centered around this clause which has been noted to "neuter municipal councilors" (Barrett, 2011a). In January 2012, the Ontario Federation of Agriculture, the largest farm lobby group in the province, withdrew its support and asked for a suspension of wind turbine development. Among its complaints was the lack of community involvement in the process of wind energy planning- suggesting that going ahead the government should look to "Giving some planning control of the projects back to

municipalities" (OFA, 2012). As noted above, community involvement in the process of wind turbine development has been suggested to increase support for projects and the increasing controversy we have seen in Ontario regarding the issue seems to agree with this point. Perhaps learning from the experience of Ontario, Nova Scotia has introduced its first substantial green energy policy. The province's ComFIT program is very similar to the FIT program of Ontario in that it offers generous returns on electricity generated from renewable sources except that the former has focused on smaller projects which are community-based. Nova Scotia's Energy Minister, Charlie Parker said that his province is choosing to focus on local projects because it will generate widespread support. He explains, "We just feel it is a good way to get community buy-in and help spread the message" (Blackwell, 2012).

In the context of the Erie Shores Wind Farm, it is important to note that it was developed before the Green Energy Act was in place and therefore community involvement and permission was required. In an interview with prominent former politician "Hilary", we see she believes the stripping away a municipality's role in wind turbine development may be a poor policy idea:

> ***"Hilary":*** *..but they overstepped the mark when they said to municipalities you don't get a say anymore, it's up to us. And that turned a lot of, cause a lot of I think, municipalities who were in favour of it before dug their heels in and said, "Whoa, whoa, who" like you know you can't, you can't force that on our community if we don't want it."*

The importance of policy also seems to be understood by Jim Wilgar of AIM PowerGen, the corporation that began ESWF back in 2006. In that year, Wilgar was invited to a meeting of the Township of Brock, Planning Committee to discuss his experience in planning ESWF. In a memo written by the Committee, a portion of his speech was summarized:

Mr. Wilgar spoke briefly on their experience which has been garnered over the past four years in successfully developing the Erie Shores Wind Farm which is located in Port Burwell, Ontario. He advised that their company worked closely with the Federal, Provincial and Municipal levels of government during the development of the wind farm due to the importance of keeping theses agencies informed due to a lack of directives, and/or policies governing this type of development. Throughout the development of the Erie Shores Wind Farm, meetings were held with area landowners due to the area being agricultural in nature and sensitive to environmental issues. As well, public meetings were held, including municipal government planning authorities, the end result being the development of a template for official plans and zoning by-laws, and the approval of the Erie Shores Wind Farm. (Township of Brock, 2006).

In the summary produced by the planning committee, it is believed that the lack of directives- now present because of the GEA may have actually assisted the project. It appears as though the development of policy was driven largely by local stakeholders and interests which resulted in the community's approval and support for ESWF. According to a 2009 article in the Simcoe Reformer (largest city in Norfolk County), because provincial green energy guidelines through the Green Energy Act were not yet in place, it was up to the local governments of Bayham, Malahide and Norfolk counties to set their own green energy policies (Helsdon, 2009). In Wilgar's opinion, the success seen at

ESWF can be partially explained by the effort AIM and the local governments spent toward making sure people were comfortable with all aspects of the wind farm. In addition to spending over $1 million dollars on studies, Wilgar explained why they felt it was important to spend time and explain all effects from wind turbines. “If the landowners are misunderstanding an issue, or have misconceptions about an issue, you know you’ll have problems with the politicians” (Helsdon, 2009). County of Elgin C.A.O Marck McDonald also believed the process that led to turbine construction was the ideal way to go about it noting that the cooperative effort given by all three local governments represents “[the] model public-private partnership” (County of Elgin, 2007).

Chapter 3:

Methodology

This research was qualitative and inductive with the goal of developing theoretical concepts to explain the nuances of wind turbine impacts in Ontario. A constant comparative method (CCM) within a grounded theory approach was conducted- which is a dynamic form of research that allows for flexibility and may be applied to social units of any size (Glaser and Strauss, 1967). The main tenet of grounded theory is its inductive nature; allowing the researcher to generate theory from data rather than the other way around (Charmaz, 2006). This helps fill a gap within the wind turbine impact literature especially since there are few broadly exploratory studies and as chapter 2 demonstrates, a distinct lack of specific theoretical concepts to explain the "fit" of turbines in the local context. The goal is middle-range theory, to produce concepts that explain local and/or specific social phenomena yet are sufficiently general enough that they *may* apply in a variety of other contexts (Charmaz, 2006). It is an approach suitable for this place-based research. Ultimately, the goal of the research was theoretical development, with interviews being conducted until the saturation of concepts was achieved (Morse and Field, 1995).

The primary philosophy I used in the research was phenomenology. It is from the school of humanism and emphasizes the role of sensory experience. More specifically, its major aim is to conduct investigations that are "sensitive enough to articulate the nuances of human experience and reflection" (Pollio et al., 1997). Research participants were

encouraged to elaborate on the positive or negative impacts they are experiencing from wind turbines. In this way, I placed trust in the participants' perceptions, annoyances and illnesses they linked to the wind turbines and was able to better understand what they are going through on a daily basis. This decision was made in part because of the now famous Thomas Theorem which states, "If men define situations as real, they are real in their consequences" (Thomas, 1966). Even if adverse health effects due to turbines are not 'real' in the truest sense, it is clear that the worry associated with the perception of health effects is itself, an impact.

3.1 Community profile

Although the official location for Erie Shores Wind Farm and this research itself is Port Burwell, Ontario, Canada (Bayham Township) the turbines and homes close to

Figure 3.1

them are spread over two counties and three townships. In Elgin County, 14 and 24 turbines lie in Malahide and Bayham townships respectively. The remaining 28 are within Houghton Centre in Norfolk County. Likely because of the high winds along the shore, all of the turbines extend approximately 2-3 kilometers from the north shore of Lake Erie (Macquarie, 2010) and are spread out along the coast for a total of 25 kilometers east to west (OPA, 2012). The width of each of the townships is fairly narrow in comparison to their large lengths. Because the wind farm is very wide, it was created in the three aforementioned townships. Figure 3.1 displays the geographic placement of all 66 of the turbines from Erie Shores (in green) and the 18 from Clear Creek (in red). The location of all turbines were found using a combination of Google maps visual location, and Elgin and Norfolk county maps.

Economic Situation of Bayham

Figure 3.2 is a snapshot of the Municipality of Bayham's website homepage (Bayham, 2011). Note the picture of the wind turbine in the top right portion of the page. It is one of eight pictures used in a rotation. Erie shores wind farm is also highlighted in the site's Tourism and Recreation section.

Figure 3.2 - Municipality of Bayham's Official Website

Along with general information about wind energy and the history of the wind farm, it also includes several pictures of the construction and operation phases as well as links to other related sites. The tone of the page is almost entirely positive. Emphasis is placed on the economic importance, size of the project, as well as the turbines' ability to provide a clean and green source of electricity.

As for the labour force of the region, Bayham had a 7.1% unemployment rate (Ontario = 6.4%) as of 2006. The largest segment of those employed are in the manufacturing industry (28%) followed by agriculture/resources (17%) and business services (15%) (Statistics Canada, 2007a). While the turbines originally were seen as a potentially large source of local jobs, information obtained through the research revealed there are currently only nine full-time jobs directly associated with the wind farm.

Loss of Tobacco

An important socio-economic characteristic of the Port Burwell area over the past decade has been the loss of the tobacco industry. Perhaps the strongest indication of how the loss has affected the area is found through a report presented by Kyle Kruger (*CMO/Administrator, Municipality of Bayham)* in 2007 to the mayor of Tillsonburg, Ontario, Stephen Molnar. The purpose of the report was to "[seek] the support and endorsement of surrounding municipalities , local MP's, and local MPP's in proceeding with [a] feasibility and impact study [concerning Port Burwell]". Selected quotes from Kruger below indicate how economically unstable the area has been and may continue to be because of the loss of tobacco:

> *"The Municipality of Bayham has been experiencing decline in the local rural economy, not the least of which is the lack of tobacco production...we have a large population involved with the tobacco industry, many of whose jobs have or will be soon displaced and we need to find opportunities for jobs…"*
>
> *"The bank has closed, the local public school is facing potential closure and there is a real fear in the community that essential services like the doctor's office, post office, library and daycare may close as well."*

Thus, questions were included in the interview guide (see appendix A) dealing with these types of issues. Results from the questions were found to be important and can be found within Chapter four.

Why site was chosen

Port Burwell was chosen as the primary site to begin the study because it is home to one of the earliest large-scale wind farms in Ontario. Being operational since May 2006, the people living in the area should have had the time to understand the impacts more than most people in Ontario. According to CANWEA (2012) Erie Shores is the fourth oldest wind farm in Ontario and as of February 2011, it the eighth largest with a capacity of 99 megawatts. The site was also suitable for pragmatic reasons. It is the closest wind farm to London, Ontario, located only 70kms away and thus close enough to facilitate multiple trips per week if required. Additionally, the Port Burwell study site is very large with five "sub-farms" totalling 66 turbines- meaning a good population of people likely to live in the vicinity of one or more. (See map 3.1).

Characteristics of the Port Burwell area

In order to understand the area better, relevant demographic information was collected on the Municipality of Bayham after the site was selected for the study. Of special note to the wind turbine literature is the fact that Bayham is a fairly poor and uneducated area when compared to Ontario as a whole. This fact may have caused the area to accept wind turbine development for a couple of reasons. First, risk analysis literature has stated that poorer societies seem to believe they must tolerate risk in order to gain the benefits associated with technological or ecological risks (Sokolowska and Tyszka, 1995). Their study compared the economic disparities between the societies of Sweden and Poland and found that the latter, which is poorer, was more likely to tolerate risk. While the theory was not proven *within* a country, it makes intuitive sense that economic inequalities on much smaller scales (municipality/provincial levels) may indeed show similar findings. More specific to wind energy development is research that seems to indicate that those with lower incomes are more likely to be supportive of wind electricity than the average person (Ek, 2005). The researcher notes that this may be explained because those with lower incomes tend to value the positive aspects of new local employment common in most wind turbine installations. Additionally, it appears as though people with higher education are less likely to be positive towards wind energy (Ek, 2005). In relation to both income and educational attainment, the Bayham area was far below the provincial average in 2006. As noted in table 3.1, the median income is almost $7,000 less in Bayham compared to the provincial median and the percentage of population without any formal education is more than three times as high (71.3% vs.

22.2%) (Statistics Canada, 2007a). The low cost of home ownership may also indicate a lower socio-economic condition than the average Ontarian. Table 3.1 also reveals that Bayham also has higher proportions of young (< 15 years) and older (> 64) people which may be both a good and a bad thing for the area. While a large elderly population may entail population decline over the short run, the high percentage of those under 15 may counteract this. Additionally, the observed pattern of youth increasingly migrating from rural to urban centers over the past three decades (Tremblay, 2001) may suggest that some of these children under 15 may have already or may soon move out of the area. The effect of the demographic profile of the area then, may have implications for the level of support in the Port Burwell area.

While Clear Creek (Norfolk County) was chosen as a secondary site, it made sense to investigate certain socio-economic indicators that we found in Bayham. Through nearly all the recorded variables, Norfolk County was seen to be in between the Ontario and Bayham averages (Statistics Canada, 2007b). While the area may be described as 'better off' than Bayham using economic measures like median income and average value of dwelling, the area still is below the provincial averages. Compared to the provincial average of 2.9%, Norfolk is also an area highly engaged in the agricultural sector- with 14.2% of people employed in it. The area also appears to be much older than Bayham as the proportion of those under 15 is lower than the provincial average while the percentage of people over 64 is much higher (10.9% Ontario, versus 17.2% Norfolk). If this is the case in Clear Creek, it would help explain the opposition as it has been shown that older people are a) less willing to pay for renewable energy (Zarnikau, 2003) and b) less positive towards wind energy electricity than younger respondents (Ek, 2005).

Similar to the findings in Port Burwell, these measures may hold promise to help explain the results in Clear Creek.

Table 3.1: Selected characteristics of Bayham, Norfolk, and Ontario - 2006

	Ontario	Bayham	Norfolk
Total Population (2006)	12, 160, 282	6, 727	62,563
Proportion < 15 years	18.2	24.2	16.9
Proportion > 64 years	10.9	13.6	17.2
Population percentage change (2001-2005)	6.6%	5.5%	2.8%
Percentage in Agriculture and other resource-based industries	2.9%	16.7%	14.2%
Median income (Persons 15 years and over)	$27, 258	$20, 593	$24,144
Average value of owned dwelling	$297, 479	$180, 828	$203,985
Education (Percentage no certificate, diploma or degree, over the age of 15)	22.2%	71.3%	58.6%

Brief media review

Through a brief analysis of news articles and letters to the editor it appears that that there is an overwhelming positive feeling toward the wind turbines in Port Burwell. A majority of those articles discussing Erie Shores Wind Farm highlight the positive

economic and environmental impacts the turbines will or have had on the community. Most articles were found online through the Tillsonburg News database and were usually 4, 5 or 6 years old. Perhaps because they were one of the first of its kind in Ontario, much seemed to be unknown about human impacts (including human health impacts) because they were rarely discussed. Results from Songsore (2011) indeed seem to indicate that the development of Erie Shores Wind Farm in 2006 preceded the beginning of the health debate through newspapers in Ontario.

Political leaders, including former Mayor of Port Burwell from, Lynn Acre tended to highlight the positive aspects of wind energy in the news articles in which they were quoted. In a 2006 article looking at the past year's accomplishments in the area of Port Burwell the mayor focused largely on the economic benefits the wind turbines had brought to the area. She explained that since the construction, "Every cottage and bed and breakfast has been full" and that "They've made a difference in the restaurants and variety stores too" (Tillsonburg News, 2006). In addition to increased economic activity, Acre also believed at the time that there would dozens of jobs created from the turbines. She noted that by her understanding, two maintenance personnel needed for every three turbines in operation. Today there are 66 turbines in operation- meaning a potential of staff of 44 maintenance personnel alone. As mentioned in 3.1, in actuality, Erie Shores Wind Farm employs only a total of nine people, some of which are managers. It would not be difficult to imagine the community being disappointed in this number as it was not even close to the number of jobs originally anticipated. In the same year of 2006 an article was published in the Tillsonburg News describing how the landscape has changed since the arrival of the wind turbines. Author David Price noted that when standing on the

west side of the harbor and looking east, "…a half dozen wind turbines perched above the cliff add an intriguing modern element to the vista". Further, he writes that when the wind farm is finally completed, it will be home to 66 "sleek turbines" (Price, 2006). Both of these descriptions paint the turbines in a very positive light and may have helped to contribute to the feelings of acceptance the Port Burwell community has felt.

There have also been some news releases that negatively portray the wind turbines in Port Burwell. Most recently, a June 2011 article in the Simcoe Reformer showed the voice of Houghton-area (just east of ESWF) resident Stephana Johnston. She explains she can no longer sleep in her own home and that since the turbines have been operational it has "…lost 100% of its value" (Pearce, 2011). There have also been several articles written in the past year that claim that wind energy is not a good thing for the area. The negative descriptions have included calling the turbines 'monstrous', unsightly, tacky and generally a bad thing for the area. Furthermore the development of the health impact debate has emerged in the recent articles. The Tillsonburg News reported that local residents are now claiming many health problems that have resulted from the turbines including "headaches" and "sleeplessness" and "unexplained twitches" (Pearce, 2009).

Because of what we learned through the brief overview of media reports in the Port Burwell area, it was decided that a full and more detailed analysis was required. Time allowed for this to take place after the analysis of the interviews was complete. In total, 102 articles were found to be relevant to the ESWF local wind energy in general. These articles were once again from the Tillsonburg News and ranged from the years

2005 to 2011. As this is a more comprehensive analysis, it is included within the results section of the thesis (Chapter 5).

Political landscape – Elgin and Norfolk counties

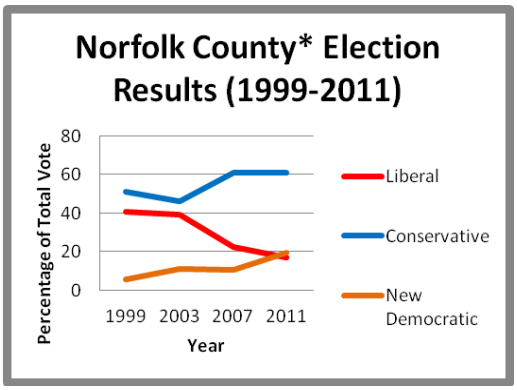


Figure 3.3

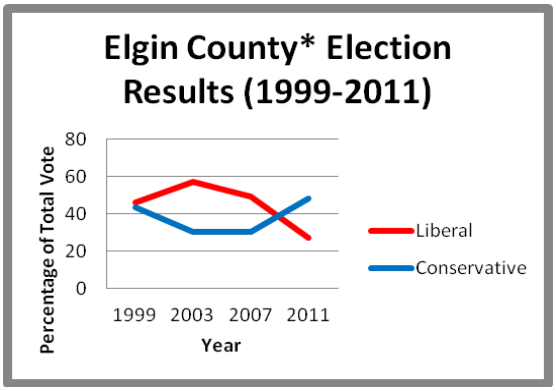


Figure 3.4

As mentioned in the literature review on theories of risk, the socio-political backdrop of Elgin and Norfolk counties may serve to amplify or attenuate the perception of risk posed by the local wind farms. Because of this we felt as though a brief look into the recent political history (using voting records; Elections Ontario, 2011) of the two areas may give us some insight as to the political values of the different groups. The reason we see value in this is because of the stark differences in opinion between the two major parties in Ontario, the Liberal Party and the Conservative Party. While the former is responsible for introduction of large scale green energy projects in the province, the Conservatives, including leader Tim Hudak are strongly against many of the policies in place. In political speeches, Hudak has questioned many aspects of the Green Energy Act including a now famous contract with Samsung- one he called "a shady deal that Dalton McGuinty signed behind closed doors, [one that will] drive up hydro bills even more for seniors and families" (Jenkins, 2011). Although I believe this helps us understand both

Elgin and Norfolk better, I recognize that there are some barriers that may not allow one to characterize the people of each group based on how their community voted. First of all, both Elgin and Norfolk are each only a small part of their respective ridings or voting districts. Elgin is part of Elgin-Middlesex-London while Norfolk was part of Haldimand-Norfolk – Brant from 1999-2003 and Haldimand-Norfolk since 2007. Additionally, the percentage of the population in each county that does live near the turbines is relatively small and entirely rural. Larger cities such as St. Thomas and Aylmer make up large portion of Elgin County for example, but both are very far away from ESWF. Secondly, although all of the turbines (18) in the Clear Creek area within Norfolk county, almost half (30/66) of the Erie Shores Wind Farm turbines are not located in Elgin but rather Norfolk County. Although first developed in Elgin, ESWF moved eastward and led to development along the southern edge of Norfolk in 2006. Lastly, the complexity of political elections make it almost impossible to accurately assess the motivations of each individual's vote. For example, just because a person sees themselves as a 'Liberal' does not mean they necessarily agree with the proliferation of green energy projects we have seen across the province. Still despite these challenges, I feel as though learning more about the political orientations of each area may help us to better appreciate them as separate, perhaps socially diverse groups of people.

Because of what I deemed to be the *recent political history* of Elgin and Norfolk Counties we chose the years 1999-2011 to conduct our analysis. Since 1999, provincial elections have taken place every 4 years for a total of 4 elections. Below are the results from those elections in both Norfolk and Elgin (figures 3.3 and 3.4 respectively; source: Elections Ontario, 2011). Perhaps the biggest difference between the two figures is the

relative dominance of different parties over the past 4 elections. In Elgin, the Liberals have won in 3 of the last 4 elections- only most recently losing in 2011. Conversely, in Norfolk the Conservatives have shown dominance- winning the riding in all 4 prior elections. Also notable is the rise of the New Democratic Party in Norfolk who in 2011 received more votes than the Liberals.

Although patterns are difficult to distinguish with any huge confidence, we can say that on a most general level there is more support for the Liberal Party in Elgin and that there also appears to be more support for the Conservatives in Norfolk; particularly since the 2003 election. Implications of this political orientation, including the explanation of support/opposition movements will be explained within the discussion.

Table 3.2 Site History

Date	Event
1999	Initial talks between Bayham and AIM PowerGen begin
2001	Concept for Erie Shores launched
2002	Planning & public consultation period begins
2005	ESWF (AIM PowerGen) awarded energy generation contract through the Government of Ontario's green energy initiative
June 2005	Power line plans finalized
July 2005	ESWF Groundbreaking ceremony; work begins
May 2006	All ESWF turbines in operation
July 2008	Cultus and Frogmore wind projects installed
November 2008	Clear Creek wind farm installed
December 2008	First mention of health effects in local media
November 2009	Nina Pierpont publishes *Wind Turbine Syndrome: A Report on a Natural Experiment*
May 2010	Dr. Arlene King (Ont. MOE) publishes a report that says there is *"no direct causal link between wind turbines and adverse health"*
December 2010	Siemens selects Tillsonburg, Ontario for wind turbine blade plant site
March 2011	8.9 magnitude earthquake/ tsunami in Fukishima, Japan. Concerns with nuclear safety begin to pose threat; serious questions raised regarding safety of nuclear around the world
July 2011	Start of interviews
July 2011	Southern Ontario declared to be in a recording setting heat wave
October 2011	End of Interviews
December 2011	Siemens Tillsonburg blade plant officially opens
January 2012	Ontario Federation of Agriculture calls for a halt to wind turbine construction

3.2 Participant Selection

Figure 3.5 - A typical 'pro-wind' sign

The study took place in the summer and fall of 2011 in Port Burwell, Ontario and Clear Creek, Ontario. It is part of a proposed larger study that will compare different types

of communities and their experience with wind turbines. Sites with turbines, without turbines and with proposed turbines all will be studied through this process. As mentioned above, Port Burwell was chosen as a good site to begin the study because since it is one of the largest and longest-standing wind farms in Ontario. In keeping with the flexible design afforded by CCM and grounded theory, Clear Creek was chosen as a secondary study site later on in the research process. 'Clear Creek' was the name given to the residents surrounding all 18 turbines in the Frogmore, Cultus, and Clear Creek wind farms (6 in each). Although they are technically three different developments, they are all the same model turbine and visually, all are built as though they are 'one' farm. Through information gained after the interview process, it was learned that they were developed in this way in order to receives higher rates of return on the electricity they generate because small farms (<10 MW) are funded differently. Clear Creek was chosen as a secondary site because during interviews with the residents of Port Burwell, it was indicated that there was a lack of controversy in the immediate area, however many people referred to "trouble down the road" just to the east of Erie Shores Wind Farm in the community of Clear Creek:

Figure 3.6 - Examples of 'anti-wind' signs

***Chad**: Has life changed I guess, any, the social relationships between neighbours or anything like that?*

***"Mike" (Port Burwell, supportive):** I don't think so. Not that I've heard of. I know there is a place, a little town called Clear Creek down the road. And you drive through and*

> *they have "stop the wind turbines" signs and….*
>
> ***Chad**: Ya, I've seen those ya.*
>
> ***"Mike": I'm sure you have, I mean that's, it seems to be this little pocket of people who are adamantly against turbines for some reason.*

"Mike's" views were typical of the vast majority of the population in that they felt there was little to no controversy in the Erie Shores Wind Farm area but there was at least some just to the east. There, the debate seemed to be much more evident- with signs both for and against wind energy being displayed on the front lawns of many homes (see figures 3.5 and 3.6). In comparison, no such signs were seen in the Port Burwell area during the entire research process. Because of the overwhelming acceptance and support of the wind turbines in the Port Burwell area, I decided to purposively seek out only those opposed to wind energy in Clear Creek. The reason for this was to better understand the people living near turbines that are experiencing negative impacts. In order to find these people, I searched media reports which covered the controversy in Clear Creek and found a woman by the name of "Barbara" who led a group of local residents opposed to wind turbines.

Table 3.3 – Participant groups

Group /Person	Number of Participants	Sampling Strategy	Reason for inclusion
Residents of Port Burwell area (within 1 km of turbine)	16	random sampling then all; self-selection	Learn of the impact and experiences turbines have had in the community
Opposition Group	3	purposeful (1) and snowball (2)	Examine those opposed to wind turbines; learn of their struggles and challenges of the "vocal minority"
Former local politician	1	purposeful	Investigate why ESWF was a "success"
Wind energy lawyer	1	purposeful	Learn more about the legal aspects of wind energy policy and the future of financial compensation

I interviewed “Barbara” late in the summer and through her, was able to gather contact information of five other local residents who were interested in participating in an interview. Because of scheduling and time conflicts, I was only able to interview two people from this opposition group in Clear Creek.

During the interviews in Port Burwell, there developed strong support for the turbines in the area. When probed to determine why this was the case many people explained that the local government did a good job introducing the turbines and that required some further investigation. In order to accomplish this, a former politician, “Hilary” was interviewed. She played an important role in the planning stages of wind turbine development in the area and therefore it was thought (and later confirmed) she would bring a very insightful perspective to the research.

Lastly, because wind turbine siting and contracts have a large legal component to them it seemed necessary to interview a person who had some unique legal experience in the area. Fortunately, I were able to find one in “Kenneth”. He is a practicing lawyer and has worked on wind turbine contracts for years, both in the local area and around Ontario. What we gained from his inclusion in the study was a greater understanding of the policy responses to opposition that wind energy companies are beginning to put into practice. Because “Kenneth” was a life-long resident of the area, we also learned more about the Municipality of Bayham which helped our understanding of the community as a whole.

Although exact numbers were not the most important aspect of the research, it was expected that we would reach saturation of the concepts at between 20 and 30 interviews; roughly split between those with a turbine on their land and those without.

This 50/50 split between the two groups ended up to be impractical. Although there are 66 turbines in the area, there are only 31 people who have turbines on their land. Many have multiple turbines, including four people with five turbines or more. Additionally, there appeared to be four people in the area who do not actually live on the property on which the turbines are located- rather they farm on it or rent it out to farmers and live in a neighbouring town or city. In the end, I conducted interviews with a total of 16 people in Port Burwell- 3 of which had a turbine on their land. Three people were interviewed in Clear Creek and we also spoke with two policy experts to bring the total to 21*.

**Though I requested to speak with only one person per household, in one instance with an elderly man ("Frederick"), it was clear that assistance from his wife "Carolyn" was needed. Because she mostly helped him explain himself, and the two rarely differed on the topics brought forth in the interview, it was treated as only one person.*

3.3 Participant recruitment

Beginning June 15th 2011, 110 households in the community were hand delivered a letter (see appendix B) inviting them to participate in the study. The majority of these letters (79) were randomly delivered to homes which did not have turbines on the land; with the remaining 31 being placed in the mailboxes of homes with a turbine(s) on the property. 110 was chosen as the conservative number of original letters to drop off because of an expected 30% participation rate (Neuman, 2000), leaving approximately 24 people in the non-owner group and 9 from the owner group. Because the latter was below my goal of 10-15 people per group, I was hoping for a higher response rate (40-50%) from this much smaller group. I decided against small incentives to encourage participation from this sub group mostly because of the ethical considerations of paying some and not others for

participation. Since my goal was to have 20-30 participants in total, I hoped to have enough participants by sending out 110 letters- even if the rate was in fact as low as 20-25%. If the participation rate was the expected 30% or higher, we planned on randomly selecting from the sample until we had reached saturation, which often happens between 20 and 30 people. The delivered letter included several options for the residents to contact us – email, phone, and pre-paid envelope. As mentioned above, I contacted participants purposively in hopes that the sample was split roughly half residents with a turbine(s) on their land and half without, using records from Erie Shores Wind Farm for verification.

In order to select participants at random, a list of all eligible households was compiled. Although there were most likely thousands of homes in the Port Burwell area, most were not in close proximity to one of the wind turbines of Erie Shores Wind Farm. In order to reduce the total number of potential participants and make the distances to the turbines relatively consistent, 1 km was chosen as the maximum distance a home could be from a turbine while still being eligible for the study. This number is reasonable considering a 2008 study by the Ontario Ministry of the Environment (MOE) which stated that beyond 1,000 metres , it "..would not be possible to differentiate between the ambient noise and noise produced by turbine operations" (MOE, 2008). Additionally, the limit of 1 km ensured no home was farther away than approximately twice the new setback distance of 550m enforced by the Ontario government in 2009 (GEA, 2009). That said, some opposition groups are suggesting impacts happen up to 3km away. Because many of the turbines in the area were constructed before the new setback

Table 3.4- Participants and important demographic factors

Name	Approximate age	Gender	Community	Turbine on Property?	Length of residence	Distance to closest turbine (m)
"Matthew"	65	Male	Port Burwell	No	~30 years	~500
"Dave"	75	Male	Port Burwell	No	~45 years	~780
"Scott"	58	Male	Port Burwell	No	36 years	~900
"Christine"	55	Female	Port Burwell	No	-	~920
"Pete"	62	Male	Port Burwell	No	10 years	~610
"Mike	28	Male	Port Burwell	Yes	~24 years	~410
"Don"	63	Male	Port Burwell	No	63	~450
"Ann"	40	Female	Port Burwell	No	~30	~390
"Fredrick and Carolyn"	70 (both)	M & F	Port Burwell	No	26 years	~350
"Charlena"	62	Female	Port Burwell	No	~25 years	~570
"Thomas"	70	Male	Port Burwell	No	70 years	~970
"Kelly"	45	Female	Port Burwell	Yes	~40 years	~600
"Diane"	60	Female	Port Burwell	Yes	-	~520
"Mary"	80	Female	Port Burwell	No	61 years	~780
"Betsy"	75	Female	Port Burwell	No	52 years	~700
"Jerry"	75	Male	Port Burwell	No	24 years	~840
"Bob"	26	Male	Clear Creek	No	~20 years	n/a
"Barbara"	80	Female	Clear Creek	No	6 years	n/a
"Henry"	70	Male	Clear Creek	No	9 years	n/a
"Hilary"	55	Female	Undisclosed	No	n/a	n/a
"Kenneth"	65	Male	Undisclosed	No	n/a	n/a
TOTALS (when applicable)	n/a	12 males, 10 females	n/a	3 w/ turbine on property, 18 without	n/a	n/a

distance in 2009, some were closer to homes than 550m. In one instance in the Port Burwell area, a home was located only ~350 metres from the nearest turbine. In this case, we found that the maximum difference between those homes deemed to be close and those far away from a turbine was 650 metres. This difference appeared relatively small. Using the criteria above, 210 homes were selected and added to the master list of eligible participants. In order to provide accurate and dependable measurements a laser rangefinder, the Bushnell Pro 1600 Tournament Edition was used to calculate the straight-line distance between a home's exterior and the closest wind turbine. This rangefinder has a range of 5-1600 yards (4.6-1463 metres) and a margin of error of +/- 1 yard (Bushnell, 2012). Homes were included in the study if they met the criteria of proximity of 1.0 km to a turbine. This was measured during initial sampling and confirmed upon the start of each interview. The straight-line distance was confirmed for all residents who chose to participate- with distances ranging from 350 metres to just under 1.0 kilometre.

In the first round of letter delivery, 70 letters were prepared. Of these, 16 were designated to be dropped off in the mailboxes of "turbine owners" and 54 at the residences of "non-owners". Within each envelope contained: a two-page letter of information, a consent form, and a self-addressed stamped envelope; for which residents could return the consent form to me. On June 30th 2011, I set out to Port Burwell to drop off the 70 letters. In error, two of the letters were addressed to non-residential properties and therefore were not dropped off and two more letters were placed in the mailboxes of homes that appeared to be uninhabited. All four of these letters were from the non-owner group of 54. One week after the initial drop off, there was only one person who

responded willing to participate. He responded by email. Another week later, on July 15th, 10 more letters were dropped off to randomly selected homes from the master list. By July 22nd- three weeks after the initial drop-off, only two responses were received. The low response rate was thought to be somewhat the result of the labour disruption by Canada Post which resumed service on June 27 after beginning striking on June 2 (CUPW, 2012). The result of weeks of striking was a backlog of undelivered mail that was not cleared until mid-July (Bouzane, 2011). On July 25th, I drafted a 2nd letter reminding residents of the opportunity to participate and delivered them in person at the front door of 20 randomly chosen houses from the original list of 54 non-owners. Of these, 19 were not home or did not answer the door and therefore the letters were simply dropped off in their mailbox. One person was able to answer the door but when asked about the opportunity to participate, he simply refused, citing lack of interest with the turbines. Three days after the initial drop off, a final round of letters were made and dropped off at all remaining 130 addresses. This final attempt was made because of the lack of overall participation and with hopes of gathering a total of 20-30 people.

In the end, we had 21 total participants: 16 from the Port Burwell area, 3 from Clear Creek and 2 policy experts from the Elgin county area. Of the Port Burwell group, 10 contacted me through return envelope, 2 by email, and 4 by phone. One additional person from Port Burwell responded by mail but was unable to take part in an interview. Therefore the response rate was 8.1% (17/210) and the participation rate was 7.6% (16/210).The one person who was unable to take part was an elderly lady and immediately after submitting her consent form fell ill and was unable to take part in the interviews for months after. Because we were dealing with human subjects as part of the

research, NMREB (Non-Medical Research Ethics Board) approval was required before the interviews could begin. After two rounds of edits, the application was approved (see appendix G).

In accordance with grounded theory and middle range theory, research and analysis was conducted simultaneously. Though a rough sample of 20-30 was helpful for planning purposes, interviewing and analysis was conducted until the saturation of the concepts was complete. This is said to be when "the categories and theory are fully explicated and no new information about the core processes is forthcoming from ongoing data collection" (Strauss and Corbin, 1998). Based on the literature it was probable that between 20 and 30 interviews would be needed to reach this point of saturation (Creswell, 2007). The entire set of interviews was originally scheduled for June 20-July 20 but because many are farmers and/or were on summer vacation, most interviews were extended into July, August and even the fall. Interviews were conducted within the residents' primary home (14), on a porch or patio attached to the home (2), at the residents' temporary home (2), at a local restaurant chosen by the participant (2), or at their office (1).

During the research, we used in-depth semi structured interviews. Within geography, they are known as one of the most commonly used qualitative methods (Kitchin and Tate, 2000). This method was chosen because the interviewer can more easily help participants feel relaxed and comfortable. Because one of the major goals of the research was to understand what residents are really going through with reference to their experiences with wind turbines, interviews seemed to be appropriate. As Krueger (1994) explains, semi-structured interviews are about "...being open to hear what people

have to say. [they are] about being nonjudgmental [and]... about being careful and systematic with the things people tell you". It has also been said that the nature of an in-depth interview allows the interviewer to delve deeply into social and personal matters (Chirban, 1996) - something we valued and thought should be an important part of the research. Different methods were considered including surveying and other quantitative means. Qualitative methods were ultimately chosen because many of the impacts felt by participants are likely to be in the context of community well-being and as Brown (2003, p.1789) explains, qualitative methods are especially important to community research, as they "...give voice to individuals and characterize the community in a full and complex fashion". Other types of qualitative methods were also considered. Despite their cost-effectiveness (Rogers, 1976) telephone interviews (which would have saved transportation expenses) must be kept short (Creswell, 2007). It was believed that people may not be as engaged within the research experience and thus may tire more easily or be hesitant to elaborate on their experiences if telephone interviews were conducted. Face-to-face interviews also were thought of to be advantageous because they would be set in the vicinity of wind turbines- the particpants' homes. Interviewing people in the 'area of question' seemed to add a contextual element to the research that would have not been possible using other means. Additionally, the nature of wind turbines in Ontario seemed too complex to research using 'superficial' means such as surveys or telephone interviewing. Since a major goal of the research was to develop in-depth understanding of the issues affecting those within the vicinity of the turbines, telephone interviews did not make sense.

3.4 Steps for qualitative rigour

There were several steps taken to guard against threats to qualitative rigour. First, I decided to provide an autobiography to self-disclose my assumptions and biases that may affect my research choices and I will trace how these evolve through the study. For example, before the research began, I was most certainly on the pro-wind side of the wind turbine debate and I feel as though divulging this information through a separate section in the introduction may help to minimize perceived bias in the research. As the research progressed and I was able to understand more deeply the proposed negative aspects of turbines, I became much more sympathetic toward those who oppose wind turbines. In the later stages of research, I actually was able to interview some of these people and because of the recognition of my potential bias, I made sure to place trust in the feelings felt by participants, no matter how foreign or out of place they appeared to me months before.

I also promoted rigour by providing a rich and detailed account of the research interviews (see appendix C). I placed focus on the setting and other factors that may directly or indirectly change the pace or "flow" of the interview. Providing a vivid description of the research not only helps the reader determine if the research is credible but also allows them to compare the results to other settings in better context (Creswell and Miller, 2000). Next, I also made use of low inference descriptors throughout the data analysis. Low inference descriptors are ways in which the researcher phrases ideas that are very close to the participants' actual accounts (Johnson, 1997). The use of these descriptors has been said to make it easy for independent reviewers to agree with the findings (Nunan, 1992). Low inference conceptual titles or codes were developed in order

to group participants' ideas by theme and direct quotations were also used to show the readers exactly what ideas were brought up during the interviews.

3.5 'Another set of eyes': Investigator triangulation

Another important procedure I used to promote rigour was through the use of investigator triangulation. After initial coding of the first 16 Port Burwell interviews, I asked Dr Baxter to code one purposively chosen interview transcript. "Christine's" interview was chosen because it had a great number and variety of the codes seen to that point in the research and was somewhat of a 'typical' interview. Though I recognized that inviting Dr. Baxter would not eliminate all subjective factors in the coding process, investigator triangulation is said to promote an inter-coder dialogue and thus at least *help* with the problems of having just one set of eyes. Despite its imperfections, this process helps makes sure the two investigators agree about what took place; and if so, it is less likely that outside reviewers of the research will question whether something occurred or not (Johnson, 1997). In our case, Dr. Baxter shared very similar coding preferences as I did. In most cases, his 'new' nodes were very similar to existing nodes and therefore were often combined into one more inclusive grouping. Themes found by Dr. Baxter that were most helpful related to community well-being and conflict. He also developed a theme called 'Thesis-able' quotes. As the name entails, this node contained the most valuable and/or memorable quotes we felt would be useful in the thesis. Perhaps the greatest value in the process of investigator triangulation was the conversations I had with Dr. Baxter concerning existing and new themes. During these meetings we would discuss the relative merits of each major theme and thus I was able to more confidently decide on what particular ideas were important for the research. Thus investigator

triangulation in this study was used as much for conceptual development as it was for reassuring ‘proper’ analysis of the data. With the concepts from these meetings in mind, a second round of more detailed coding took place where I considered these new ideas.

3.6 Member Checking

Lastly, and perhaps most importantly member checking was conducted- where I took preliminary interpretations of the interviews and media analysis back to the participants to see if they agreed with them. It has been said to be “the most crucial technique for establishing credibility” in a study (Guba and Lincoln, 1985, p.314). Participants were sent via mail a nine page word document (see appendix D) that explained the process of member checking and briefly outlined the preliminary results. They were asked if they agreed with the document and to comment on anything; particularly the points which they disagree with. Though part of the value in member checking is to see if I ‘got it right’, there was also opportunities for better levels of general understanding. For example, even if a participant indicates they agree with all of the findings, they may choose to elaborate on a particular issue or idea not directly covered during the interview. Similarly, if a person disagreed with the findings, they may be able to provide new and possibly ‘hidden’ insights into the research. This point is understood by Borland (1988) who stated that bringing data back to the participant allows for “the exchange of ideas so that we do not simply gather data on others to fit our own paradigm...” (pg. 532).

In order to accommodate the greatest number of people, we allowed participants to respond to member checking using 1 of 3 ways: by mail (using a pre-paid return

envelope), email, or fax. Of the 21 original participants we were able to contact and send out the letter to 20. One person in the Port Burwell area was in the process of moving at the time of the original interview and they were unable to be contacted afterwards. In early April, letters were sent out to the 20 residents. By the end of May, we had received 12 responses (60% response rate). Most indicated that they either somewhat or strongly agreed with the findings (8), while two people neither agreed nor disagreed and two strongly disagreed with the findings. The latter two were also vehemently opposed to the turbines and one provided a ~4,100 word email in response.

At the end of the analysis chapter, the limitations of the research, many of which were brought forth during the member checking process, are discussed (pg number). Though some of the concerns raised were unavoidable or not relevant to the practice of qualitative methods, others were valid and investigation into them makes this a better thesis overall.

3.7 Other forms of Qualitative Rigour

Much attention was given to make sure that during the interview, participants were as comfortable as possible. The choice of location for the interview, for example, was left up to the participant. Unsurprisingly, most people chose their home and in only three instances, likely because of convenience, we met at either a local restaurant, or the participant's office. As for attire, I typically chose a fairly casual outfit to wear to the interviews. Being that most were in mid-summer, I wore a lot of polo shirts and khaki shorts to the interviews. Later in the summer, I was forced to wear warmer clothing- most often a jacket and nice khaki pants was the choice. Most of the time this choice of fashion

seemed to match fairly well with the participant- I felt as though I was neither too 'dressy' however formal enough to be taken as a researcher. Another technique I used to maximize the comfort of participants was to spend some time before the interview getting to know the person. We would often meet outside and explore the property. Once I met them, I would often remark about the beauty of the land, ask questions about the property, where they call 'home-home', or simply remark on the great weather we were having at the time. Fortunately my efforts were often reciprocated- with the resident asking about myself and where I grew up for example. When I replied with St. Thomas, Ontario (~30 minutes away), people seemed to open up and we instantly had much more to talk about. This 'small-talk' generally lasted for 5-15 minutes- at which point it seemed a certain amount of rapport was developed. Participants also generally had some questions about the nature of the study and my role in it. I responded that I was a Masters student in Geography conducting research under the supervision of Dr. Baxter and that my research was to contribute to a larger project that studies wind turbine communities across Ontario. Before each interview began I asked them if they had any further questions. Most often they did not. Finally, I reassured them that they would be given an alias and that there answers would be kept confidential. Following the interview I reminded them that they could always 'back-out' of the study at any time and I gave them a business card with my contact information on it in case they had any questions or concerns.

3.8 Analysis – Coding

For this research coding, which is the process of identifying and organizing themes in qualitative data, was used (Hay, 2000). Coding was essential for the data

analysis because of the ~800 pages of transcripts, it served to reduce the data while also helping to identify the most pertinent issues and themes relating to the research.

Coding was first done line-by-line – also called initial or descriptive coding. The process of line-by-line coding was used through each transcript to record each possibly significant issue or theme that was discussed. According to Charmaz (1994), line by line coding also helps to develop leads in which to pursue and keeps the researcher closer to the data itself. Examples of codes developed during this initial stage included: health effects, noise, planning stages, and life before and after. These types of themes were helpful in establishing somewhat superficial themes with relation to wind turbines in the area. In an effort to glean as much relevant information from the interviews as possible, potential themes including a broad spectrum of topics. These may have included topics or theories found in the literature, new themes discussed with great detail and/or passion, or references to the wind turbines, wind energy or the community itself. Additionally, to remain consistent with the tenants of grounded theory, categories/codes remained flexible based on the growing understanding of the issues. For example. codes were often merged or moved into others when they were found to be more useful. After the first round of initial coding, analytic coding was conducted. This type of coding is useful because it allows the researcher to "dig deeper into the processes and context of phrases or actions" (Hay, 2000, p. 283). Examples of some of the more in-depth analytic codes developed were: Perception of opponents→ Some people will always complain, How people get along→ turbines bringing people together, and Community conflict→ Do not perceive much conflict.

3.8.1 Process of Coding

The data obtained through the qualitative in-depth interviews was analyzed with the aid of NVivo 9 data analysis software. There are few well-established concepts to describe wind turbine impacts in the North American context so a grounded theory (inductive approach) was appropriate (Glaser & Strauss, 1967). Much of the current understanding of wind turbine impacts and controversy comes from the European experience and generally set under much different contextual circumstances including ownership systems (see Community ownership in Introduction). Using Nvivo 9, we coded the data by common theme in order to describe what types of impacts are felt and/or shared by each individual or group. Because Nvivo allows the researcher to work with transcribed text and the original audio recording, this helped me 'stay close to the data' and facilitated the empirically grounding of it.

3.8.2 The Selection and Use of Quotations

Due to the overwhelming amount of data collected during the interview analysis process, it was necessary to select only a small percentage of quotes to be included in the thesis. There were no strict criteria used but rather three generally guidelines were put in place to determine if quotes were to be included:

1) **If they were representative of the sub-group of participants whose transcript was flagged with the theme –** many themes were found to be evident within most or the vast majority of the interviews and thus were deemed important to the understanding of turbines in the area.

2) **If they represented a negative case or theoretical importance –** the number or frequency of the themes did not matter as much using this criterion. Instead, if it was believed that a particular concept added some theoretical understanding to the research, or characterized a negative case quotes relating to it were used in the thesis.

3) **If they rounded out the entire sample/ were different than others already cited –** although rarely used, I thought it would be important to include the greatest number of people within the thesis as possible. Particularly when multiple people expressed very similar beliefs or feelings, I believed that including more people in the thesis would help the reader see that I did not simply use a few people to represent the entire sample.

In referring to codes in the thesis, I decided to use 'transcript counts' instead 'reference counts'- that is, the number of interviews that included at least one mention of a code(s) and not the total number of references in all interviews combined. The fact that I controlled the questions and often solicited further explanation of a participant's feeling or belief meant that the number of times it was spoken about was somewhat unrelated to the participants. Additionally I feared that overall counts would have the potential to skew a reader's overall perception of the sample. For instance, if only one person spoke about the fact that turbines are ugly but mentioned it dozens of times, it may give the reader the impression that most people mentioned the fact.

3.9 Sample Limitations

Although not the goal of qualitative research, the sample is likely not representative of the population of Ontario, and perhaps not even Port Burwell given than another student did find many more opponents to the turbines through survey research (Ouellette, 2012).Though her survey work did include many more people to begin with. Self-selection is the main problem in this study, but this had to be traded off against willingness to talk. Due to the fact that the interviews were voluntary, participants with more passionate views of wind energy were more likely to participate than those with more passive views (Swofford and Slatterly, 2010). There is no reason to assume that this passion would have been evenly distributed across important conceptual categories though – (e.g., those supportive and those opposed to turbines). In fact, it was expected that my sample would comprise a higher percentage of people who oppose wind energy than the population average – since they tend to be passionately opposed. This has been shown in many wind turbine studies and is associated with the "democratic deficit" as defined by Wolsink (2007; see Chapter 2). Prior to the start of the interviews, I considered also using snowball sampling if needed - asking residents to encourage people within the community who are not concerned about the impacts of turbines to contact me for an interview. In the end, almost our entire sample in Port Burwell was in favour of wind turbines so this step turned out to be unnecessary.

Focus groups, rather than in-depth fact to face interviews, were considered an option during the initial planning stages of the research. A major advantage of using a focus group format would have been that I would be able to see the dynamics of group interaction (Kitzinger, 1995) surrounding issues relevant to wind turbines and the

community. Scheduling focus groups tends to take longer, however the actual process of conducting focus groups can allow the researcher to "observe a large amount of interaction on a topic in a limited period of time..." (Morgan, 1997, p. 8). Focus groups also may have been advantageous in creating less structured interactions, a feature often cited to fit well within exploratory research (Morgan, 1997, p.11). Despite these possible advantages, personal interviews were chosen for two reasons. First, because of the potential conflict in the community over wind power, it was thought having a personal conversation with people would allow for a more comfortable atmosphere and a better sharing of ideas. Indeed when a goal of the research is to facilitate emotional sharing, individual interviews are the more appropriate choice (Krueger, 1994. p. 14). Second, the group dynamic of focus groups at the very least compromises anonymity (Kitzinger, 1995). When this is occurring it is likely that people will not share all of the relevant information as they would if they were participating in personal interviews.

Chapter 4:

Analysis

5.1 Introduction

This chapter presents the findings from the qualitative in-depth interviews conducted over the summer and fall of 2011. It is based on the heuristic frameworks developed (figures 4.1-4.3). The first is based on the main finding from the research; that is, Port Burwell is an area of high support/acceptance for wind turbines while in Figure 4.2, I present a conceptualization of the findings from Clear Creek- an area of relatively high opposition to wind energy developments. Lastly Figure 4.3 provides a simplified explanation of why we found support in the Port Burwell area.

What this chapter explains are some of the themes I found to be most important

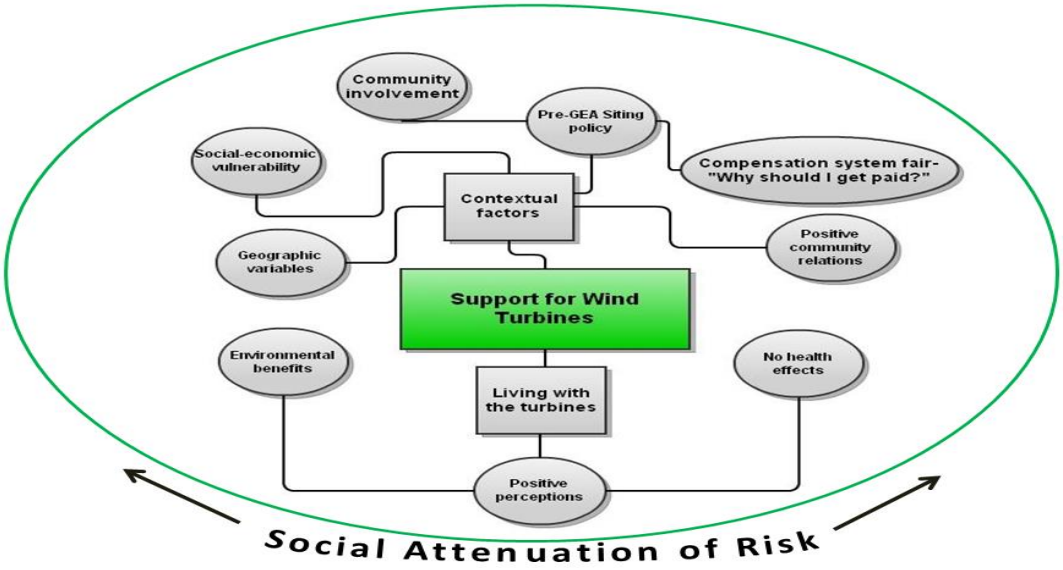


Figure 4.1 – Social attenuation of risk in Port Burwell

with relevance to Ontario's green energy policy, community health and well-being and wind turbines' impact on individuals. The main finding of the research is that despite efforts to find opinions to the contrary, the Port Burwell area (Erie Shores Wind Farm) appears to be an area of low concern / high support for wind turbines. Thus, Figures 4.1 & 4.3 and much of this chapter focus on why this is the case, using the words of the participants. This is likely at least partly because of the social, political and economic conditions unique to the area prior to construction in 2006. Risk was 'socially attenuated'- meaning the perception of risk (negative impacts, including health problems) was reduced because of place-based contextual factors (figure 4.1). I present this main finding amongst the backdrop of other areas of medium to high concern including Clear Creek- a village where I purposely interviewed three opponents of wind turbines (Figure 4.2).

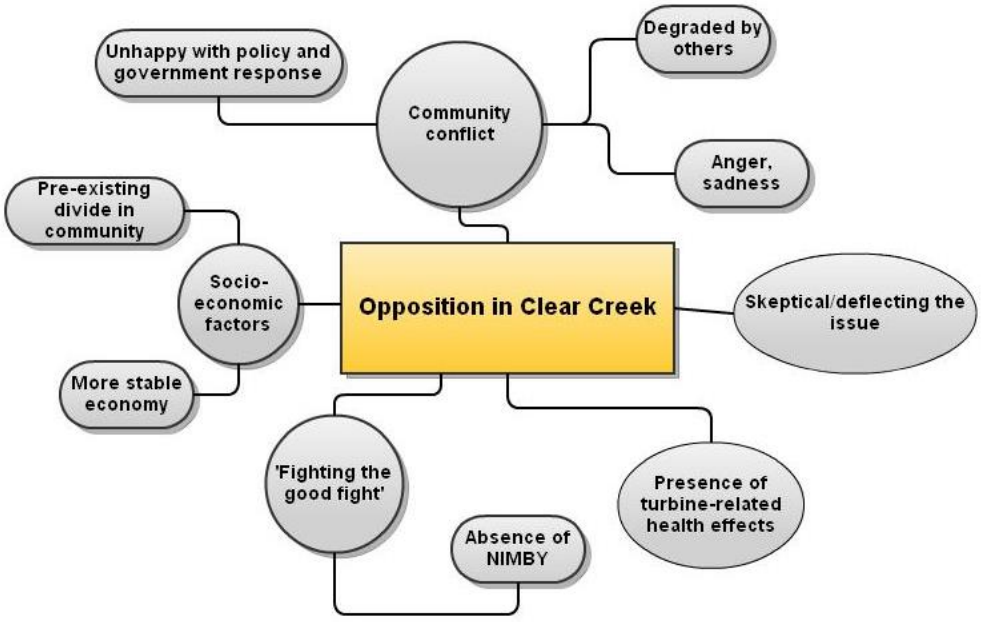


Figure 4.2 - Social amplification of risk in Clear Creek

The results from these meetings reinforce the idea that pre-construction contextual factors may be helping to determine how turbines are received. Though of course, these opposition residents have their own theories for differences in responses to the different wind developments – ones which I will also discuss in Chapter 5. Additionally, two of the people I interviewed in Port Burwell were 'policy experts' in the sense that they had knowledge and experience working on the local front of wind energy policy. Understanding the reasons why Erie Shores was so successful[1] and the future of wind energy policy was gained through these interviews and once again reinforced my ideas about context and acceptance/opposition.

4.2 Success explained: summary diagram

Figure 4.3 reinforces the mechanism of success[1] found in Port Burwell. It shows that community support for wind turbines in the Port Burwell area is a function of at least three key contextual factors (Socio-economic vulnerability, the type of policy and geographic variables). The figure simplifies much of the understanding of why some communities support wind energy projects and others do not. In combining the two cases I studied, I believe that (1) the right contextual factors as seen in Port Burwell may lead people to (2) perceive the planning and policy process as being

Figure 4.3 - Explaining support

[1] *The term success was chosen to represent the way in which turbines were accepted/supported in the Port Burwell area. It is undoubtedly a success from the point of view of most residents and the governments (provincial, municipal whom planned and implemented the wind farm).*

"good" or fair and that (3) because of these proper planning procedures, wind turbines appear to be a 'good fit' in the community. In 15/16 interviews in Port Burwell for example it was clear that the benefits were perceived to outweigh the costs. This type of feeling seemed to be leading to (4) high levels of support. Conversely, it was seen that Clear Creek had lower levels of (1) and (2) which may have been why the turbines were not overwhelmingly accepted.

The first section of this chapter highlights the Port Burwell area and the unexpected support for wind energy. With the use of voices from residents of Port Burwell, the second section addresses the question: what does support sound like? Here the level of enthusiasm for turbines is explored. Using traditional points of contention relating to wind farms, I examine how important issues such as health effects and noise problems are perceived in the area. Third, I explain in detail, why the Port Burwell experienced such widespread support. Special consideration in this section is given toward the contextual factors that may have led to support including a full media analysis which highlights the special role policy appears to have played.

Table 4.1 - Main findings (themes and sub-themes)*

MAIN THEME	SUB-THEMES	# of participants** (when applicable)
1. Support for Wind Turbines	a) Introduction; unexpected support	14/16 supportive (1 ambivalent, 1 opposed)
2. What does support sound like?	a) No health effects	16/16
	b) Positive perceptions: Turbine noise and aesthetic problems i) Different interpretations of sound ii) "I think they look cool"	15/16 (accepting of noise) 12/16
	c) Environmental benefits	15/16
	d) Positive community relations: Lack of community conflict	16/16
3. Explaining support	a) Compensation fair & Pre-GEA siting policy	13/16
	b) Why should I get paid? Economic history and positive feeling toward farmers	15/16
4. Explaining opposition: Findings from Clear Creek (and Port Burwell→ g, h)	a) Presence of turbine-related health effects	3/3
	b) Absence of NIMBY	
	c) 'Fighting the good fight'	3/3
	d) Skeptical/deflecting the issues	3/3
	e) Pre-existing divide: Different ideas of neighbourhood and friendliness	3/3
	f) Unhappy with policy and government response	3/3
	g) Lesser evil argument	2/3 *(15/16 in Port Burwell)*
	h) Negative attitude toward the other	3/3 *(14/16 in Port Burwell)*
5. Place-based contextual setting and policy	a) '3a. continued': The important role of policy	2/2 (policy experts)
	b) '3b. continued': Economic circumstances and the arrival of wind turbines	2/2 (policy experts)

**Note: Most themes and subthemes can be found within figures 4.1-4.3 however those which specifically apply to both groups (e.g. Lesser evil, negative attitude toward the other) do not.*

***Because there were three 'sub-groups' interviewed, some questions/results only apply to one group of people. The group of 16 is mostly supporters from Port Burwell, the group of 3 are opponents from Clear Creek and the group of 2 are policy experts from Elgin County who do not live 'amongst the turbines'.*

Next, I use insight from the opponents interviewed in Clear Creek to explain opposition and controversy- particularly against the backdrop of the support found in Port Burwell. Fifth, I discuss the results from the two interviews with our policy experts which I believe round out the research and add important elements of the policy perspective of which the study is deeply embedded within. Lastly, I explain the results from the member checking process in which participants had a chance to comment on preliminary results.

4.3 Port Burwell: High levels of wind turbine support

Despite the widespread Ontario media coverage to the contrary (Songsore, 2010), the people who volunteered to speak to me about wind turbines in Port Burwell were quite supportive of them. The media coverage in provincial dailies leaves the impression that all communities that are actual or potential 'hosts' to wind energy projects experience at least some controversy or conflict. I was of course surprised then to see the overwhelming support for wind energy in the Port Burwell area- home to 66, 1.5 megawatt turbines. Of the 16 residents of Port Burwell interviewed, 14 supported the wind farm; while 1 person opposed, and one person was ambivalent or simply accepted the wind farm. To distinguish these three groups of people is important. The first time

each person is mentioned, a quick description including their area of residence and opinion of wind turbines is noted (example: *"Don", Port Burwell, supportive*).

In conversations with residents of Port Burwell, it was clear that most (15/16) showed either acceptance or support for the wind project. Their reasoning and strength of support was quite varied and included everything from the turbines' contributions to the grid (15/16), the green energy they produce (14/16), and even the turbine acting like a weather vane[3] (7/16). The variety of perceived advantages the participants spoke about may speak to the value system or the knowledge each person has of wind energy. When asked in general terms what they thought of wind energy, I received a great range of responses- most of which were positive. Ann mentions how her faith makes her believe that wind energy is the right thing to pursue, Diane sees value in the economic benefits wind turbines can bring, and Thomas sees the turbines as some kind of 'weather vane':

> ***"Ann" (Port Burwell, supportive):*** *...you know you're going to need hydro and God made the wind so, you know, why not harness it and use what he gave us to help whatever we need.*
>
> ---
>
> ***"Diane" (Port Burwell, supportive):*** *Well, as far as farmer, being a farmer goes, you know we've had some tough years in the last few. Things are better now, commodity prices are up but when you're paying, you know, when a bushel of corn brings your 3 bucks, farming's not a very profitable business. So if something like this can help the farmer and it's a very small footprint in a field, you know, so I have to think it's a good idea.*
>
> ---

> ***"Thomas" (Port Burwell, supportive):*** *[I] wonder which way the winds coming from, so I can tell which way the winds coming from in case I want to go fishing…you know I don't think [the turbines] predict the weather but, …you know like you can see how fast they're turning*

Because of this wide array of reasons for support given during the interviews, very few people spoke for all- that is, were representative of the majority. A couple of people however were representative of the degree of support seen by the people of Port Burwell. "Mike" and "Don" both seemed to represent the majority in that they spoke in general terms. Most often people would cite multiple reasons why wind was 'good' indicating an unconditional and strong sense of support for wind:

> ***Chad****: …what do you think about wind energy in just in general? What are you kind of feelings about it?*
>
> ***"Mike" (Port Burwell, Supportive):*** *I think it's great…I think it was a great thing to put in the area, it's a windy area, it always has been. And I do think it's a great thing that we're, we are contributing here to, you know the green economy, the green power generation, I really do…*
>
> ---
>
> "***Don" (Port Burwell, Supportive)****: I guess overall, I'd be just 100% for wind energy. It's something that, in my way of thinking has no end to it so why not harness it and use it to our benefit.*

Even within the subgroup of 15 who were either supportive (14) or accepting (1) there was much disparity in terms of the level of enthusiasm each person had. Whereas people

like Mike and Don were more outwardly positive toward wind turbines in the area, other were supportive but to a lesser degree. In fact, it was seen that six of those who were determined to be supportive were only 'casually' so. Though the impression gained through the interview was that this group would rather see the turbines in their area than not, it would also not be a huge loss if they did disappear.

> ***"Ann":*** *...I don't know I think it's good. I mean there's always wind or it seems like there's always wind of some sort (laughter) So it's always gonna be there to always power whatever so if you can use it, I don't know, I think it's a good thing. ...I don't see a better way I guess other than your solar panels to create energy and to do stuff so, I don't know. I think it's an overall ok feeling.*

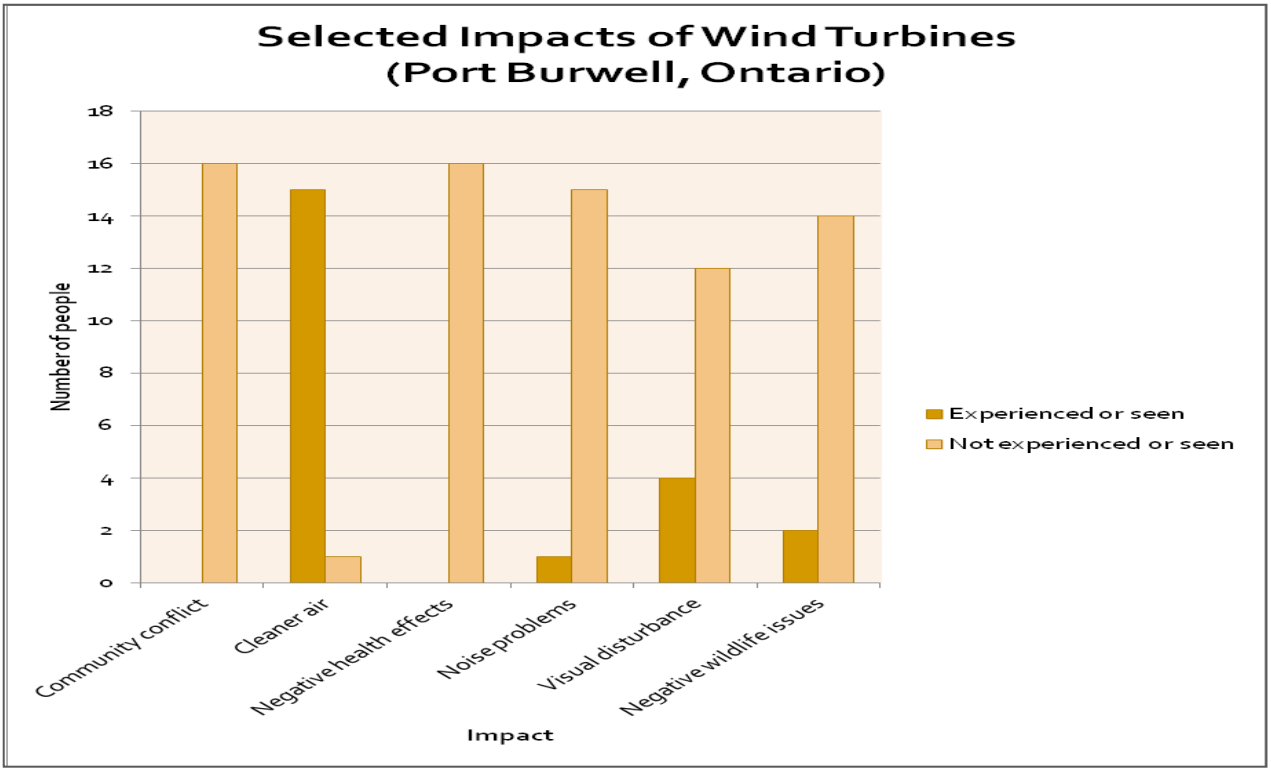
Though the aim of the research was not to determine a census of support/acceptance/opposition in the Port Burwell area, some measures may help to reassure our findings are most likely accurate. First of all, questions posed to participants regarding potential problems of wind turbines (health problems, noise issues, etc.) were always framed on both the individual and community levels. For example, just as no person interviewed in Port Burwell experienced health problems, no participant knew of anyone in the community that had complained of or were experiencing health problems. Secondly, Ouellette's (2012), survey work in Port Burwell and Clear Creek (Frogmore) presents quantitative data which shows the relatively high levels of support and fewer problems in Port Burwell. For example, whereas 29% of those surveyed (n=65) in clear Creek indicated they were strongly against the wind farm in their community, that number was less than 10% in Port Burwell (n=76). (see appendix E). In order to illustrate the support seen in Port Burwell, figure 4.4 (below) was created. It shows the opinion of

those interviewed on the some of the most important issues facing wind energy in Ontario today.

[2]*The fact that some people saw wind turbines' rotor and blades to be somewhat of a 'weather station' was one of the most surprising advantages perceived by participants. In total, six people felt similar to "Ann's" opinion: "because the faster they go the stronger the wind is so, you know, you sort of check them out to gauge the weather, I mean it's like a weather gauge in a way…"*

Figure 4.4 – Port Burwell: Community opinion on important wind turbine issues

Note: The table shows the counts of issues found to be important in the literature and during this research. In combination with the chosen quotation which make up a large portion of this chapter, these values add value and breadth to the research that may not exist otherwise – giving us an indication of what is most likely the community's



The remaining part of this chapter looks at equally important questions relating to wind turbines in Ontario- most notably: What are residents of the area experiencing? What caused the high level of support in Port Burwell and; what factors lead to successful[2] wind energy policy? This section explains the type and level of support seen in the Port Burwell area and draws on the interviews with local residents as well as the political and legal experts I spoke with familiar with and who lived just outside the immediate Port Burwell area.

4.4 What does support sound like?

4.4.1 (Lack of) Health impacts

A prominent issue facing rural residents of Ontario today, a variety of health impacts have been proposed to be caused by wind turbine developments built too close to homes. Because of this importance, a significant portion of each interview conducted asked participants what health problems they have had since the installation of local wind turbines. Of the 16 people interviewed in Port Burwell, none had experienced any health problems first hand and perhaps more importantly, had no knowledge of anyone in the immediate community who did either (see figure 4.4). When asked about their health since the turbines had been installed the typical answer was often quite positive. Interestingly, participants who either first-hand or through a family member had experienced health problems since the turbines were operational always attributed the health issue to another reason such as old-age or genetics. When asked about her thoughts on

health impacts experienced by some people in Ontario, "Betsy" *(Port Burwell, supportive)* revealed this feeling shared by 15 of the 16 participants:

> ***Chad:*** *People in Ontario- specifically some areas insist that these things are giving them headaches, give them nausea, dizziness, all sorts of kind of ailments. What's your opinion on the, on that? On people saying that?*
>
> ***"Betsy" (Port Burwell, Supportive):*** *Well ok, take my husband for instance. Before the wind turbines come here, he was fine. Now he's got [age-related illness] did the wind mills cause it? Nooo... (Laughter) It's an aging process. Well the same, ok I've always been healthy, I've never had any problems I don't take any medication, I still don't, the wind mills have been here, I still don't. And…so I*

> *can't see, or alright, I'm having a little trouble with my back. Well my heavens I'm 81.*

No personal health impacts were found to affect any of the 16 participants in Port Burwell during the interviews. All participants talked about how for whatever reason, they have never experienced health problems they could attribute to the turbines. A person well connected within her community, "Diane" says that she knows her neighbours quite well and over the years has "never met anyone" that experiences health problems due to wind turbines. She is somewhat open to the idea but insists that there is most likely no one in the Port Burwell area facing problems:

> ***"Diane":*** *Well they may have some issues. They might be so ultrasensitive to things that, like, it's hard to know what goes on in another person's body so I wouldn't say it's impossible, maybe for them but it's certainly isn't an issue for anybody I know. I have never met anyone who had any of those symptoms. And we live right here amongst them. I don't know anyone that's ever done that, no.*

There were two more people even more willing to believe that it was entirely possible for others to experience turbine-induced health problems. One woman in particular, "Charlena" *(Port Burwell, opposed),* was very open to the idea. She explained that she is familiar with a woman in Clear Creek who is going through health problems and that the sound and shadow flicker turbines create may very well be the source of these health effects. When asked about the legitimacy of her complaints, "Charlena" shares with us a rare example of empathy toward those who are suffering- particularly compared to most residents including Diane and Betsy, above:

> ***Chad****: So I guess a lot of those [health] impacts we just talked about, we just kind of want to get your feeling on them. What about, what do you think about people*

claiming health problems from wind turbines? Like legitimacy or the, or are they not legitimate?

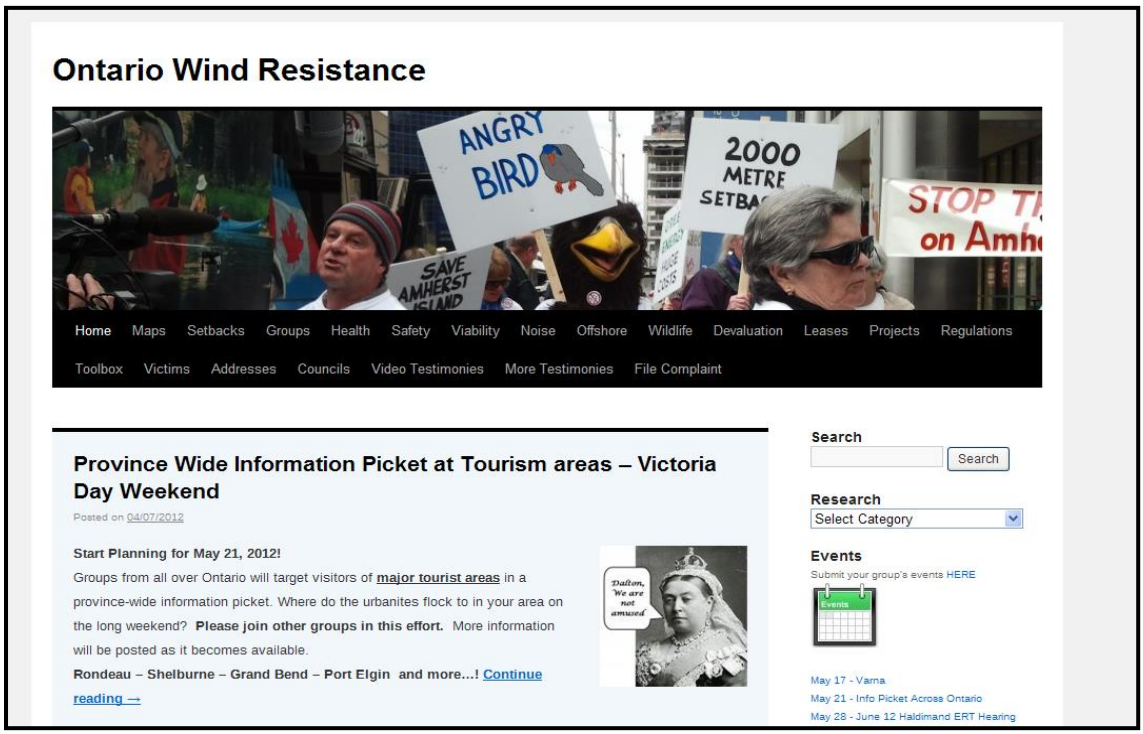
***"Charlena" (Port Burwell, Opposed)**: I think it could be very legitimate. I think they could,…if they're closer that they're that they really do have an impact…I would think some people could easily experience that. …if the noise, if you know if you're particularly sensitive to noise that can be REALLY bad. If they're close enough to cause shadow. So suppose one's on like on the west of your house and the sun is coming and I know that people who have epilepsy can go, can have a seizure because of them. So yes, the health concerns are legitimate.*

Most people were unlike "Charlena" however and had no belief in the thought that turbines cause health problems. Conversations about health problems and wind turbines would usually result in ridicule of people who do experience negative health effects (see Negative feelings toward the other).

4.4.2 Wind Turbine noise and aesthetic problems

According to a 2010 province-wide survey of 1,361 respondents, noise and visual problems are the two largest drawbacks of wind energy (Ipsos Reid, 2010; see figure 4.5). Despite the results of the study, health effects is arguably the one of the most important issues cited by *opponents* of wind energy in the province- indicating a possible disconnect between perception of the problem at different scales. Noise (both audible and inaudible) is cited as being an important issue to many activists in the province however most of this is because of the perceived effects on health.

Figure 4.5 - Snapshot of WCO website - May 18 2012



Aesthetic concerns are not used by opponents in Ontario very often. In fact, on the website of Ontario Wind Resistance (The province's unofficial anti-wind group) they do not list visual intrusiveness or the like under a 'clickable' tab. Instead, they include things like health, safety, wildlife, and regulations (see figure 4.5 - snapshot of site).

In other parts of the world, particularly the UK, noise and aesthetic concerns have consistently been noted to be the most frequently reported problems among a group Simon (1996) calls the 'Nay-sayers' of wind energy. As seen in the conceptual framework (figure 4.1, 4.2) there was also little concern for these issues during the interviews in Port Burwell and Clear Creek. While they are often grouped together, sound and aesthetic problems are two very different issues. While audible sound can be

measured fairly easily (through decibels) visual objections are far more nuanced. It has been shown that the perception of a wind farm's visual impact can be affected by more than the actual turbine itself, including social, cultural and political factors. For this reason I split up the two issues.

4.4.3 Interpretations of sound: Soothing or like a "747 that never goes away":

When participants of Port Burwell were asked whether they find the noise bothersome, nearly all (15/16 claimed they did not (figure 4.4). All participants acknowledged that the noise created by the nearby turbines was audible but not enough to be annoying or create discomfort. On the contrary, though the literature reviewed in Chapter 2 suggests the "swoosh" sound may be harmful or annoying, 2 of the 16, including "Christine" *(Port Burwell, supportive)* found the 'swoosh' created by the moving blades to be soothing:

> ***"Christine":*** *No, and as I said in the still of the night and if the breeze is a certain way you can hear a "whoosh, whoosh". Which again is soothing…I've gone down to the one you can walk up to and I don't, you know, you might here a bit more right underneath it but…*

Proximity to Lake Erie may also be playing a role, with six people noting that the noise from crashing waves and those from the turbines are often difficult to differentiate. More often people said that they "were used to the noise" or that they "don't hardly hear it anymore" such as "Mike", who describes it as "background noise":

> ***Chad****: Ok, how about the noise they produce- what kind of community talk is there about the noise?*
>
> ***"Mike":*** *Umm, well they do make noise. I don't think, I haven't heard of anyone say it's too much and ya from our experience and my family and parents who live [location] …and I mean, you don't hear it anymore. It's completely background noise at this point.*

The question of whether or not the turbines made annoying or harmful noise was sometimes a topic of humour during the interviews. When asked if they hear it on a regular basis, three people turned the question on me and we both became quiet and listened closely for the infamous 'swoosh' noise. An example of such a conversation occurred in early September with an elderly woman named "Mary" on a late summer day- with the nearest turbine spinning.

> ***Chad:*** *Ya, ok that's good. What about the noise these thing produce, is there any community talk about that like a community, have you heard people?*
>
> ***"Mary"(Port Burwell, supportive):*** *I, I don't hear any noise myself. Can you hear any now? I don't. (Laughter)*

Whether inside or out, on no occasion could either of us hear the noise. This prompted laughter from the participant- perhaps their way of mocking the seriousness of the question and/or the people who do claim problems with noise. This type of disbelief often took on a negative tone and is discussed in Negative feelings toward the other in the section below**.**

Interestingly, the people who had a problem with the sound turbines make would describe them in very similar ways to those who found the noise not to be bothersome. In

both Clear Creek and Port Burwell, all people interviewed acknowledged that the turbines did indeed make noise. More surprising is the way in which the perception of the noise (e.g., what they compared it to) affected them. In both areas, there were people who compared wind turbine noise to an airplane travelling overhead. Barbara used the metaphor to describe the constant presence in her community:

> ***Chad****:…the first one has to do with noise, it says on a windy day they can sound like a jet is coming right at you. They are much louder than we were led to believe they could be. Like what are your feelings toward that, do you…*
>
> ***"Barbara" (Clear Creek, Opposed):*** *That's exactly what it sounds like around my house.*
>
> ***Chad****: Really?*
>
> ***"Barbara":*** *Yes, yes a 747 that never goes away. The good thing about 747 is that they're flying from Toronto to Cleveland. Ok, once they've gone over to Cleveland it's gone. But these things, they stay for 24 hours. Because they're created by those blades that never go away.*

In stark contrast to "Barbara's" interpretation of the sound, "Ann" did not seem to mind the fact that turbines sound like an airplane flying over. Her perception of the noise as being "not so bad" because of other sources, is discussed in more detail in Relative Evils.

> ***Ann:*** *I worked in a field oh I don't know the owners of the turbine were in one field and I was in the field beside it and yet to me it never really sounded more than a jet going over. So that people talk about how noisy they are, I've never heard them.*

"Ann's" time working in a farmer's fields has given her the personal experience of being very close to turbines. When asked how close she was from the turbines while she worked, she replied *"...I don't know distance but you look out my window and see those trees over there, the pines in the yard next door…about that far" (Laughter).* From this approximation, we determined the distance to be no more than 100 yards (~90 meters). While both ladies live close to the turbines it is interesting that while both "Ann" and "Barbara" compares the sound to a jet, their much different perceptions of the same 'jet' is an interesting point- especially "Ann's" comment that she *"never [hears] them".*

4.4.4 Aesthetic issues: "I think they look cool"

The issue that led to the most disagreement in Port Burwell was whether the turbines were visually disturbing or not. In 4 of the 16 interviews (see figure 4.4), a feeling that the turbines were an 'eyesore' or visually disturbing was clearly expressed. Most commonly, residents would speak in terms of the rural environment and that the turbines do not seem to 'fit' in the otherwise natural landscape of the area. Perhaps the strongest voice heard in Port Burwell was from "Charlena" who described the sight of the turbines as making her feel like she is living in an industrial zone:

> ***"Charlena"****: They're a blight on the landscape, I don't like looking at them, I don't like seeing the red lights when I drive along the shoreline anymore, I don't like feeling that I'm living in an industrial zone.*

In three of the four interviews where people perceived the turbines to be visually disturbing, respondents used qualifying statements that framed the impact as a 'semi-negative' in order to make sure I knew that they still supported wind turbines overall. In

an interview with married couple "Carolyn" and "Frederick" it was found that the 'eyesore' that has entered the area is perceived to be somewhat of a necessary evil:

> ***"Carolyn"*** **(Port Burwell, neutral)*:*** *Well of course it's been ruined! Like they weren't here before and we had beautiful, you know, just green around us and now we've got mill, windmills which does change the equation quite a bit.*
>
> ***Chad****: Ok…*
>
> ***"Carolyn"****: But the thing is, that's all, well said and done but we still like our homes to be heated and cooled.*
>
> ***Chad****: Yes …*
>
> ***"Carolyn"****: Now how do you come about that without making some, some sacrifices?*
>
> ***"Frederick"*** **(Port Burwell, neutral**)*: If you have a solution, that's better than what we have…we'd welcome it.*

While "Carolyn" and "Fredrick" support wind energy in many ways, they clearly have some other problems concerning how turbines look in the landscape. Moving from a large city in the Greater Toronto Area, the couple settled in Port Burwell because they '…wanted to live in the country in a peaceful environment' ("Frederick"). When measured, the turbine closet to their home was just over 350 meters- the minimum setback at the time of construction and 200 metres closer than the minimum setback of today. While the couple has no serious problems with the local turbines, they appear to have mixed feelings overall.

Ten of the people interviewed in Port Burwell spoke in a neutral tone concerning the aesthetic effect of wind turbines. 'Acceptance' of the view with turbines rather than

enthusiasm for it, was by far the most common feeling (10/16) of visual effect encountered during the interviews in Port Burwell. When asked about the impact the turbines have had on local tourism, "Pete" spoke of turbines in utilitarian terms which represented nine others who felt the ambivalent about how they look since they serve a purpose:

> ***Chad:*** *Alright…what about the wind turbines and the ability to provide economic development. I guess first in the area- through tourism and stuff like that. Have you seen any difference? Any change?*
>
> ***"Pete" (Port Burwell, supportive):*** *Well some people think of them as a tourist thing, I don't think they're that attractive. They're a piece of industrial equipment. They're not unattractive but I wouldn't consider them attractive either. Part of the scenery, they're no different than say a telephone pole carrying hydro lines to me. You know they're just there. They move, that's the only difference. But they're there, they do, they generate power…I see people stopping to take pictures often. I even took a few myself but I didn't take a bunch I mean they're just wind turbines. I'm used to them now. They're scenery to me.*

Within the Port Burwell sample, there were also two people who thought that turbines added value to the landscape of the area. While they were a small minority of all people interviewed, they both showed how it is possible to perceive beauty in something that contrasts the rest of rural Ontario so much. Especially at night, "Mary" felt that the scenery was more beautiful because of the wind turbines. In fact, in her opinion, they actually looked 'cool':

> ***Mary (Port Burwell, supportive):*** *Ya, I have no problem, I think they look, they look cool. It doesn't ruin the landscape, it changes the landscape, it obviously*

changed the landscape but ruin it? No. This is what it is now, and it looks just as good as before. At night, I don't know, there's just some red stars out there (Laughter).

4.4.5 Environmental benefits

Though the majority did not feel turbines were visually appealing, the vast majority (15 of 16) interviewed in the Port Burwell area felt that the wind turbines brought with them tangible environmental benefits. The advantage most commonly cited by the participants was the ability for wind energy to clean the air. When asked of the turbines' environmental contribution, "Thomas" gave what may be labeled a typical response:

Chad: *So in your opinion what are the most important impacts of wind turbines? Ah I guess let's start with maybe the positive impacts if there's any?*

"Thomas" (Port Burwell, supportive): *Well it's a green energy, its, it's to make the country better. I think that's what they do. You know.*

Chad: *Oh ok, what about, is there…could expand on that? Like how, in what way do you think it makes the country better?*

Thomas: *Well you get rid of the coal-fired or and also the danger of nuclear energy, you know like there's always a danger, look at Japan [presumably tsunami and Fukishima nuclear plant radiation leakage in the summer of 2011].*

The fact that most people spoke about the environmental benefits of wind turbines at all but the international scale indicates a spatial preference for benefits to affect 'one's own'. This divide between global versus local environmentalism is a difficulty seen in many instances involving sustainability issues (Owens & Cowell, 2002). This will be addressed in more detail in the *discussion.*

4.4.6 Relative evils

Benefits being relative and in reference to other forms of electricity generation was something found in all 16 of the interviews in Port Burwell- people (13/16) would most often say wind energy is good because it is better than coal for example. This theme was labeled *relative evils* and was used in several other contexts by both opponents and supporters of wind energy and is touched on more in the discussion. People also spoke of the relative environmental merits of wind energy compared to other non-energy related developments. When asked about her opinion of wind turbines and bird deaths, "Ann" spoke about how compared to driving your car, the wind turbines do very little to kill birds in flight.

> ***Chad:*** *Ok another kind of big critique or negative impact that a lot of people are saying the wind turbines have is that they kill birds and bats, in flight…*
>
> ***Ann****: It's no different than your car driving the highway (laughter)…how many times has people hit a bird, maybe not a bat but a bird or a chipmunk, or you know, the coons or you know, how many people kill animals with their vehicle and yet they still drive their vehicle…*

As pointed out by Sovacool (2009), contextualizing avian mortality in terms of non-energy sources such as skyscrapers or road traffic may be an error because the comparisons are less relevant. Driving your car will almost certainly always pose a threat to avian health for example, but does that mean we should disregard energy production (including wind energy) that also threatens them? This consideration should be applied more in the conversation of wind turbine impacts (noise, bird deaths, etc.) and will be elaborated upon under relative evils in the discussion section of this paper.

The issue of global climate change was never raised specifically without first asking the participants. For example when asked about the environmental benefits, nobody spoke of turbines as being a possible solution to climate change. This may be for several reasons. It is possible that those who did consider themselves environmentalists or 'green-minded' preferred to think of benefits on a local or regional scale. This is in contrast to Khan (2003) who argues the benefits of wind power are mostly at the global and national scales. When it was entered into conversation half of the people (8/16) believed that wind turbines would reduce global warming. Six people gave very vague answers and were clearly unsure of the mechanism of climate change, and two were skeptical of the credibility of climate change science. What this may tell us is that the people of Port Burwell are not 'rampant environmentalists' like myself but support wind energy nonetheless. Those that appeared unsure of the causes of climate change did for the most part support wind turbines and would often agree with me on general terms when I asked whether they thought turbines could reduce 'global warming'. When examining their perception of the issue, conversations would usually be short and vague

in nature. “Mike’s” answer is typical of the six people in the ‘unsure’ group- residents who tentatively agreed with my proposal:

> ***Chad****: …the proponents of the wind turbines, one of their kind of green arguments, one of the ways they say, you know these things are good for the planet, good for the environment is that they might through reducing the emissions that they might be good for decreasing global warming and global climate change? What are your thoughts on that?*
>
> ***“Mike”:*** *Well I mean it makes sense.*

Discussing climate change with people in Port Burwell was an interesting experience and because they only discussed environmental benefits in local or regional terms, it may well be the case that people are not familiar with the larger-scale goals and possible benefits of wind energy.

Outright denial or skepticism toward climate change was very low in the Port Burwell area (2/16) and one woman, who was clearly supportive of wind energy for economic and some environmental (cleaner air) reasons, believed there was still some doubt when it comes to climate change:

> ***Diane:*** *As far as global warming, Al Gore is in his own inconvenient truth. So and David Suzuki, he, I hope he’s not your uncle…its, it’s made a lot of money for Al Gore and David Suzuki. I think the jury might still be out on that.*

Citing Gore and Suzuki reveals a familiarity with the issue of climate change, yet “Diane” shows an unwillingness to support their messages. Her comments tell us that one can be very supportive of wind energy yet skeptical or unsupportive of one its major touted benefits.

In stark contrast to "Diane", "Scott" believes that wind turbines and reducing greenhouse gas emissions in general has major implications for climate change and the health of our planet. He was clearly the most knowledgeable when it came to climate science and works in a field that he says has great potential to be affected by some of the predicted impacts:

> ***"Scott" (Port Burwell, supportive):*** *I'm in the [agricultural] business and we're not going to be able to eat if the temperatures go much higher. Like right [now], there's a whole lot of corn this year in big trouble because of the heat.*

The views from people like "Diane" and "Scott" tell us that there may exist degrees of and reasons for an individual's sense of environmental awareness in the Port Burwell area. While the majority of people do support wind energy for environmental reasons, there doesn't appear to be any strong environmentalism in the community and the 'green' reasons people give for support vary considerably amongst the sample of people I talked with. Because of these reasons, the sample in Port Burwell may be effectively labeled as "half-greens". This point is elaborated in the discussion under *Environmentalism*.

4.4.7 Lack-of community change and conflict

Conflict is prominent in the media accounts and is beginning to be understood in the academic literature as well. Social conflict has been seen in wind farms all over the world and is likely caused by a perception of inequity or procedural injustices (Hindmarsh and Matthews, 2008). As noted in the Literature Review, intra-community conflict is one of the major problems facing the province of Ontario at the moment (OFA 2012). Perhaps the largest sense of conflict seen during the interviews was not between

neighbours or even between communities but between opponents and the government who is responsible for wind projects.

In order to detect if conflict is front of mind, during the interviews with residents of Port Burwell, questions were asked about how the community has changed since the arrival of the turbines in 2006. In all 16 of the interviews, residents cited no major changes in the community since the turbines. "Scott" is a man in his late 50s who is well connected within the community and when asked about how life has changed in Port Burwell since the turbines, he explained that they are almost a non-issue.

> ***Chad****: So I guess what are the general conversations about, about wind turbines say, like you know, you're at a local restaurant, people are talking about them, what kind of…*
>
> ***"Scott"****: We don't really say much anymore, we, you know, if you'd been here a couple of years ago yes but just we're just part of our, part of our scenery, part of our life. Um….you really don't talk much about them. Cause they're just in the fabric of our community…*

"Scott's" response is somewhat typical of the type of conversations I had with the residents of Port Burwell. The largest way in which life has changed since the turbines have been in place has been through an alternation of the natural landscape of the area (see Aesthetics; figure 4.4). Community well-being seemed to be unaffected by the wind turbines and community conflict was only cited as being "down the road" in Clear Creek.

One may intuitively suspect that the turbines create jealousy between people who have turbines on their land (and thus reap the lease payments) and those who do not. Most people were open to the idea that conflict may well exist in the community but none

knew of any specific case. Those who did know of community conflict usually referenced nearby Clear Creek or another wind farm community. “Betsy” exemplified this awareness shown by the majority (9/16):

> ***Chad****: Yes, ok. So do you think there exists, or do you know of any conflict that exists in the community between those supporting wind turbines and those against them?*
>
> ***“Betsy”****: No, the ones, the ones that I know that are against them are closer to Clear Creek, down that way you’d get more of a, of a response than, than, I haven’t heard anybody along here say, “Oh I hate these things” or, you know I’ve never heard anything like that.*

Since conflict is such a prominent theme in the media but did not seem to be in Port Burwell, I chose to push the issue slightly to see if it was being suppressed by residents. Though I had little reason to believe they were being evasive, this seemed useful to address the apparent disconnect between what is being reported in the media and academic literature and what seemed to be happening on the ground in Port Burwell. Thus, after the second interview, I started asking participants if there was any tension between those who have turbines on their land and those who do not. The apparent unequal distribution of financial benefits (through lease payments) between these two groups however did not result in jealousy/conflict in the area. Quite often (12/16), when the topic was brought up, the conversation would unfold similarly to the way it did with “Thomas”:

> ***Chad****: I guess do you think there exists any sort of conflict between people that have turbines on their land and those who don’t? Like people who are getting paid to have them on their land and you know, those who…*

> ***"Thomas"**: I don't know. I, I really couldn't answer that question because I don't, I don't know. I've never heard anybody complain. Mostly I hear people saying, "Wouldn't mind having a couple of those on my property"*
>
> ***Chad**: (Laughter) Ya…*
>
> ***"Thomas"**: Help with the taxes…*

Thomas' insight into the community dynamic – a sort of live and let live approach - may be an important one as he reveals more on the context of turbines in the Port Burwell area. As he sees it, although people may want a 'couple of those things' on their land, not having them has not produced jealousy or animosity between neighbours, but perhaps a slight bit of financial envy. He hints at the fact that others (and presuming himself) "wouldn't mind" to have turbines on their land. In the end, the general well-being and friendliness of the community appears to have been sustained for people like him.

4.5 Explaining Support for turbines in more detail in Burwell

The following section attempts to explain why Port Burwell is an area where the large majority appears to support wind energy. While section 4.4 aimed to describe support/acceptance, the following paragraphs look at what has lead to such feelings in the community. Many contextual and political factors appear to have attenuated risk in the area and led to a lack of conflict or controversy that is evident in other parts of the province.

4.5.1 Fair planning/policy process

A major component of the attenuation of risk and overall support/acceptance of the wind turbines in Port Burwell may be closely related to the perception of fairness felt by those living in the area of the wind farm. Though few (3/16) were directly involved in the development of Erie Shore Wind Farm, more than twice as many (7/16) participated in the planning or consultation processes and were familiar with the steps taken prior to construction. When asked why they did not participate, most (7/9) said that they were informed of the meetings but they did not feel like the project would affect them at all. Like others in the community, "Pete's" property was not large enough to allow for wind turbine development. Despite being less than 1 km from 2 turbines, he didn't feel any concern for the project at all. He describes why he chose not to attend the meetings:

> ***"Pete" :*** *So I just thought, ok, this is not going to have much bearing on me one way or the other, no doubt it's an information meeting. I wasn't concerned about wind power at the beginning and I'm not now.*

Similarly, "Don" remembers AIM PowerGen creating public notices that made him aware of the plan to construct wind turbines in the area. His reason for not attending the meetings however is based more on convenience.

> ***"Don" (Port Burwell, supportive):*** *I think we were all, more or less made aware of what was happening and I think it was through, I think it was through general meetings or something… I think we was made aware of what the plan was before the plan was even etched in stone… I think probably the reason I didn't attend them is probably I wasn't home at the time of the meeting…*

While most appeared to have been made aware of the planning of ESWF, others were not and felt like they were this was unfair. “Carolyn” and “Frederick” in particular felt they should have been notified of the upcoming development.

> ***“Carolyn”:*** *Because we are bordering on one of these windmills, we should have been advised that there was a town meeting or a meeting of some sort with any objections...*

Details about the turbine development company’s consultation process varied greatly amongst the people interviewed in Port Burwell. As mentioned, some people said that they were notified about public meetings, consultation periods, and were able to raise their concerns, while others spoke about the fact that they had heard almost nothing about a potential wind farm coming to the area. According to “Diane”, a member of the former group, people were invited to participate and have their voices heard- when they did she explains how AIM Powergen[2] was able to help promote community acceptance:

> ***Chad:*** *And how were they able to do that, like what kind of things did they do?*
>
> ***“Diane”****: Perseverance, answering questions honestly, coming to the house and taking all our concerns into account, you know. Having town hall meetings as you say where they explained everything that you know, pros and cons. This is how it’s going to look and they really just they were just so inclusive. They didn’t just go[and speak to] the farmer…*

While most people interviewed in Port Burwell had the feeling that AIM Powergen did all they could to inform the public, others (3/16) like “Betsy” were not given any information from the company itself but were instead forced to rely on media reports:

> ***"Betsy":*** *Never heard much about it just all of a sudden saw them building them! Well they started way down at Copenhagen and came this way so you knew they were coming…*
>
> *…just write-ups in the paper that we got at that time, no we never got anything in the mail. We heard on the news, a lot of things on the news.*

Despite the fact that some people appeared to have been left out of the door-to-door aspects of the planning process, most still were content with the way AIM Powergen and the municipality of Bayham went forward with the project. Only 4 of 16 people had an initial concern with the project and 3 of these appeared to be resolved before the wind farm had become operational. Most people (5/6) that were actively involved in the consultation period perceived the actions to be fair and just- something that may be lost since the implementation of the Green Energy Act in 2009. Some people (3/16) were even won-over by AIM Powergen. For example, while "Diane" had serious initial concerns with the development, after meeting with the company and municipality, she was assured of their value:

> ***"Diane":*** *I had a lot of concerns about turbines. Because we're on the migratory lane here I mean this is butterflies and birds and whistling swans and oh my gosh, I said I don't think that's a good idea at al. So we went up to see and get our questions answered. Up at Kincardine. Then I came back with a different… I went up there sort of dead set against it and I came back thinking, maybe it will work...*

The fact that "Diane" was forced to travel all the way to Kincardine, Ontario (~220 km northwest of Port Burwell) to "get [their] questions answered" speaks to local understanding of wind energy at the time. Other residents interviewed in Port Burwell

(9/16) went so far as to describe the construction process as being an exciting time in their lives. Many were amazed by the amount of work and engineering that went into the building of these massive wind energy generators. “Kelly” was one person who was particularly struck by the ‘amazing’ process:

> ***Kelly:*** *The different steps and it was really exciting, you know to watch the whole process of it and how, you know the trucks and trucks of cement coming in. Cause like underneath that turbine is a, the base of it, they described it as an upside down wine glass. And all the rebar that goes in there and the structure that they put, it was amazing. I took pictures (laughter)…*

Overall there appeared to be an accepting feeling in the community when the wind turbines were being planned and later constructed in the Port Burwell area. The fact that the process and implementation of turbines was seen as fair or just may have something to do with the policy surrounding their implementation. As noted in the literature review, the Erie Shores Wind Farm (ESWF) was developed under multiple policy frameworks including the Electricity Act (1998) and three years before the Green Energy Act of 2009 which “streamlined approvals for renewable energy projects…” (Ontario, 2009).

4.5.2 Full Media Analysis

In order to learn more about before, during and after the construction of Erie Shores Wind Farm, a detailed media report was done. The closest medium sized city to the Port Burwell area was Tillsonburg and many people who received newspapers to their door often received the Tillsonburg News. According to data provided by the newspaper, there are approximately 2,500 paid subscriptions (Monday and Friday) and 9,500 non-

paid subscriptions (Wednesday) in the area. In addition, articles written in the hard-copy version are also published on tillsonburgnews.ca.

It has been commonly agreed that the media can play an important role in influencing the perceptions and decisions its readership makes in the public sphere (Dispensa & Brulle, 2003; McCombs and Shaw, 1972). Iyengar (1997) describes a framework where the media can have four major effects on the public. He shows that the media can act as: informers, agendas setters, farmers and persuaders. The latter two of these may have particular relevance to the idea of social amplification/attenuation of wind turbine risk in the Port Burwell area. For example, if the majority of media articles framed the development of local wind turbines as being a dangerous or nonsensical thing for the area, it is possible that local people may think so as well.

The media, including newspapers have been shown to exert a powerful influence on people's perceptions of the world (Slovic, 2000, pg. 192). The risk perception literature for example has stated that media reports have the ability to either amplify or attenuate the amount of danger a person feels is present. An well-known example of risk amplification can be seen in the case of nuclear power. While expert opinion consistently ranks nuclear electricity generation a low-medium risk activity, the public often perceives it as a high risk (Slovic, pg. 244, table 13.1). This discrepancy may indicate the presence of social factors and their ability to transform the idea of "risk"- meaning different things to different people. Being aware of these types of processes can help us better understand the role of local media (Tillsonburg News) in the Port Burwell area.

In order to collect the greatest number of relevant articles three different search terms were used. In the first round “erie shores wind” was used. This search initially brought forth 500 articles. After careful selection, 56 articles were chosen to be important for the report. The newspapers’ website measured relevancy through a helpful tool- for “erie shores wind” all articles that were between 76% and 30% relevancy were used. Every article lower than 30% seemed to contribute nothing to the report. Despite the specific search terms, many were unrelated to Erie Shores Wind Farm and/or wind energy in general. In the second round of the search, “wind turbines” was used. Although this search brought up 250 articles, many were either irrelevant or were already collected through the original search. From this round we used all articles that were between 75% and 35%- after the latter value the relevance of each article seem to decrease dramatically. A total of 37 articles were chosen from this round. Lastly, to find even more articles relating to Erie Shores Wind Farm, wind energy, or a related topic “green energy” was used in the third round. From this search term we were able to gather 500 articles, 9

Table 4.2 - Results of Media Analysis (by theme, tone and frequency)

THEME	TONE	FREQUENCY
Poor or incapable government / policy	*Negative*	*High (13)*
Sustainability/Environmental Benefits	*Positive*	*High (9)*
Job creation	*Positive*	*High (8)*
Good income for farmers	*Positive*	*High (6)*

Contribution to the grid	*Positive*	*Medium (5)*
Tourist attraction	*Positive*	*Medium (5)*
Health effects	*Negative*	*Medium (4)*
Capable businesses/ government	*Positive*	*Medium (4)*
Cost of Electricity	*Negative*	*Medium (3)*
Bird deaths	*Negative*	*Medium (2)*
No health effects	*Positive*	*Low (1)*
No bird deaths	*Positive*	*Low (1)*
Property values	*Negative*	*Low (0)*
Local conflict	*Negative*	*Low (1)*
Noise	*Negative*	*Low (0)*
Aesthetics	*Negative*	*Low (0)*

of which were used in the analysis. Again, many of the relevant articles were already found within one of the first two rounds. In the end, 102 articles were used in the analysis.

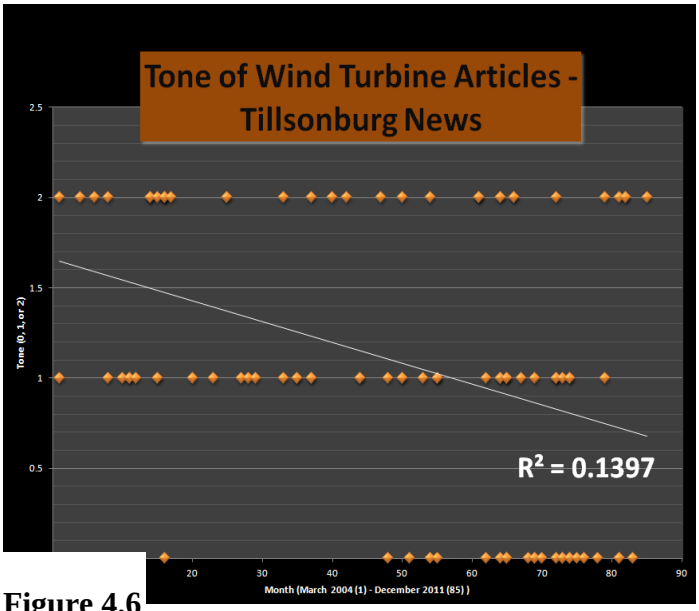


Figure 4.6

The themes that were presented in each article were varied and included many of the supposed advantages and disadvantages of wind turbines. Because it was a local paper, the majority of the articles spoke about specific local issues relating to wind turbines including financial compensation, health effects, bird deaths and electricity generation. More regional or general issues were spoken about also however the original source of these articles often came from the Canadian Press or larger newspapers like the London Free Press. Although these were not written by the Tillsonburg News staff, the fact that they were published in the local paper meant that the local population was exposed to it and thus was included in the analysis. For the sake of simplicity table 4.2 above shows the most common themes that were discussed in the articles. Generally each theme fit into one of three categories: 1) a positive or supposed advantage of wind turbines, 2) a negative or supposed disadvantage of wind turbines or 3) A neutral portrayal of wind. For simplicity, only those labeled in the former two are listed. In an effort to measure the tone and/or themes over time, quantitative analysis was performed on the 102 articles. Based on the general tone, each article was given a number between 0 and 2- 0 indicated a negative tone, 1 a neutral tone, and 2 a positive tone. In order to quantify the time each was written, each article was given a number between 1 and 85. Beginning in November

2004 and ending with the last article in December 2011, each month was given a number between 1 and 85. Months in which no article was written were 'skipped-over' and in cases where multiple articles were written in the same month, they shared the same number. In the end, a weak negative relationship was found. This means that as time passed, the tone of the articles generally became more negative. The R^2 value of 0.1397 indicates that the relationship is not strong. Looking at figure 4.6, two things stand out: 1) The fairly consistent occurrence of both positive and neutral articles over time and 2) The great increase in negative articles during the second half (beginning December 2008).

One fascinating observation noticed in the report was the great increase in Letters to the Editor that concerned the Erie Shores Wind Farm or wind energy in general. Although articles about the topic began in late 2004, it wasn't until April of 2010 before a Letter to the editor was written. This form of public discourse became more popular in the coming months and likely indicates a higher level of activism, both for and against wind turbine development. In all, there were 12 Letters to the editor written from April 2010 to August 2011; 7 speaking on the negative aspects of turbines and 5 on the positives. Letters to the editor have been said to be "essential to the effective operation of the democratic system (Hynds, 1991, pg. 124). Although there is some debate in the literature as to what role letters to the editor play. One consistent finding has been the understanding of the person who writes to the editor. They tend to be: older, more educated, more conservative and more display more negativity than the average person (Forsythe, 1950; Foster and Friedrich 1937; Grey and Brown 1970; Rosenau 1974; Tarrant 1957; Vacin 1965; and Volgy et al., 1977). Still other research has concluded that in some cases, the number and types of letters to the editor closely resemble actual

public opinion polls (Buell 1975; Hill 1981). Because of a lack of absolute truth in the area, letters to the editors were not analyzed individually for content. Because writing a letter to the editor represents one of the few ways in which the average person can have their opinion heard on the public stage, it represents a "debating society that never adjourns" (Kapoor and Botan, 1992). The presence and specifically great increase of them beginning in 2010 likely indicates a growing interest in wind turbine politics. The fact that there was clearly pro-wind or ant-wind sentiments in each piece also may be a sign that there developed a debate during that time as well.

Another interesting aspect from the media report is the emergence of articles written by local politician Toby Barrett. He is a Conservative MPP from Haldimand-Norfolk who was first elected in 1995 with reelections in 1999, 2003, and 2007 (Barrett, 2011). Of the 102 articles collected 3 were written by Mr. Barrett, all of which were spoke of the disadvantages of wind turbines. They were also all written fairly recently-ranging from August 2010 to the most recent in December 2011. The criticisms brought forth by Barrett all seem to be in opposition to Ontario Premier Dalton McGuinty and his green energy policy. According to the articles, he sees a variety of problems including the cost, possible health effects, and the policy process associated with wind turbine development. Barrett's lack of confidence in McGuinty when it comes to wind energy is summed up nicely when he said "…the only science Mr. McGuinty seems to use for decisions on wind tower placement is political science…" (Barrett, 2011b). In his most recent article, "Industrial wind turbines require local decisions" (Barrett, December 2011) he speaks of the 2009 decision by McGuinty to streamline the development of wind

turbines in Ontario by eliminating the need for community approval of projects. This is an important issue and is discussed in more detail within the literature review.

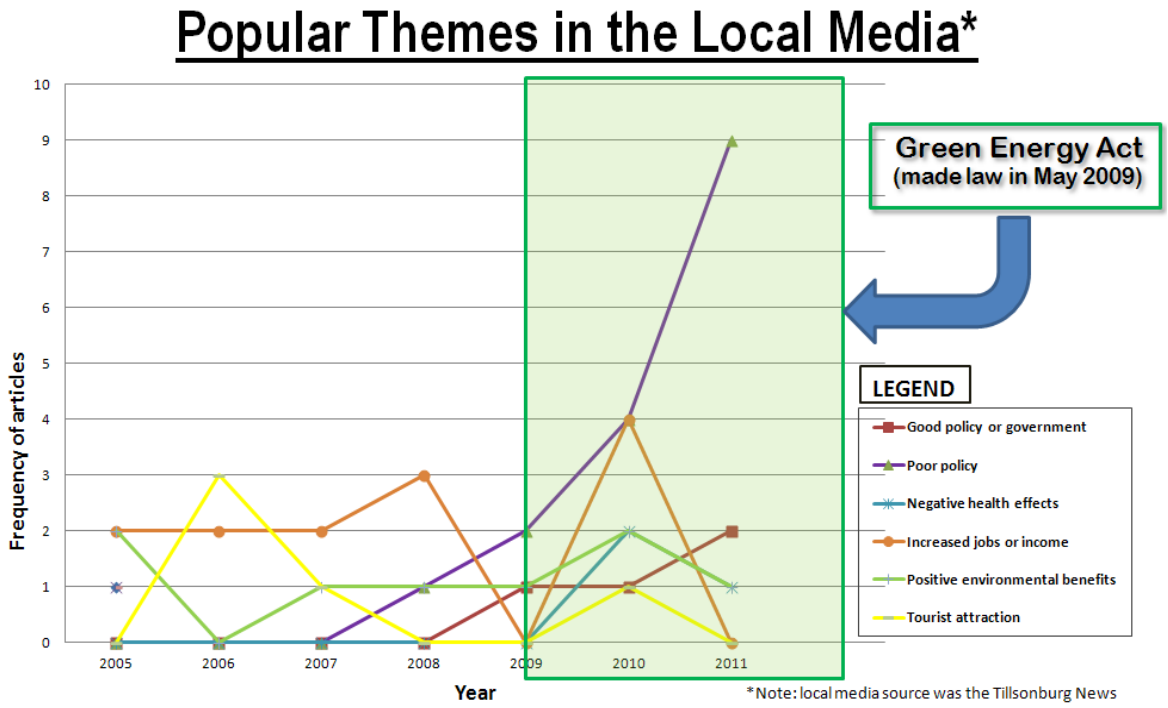


Figure 4.7

The above chart was created from articles in Tillsonburg News. From conversations with local residents, I was informed that it was the 'major local paper', though some did suggest other smaller ones during member checking. The themes in the articles seem consistent with what I found in the interviews, and the chart is a very crude way to represent some of the themes in the 102 articles I read. The increase in reporting about "Poor policy" after the introduction of the Green Energy Act (GEA)- was put in

place reinforces the idea that the reason for relative contentment with turbines in the Burwell area is in part due to the fact the turbines were not put there under the GEA but instead through a far more participatory process.

4.5.3 Economic history and feeling toward the farmers

An important sub-theme relating to the lack of controversy found in Port Burwell is the feeling non-owners (13 of the 16 interviewed) felt toward the land owners who do have a turbine(s) on their land. In communities that do experience conflict, it makes some intuitive sense that there may exist a negative feeling toward landowners- as shown in "Thomas' " quote above (pg. 26). The logic behind this type of reasoning is because of what may be perceived as an unequal distribution of costs and benefits. For example, besides the obvious cost of land usage, landowners may have less disadvantages in terms of sight of and the noise turbines can produce. Benefits (through financial compensation) on the other hand are almost exclusively given to the landowner. While rare during one interview with "Frederick and Carolyn", I found an understanding of this concept:

> ***"Frederick"****: No, but that's what I mean, so he gets all the benefits. Well we still have to put up with that but we have no direct benefit out of…*
>
> ***"Carolyn"****: Well we are actually closer to that windmill than he is…*

Although the couple had no idea just how close they were to the turbine, they clearly felt cheated out of a system that provides financial benefits to their neighbour but not them. For "Frederick" and "Carolyn", the specific distance did not appear to be the problem but more so the relative distance- that is, in comparison to their neighbour. For curiosity, I

did measure the distance to the turbine and it was shown that "Frederick" and "Carolyn" were a mere 350 meters away (the minimum setback distance in 2006). Although not measured, it is very likely that their neighbour did live farther from the turbine than they did. Therefore the physical effects of wind turbines (noise, visual problems) may indeed have been more prevalent in the case of "Fredrick" and "Carolyn" yet they receive no compensation.

Clearly the couple interviewed had problems with the lack of equity in wind turbine siting. They do not however actively oppose wind energy developments or even the neighbouring turbines themselves. A possible source of explanation for this is Kasperson's (1996) theory of the attenuation of risk (see main figure 4.1; Port Burwell). The fact is that "Carolyn and Frederick" have had a historically good relationship with their neighbour. "Frederick" states that "we get along very well" and later "Carolyn" remarks that they wouldn't dream of getting into a conflict with their neighbour:

> ***"Carolyn":*** *…we all need each other, we don't need conflicts…I mean he comes over, he plows our driveway, mind you he gets paid for it but there are little things they do for you, you know. He has a problem with the riding lawnmower or something, [neighbour] comes over and helps him out or, or when he, you know, he has some physical problem …So we do need each other and we don't want to have conflict with our neighbours because of that. It won't solve anything anyway, I mean [the turbines are] there and that's it.*

The type of relationship the two participants have with their neighbour may be one factor that has kept them from being against wind turbines. Had there been an existing divide or conflict between the two families it may have lead to more problems with the arrival of

wind turbines. By contrast, in Clear Creek, opponents, among other things note landowners as being greedy and selfish. This important idea is discussed more during the *Pre-existing divide: Different ideas of neighbourhood and friendliness* portion of the findings.

The vast majority (11/13) of residents I spoke with living in the ESWF area had very positive feelings toward the landowners and in turn, the system of financial compensation that pays the landowner large sums of money and their neighbours comparatively little or nothing. The general congeniality around this issue, seems tightly tied to relatively recent and difficult transition in agriculture in the area that saw many farmers suffer. In particular Bayham was traditionally a tobacco growing region- part of what was once known as Canada's tobacco production heartland (Niewojt, 2007). A growing awareness of the health effects of smoking and later, government policy, has changed the abilities for farmers to grow tobacco in both Elgin (which contains most of the Erie Shores wind turbines) and Norfolk counties . Appearing to coincide with the loss of tobacco in the area from 2005-2009 is

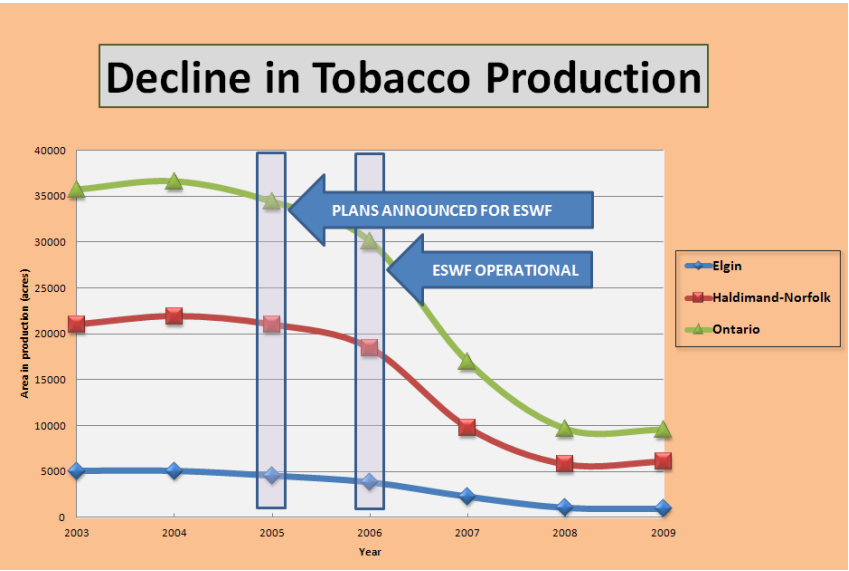


Figure 4.8 - Erie Shores Wind Farm and Tobacco loss

the introduction of Erie Shores Wind Farm (see figure 4.8). During the interviews, there was some discussion with residents well-connected within the community that the impending loss of tobacco in the area may have played a role in leading to widespread acceptance.

Through the interviews conducted in Port Burwell, it appears that just before the installation of the turbines in 2006, most people felt as though the income farmers get from having a turbine was deserved and seemed genuinely happy for their neighbours' success at transitioning away from tobacco. A typical conversation is shown through the comments of "Thomas" who cites the troubles with tobacco and being happy his neighbours (11/13) are able to "get a few extra bucks":

> ***Chad****: How about the ability for these turbines to promote economic development in two ways basically: The first way obviously through providing farmers with some extra income, having them on their land. How do you think, how does the community talk about that or how is that perceived in the area?*
>
> ***"Thomas"****: Well I think it's, I think it's good. Like you know, it's…where in this particular area, where they've uh, pretty well ousted most of the tobacco farmers…they got rid of the tobacco farmers and it caused a lot of the farmers to switch to, lesser valuable crops and what have you. So if the farmer, if they can get a few extra bucks off of energy why not?*

Although I felt an authentic feeling of happiness toward farmers in the area, I decided to test this by pushing the issue to make sure neighbours were not jealous and/or that there were no 'buried' negative emotions. Starting with the third interview, I would often

present the case for the non-landowners- citing proximity to the turbine(s) as a reason why they should be getting paid as well. In questioning the legitimacy of the compensation system in Ontario, 11 of the 13 non-landowners were taken back- apparently curious as to why I was asking questions about a system they perceived as completely fair. It is a system wherein the vast majority of neighbours in Ontario do not receive payment for living in the vicinity of turbines. When presented with the opinion of some people that would argue payment for neighbouring properties, residents like "Don" would often be confused; telling me that they do not understand that type of reasoning:

> ***Chad****: There's some people that say that that's unfair so what's your opinion about how things are working right now? How if you have one on your land you get paid if you don't, you don't…*
>
> ***"Don":*** *I would think that would be the fair way to do it. Either I mean, even if it was within 10 feet of my property it's not my property so I can't see why I'd be compensated for it.*
>
> ---
>
> ***"Betsy" :*** *Now I don't need any compensation, it's not on my property, doesn't belong to me so therefore it's just like somebody finds oil on their property. Do I get any money out of the oil on his property or? (laughter) You know? No I, I'm against all that…*

Framing the hypothetical question of "do you deserve payment?" in Port Burwell served as a interesting tool for measuring the community's acceptance of the private system for compensation in Ontario. While it has been shown (Bollinger 2001, Maruyama et al., 2007) that community ownership and a more equitable distribution of the costs and

benefits of a wind farm leads to more acceptance, it appears to be ‘unnecessary’ in the Port Burwell area. Those people interviewed without a turbine were happy for their neighbours who were ‘deserving’ and generally were accepting of the fact that they would not be entitled to any financial benefits themselves.

4.6 Those opposed to wind turbines

4.6.1 Presence of turbine-related health effects

Because the sample collected in Clear Creek was selected specifically because they were opposed to wind turbine development, given the media releases over the past few years, it was not a huge surprise that they suffer from health effects that they attribute to the wind turbines. Despite the expectation of seeing health problems in the three people interviewed, it was still interesting to speak with them about it and added much context to the overall picture of the research.

This section briefly reviews the nature of health effects experienced by “Barbara”, “Bob” and “Henry”. Because the nature and perceived cause of the health impacts varies so much amongst the sample, each person’s unique experience is represented by selected quotes from the interviews. First, the type of health effect each person experienced varied considerably:

> ***“Barbara”:*** *So, but the pressure in my head is unbearable. I can stay there for, if I stay there longer than 4 hours, then I feel as though I want to start screaming…*
>
> *And it was for 3 years. I had no difficulty sleeping, slept like a baby. But when the turbines started generating, that was in November 2008, all of that was gone.*

So, the pains that I did feel were in my arm, starting here in the shoulder and when you do some research into that in people who are having heart attacks that's one of the kinds of pains that they feel…

***Chad**: …one person reports higher blood pressure, certainly a lot of people report sleepless nights, headaches, ringing in the ears…those are kind of the major group…. so what's your opinion of those?*

***Bob:** Yes well I think, I've experienced all of those things. So I know them to be true.*

…What I used to feel [before moving out] was that kind of low frequency and it's not something that's heard as much as it is felt. And you know you feel it, and the ways that you feel it sometimes get to be downright disturbing.

***"Henry":** I've fallen down several times because of these wind turbines and the one time I was pushing my portable generator and one of my wheels jammed up as I was pushing it forward and I went right over and I pulled my rotator cuff, which is up here. And it mucked it up really nicely which is compounding the whole thing too, aside from my stroke, when they found out the reason I had a stroke was because I had a plugged artery in my ticker.*

…but if I'm there [at home] every day, I'll tell you it starts to really make, basically what it does it makes me dizzy.

***Chad:** Ya, oh I see…. ok and then some of the health effects that people have reported in this article that one person reports higher blood pressure…sleepless nights, headaches, ringing in the ears … anxiety, stress, sleep disturbance. What kind of, from those things have you experienced?*

***Henry**: Yep, ya…probably everything to a degree. But mostly is my instability.*

As you can see, the type of health effects varies within the sample I spoke with in Clear Creek. For “Barbara”, the main problems are pressure, sleeplessness and general body aches. “Bob” is experiencing a wide range of symptoms, while for “Henry” dizziness and instability are the major issues.

The type of health effects people in Clear Creek were experiencing made up only a part of what the research intended to look at. Another, perhaps more interesting question relates to the cause of these problems. Even less is known on this subject and therefore to hear explanations from sufferers first-hand adds much to this study. Though, like the literature, participants were somewhat unsure of the exact mechanism for their troubles, they all pointed to the turbines:

> ***“Barbara”:*** *Well the fact is I don’t want to live there 24 hours a day. Because I’ve been told by medical professionals that if I do, it’s going to destroy me faster.*
>
> *… I don’t because I understand what’s happening. But it is not a pleasant feeling.*
>
> *…but anyway he made an appointment with one neurologist whose prescription for me was well, if in your house you feel these effects and when you drive away and when you sleep outside the area, you don’t feel them, my prescription for you is that you should move.*
>
> ---
>
> ***“Bob” (Clear Creek, opposed):*** *It’s not that you're hearing it as much as you're feeling it. So, I think that might be what’s happening.*
>
> *…and so the problem is… we’ve had to hire our own independent well qualified…acousticians out to measure the sound that finds the wind turbines to be exceeding the compliance levels. Could that be a reason why people are getting sick? Absolutely.*

…the fact that Dr. McMurtry's opinion is being ignored, like Dr. McMurtry was the guy that briefed the government when they came in to, the McGuinty government when they came in on the state of health care in Ontario. He's been a professor and the dean at the medical school, you know and a well-respected surgeon for his whole career.

"Henry" (Clear Creek, opposed): *I was so dizzy coming out of her place, her place is just terrible. Like the electromagnetic fields in there or something whatever is going on.*

…and they talk about this here, think as the blades go around you get the, I forget what they call that there the, you can see them going around in the light?

…but you know you can't tell whether it's being in wind turbines if its compounding things.

Similar to the way in which the residents described their symptoms, there was no consensus as to what exactly was the cause. "Bob" was the most certain of the mechanism for the health effects he and others are suffering- pointing to his own work that showed turbines are producing more noise than they should and citing Dr. Robert McMurtry who also believes turbines are causing health problems. "Barbara" is less certain than "Bob" but still refers to the expertise of medical professionals; one of whom gave her the prescription to move out of her home. Lastly, "Henry" is perhaps the least certain regarding just how the local turbines are making him sick. He points to a variety of possible sources including electromagnetic fields, and shadow flicker- going on to say it is possible that turbines are only compounding other health concerns in his life.

4.6.2 The abandonment of the NIMBY thesis?

Despite the recognition in the literature, some people in Port Burwell (7/16) clearly believed those opposed to wind turbines were doing so because of selfish motives – with three people noted NIMBY-ism itself. "Dave" represents this group who believe that unlike in European nations, attitudes relating to NIMBY-ism are commonplace in Canada. While the idea of NIMBY is losing credibility in the academic world, the popular media still commonly portrays those opposed to wind energy developments as selfish. This important trend and the value of questioning it will be spoken of in more detail in the discussion chapter.

Though I only interviewed four people (three in Clear Creek) clearly opposed to large wind turbines, NIMBY seemed absent. For the most part, people felt as though turbines in 'their backyard' were only part of the problem. Most of the reasons why they objected to their local wind farm had to do with the problems they saw with wind energy in general and/or wind energy policy in Ontario.

There were some indications through two of the four interviews that people objected to wind because it was located near their homes. Most prevalently, "Charlena" noted that although turbines are located in rural areas of Ontario, much of the power they produce goes to serve the needs of people in urban centres such as Toronto. She described the disconnect between power generation and use as being nonsensical:

> ***Charlena:*** *What I am in favour of is putting tiny generators on the utility poles in cities. You want power? You want power from wind? Get it in your own city! Get it in your backyard! Instead of mine! And see how you like having these things*

> *zimming around the whole time. You want the power? It should be generated where you are living. And I don't mind seeing people who put up their own generators, that's, that's sensible. But to do it here so that we can supply Toronto's air conditioners does not thrill me very much.*

Charlena's comments could be construed as NIMBY but this also seems to refer to the scale of the turbines; that is her reference to "own generators". On the other hand most arguments the opponents had against wind seemed much further removed from NIMBY. In fact, the vast majority were rooted in the theme *fighting the good fight*. Particularly from the vocal opponents in Clear Creek, arguments made against wind often had more to do with macro-level themes of injustice, province-wide health problems, and procedural inequities.

4.6.3 "Fighting the good fight"

Once seen as a major impediment to a project's construction, NIMBY attitudes were perceived to exist in all those who opposed the development of wind farms (see Literature Review). Opponents are often seen as either ignorant or deviant in this way. From the interviews with the opponents of wind energy in Clear Creek, I found neither point to be applicable. Two of the three interviewed in particular may have been the most knowledgeable about wind turbine issues than anyone interviewed in Port Burwell. In discussion of the literature surrounding wind turbine impacts, "Bob" would often be quite familiar and was even able to cite by memory an important conclusion made in "*The Potential Health Impact of Wind Turbines*" (King, 2009):

> ***Chad****: The big [conclusion] is that she recognizes people living near turbines are reporting symptoms… but she later goes on to say that scientific evidence doesn't link those symptoms with actual, with the turbines themselves…*
>
> ***"Bob":*** *Ya well, actually the line [is] while there are many reports of sleep disturbance, headaches, the scientific literature TO DATE does not demonstrate a direct causal link. There's a lot of qualifiers that she used in there to get away with making that statement and not losing her medical license.*

The fact that "Bob" was able to recite a piece of Dr. King's paper is perhaps a testament to his devotion to the cause and perhaps more importantly that the 'cause' goes beyond his own interests. His involvement with the medical side of the debate (without any indication of an interest in financial compensation) makes his opposition much nobler in this way. Additionally, in emails sent back and forth after the interview, "Bob" further showed his willingness to read and involve himself in the literature. He would often display his knowledge of the physics of audible and infrasound, Ontario's policy approach with green energy, and the medical 'evidence' showing how people are affected by turbines placed too close to their homes.

Opponents also were able to provide admirable forms of criticism of wind turbines- helping to support 'their case'. For example, though they are often perceived as being selfish, "Bob" in particular would often cite the well-being of other people or future generations. From his perspective, the problems with wind turbines extended far outside of their own 'backyard':

> ***"Bob":*** *People's homes, health and human rights are on the line, and businesses are investing billions of dollars into an industry that is founded on misunderstandings, misrepresentations, and in some cases, deliberate deception.*

The other opponents "Henry" and "Barbara" share similar feelings of unselfishness however tended to focus on the problems in Norfolk County. Concern for other people is something "Henry" speaks about on a regular basis during the interview:

> ***"Henry"****: Well it's brought a lot of friction between a lot of the local people from both sides. Animosity between them. My concern for nature…with the neighbours I'm still concerned…I'm still concerned about their health.*

On the whole, it appears that through our few interviews with opponents in Clear Creek that one may at least begin to seriously question the validity and use of NIMBY to describe those that believe there are problems with wind turbines. Opponents are most certainly against the development of wind turbines near their home but almost equally they are against turbines near *anyone's* home.

4.6.4 Skeptical/Deflecting the issues

While "Bob" and others were well-read within the "anti-wind" literature, at times, opponents also seemed to dismiss or completely avoid talking on the benefits of wind energy (also; see relative evils). Seen by herself and others to be a strong environmentalist, "Barbara" has her doubts when it comes to one of the most important benefits of wind power:

> ***"Barbara":*** *But, being a skeptic and I am deeply skeptical. And I want to tell you how skeptical I am. I believe in climate change, four and half billion years of the earth's existence, the climate has changed, I believe in that. Global warming? Perhaps one of the cycles we are in a global warming trend. Human beings can*

> *caused Global Warming I'm very deeply skeptical of that. My hunch is that we are not that powerful.*

In further interviews with "Bob" and "Henry" climate change is once again brought up in conversation. Neither person directly gives their opinion of whether or not turbines may help solve climate change- instead they seem to 'deflect' the question. Henry uses a case of "relative evils"; using China's recent growth in coal-burning facilities to most likely trivializes Ontario's attempts to use more green energy:

> ***Chad**: People who support them would say you know, they clean the air or they reduce air pollution and another big one is in relation to global warming the fact that they emit less carbon dioxide and help with that problem. What's your opinion on those?*
>
> ***"Henry"**: Well I'll tell you something when you look at what they're doing in China. And I've heard that they finished the production of a generating equivalent powered, a dirty coal-powered facility, generating facility is built every week.*

"Bob" uses a similar technique to not commit to answering the question of wind turbines and climate change.

> ***Chad**: … green energy [is] being promoted as kind of a green source or a clean source of electricity generation to solve problems of air pollution and global warming/ global climate change…*
>
> ***"Bob":** Um….we….you know I was never an energy guru…Well, my thing is that as we've been you know, we're in the middle of this, we're overwhelmed with having to make our point that these wind turbines are having a negative impact*

on our health that I really try not to get into the discussion …because I'm just not the expert.

4.6.5 Different ideas of 'neighbourhood' and friendliness

Though it could be the result of different levels of support for the local wind energy developments, the people interviewed in Clear Creek and in the Port Burwell area clearly had different feelings toward their community and the friendliness of their neighbours. When describing the social aspects of life in Port Burwell for example, most people said that generally neighbours were friendly and approachable (15/16). They also commonly stressed that although they do not live close to one another like would be common in an urban setting, there is still a close-knit atmosphere. One person from Port Burwell seemed to almost take offense when I may have suggested that the idea of having 'neighbours' is different in rural areas:

> ***Chad****: Ya, alright, ok. How about, how do people get along here? Like obviously you don't have any next-door neighbours certainly but you're neighbours kind of down the road or people in the area. How do people get along?*

> ***"Diane"****: Really well. Yep, when we go away, we just got back from an extended vacation…So some people would have been kind of concerned about visibility, like someone could have broken in and no one would ever know. But, well first of all, we have [a security system], but secondly we have a neighbour right across the street in that white house. And she is wonderful. She doesn't miss a thing. Our other neighbours on that corner,[Names] …they're on standby, our neighbours down the road [Names], they're on standby. So, we're all, we may not be next*

> *door to one another like in a city but it doesn't mean we're not neighbours. And we look out for the other, we let each other know when we're going to be away.*

Most people in the Port Burwell area claimed that they get along well with their neighbours and although there may be minor disputes from time to time, the community as a whole was fairly homogenous. In contrast, from three interviews in Clear Creek, there appeared to be some factions that were affecting community well-being. In all three interviews, residents spoke of the stark divide in the community. Even years prior to the construction of the turbines in Clear Creek, Henry, who recently moved to the area in 2002, explains how he has experienced the division between 'newbies' and the old-time residents:

> ***"Henry":*** *It's sort of like, there's so many different, I don't know how to describe it, the way different…look at other people. Like I was just talking to you about these people who have lived there since the 1950s or something, when they grew up as kids there and they stayed there and they got, stayed on the farm. They're a completely different group pool, group over there…*

The division between the two groups was even more evident in an interview with fellow opponent "Barbara". Being a 'newbie' herself years ago, she found an existing divide in the community that did not allow her to get to know most people in the Clear Creek area:

> ***Chad****: Oh ok, alright, and so have you gotten to know those people in the area?*
>
> ***"Barbara":*** *Well I've gotten to know them by name but one of the things that I think is probably true in other counties in rural counties in Ontario, people keep with their own groups that they've established since they were born there. But*

everybody has to be born someplace but again I don't see why I should apologize because I was born in [large Canadian City].

***Chad**: Oh wow, were you really?*

***"Barbara":** Ya, and you know, I'm sorry I wasn't born right here in Clear Creek. (Laughter)*

***Chad**: Ya (laughter)*

***"Barbara":** …Um but I'm still a person and I'd like to get to know the new community and however I found them very distant, distant, yes. They were not welcoming newcomers with open arms. And that's true of other people who are new to the Clear Creek area…but other newcomers have told me the same thing that, one of my neighbours down the road he says well I've been here for 10 years and I'm still considered a, a you know, an outsider. And another neighbour the other way bought another house and he's still an outsider.*

From people I talked with in Clear Creek, there appears to have been an existing divide in the community, particularly between those who have lived their whole life in the area and those who had recently moved. It is clear that "Barbara" never truly felt accepted by the community and perhaps this was increased by her fight against wind turbines. I see the effect of the wind turbines on the community level through the words of "Henry" who explains how life has changed over the past three years:

***Chad**: Ya, ok. What's life like now for you since the turbines have come in? Like how has life changed for you?*

***"Henry"**: Well…its split up to a degree to a large degree the whole, all the people. Some of the ones who were indifferent, some of the ones who are very*

> *concerned about now not only the, the animals or the birds that go by there but also the health of other people or themselves.*

This type of situation is in stark contrast with most instances in Port Burwell where people claimed everyone got along quite nicely and in some cases, friendly relations (see "Carolyn and Frederick", pg 30) may have prevented wind turbine-related conflict.

4.6.6 Dissatisfaction with the government and policy

The opponents interviewed in Clear Creek all seemed to be very disappointed with the government. They often noted that the government refuses to conduct "good" scientific research and it has not been proven that turbines do not cause health problems. All three people interviewed spoke of a sense of helplessness they were experiencing; often noting like "Barbara", how the government has ignored their problems:

> ***"Barbara":*** *And so what they do is wrap themselves in a cloak of green, this is green energy, its non-polluting, it you know all of the spiel about green energy and they did not have to do anything to mitigate our situations."*

"Bob" feels very similarly to "Barbara" and may even take the feeling of helplessness to a new level. He explains that because of the lack of concern the government has shown toward people suffering from wind turbines, he has lost all respect for the way 'they're operating':

> **"Bob":** "I mean if it's something as important as people's health and the government is still choosing not to do anything about it? How can you have any respect for the way that they're operating or what they're trying to do?

4.6.7 Relative evils argument

Residents in both communities would often argue their case- whether it be for or against wind energy developments, using the 'lesser of two evils' line of reasoning. When discussing the impacts of wind turbines people would rarely insist that turbines were intrinsically good or bad- rather better or worse than another unrelated source of the impact. In a conversation with "Dave" this point is illustrated when I ask for his opinion of the noise turbine produce near his home:

> ***"Dave" (Port Burwell, supportive):*** *"You know, it certainly ain't no damn train. Uh, friends of ours live right, had train tracks right in front of the house, stayed overnight and man it just jump right out of bed when you hear the damn train, house was shaking and everything. So (laughter) there's no comparison, by no means"*

Likewise, "Mary" admits that turbines may well kill some birds or bats in flight however the number is likely much smaller than the number of 'critters' killed on our roads and highways:

> ***"Mary":*** *"Like I think there's more critters killed on road kill (laughter) you know than actually probably actually by the wind turbines."*

While "Dave" suggested, "it certainly ain't no damn train" when referring to his tolerance of what sound the turbines do produce, others talked about relative pollution. Though some did mention problems (e.g. bird deaths) this feeling would often be almost immediately offset by a positive statement or another more problematic case (e.g. Mary explained wind turbines kill less often than car traffic).

The use of ‘relative evils’ was not restricted to those in support of wind turbines. In fact, 2 of the 3 people vocally opposed to wind used the argument at times to help support their views. The most common way these people used the reasoning was in defense of their belief that real estate values tend to decrease in areas surrounding wind farms. In a discussion with “Bob” on this topic, he admitted that while the value of homes with turbines may increase, the majority of properties without a turbine would decrease:

> ***“Bob”:*** *The other thing that happens in the argument about property values is that for farms or for properties that earn income from wind turbines, it might increase the property’s value because all of sudden the land is more productive and that get factored into a value of the land. But that’s not what we’re talking about I mean that’s a separate argument, like that’s a separate issue.*

Most ‘relative evil’ references were related to non-energy developments. The usefulness of this type of comparison has recently been questioned and is elaborated upon in the discussion section.

4.6.8 Negative attitudes toward the other

Supporters and opponents both had negative things to say about the other group. Though few talked about open conflict or open hostility in the community, positions nevertheless seem quite entrenched with reference to the other. Thus, there seems to be more tension than conflict whereby the opponents and supporters showed a certain lack of respect and disdain for each other, but they do not have a public forum to exchange these concerns. They are in many cases separated by geographic and political (county line) boundaries. It is very difficult to tease out the impact of this tension from the usual

community squabbles and gripes, indeed it likely exacerbates existing divisions. Yet, these negative sentiments directed towards the "other" seem to work against well-being to some degree. "Betsy" uses a common tactic in painting those against wind energy as being anti-environmentalist:

> ***"Betsy":*** *...probably a lot of those same people that are complaining would go out and complain about gas but they might go out and buy one of these high-powered yachts that's going to burn hundreds of gallons of gas in a day, you know. It all depends on where your priorities are I think…*

None of the people I spoke with were the 'yacht-owning' types- in fact 1 of the 3 opponents was a self-professed 'green' who consciously took personal actions to reduce their footprint. Still others in Port Burwell would use forms of mockery when conversations about wind turbines and health problems came up. 13/16 of those in Port Burwell had some kind of negative perception of opponents and most would centre around the fact that turbines do not affect health and that for people to complain makes them 'NIMBY-ists', crazy, or that they are complaining "about ridiculous things" ("Christine"). Some (5/16) believed that people against turbine developments only feel that way because it is in their backyard. This feeling is shown by the comments of "Dave" who believes that people in Canada are spoiled and that we will 'belly ache about anything':

> ***"Dave":*** *Because like here in Canada they belly ache about it and everything and so everything, as long as it's not in my backyard, go ahead, you know. Put it in the next township and then they'd be all in favour of it so that doesn't make sense either. Ok?*

Other people appeared to use different approaches to voice their opinion of those against wind turbines. “Pete” uses an attempt at humour to voice his opinion of whether or not turbines can cause health troubles:

> ***“Pete”:*** *And, I hear other people complaining, “oh the wind turbines, uh, affect our health” and I’m scratching my head saying, “unless it lands on you, chances are it’s not going to hurt you…*

Negative perceptions of ‘the other’ were not limited to supporter of wind turbines. Opponents too had some negative ideas of supporters. “Bob” uses a sense of greed to characterize those who have turbines on their land and are pro-wind:

> ***“Bob”:*** *Like this is really serious stuff and you know for them to be so flip about it and really only be concerned about whether they’re going to get their paycheck in the mail every month from the wind turbine you know at the expense of our health I mean it’s really upsetting.*

Implying that those who have wind turbines on their land are doing it just for the financial compensation they gain is something that may be insulting to the landowners in the area.

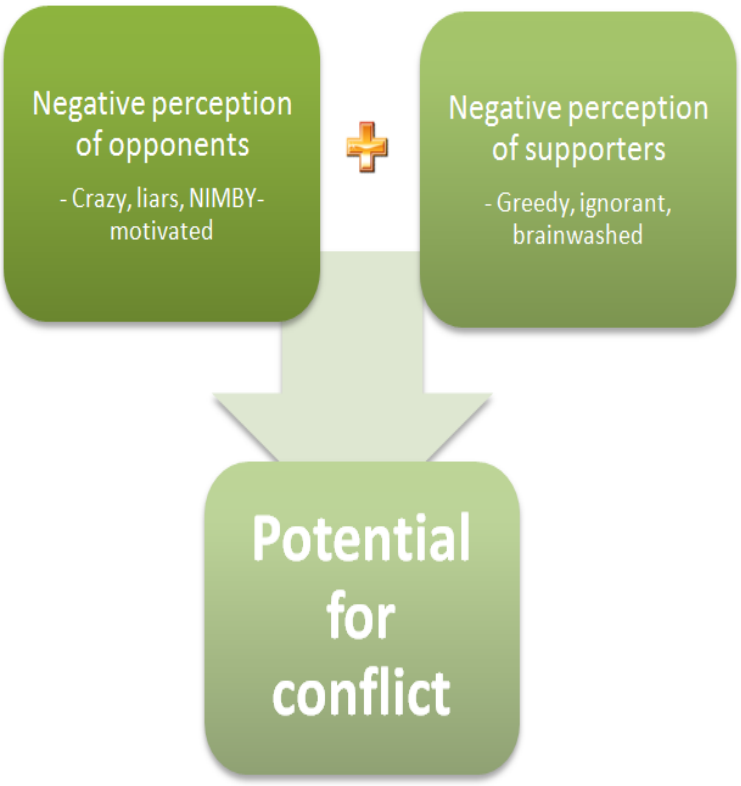


Figure 4.9 - The Potential for Conflict between supporters and those opposed

The negative emotions found within the two communities show that there is some hostility when it comes to the topic of wind turbines- particularly the issue of health effects. Fortunately this hostility did not appear to be realized in the form of intimate controversy and/or conflict in the area. This potential for conflict is shown in figure 4.9. When asked about face-to-face controversy, all those interviewed explained it simply has not happened in the area. There appears however to be a sharp divide within Clear Creek. "Barbara" explains that people simply avoid each other:

> ***"Barbara":*** *So it's very divisive and those neighbours who have leases don't speak to the people who you know signed our petition and visa-versa.*

Another opponent, "Henry" explains why he believes there is no outright controversy in the area. His perception is that both groups have a mutual respect for one another:

> ***"Henry":*** *Well this is it where we sort of try to have a more a mutual self-respect type of thing…I just look at them as like some of, a lot of these guys I know, they're good enough guys enough and I try and respect the fact that you know they have their point of views and I just say that well, they just don't know better.*

Perhaps because of the different political and social boundaries separating most people in Port Burwell and Clear Creek, it may never be the case that face-to-face conflict will develop between the 'pro-wind' and 'anti-wind' communities.

4.7 Collaborative insight from policy experts

In an attempt to further our knowledge of the political and legal backgrounds of wind energy in Ontario, I conducted and analyzed two interviews with "Hilary" a former prominent politician for the Municipality of Bayham and "Kenneth", a long-time area lawyer who lives near Elgin County, owns property in Bayham, and has recently been involved with the legalities of wind energy contracts. Because these two interviews were the last in our sample of 21, it was rare that I learned new themes or concepts from the two participants but rather the interviews complemented are contextualized our findings from Port Burwell and Clear Creek.

There were two very important themes that were built upon through the interviews with policy experts. The first is that the pre-construction economic situation in Port Burwell may have increased support and reduced the perception of risk. This is especially true with reference to the loss of tobacco just prior to the planning of Erie Shores Wind Farm. Secondly, it was understood that the process of siting before the GEA

was more fair and inclusive than projects built after May 2009. The fact that ESWF was built before the GEA was perceived to be a key reason why there was high levels of support/acceptance. “Kenneth” in particular believed there was value in community-based projects and told us that in order to increase acceptance, companies are now giving ‘neighbours’ some form of financial compensation.

4.7.1 ‘An absolute wasteland’: Economic situation and wind turbines

As noted in the community profile, the municipality of Bayham is a very poor and uneducated area compared to the provincial average. Through the main set of interviews I was given the impression that this context may have indirectly increased support. This ‘struggle’ was often cited to be caused the loss of tobacco from 2002-2009 (see figure; 4.8). The importance of tobacco leaving the area was also evident throughout the expert interviews. “Kenneth” in particular was a long-time area resident and spoke of the crop as being a historical ‘savior’ in the area:

> ***“Kenneth”:*** *It wasn’t until about 1937 or 1938 that tobacco came into that area down there. And up until that time, that area was an absolute wasteland. Because it was sand and it didn’t grow good crops… those areas were very, very poor areas until tobacco came in.*
>
> *…and I remember to this day [during a trial] the social worker’s reports saying Mr. so and so, the accused has grown up in one of the most culturally and socially deprived areas in Ontario. Fairly strong statement in this part of the province. But quite correct, quiet correct. I know the school that I went to… all the kids that went through that school that I know, there was only one other who went on to a university level.*

Sharing many of the same beliefs as “Kenneth”, “Hilary” strongly believed that the support/acceptance for the Erie Shores Wind Farm may not have been without the loss of tobacco just years earlier. When asked why there has been a general lack of problems in her community, she first noted how farmers may have been ‘missing’ the income from tobacco crops:

> ***Chad:*** *…how do you think Port Burwell and yourself and the Bayham area I guess was able to be so successful especially in the wake of recent communities that are, produce high controversy and people report health effects and all these sorts of things that your area seems to be void of?*
>
> ***“Hilary”:*** *Well there’s the several factors of, the fact that the downturn in tobacco and the farmer were hungry and ready…So that’s why I think. If it would have happened when tobacco was booming, it might not have been successful, if it had happened when the economy was better or if it would have happened midway through, who know but just everything was just right for us, who knows but I’m just glad it was.*

Although “Hilary” noted several other reasons, the fact that she first described the area’s tobacco loss first may reveal the importance of the crop in the community’s economic and cultural history. More information on this important issue can be seen in *Community Profile*.

4.7.2 The important role of policy

Erie Shores Wind Farm was planned and designed before the GEA and under multiple policy documents/guidelines from all levels of government including the Electricity Act (1998), Ontario Energy Board Act (1998), and the Environmental

Protection Act. Being build before the GEA meant that the siting process was much more reliant on community input and ostensibly community acceptance. This crucial step seemed to be understood by some residents (4/16) and former local politician "Hilary":

> ***"Hilary":*** *...at that time Bayham had a lot of say in yes or no but now, right now the way it stands they have, the municipalities have no choice so I think people are just angry about that and they're digging in their heels and saying, thinking that they don't have a say so its, if somehow you can engage them beforehand and say this is what we're planning. Here's the you know, the most common concerns, here are the answers to these like, you know, this is not really a concern, or this might be a problem but this is how we're gonna mitigate it. And just kind of get the anxiety level down.*

Community involvement and participation is beginning to be understood in the literature as being an important factor for a project's overall acceptance (see literature review). During the interviews with residents of Port Burwell, it was clear that most (13/16) were made aware of public meetings and consultations and 7 actually attended them. The two who didn't receive a notice had no problem with the lack of communication and those who chose not to attend, like "Pete" usually believed that because there were no plans to have a turbine on their land, there would be no issues:

> ***"Pete":*** *So I just thought, ok, this is not going to have much bearing on me one way or the other; no doubt it's an information meeting. I wasn't concerned about wind power at the beginning and I'm not now.*

The fact that community involvement and transparency tends to lead to higher levels of support is a fact that is becoming more understood by energy companies hoping to increase support for wind farms, according to "Kenneth". Like "Hilary", he believes the

fact that ESWF involved the community much more may have helped it succeed. He gives examples of some of the things AIM PowerGen did to reach out to the area:

> ***"Kenneth":*** *... AIM PowerGen representatives have, you know they rented the church. They annually, even to this day have a fish fry for the participants in these projects down there. They have a, a Christmas party every year that they were just super at the, at getting everybody onside with it...*

Hosting things like social events may have helped the community feel as though AIM was a 'good' company and that they were doing positive things for the area. Perhaps because most of the events were planned only for lease-holders and most (13/16) of our interviews were with non lease-holders, we did not hear much about the extra-curricular activities AIM and subsequent owners had take place in Port Burwell. There were also no specific questions in the interview guide looking at the each company's role in the community itself.

Because of his involvement with wind farm contracts, I was able to learn more about the future of green energy policy and lease contracts from my conversation with "Kenneth". Green energy firms like Renewable Energy Systems (RES) are now creating leases that recognize the neighbours of wind energy developments and pay them some form of financial compensation. Despite my best efforts to pry, "Kenneth" would not very reveal what that exact number was but would mention it was "a good arrangement" for everyone involved. Although clearly not needed or wanted by the residents I interviewed in port Burwell, in the view of "Kenneth" these types of programs are warranted in places where opposition may develop in the future:

> ***"Kenneth":*** *No, no, no, no. I think that [paying neighbours] should occur. I think that is, that is in recognition of the fact that if you're living in the vicinity, you're going to have to look at the turbine, you're going to have the noise that is associated with it. And I think that the fact that has what has been done is certainly recognition of that and also it is a manner whereby the developers are able to, and this isn't quite the right word but I know you'll understand me, are able to placate[3] some of the other, some of those people who might otherwise object.*

The fact that the Municipality of Bayham had "a lot to say" on whether or not they would be supportive of the wind farm may have had huge implications for the relative success of the project in the community. More detail regarding different policy initiatives and their impact on support/opposition will be given in the discussion chapter.

4.8 Results from Member checking

As mentioned in the Methods section of this thesis, member checking was initiated in order to enhance the qualitative rigour of my research. The goal of this process was to allow the interviewees a chance to answer the question: do you agree with my preliminary findings? For the most part, the answer was yes. Of the 12 responses we received back, 8 people indicated they either somewhat or strongly agreed with the findings, 2 were neutral, and 2 strongly disagreed. Of those who agreed, most would write that the way I described the different situations of Port Burwell and Clear Creek seemed accurate and that indeed different contextual factors in the two areas may have played a role. The most unexpected comment left by a person who agreed with the findings was that he or she was sorry for the way in which they may have portrayed the

opposition group. This is assumed to have come from the 'negative feelings toward the other' theme in which I listed some of the most possibly hurtful quotes from the research. The person clearly felt a sense of regret and was sorry for what they may have said, although they reiterated it is difficult for them to understand opposition:

> ***Unknown #1:*** *Although I cannot see or hear anything extremely terrible about the wind towers, it does not give me the right to shrug off or criticize the thoughts and feelings of others…[I] apologize for "showing a lack of respect or disdain" towards those who are adversely affected by the towers.*

In the comments left by those who indicated a neutral position, there was a feeling of uncertainty and vagueness in my results that I sent to them. One person wrote that because they had not talked extensively with 'the locals' that they did not feel comfortable answering the questions/ assessing my results. The other felt as though my report did not express what I found out at all:

> ***Unknown #2:*** *I feel this whole thing is too vague to address any issues on either side. Ex. What kind of windmills? Sickness in area?? What exactly did you find????*

Those that completely disagreed with my findings did so by mostly challenging the ethical and methodological merits of the research. In "Barbara's" returned document she criticized the fact that our analysis was based on 'only' 16 in-depth interviews (in actuality, it was based on 21). She begins her comments along this topic:

> ***"Barbara":*** *WHERE to BEGIN? There is so little data in your interpretation that anyone doing a peer review would be at a loss to say there is any validity to the comments on the seven pages you compiled.*

Her disapproval of the methods chosen for my research indicates a general lack of understanding of qualitative methods. This was expected out of some of the residents of both Port Burwell and Clear Creek as quantitative methods are still perceived as the dominant and 'academic' form of research. Though I did preface each interview with an introduction to the goals and merits of interviewing, perhaps I was not able to effectively communicate this to some people. The way in which I chose participants for the study was also criticized by both "Bob" and "Barbara". Because of the legal aspects of wind energy contracts for example, they told me that those unhappy with or experiencing negative effects from turbines may not be able to talk with myself: and that those who did express positive feelings were likely all lease-holders:

> ***"Bob":*** *It is common if not universal that participants in a wind turbine project (i.e. those who have signed contracts) are contractually prohibited from expressing anything negative about the wind turbines. This brings into question the honesty of the information that was provided to you and the extent to which you can rely on it.*
>
> ---
>
> ***Barbara:*** *How were the 16 Pt Burwell residents selected? A sparse description leads me to assume that they were all lease holders who were financially well rewarded for having industrial wind turbines on their properties.*

Ultimately, member checking contributed to the research in three important ways. First, through the comments of "Bob" and "Barbara" (who strongly disagreed with the preliminary findings) I was able to more easily recognize the potential methodological and theoretical weaknesses of the research. Much of their insight was helpful (as tough as

it was to hear at the time); and I believe admitting these potential weakness within the Limitations section of the Methods chapter helps the thesis on the whole. Secondly, comments made by both groups of participants made it clear that conducting a final analysis of the themes developed was necessary. "Bob's" comments for instance, pointed out that there was an overall lack of in-depth attention paid to the adverse health effects he and others are facing. There was also a comment on the vague nature of the report from a person in Port Burwell. In further analysis of the data, I paid special attention to making sure my main arguments were spelled out clearly so that all people interested in the work may be able to understand it. Lastly, because most participants agreed with my findings, the member checking process reiterated that I was generally on the right track and that I did many things well in the research up to that point.

4.9 Summary

The interviews in Port Burwell and Clear Creek, as well as those with our policy experts reveal some interesting trends in the way turbines can be received positively (or negatively) in a an particular area. As seen through the lack of health problems, local conflict and a general positive feeling of the nearby turbines, it was discovered that Port Burwell is an area or high support/acceptance. This may be because of the 'right mix' of contextual factors and planning/policy directives. The fact that the Municipality of Bayham is a fairly poor and uneducated area for example, may have attenuated the feeling of risk by residents focusing on the financial benefits that their 'hard-working' neighbours deserve. Additionally, the process behind the development of ESWF was perceived by residents to be fair and this may have again have led to attenuation of risk/ acceptance of the wind farm. In the interviews with opponents in Clear Creek, many of

the key themes developed from Port Burwell were reiterated and expanded upon. I also discovered important relationships between the two groups. Although there was no actual conflict between the two areas, they clearly showed negative feelings toward each other and it was easy to imagine what I call a 'potential for conflict'. Lastly, the interviews with policy experts enabled me to discover new perspectives on the issue of support for wind turbines. Though not living amongst the turbines, their insight into the socio-political factors important for 'success' resonated with many of my findings from both Port Burwell and Clear Creek.

4.10 Limitations

There were many concerns surrounding the study that created limitations. Some were based on the time limit imposed by the M.A. program of which a thesis is an important component. In essence, 14 months were allotted to complete data collection, transcription, analysis and of course the writing of the thesis itself. More time would have allowed for a larger data set and perhaps a better understanding of the research. Many other limitations resulted from the general lack of literature surrounding wind turbines in the Ontario context. For example in several instances, instead of referring to wind turbine literature when citing a particular theme found in our data, we were forced to use articles from the general political science or risk analysis (including toxic waste siting) literatures. Lastly, there were less obvious limitations that were brought forth to us through the member checking process. Methodological and theoretical limitations most specifically were brought forward by participants opposed to wind turbines in their area. Without their valuable input, many of these would not have been realized as being challenges to good qualitative research.

"Gag clauses" and unwillingness to speak truthfully

The fact that some people interviewed may have had turbines on their land and a) may have been afraid to speak to us or b) may not have had told the entire truth about their experience with wind turbines was an idea brought forth by a person in the Clear Creek group. This person was concerned that the high levels of support (or acceptance; see below) seen in Port Burwell may have been skewed by the fact that some if not all, have signed wind turbine contracts and are therefore unable to speak negatively about them. In reality, 3 of the 16 people interviewed in Port Burwell had turbines on their land. Although this number is a fairly low the question raised was quite valid and therefore worth some investigation.

Questions of the legality of wind turbine leases are often difficult simply because of the nature of the contracts themselves. According to the website, Ontario Wind Turbine Contracts, most often they are not made public and even when one is, it may very well differ from ones developed at other sites or under other companies (OWTC, 2012). Fortunately, we were able to come across one contract from TransCanada Energy Limited- an Alberta-based energy infrastructure company. It was made public through the group National Wind Watch to be shown as an example lease in place. This anti-wind group's mission is to, "[present] the facts about industrial wind power" (Wind Watch, 2012). The site is a collection of articles and documents outlining the negative aspects of wind energy including potential health issues, noise complaints, and declining property values. We cannot comment as to the consistency of the document with reference to other leases- all we can do is analyze this one. Since the lease was developed in Ontario

however, we can assume that it is in accordance with the conventions of real estate law in the province.

According to many opponents of wind energy, wind turbine contracts have within them "gag clauses" that restrict people from disclosing the details of their contract and/or problems with wind installations- including negative health effects. According a report found on the anti-wind website Quixote's Last Stand, Ontario wind turbine contracts can produce gag clauses in two instances: in the original agreement itself or "in a subsequent buyout agreement" (Quixotes Last Stand, 2012). An example of the former is seen below:

> 6.16 **Confidentiality**:
> The Owner shall keep confidential all confidential information of a technical or business nature relating to the business of TCE, the operation of any Wind Turbine, the terms of this Agreement and any Ground Lease, all research data, technical information, trade secrets or other proprietary no-how, processes, plans, equipment, instructions, manuals, records and procedures (unless readily available from public or published information or sources or required to be disclosed by law)("Confidential Information") obtained from or in respect to the business transactions between the Owner and TCE. In the event this Agreement is terminated, all Confidential Information in the possession of the Owner arising from this Agreement or any Ground Lease shall, promptly upon such termination, be returned without duplication and in its original form to TCE.

Though it is difficult to say with certainty which part of this lease opponents have troubles with, the opening sentence may be the issue. It begins by saying that the owner (re: landowner) "shall keep confidential all confidential information of a technical or business nature relating to the business of TCE and the operation of any Wind Turbine…" The last part of this clause which mentions the "operation" may be construed to mean the impacts of operation, like sound pollution and/or health effects. Concerns brought forth by the opponents to wind turbines in Clear Creek may be valid in this way

however according to the interview with lawyer "Kenneth", there is no such "gag clause" in contracts with landowners of ESWF:

> ***Chad****: There's been some kind of, I'm going to call them rumours [that have] come up in some of my interviews about non-disclosure agreements …one person has noted actually in my last interview that people that have turbines might be experiencing health impacts or may hate them or what have you but it's in their contract not to kind of come out and say that…Does that at all exist in your experience?*

> ***"Kenneth":*** *Not to my knowledge, no. No at least not in the, you know I, in preparation for this talk with you I have read the, the various agreements so I'm not going to sit here and pretend what I know what each and every clause says but I do know this, that there is nothing in the Erie Shores contracts that would in any way prevent me from suing Erie Shores Wind Farm if I suddenly develop some strange disease or sickness as a result of it. Nothing in there.*

Through the words of "Kenneth" therefore, we can eliminate with some certainty, the possibility that "gag clauses" were keeping people from speaking out against the wind turbines in Port Burwell. Of course, even if "Kenneth" is right does not mean that people perceive that they are free to say what they want about ESWF. Perhaps there is a specific section within a landowners lease for example, that hints at this idea and in order to continue in accordance with it, owners either were afraid to talk with me or did so while keeping certain issues concealed.

The move-out effect

Another concern raised by a member of the study in Clear Creek was concerning the fact that ESWF had been operational since May 2006 (Canwea, 2012); over 5 years after the initial interviews were conducted. In his estimation, it was possible that many or some of the people who had experienced problems with turbines and/or were against their presence in the area had already moved out of the area. In comparison, the turbines in the Clear Creek area had been operational since between July and November of 2008 or approximately 3 years. In order to address this concern, I wanted completed two investigations: 1) Comparisons of real estate activity between the Port Burwell area and "another area" and 2) A statistical comparison using Danielle Ouellette's data looking at the relationship between residence time and opposition to wind turbines. Unfortunately, the first comparison ended up being impractical. Despite being in contact with three real estate agents, I was unable to gather real estate activity information going back to 2006. The statistical comparison may help us to determine whether or not people new to the area are more accepting because they essentially bought into the idea of having turbines in the area.

In the risk analysis literature, it has been shown that length of residence may play a role in how group formation develops in relation to a local conflict. Whittaker (1998) for example found that a landfill's proposed development created a divide between what "he" calls the white-collar newcomers and blue-collar long term residents. In that case, the opponents to development were the more wealthy newcomers in the area. In the case of Port Burwell and Clear Creek, it has been claimed by a local pro-wind group, Norfolk Friends of Wind Power that those opposed to the turbines are "…a small but vocal

minority…new to the area" (Norfolk friends of wind power, 2012). In order to help test this hypothesis, we used Danielle's quantitative data from both Clear Creek and Port Burwell. The new-comer's hypothesis was tested using correlation (Pearson product moment correlation coefficient). Length of residence was asked in each survey using a scale of 1-5 (5 being the longest) and support was determined by the question "Do you support the existing wind turbine project in your area". The result of the test was that r = 0.13196; meaning that a weak positive correlation existed between the two variables. That is to say that as a person's length of residence increased, they were only slightly more likely to support wind turbines.

Sampling

A question was raised by a participant from Clear Creek regarding how we sampled. As outlined in the Methods chapter, the invitations to participate in the research were first sent to homes randomly sampled from all homes within 1 km of an ESWF turbine and secondly, because of the low levels of participation, to all homes within that 1 km distance. Although we did use random sampling and then reached out to the entire population, because we required informed consent from the residents, all were self-selected. This type of sampling however may have even overestimated the number of opponents to the wind turbines in the Port Burwell area. In the scope of public participation and planning of wind farms, Wolsink (2000) notes that "people generally do not come forward with positive responses…". This idea is part of what Bell et. al (2005) calls the democratic deficit explanation- despite low levels of overall opposition in an area, those who actually take the time to have their voice heard are more likely to be against wind farms. This phenomenon has been illustrated by Toke (2002) through a

study in central Wales. In the consultation process for Carno wind farm, 54% (n=47) of the 87 people willing and able to participate objected to the wind turbines. A few months after the consultation period, a survey was done in the area that found only 23% of residents opposed the wind farm. To this point, Olson's rational choice theory of collective action may be causing opponents to be more active simply because they have more to gain. According the theory, opponents of wind projects object because of the local consequences of the turbines, such as visual disturbance. Their actions against local developments therefore may solve their problems. Conversely, proponents of wind turbines often see farms as being good for the collective 'good' they bring- supporting one wind farm actively will only help a small amount toward that goal.

Different layout and model of turbines

In the preliminary results that were sent out through member checking, there was no mention of the different models of turbines and the layout of them in Port Burwell and Clear Creek. We were notified by a two participants that this may have been the reason why there are problems in one area and not the other. To look at this, we did a quick investigation. According to CANWEA (2012) the Erie Shores Wind Farm uses 1.5 Megawatt, General Electric models while the Frogmore, Clear Creek and Cultus farms use 1.65 Megawatt models produced by Vestas. More details about each model is below:

Location	Model	Capacity (megawatts)	Hub height (metres)	Blade length (metres)	Swept area (m^2)	Rpm range	Max blade tip speed* (km/h)
Port Burwell	GE 1.5s	1.5	64.7	35.25	3,904	11.1-22.2	294.5
Clear Creek	Vestas V82	1.65	70	41	5,281	?-14.4	222.08

Table 5.1 - Comparison of wind turbines

[1]Data collected from American Wind Energy Opposition (http://www.aweo.org/windmodels.html)

*Converted from miles per hour.

The differences in the two turbines are clear from the table. The turbines found in Clear Creek are larger; both in terms of height and blade length. As a result of the longer blades, the area swept is also much larger in the Vestas model. Based on the data collected from AWEO, the GE models found in Port Burwell have the capacity to turn much faster. The RPM (revolutions per minute) and maximum blade tip speed are both higher. It is therefore clear that the turbines found in Clear Creek are much larger yet turn slower than the ones in Port Burwell.

The implications of the different models' shape, size and operating characteristics are numerous. For the sake of simplicity we will limit the term 'impact' to noise production. We recognize that the perception of visual disturbance would likely change in the different communities however it is proposed that the most serious effects caused my wind turbines have to do with the human health through noise levels (Pierpont, 2009).

The noise produced by wind turbines is dependent on many physical and social factors. Because of this it is impossible to calculate an exact reading of sound levels (measured in decibels). What is understood is that total sound levels are primarily determined by aerodynamic noise however mechanical noises also play some role (Hau, 2006). It is also clear that the different turbine models seen in Clear Creek and Port Burwell may have different sound characteristics. Though it could not be verified in the literature, discussions with opponents in Clear Creek revealed that the slightly larger (size and capacity) turbines in that community may produce higher sound levels. Conversely it was seen that because the GE model from Port Burwell has a higher rotor speed (RPM range), it would be louder (Hau, 2006).

Low frequency noise produced by turbines has been pointed to as the source of the health problems however empirical support is still unclear (Bolin et al., 2011). Especially as turbines get larger and larger, worries that noise produced by turbines would lower in frequency (Moller and Pedersen, 2011). This type of feeling was felt by an opponent in Clear Creek. Bob explained his idea of the noise produced by the larger turbines in his community:

> ***"Bob":*** *But one of the ways I think people can understand what this is, is the wind turbines produce low frequency noise and infrasound. And low frequency noise is like bass, bass music- like bass that would come out of a, a boombox or whatever…But it's like when you go to a movie theater and you're watching a suspense film and they want to put you on the edge of your seat…And I don't know, next time you're a you know a thriller or something….*
>
> ***Chad****: I'll be thinking of that ya….*
>
> ***"Bob":*** *…watch it and you'll notice it's just a, it's a rumble it's like "whooooooo"…and so when I think about how, what I used to feel and you know and why I used to feel it. What I used to feel was that kind of low frequency and it's not something that's heard as much as it is felt. And you know you feel it, and the ways that you feel it sometimes get to be downright disturbing.*

Bob appears to be accurate in his description. Although much smaller in turbines less than 2 MW, results from a study in 2010 indicated that indeed larger turbines (in terms of capacity) do produce noise that is lower in frequency (Moeller and Pedersen, 2011). Exactly what an additional 0.15 MW in would do to affect the frequency of the noise is difficult to quantify.

Layout of the turbines was also seen as a particular problem by one person in the Clear Creek group. She found that the comparison between ESWF and Clear Creek was unfair.

> ***"Barbara":*** *Comparing the effects of the Erie Shores Wind "Farm" 1.5 MW G.E. IWTs (Industrial Wind Turbines) which were strung out along the north shore of Lake Erie linearly for about 30 to 40 km to those of the 18 – 1.65 MW Vestas*

> *IWT's which were all jammed in within a 3km radius of our small community is like comparing a breeze with a gale."*

The choice of words used by Barbara is quite telling of what she thinks of the turbine layout in her area. She notes that in contrast to the Port Burwell area, the turbines in clear creek were 'jammed in'. Also notable is her spatial perception of 3 km as being too close. The government of Ontario has insisted that the current setback of 550m from residences is "the most stringent in North America and is based on the most up-to-date science" (DSF staff, 2012).

Overall, it is unclear if the different models seen in Port Burwell and Clear Creek actually do produce different levels or types of noise although there is some indication the larger blades turning slower may produce less noise in terms of decibels but higher levels of low frequency noise.

'*Acceptance' versus 'Support': The careful use of terminology*

It was suggested by a member of the opposition group that I question whether or not people in Port Burwell actually support the wind turbines in the community or simply accept them. It is commonly seen in the risk analysis literature to group the two terms together. In fact in a 1992 paper (Flynn et al.) continually contrasts opposition with support- indicating that in the absence of opposition, there must be support. This type of word usage brings a dichotomous viewpoint, ignores the possibility for a 'middle ground' and does not allow for the 'qualified support' explanation as described by Bell et al. Additionally, as Eagly and Kulesa (1997) argue, it is an error to interpret a passive local population as being pro-wind. Considering this insight, we re-examined the interview

transcripts to confidently determine what where each participant felt toward the wind farm. The results from this can be seen in the analysis chapter.

'Concerned' not capturing the situation

Terminology was also seen to be an issue in terms of the situation in Clear Creek with two of the three people we interviewed in the area. In our member checking document, we used the term 'concerned' to describe the feeling had by opponents to wind turbines in Clear Creek. At the time we felt this to be an accurate portrayal of what they were going through and their opinion of wind energy policy, the government and their health status. Evidently the choice of words did not adequately address the situation. Instead, in his response "Bob" wrote that "It would be more appropriate to describe us as "victimized," "abused," "marginalized," etc.". Looking back through the interview transcripts, it was clear that these feelings were being expressed- if only in more subtle ways. While "Bob's" comments are invaluable in showing his feelings toward the government, we are careful not to use the term 'victim' in the somatic sense. It was not the point of this study, nor were the methods adequate to detect the source of the health effects. What we can conclude is that some people in Clear Creek are experiencing health problems and they are feeling like 'lesser citizens' in terms of the policy response to their problems.

Chapter 5:

Discussion

5.1 Introduction

This chapter links the results of the research found in Port Burwell and Clear Creek to the literature review in Chapter 2 to highlight the contributions of the thesis to this literature. The main finding is somewhat unexpected support for turbines in the Port Burwell area given the plethora of negative press on turbines in Ontario, particularly regarding health effects. Unlike parts of the literature which tend to connect opposition with landscape characteristics, (see Devine-Wright 2005) I have argued that support was a function of multiple contextual factors as manifest in place - including social, political and geographic issues. Ultimately, the main reason for support in Port Burwell is closely associated with Kasperson's Social Amplification (and attenuation) of Risk.

One of the challenges of inductive qualitative research is that the literature that is reviewed prior to fieldwork may not be as relevant as literature found during and after fieldwork as concepts in the analysis begin to coalesce. Yet this is also the advantage of such an inductive and flexible approach. Looking back at the literature I originally reviewed, it was clear that some concepts were relevant, others were not, while others still were outside of the scope of this research entirely. For example, while avian deaths due to wind turbines is an important issue, questions posed to participants rarely resulted in any contribution to our understanding of the matter. As mentioned in Chapter 2, media reports and anecdotal evidence has suggested that community conflict and health effects

are a major concern surrounding wind farms in Ontario (Krogh et al., 2011). Conflict and controversy between those people opposed and the government/wind developers was evident however, the fact that I did not find either health effects or direct intra-community conflict due to the turbines is one of the major findings from the research in Port Burwell, and thus is the centerpiece of this discussion.

This chapter is organized by framework and theme with its central focus on why Port Burwell is an area of high support for wind turbines – support that is mostly subdued, rather than enthusiastic. Section 6.1 concerns the relevance of the lack of conflict or health effects. Section 6.2 connects literature relating to sound and visual "disturbances" and the findings from the research. Next, we discuss (6.3) the theories surrounding community development models and its application to the case study. In section (6.4) Kasperson's theory of the attenuation or risk is discussed with special consideration for the results we found in Port Burwell. Next, we explain how (6.5) other pre-construction contextual factors that may have led to the attenuation of risk have relevance to the risk literature. Included within this section are sub-sections looking at the ideas of dread, scientific uncertainty, and cultural theories of social division. In (6.6) we turn our attention to the community of Clear Creek where the theory of NIMBY is questioned through our results. Next, in (6.7) we discuss various theories of environmentalism and their application to what the research found in both Port Burwell and Clear Creek. Finally, in section (6.8) we discuss the developing idea of 'relative evils' in the context of wind turbine support and opposition.

5.2 Lack of Conflict or Health Effects

The fact that we did not perceive any conflict or major problems to do with wind turbines in the Port Burwell area around the Erie Shores wind farm was somewhat surprising given the amount of media attention given in the past few years focused on health effects and community conflict (Songsore, 2011).

As Krogh et al. (2011) suggest, many Ontarians who live close to turbines believe they are suffering adverse health effects – which further suggests people would know of somebody in their community suffering such effects. In our sample of 16 people from the Port Burwell area (all within 1km of a turbine) none have ever experienced negative health effects they could attribute to the local wind turbines. Although some people admitted they do suffer from the symptoms Pierpont (2009) claimed to be caused by wind turbines including headaches and tinnitus, they suspect these have been caused through other means. Commonly used reasons for some of these symptoms included old age, and the inevitability of life (bad luck, genetics, etc.). When the topic of health effects came up through the interviews many people (14/16) would not believe at all that turbines can cause health effects- one man even exclaimed, "…unless it lands on you, chances are it's not going to hurt you". The two people who did believe that health effects were possible focused on the impact of shadow flicker as described by Harry (2007). However the widespread disbelief in adverse health effects caused by wind turbines is the most common feeling found in the Port Burwell area. Most people seem to agree with the positive messages seen in the local media, and dictated by local and provincial politicians. They also appear to agree with the literature and reporting (Colby et al., 2009; King, 2010) that tends to paint wind energy in a positive light and dismisses the

possibility of a "...direct link between wind turbine noise and adverse health effects" (King, 2010).

In stark contrast to the people interviewed in Port Burwell, all three of the people I spoke with in Clear Creek experienced negative health effects that they claim had been caused by wind turbines too close to their homes (See Analysis→ Health effects). While these people were purposively chosen because of their know opposition to wind turbines, it what not known prior to interviews specifically why they did. In this way, it was only somewhat of a surprise that they had health effects in light of the recent media and anecdotal reports. Their experiences most closely resembled the reports of Pierpont (2009) and vehemently contrasted with the findings of King (2010).

5.3 Sound and visual disturbances

As noted in the analysis chapter, the number of people in the sample of Port Burwell who had problems with the sound or appearance of the turbines was quite low. This is in contrast to a 2010 survey which found that 23% of Ontarians saw noise as a key drawback of wind energy (Ipos-Reid, 2010). The finding also contradicts research in Europe which found that wind turbine noise, despite not being louder than traditional sources of sound like road traffic, is more annoying (Persson-Waye, 2004). Of course, newer generations of turbines in Ontario have been noted to be much quieter than older ones installed in Europe (Devine-Wright, 2005). Despite this, residents of Port Burwell would often defend the amount and type of noise turbines make by contrasting it to what they call more prominent sources such as cars, loud music, or even the crashing waves of close-by Lake Erie (See Chapter 4; relative evils). The fact that people living close to the

turbines of ESWF perceive the noise in a positive or ambivalent way may point further to the fact that risk (through noise pollution) was socially attenuated early on in the Port Burwell area. The sound from turbines was perceived much differently in our interviews with Clear Creek residents. In those interviews it was clear that the participants had problems with sound but it was much more to do with related to sound 'vibration' and adverse health effects than to the annoying nature of the noise as shown by Perrson-Waye (2004). The Clear Creek residents also were unique in their experience that noise produced by turbines at night could lead to sleep disturbance and in turn, negative health effects. This is currently a point of contention in the literature. Most of this stems from the fact that some people discredit annoyance as being a health impact (Colby et al., 2009). The United Nations' (1984) definition of health is "the state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". While people in Port Burwell would often dismiss noise as being a source of poor health, residents of Clear Creek were much more open to the idea- perhaps because they have experienced it firsthand and the negative effects cease when they are not in their homes, away from the turbines. That there seemed to be a cluster of such people in Clear Creek but not in Burwell needs to be investigated further, but suggests that there may be social processes that heighten the awareness of the negative aspects of turbines such as noise or annoyance, or simply sensitize them to awareness of turbines as a likely cause of both annoyance and health impacts. The flexibility that was part of the research from the very beginning no doubt allowed for the 'discovery' and understanding of problems in Clear Creek.

Problems with the visual nature of the turbines was something that was seen in both communities to some degree. Research into perceptions of visual disturbances are varied but generally point to the idea that socio-political history, proximity, setting, and topographical features all play a role in how turbines are received (Devine-Wright, 2005; Pederson and Waye, 2007). While 4/16 of those interviewed in Port Burwell had trouble with the visual aspects of their local turbines, only one of those of people was against turbines on the whole. While the other three found turbines to be ugly or unnatural in the rural landscape, they supported wind energy for all of the perceived benefits. This contradicts Wolsink's (2006) finding that stated a person's visual evaluation of the turbine landscape is one of the best predictors of opposition. Similarly, while all those interviewed in Clear Creek were strongly opposed to wind turbines, none had serious problems with the way the turbines looked in the countryside. For those who were supportive though, their feeling was more ambivalence toward the visual appearance of turbines rather than descriptions of beauty, tranquillity and/or artistic value found in the work of Johansson & Laike (2007). It would not have been unexpected to see problems with the visual aspects of wind turbines amongst the sample in Clear Creek. Many of their arguments against wind would centre on ideas of a lack of equity or fairness in wind turbine siting. Some have suggested that violation of principles of fairness (including impacts like visual pollution) that extend onto neighbours' properties is the key source of debate all over the world (Hvelplund, 2001; Wolsink, 2007). Perhaps the reason we did not see these types of grievances in Clear Creek was that at least one person (of 3) was keenly aware of how he might be perceived. "Bob" mentions,"…if we oppose it mere only on aesthetics, that's kind of just like NIMBYism right?" Though at least one of the

three people interviewed was keenly aware of how his views toward visual disturbances might be perceived or interpreted, it is difficult to find in the interview transcripts any strong feeling against the look of turbines. This awareness also suggests a familiarity with issues as well as with the wind turbine literature. This seems to contrast an assumption that states that opponents are ignorant or misinformed (Aitken, 2010). For that reason it should be said that despite their overall opposition to turbines, no person interviewed in Clear Creek had visual grievances.

5.4 "Community development" and the fair siting process

In Chapter 2, I explained much of the literature on community development models has been noted to lead to overall higher levels of social acceptance. Although Erie Shores Wind Farm was not commissioned under a true community model like we see in European nations (Bolinger, 2001; Thomson, 2008) – based on my conversations with residents, and the two policy experts, it seemed to share many of the common characteristics during the planning and consultation periods. Under true community ownership models however, the financial benefits (lease payments) are typically spread out more evenly than what occurs in Port Burwell and other wind farms across Ontario. From a combination of interviews, policy analysis, and media reports it is clear that community members had much more of a say in the development of ESWF than other areas that were developed under the Green Energy Act. There were a series of public consultations/meetings of which many interviewed were aware of and some of which actually attended. From the information gained in the interviews these meetings allowed people to ask questions, and comment on various aspects of the construction and operation of the local wind turbines.

Despite early and open involvement of the residents in siting, one of the most important aspects of ESWF is that it was not developed under a community model in terms of the chosen system for compensation. Even in those projects developed before the GEA of 2009, local turbines are almost entirely placed on private land and in turn it is only the landowner who received lease payments. One of the key assumptions going into the research was that people that were interviewed would show at least some form of jealousy or envy of their neighbours. Gross (2007) explained that "...particularly when decisions are made which benefit some sections of the communities at the expense of others" protests, divided communities, and damaged relationships can result. Additionally, it has been shown in Danish studies (Krohn & Damborg, 1999) that those who do not have financial stake in a wind energy project are much more likely to me negative towards the project. Despite the seemingly inequitable sharing of compensation in the Port Burwell area, the vast majority of non-landowners (12/13) had no problem with the fact that their neighbour was getting paid thousands of dollars per turbine per year, while they received nothing. Indeed, the most common feeling expressed by participants when asked for their thoughts was that they were happy for their neighbour(s) and their 'windfall'.

In terms of the structure of policy though, the community based co-op model is not prevented per se (Pukwis, 2012), yet there is more severe reaction to the province removing power of the local authorities (municipalities) in the process that approves new wind turbine projects. There are also known barriers to implementing community ownership, especially in the North American context. These include technical and economic viability (Adams, 2008; Dunning and Turner, 2005; Walker et al., 2007)

especially as wind projects are expensive upfront and have long return periods that in many cases only private interests can endure (Hain et al., 2005). In provincial politics, the Green Party of Ontario (2011) has called for an end to "big, centralized, expensive, and inflexible sources of generation" and instead more community-led projects where the benefits are much more localized. Toby Barrett, MPP of Haldimand-Nofolk, has publicly criticized the GEA for taking away local decision making as part of wind turbine siting. He explains that the controversial policy has the power to "neuter municipal councillors" (Barrett, 2011a). Additionally the Ontario Federation of Agriculture's 2012 statement suggested that the provincial government should decide to give more power back to the municipalities that act as hosts for wind energy developments. Because of this push for more community projects in the province and much of the above literature, questions were asked during the interviews about participants thoughts on community development. In explaining the system to them, people would often be confused because they had no problem with the private system currently in place. In 11 of the 13 interviews with non-landowners, people would ask 'why should I get paid...it's not on my land!' This indicates that unlike much of the literature that calls for community development as a way to increase support (Bolinger, 2001; Maryuama et al., 2007); it appears as though it is not needed in places like Port Burwell. As shown in the Methods chapter however, it may have been because Port Burwell was economically vulnerable as a community prior to ESWF that compensation (in any form) was enough to lead to widespread support or acceptance of wind turbines.

Other aspects of financial compensation from the risk assessment literature were also tested through this research. Kunreuther and Easterling (1996) explain that when the

risk (i.e. cost) from a facility is perceived as high, then compensation (benefit) much be equal or higher for a person to be accepting. In the case of Port Burwell, because no person had experienced any serious risk (health related or otherwise) it makes intuitive sense that no person similarly believes they deserve payment. Additionally the lack of payment given to neighbours or landowners may have lead to lower feelings of risk from the wind turbines. Though this may initially appear counter-intuitive, the use of compensation has been shown in some cases give the impression of a higher risk (Frey and Oberholzer-Gee, 1996). Often compensation packages have been used by residents as a sign of the high levels of risk they are about to encounter as well as the questionable credibility of the people who offer it (Groothuis and Miller, 1997). Perhaps the best argument toward the use of compensation then is implementation once safety is established. This may be particularly relevant to wind power schemes in Ontario due to the fact that landowners typically experience very similar inconveniences once turbines are constructed in private models of ownership.

5.5 Attenuation of Risk and Port Burwell

Kasperson et al.'s (1988) theory of the Social Amplification of Risk was chosen to guide the interpretation in this study because of its versatility to describe both acceptance and opposition to potential or perceived risks within the community context. While it was expected that we would find some degree of perception of risk (through negative health effects), in the bulk of the research in Port Burwell, I did not and therefore decided to use the attenuation part of the theory to explain the bulk of the research that took place in Port Burwell. Additionally, the theory was applied to the

village of Clear Creek; using the amplification of risk to help explain higher levels of opposition.

A key component of the amplification (or attenuation) of risk is an understanding of the social context that may influence how risk is perceived (Kasperson et al., 1988). This idea fits well within the wind turbine literature that has begun to acknowledge also has acknowledged the power of the social backdrop of individual places (Cass & Walker, 2009; Devine-Wright, 2005; Ferguson-Martin & Hill, 2011). The degree to which social and contextual forces can influence the perception of risk, however, seems to be debatable. Watt (1983) explains that given the same hazard, different community responses can be attributed to social context and political economy. Cutter (1993), using the example of the Three Mile nuclear accident and others, suggests that behavioural effects of risk estimation or expert evaluation are actually *secondary* to social or contextual factors. Regardless of exactly how much power social or contextual forces have on the perception of risk from turbines, it is almost certain that it does play some role- something the Amplification of Risk notes explicitly (Kasperson et al., 1988). Our results have suggested economic, social and/or temporal factors played a role in Port Burwell's acceptance of wind turbines are supported and thus works nicely under Kasperson's theory.

Despite their relative proximity to each other, strong socio-economic differences were seen between Port Burwell and Clear Creek and this may have had the ability to alter the perception of risk in both communities. The Social Amplification of Risk also recognizes the power of the media to either heighten or attenuate risk (Kasperson et. al, 1988). Through the local media analysis seen in Chapter 5 and evidence of similar

findings across the province of Ontario (Songsore, 2011), it is clear that there has been a steep rise in negative reporting dealing with wind turbines including articles speaking to 'poor policy' and/or adverse health effects. What makes this finding interesting is that at the time ESWF was being planned and built, the large majority of articles painted turbines in a positive light whereas in later years when other wind farms (including Clear Creek) were being developed, the media tended to write much more about the negative issues related to wind energy. The power of the media is shown through the work of Weinberg (1977). His work showed that the way the media portrays a technology or activity can scare or 'unscare' the public but he believes it is much easier to accomplish the former. Applied to my work, it is possible that the absence of articles dealing with health effects may have failed to make Port Burwell residents afraid of wind turbines yet in other areas developed after, even anecdotal evidence and reporting on health effects may be giving people 'unwarranted' fears.

5.6 Other pre-construction factors: Economic downturn and low socio-economic status

It has been shown in the literature that communities that have lower levels of socio-economic status are more likely to positively receive a risk or hazardous facility (Bourke, 1994). Further, the introduction of economic benefits has been shown to influence how people form their opinions on potential risks (Alberecht, et al., 1994; Spies et al., 1998). Prior to the introduction of the turbines, the Port Burwell area (Municipality of Bayham) was noted as being well below the provincial average in several socio-economic measures, including median income and educational attainment level (see Methods→Community profile). Several scholars have suggested economic reasons

underlie social perceptions, pointing to the fact that residents in economically depressed communities have higher acceptance of wind farms (Van der Horst, 2007; Toke et al., 2008; Devine-Wright and Howes, 2010), and that economic returns from wind farms would increase levels of acceptance in areas where they are placed (Bohn and Lant, 2009; Pasqualetti, 2011; and Sowers, 2006). As well, information collected through interviews with local residents and policy experts indicates that the loss of the profitable cash crop tobacco may have left an economic void in the community- a void that was filled with the introduction of the wind turbines in 2006. These ideas are consistent with economic dependence theory, indicating that the local jobs, tax revenues and tourism that resulted from the development may be further attenuating risk and/or increasing public acceptance of the wind turbines. Though locals in Port Burwell do not seem concerned with the potential risk posed by wind turbines, the development of ESWF amid economic vulnerability in Bayham may spark questions relating to environmental (in)justice. That is, the existing economic arrangement with the local municipality and landowners may not turn the possibly risky situation just.

5.7 Dread and scientific uncertainty

Somewhat related to the idea of community ownership and planning practices, is what Lee (1999) calls dread and others including Slovic (1988) have nicknamed a negative ‘gut reaction’. It is a term Lee uses to characterize the feeling of the public when potentially hazardous projects are seen as being involuntary or inequitable. Being built before the GEA, Erie Shores Wind Farm was developed at a time when local input and approval was required. Through the interviews in Port Burwell, there was a strong belief that the process and the eventual wind farm itself were quite equitable and a good idea on

the whole. Perhaps it was this process that has led to positive perceptions of the wind farm and wind energy in general in the Port Burwell area.

The temporal characteristics of wind turbine debate issues may also have affected how turbines were received in the pre-GEA Erie Shores. As shown in the literature, when a new or not-yet-understood risk is introduced into an area, it is more likely to be perceived as posing a greater harm (Fischhoff et al., 1978; Slovic et al., 1982; Slovic, 1987). Looking at the media analysis conducted through this research, as well as work by Songsore (2011), we can see that the idea that turbines could be a source of negative health effects did not become a major public concern in Ontario until after 2009 (See appendix F). Additionally, the basic technology behind the wind turbines currently in Ontario has been in place in Europe for decades. It is quite plausible that because the idea that turbines could cause negative health effects did not become prominent until years after ESWF was built, the residents of Bayham never had the opportunity to perceive turbines as posing a health risk. In fact, our interviews with residents suggest this as well. In projects built in later years, including Clear Creek, health concerns were much more prominent in the media and thus introduced 'new' uncertainty to the potential risk of turbines in the area. Thus, the lack of looming risks during the siting process in Burwell, and greater prominence in the three Clear Creek siting processes, may be telling of the different reactions each community experienced. The increasing number of people coming forward insisting that they are experiencing adverse health effects from wind turbines may point to this reasoning even more so.

The issue of health effects and turbines has become a large enough issue that epidemiological research at both the provincial and national levels is about to take place.

Researchers including Phil Bigelow (University of Waterloo) and a team from Health Canada now appear to be taking the issue seriously. The latter study has been particularly well received and both those pro-wind and anti-wind seem to look forward to the results.

5.8 "Us versus them": Cultural, geographical and social divides

In nearly every interview people had a clear sense of the importance of space and place in their lives. These are the two major concerns in the study of human geography (McKillrcik and Peake, 2005) and their importance were shown in cultural theories relating to community belongingness, identification, and in the case of Clear Creek, conflict.

In conducting the interviews we would ask each participant several questions regarding conflict stemming from the wind turbines in the area. While there was no reports about conflict in the area surrounding Erie Shores Wind Farm (our original study site) participants often referred to problems in Norfolk or Clear Creek. The number of people familiar with this controversy also seemed to increase as we moved eastward toward Clear Creek. Although we purposely sought out those opposed to turbines in Clear Creek, quantitative results proved that the Port Burwell area is more supportive of local wind turbines than Clear Creek (Ouellette, 2011). It should be noted that in Ouellette's survey there were many more people opposed to turbines in Port Burwell yet she had a much larger sample of 75- perhaps due to the fact that the study's study area included all homes within 3 km of a turbines (this study limited it to 1km; see Methods).That being said, the clear difference in acceptance to turbines in the two communities was likely because of several social and/or political factors. Because the

public response was different in the two communities despite the fact that the potential risks were quite similar (see turbine characteristics in Limitations) indicates that cultural factors may have played a role in the development of concern in Clear Creek and/or a lack of concern in Port Burwell. This would seem to be consistent with Dake's (1992) cultural theory of risk which indicates risk is mediated by cultural forces. There were also some indications that social groups that were in place before turbines came into both communities may have influenced how people perceived them. For example, while all people in Port Burwell described the area as being friendly and 'neighbourly', there was some talk through the three interviews in Clear Creek of divides between 'newcomers' and old-timers' of the area (See analysis). In fact, of the three people interviewed in Clear Creek, two had only recently (~5-10 years) moved into the area from large Canadian cities while the other moved back home after years away. They described how their opposition to wind turbines has only widened that social divide they felt when they first moved into the area. This theme may fit well with the theory of Phadke, who found a social divide in the American West- one that was created when "newcomers" moved into an area. Coming from urban areas, this group was not used to seeing the land as a resource but rather simply wanted it to fulfill their "pastoral ideal" (Phadke, 2011). As well, information collected through the community profile suggests that Marris et al.'s, (1998) claim that cultural biases can affect the perception of risk may hold some truth in both Port Burwell and Clear Creek. Several factors, including the two areas' political preferences and socio-economic status tend to indicate that each will feel how they do about wind turbine development. For instance, while both areas are located close to each other, Elgin-Middlesex-London (Port Burwell) has been in recent history (1999-2007) a

Liberal riding while Norfolk-Haldimand (Clear Creek) has been dominated by the Conservative party in recent provincial elections. Of course, Elgin-Middlesex-London was won by Conservative Jeff Yurek in 2011. It is also important to note that during some interviews in Port Burwell, people would voice their disapproval of Dalton McGuinty while staying supportive of his government's controversial green energy initiatives. This may be because the controversy (and the subsequent divide in Ontario politics) occurred after development of ESWF in 2006. Perhaps because wind turbines became a 'provincial issue' in later years is why we are only now seeing historically Conservative areas becoming more involved in the anti-wind movement.

As the Liberal party is responsible for the implementation of green energy projects over the past decade and the Conservatives have recently voiced their disapproval of the green energy path of the province, it is not difficult to imagine what followers of each party would be likely to support- particularly prior to the 2011 elections The fact that Elgin-Middlesex-London elected a Conservative leader in that year yet the area still is supportive of wind turbines may indicate a strong attenuation of risk years ago that holds true today.

While there was a clear division between the two wind energy developments- in terms of support for wind turbines, it did not result in much inter-community conflict. Although negative feelings of the "other" were expressed (see Analysis), people living in the ESWF area seemed quite happy not to involve themselves with the conflict that existed in the small "pocket" in Clear Creek and visa versa. Residents of Clear Creek however did have serious gripes with the government and wind developers responsible for the proliferation of wind turbines in the province.

5.9 "Fighting the good fight"

In much of the popular media, those opposed to wind energy developments are often described in very negative terms. Historically, the acronym NIMBY (not in my backyard) was commonly used to explain the selfish nature of people that are against wind turbines (Jones and Eiser, 2009). Even Dalton McGuinty, the Premier of Ontario once told reporters that NIMBY attitudes were responsible for much of the resistance to wind turbines in the Province (Ferguson and Ferenc, 2009). Despite recent evidence that questions the role of NIMBY in the wind turbine debate (Devine-Wright, 2005; Swofford, 2010; Wolsink, 2007) it still plays a large role in public discourse. Other less popular perceived motives of opposition groups are based on the visual disturbance of wind turbines and the perception that these people have anti-environmentalist tendencies (Wolsink, 2000). These and other characteristics have effectively labeled those opposed as selfish, nonsensical and/or going against the 'norm' or consensus of the general public.

Throughout the research conducted with the opposition group in Clear Creek, one of the strongest themes present was the intent of their motives in the wind turbine debate. Contrary to the aforementioned selfish motivations, most themes found during the interviews could be described as noble or altruistic. Particularly with relation to the supposed health problems turbines create, the people of Clear Creek explained their fight was to stop the needless suffering going on around the province and in some cases, the world. There was discussion surrounding individual impacts of the wind turbines however when discussing motivations for opposition, they most often cited the "bigger picture" issues of government corruption, serious and long-term health effects, and economic instability.

5.10 Environmentalism in Port Burwell and Clear Creek

Despite the widespread support for wind energy in Port Burwell, each group's reasoning for support varied substantially. While most in Port Burwell (15/16) felt turbines brought with them 'environmental' benefits, the spatial scale at which these benefits were recognized depended on the person interviewed. Most would mention most generally that they make the area/community/province/country a 'better place'. There were also some anomalies that were unexpected. As mentioned in the analysis chapter, "Diane" supported wind energy yet was quite skeptical about climate change. She, like most others in the area, perceived the benefits of wind energy to be pertinent to the local or regional area- most notably cleaner air. This goes against some of the literature that describes the environmental benefits of renewable energy including wind turbines as being mostly climate change mitigation (Sims, 2004; Szarka, 2004). The fact that the vast majority of people in Port Burwell would cite environmental benefits without climate change specifically was somewhat surprising. Perhaps the more tangible and local benefits of cleaner air are more easy to understand and affect the way local residents live in a more powerful way. Additionally, living fairly close to Nanticoke coal-fired generation station, residents of Port Burwell may have experienced first-hand the troubles with other forms of electricity.

Research into the nuances of environmentalism has indicated that there are three value-bases that motivate people: egocentric, altruistic, and biosperhic (Schultz, 2001). Altruistic (well-being of others) motivations were by far the most commonly expressed during the interviews (15/16) and biospheric were never specifically noted at all. While environmental benefits may be traditionally labeled as being biospheric, the 'green'

reasons people gave in Port Burwell were mostly rooted in the well being of children and future generations' health. This point is illustrated by "Scott" who seemed to be the only participant with a clear understanding of the mechanism of climate change. Despite his knowledge of the problem "Scott" took an altruistic approach, only highlighting the fact that if temperatures continue to increase, "*…we're not going to be able to eat…".* The absence of global environmental benefits being talked about in Port Burwell may be a result of the popular media (see chart; Tillsonburg News) in which articles discussing environmental benefits tended to exclude climate change and instead talked in general terms about cleaning the air, and providing green electricity. Additionally, in most government publications or articles in the popular media, authors have for whatever reason, ignored the fact that renewable energy may help with the issue of climate change. On the webpage of the Ontario Ministry of the Environment, renewable energy is promoted by claiming it is "cleaner", "[will pollute less] and will help improve Ontario's air quality" and "[will be] better for our health and our economy" (MOE, 2012). Perhaps the tendency for people interviewed in port Burwell to ignore the biospheric benefits of wind energy is a result of the abstract nature or simply lack of information they have received in that way.

The sense of environmentalism in Clear Creek was also important. As Warren et al. (2005) found, just because someone opposes a wind energy development does not necessarily mean they are 'anti-environment'. In fact the paper notes there are "strong 'green' arguments on both sides of the debate" – including wind's 'clean energy' credentials on the pro side and landscape impacts on the anti side. (Warren et al, pg. 854). When they first heard of the possibility that turbines might be coming to the area,

“Barbara” explained how she and others from the area formed a group and called themselves the Erie Shores Migratory Birds Advocates. She mentioned how the group was standing up for what they saw as a threat to the natural beauty of the area. In this sense, the group opposed actually represents a pro-environment standpoint (if only on the local level). “Barbara” also appeared by all other accounts to be an environmentalist; going to the trouble of super-insulating her home and driving a fuel efficient car. While in conversations with her however she was skeptical about the threats of anthropogenic climate change. There is little doubt however; she appears to be a strong ‘green’ person when it comes to issues like resource conservation and local wildlife impacts.

In addition to the initial concerns concentrated on migratory birds, the people interviewed in Clear Creek also described other localized negative environmental impacts of the turbines. Most notably, all three people interviewed would speak the turbines presenting a visual disturbance to some degree- a questionable ‘environmental’ impact perhaps. Although they would use terms like “eyesore” and “invasion”, all participants would explain that if that was the only problem with them, they would be accepting of the wind turbines in their area. They also felt as though the government and wind energy developers had ‘green-washed’ the idea of turbines. In conversations with them, it was clear they had no belief that turbines in Ontario were green, sustainable, or environmentally friendly in any way.

The perceived visual disturbance the opponent groups presents and the organization of the Erie Shores Migratory Birds Advocates, as described by “Barbara” and which “Henry” was a part of, indicates what Khan (2003) argues- that is most cases in opposition to wind energy is reliant upon local or regional environmental issues. As

Khan explains, because most of the environmental benefits of wind turbines are seen on the global scale (climate change, cross-boundary air pollution) whereas the negative environmental aspects of wind can been felt on the local scale (wildlife disruption, ruining of the natural landscape). The research in Clear Creek also indicated that the supposed social benefits of more electricity and financial profit were not localized. Instead, they argued, the electricity produced by the turbines was 'helping to keep Toronto's air conditioners working' while the bulk of the profits from local wind energy production left the area and into the pockets of corporations.

Particularly in everyday life and the popular media (Toronto Sun, 2010) those opposed to wind energy developments have been labeled as ant-environmentalists. In some of the earliest research on the nature of wind energy debates, there has also been similar negative perceptions of people who oppose developments. Krohn and Damborg (1999) speak of the 'Nay-sayer' as being simple-minded and unable to accept climate change theory while Ebert (1999) argues that only those who support wind energy 'know the environmental and community benefits' of wind power. The people interviewed in Clear Creek were keenly aware that they are labeled ant-environmentalists and felt resentment toward it. "Bob" may have been the most aware and expressed his feeling quite passionately. He explained that he and others like him are constantly labeled as 'not for the environment'- whereas as he sees it, because turbines ruin beautiful parts of Ontario and are not sustainable, they are actually for the environment.

In all three interviews with opposition residents, without directly asking a question, the participants would defend themselves against claims of being anti-green.

Clearly aware of how I may interpret her car trips to and from her two residences, "Barbara", explained that while she needs to get away from her home for health reasons, often it is her environmental conscience dictates how she plans her trips. She explained how when she leaves town, she does in a very fuel efficient car and only when she can plan "5 or 6 things to do". "Barbara's" sense of environmental awareness is shown throughout the interview and it is clear that she wants to be known as a 'green'. This type of response has been shown in the work of McLachlan (2009) who found that her respondents 'tended to not want to be seen as anti-environment and so often described their own pro-environment behavior when discussing opposition to the development. According to Barr (2004), this could be an example of opponents learning to 'sound like environmentalists' but other than the fact that two of these three are well tapped into a dense and savvy network of turbine opposition groups, we have no solid reason to suspect such a calculated decision in this case.

Through my research and the emerging literature worldwide, it is very likely that people and groups that oppose wind energy can still be deemed to be 'environmentalists'- if ever there were such a narrow label. It appears as though their value systems may be more local, regional and/or immediate than those who support wind who typically support it for regional, global, and/or long-term reasons; although in my sample in Port Burwell, supporters also tended to rely on more local reasons. This typical situation we see has been labeled green-on-green (Warren et al., 2005) is not likely to be solved anytime in the near future and can be illustrated by selected environmental groups and their positions on wind energy. While national environmental organizations like Greenpeace, Friends of the Earth, and World Nature Fund definitely support wind power

(Breukers and Wolsink, 2007) it would make intuitive sense that others which value the natural beauty of rural landscapes or local wildlife may not. In a quick search of such organizations however, it was found that no environmental group that was formed prior to the proliferation of turbines in Ontario was against turbine development overall. Even the Audubon Society, a group whose mission is to "conserve and restore natural ecosystems, focusing on birds, other wildlife, and their habitats…" (Audubon, 2012) is supportive of wind energy when planned in the right way. Organizations such as Ontario Wind Resistance (formerly Wind Concerns Ontario) oppose wind for environmental reasons but may not be an environmental group in the truest sense because their major aim to so resist wind energy developments on many different grounds.

5.11 Relative evils

One of the most common responses when contentious or controversial issues were brought up during the interviews in Port Burwell was that wind turbines are the 'lesser of two evils'. While there in little support in the wind turbine literature describing this type of feeling, it has been seen in the research of Lee (1999) and Baxter & Lee (2004). In Lee's work, residents living in close proximity to a hazardous waste facility in Alberta, Canada saw the site as being a "better alternative" (pg. 136). As the author describes, those interviewed showed support for the facility because it destroyed hazardous waste and did not simply bury it or store it. In their eyes, this was a more socially and environmentally responsible act. In very similar ways, residents of Port Burwell would defend the merits of the local wind turbines by explaining they were not as loud as car traffic, they affect your health far less than old age, and/or they are much more 'green' than coal or nuclear electricity generation.

Perhaps one of the only references to the idea of relative evils within the wind turbine literature is Gray (2012) who refers to ‘thick’ (substantive) impacts of wind turbines. He argues that when asking an individual about their feelings of both wind farms and nuclear plants separately you will elicit two separate negative responses. When asking the same person to choose from one or the other though may bring a different opinion of each. He labels this imaginative comparison and although he sees value in it, he says “[at most] it will promote a tolerance for wind farms but will fail to cultivate an aesthetic appreciation for these structures” (pg. 1). This theory of imaginative comparison held true throughout the research. In order to examine each person’s feeling about other forms of electricity generation using relative measures, I would ask what their reaction would be to coal and/or nuclear plants in their community instead of the wind farm. In all but one interviews, residents of Port Burwell would say something like ‘oh hands down the wind turbines!’. The only case in which this did not ring true was with “Dave” who explained that because he grew up and used to play with his friends close by a coal-fired power plant, he would have no trouble at all living near one.

The idea of using the ‘lesser of two evils’ has been seen in some other literature outside of wind energy research. Somewhat in contrast to the results seen in Port Burwell, Bickerstaff et al., (2002) found that when residents of various distances to sources of pollution were asked to hypothetically decide between development of the nuclear power (and radioactive waste) or the troubles with fossil fuel-generated electricity including climate change, they chose nuclear. The results indicate that most people felt a reluctant acceptance and chose nuclear energy directly as a result of their strong feelings against climate change and not because of their positive feelings toward radioactive waste. While

many residents in Port Burwell had many positive things to say about wind turbines, it might be a stretch to suggest they are on the whole enthusiastic about them, the main idea of the theory holds true.

Although most interviews and therefore most references to 'relative evils' were found within the Port Burwell sample, the theme was also found in more subtle ways in the Clear Creek interviews. Since all people in the Clear Creek sample were opponents they would use the argument to criticize the supposed merits of wind energy broadly speaking. The most obvious use was in an interview with "Henry" when he was asked about his opinion on wind turbines and their ability to reduce greenhouse gas emissions. While he seemed to acknowledge that turbines may accomplish the goal in Ontario, other places like China, he claimed are building a new coal-fired power facility every week. This and other instances represented a "yes, but…" moment for many of the opponents and has some resemblance to Bell et al.'s (2005) qualified support explanation which states that some people who would otherwise may support wind do not because of certain qualifiers.

5.12 Summary

The major goal of this chapter was to help connect the existing literature on wind turbine planning, policy and risk analysis to research conducted in the summer and fall of 2011 in Port Burwell and Clear Creek, Ontario. Contrary to media reports and anecdotal evidence, we did not find any community conflict or major source of concern with wind turbines in our main case study area of Port Burwell. In the sample of 16, there was 1 'nay-sayer' and her only grievances were mostly tied only to the potential sound and

visual disturbances turbines may cause. The absence of perceived health effects in Port Burwell appeared to mirror the European experience wherein health effects are often not even an issue at all (Warren et al., 2005). Of course, perhaps it is the case that the obsession with visual aspects and noise in Europe is why we see a lack of interest in health concerns or studies. Research from this thesis does support the idea that community development and the inclusive nature of planning and policy that comes with it does lead to higher levels of support as described by the literature (Bollinger, 2001; Gross, 2007; Maruyama et al., 2007). Kasperson's theory of the amplification of risk also appears to be the best framework to describe why turbines were accepted in Port Burwell and does so in a way that does not discredit possibly valid concerns from those opposed to wind turbine developments. That is, both attenuation and amplification as processes that are rational, perhaps not in a scientific sense, but the social sense of people getting along in their everyday lives. Lastly, the increasingly controversial characterization of opponents to wind turbine developments as holding NIMBY motivations is not supported by this study. Though researchers (Devine-Wright, 2005; Wolsink, 2007) are beginning to publish findings that explain NIMBY attitudes are responsible for at most only a small fraction of all opposition, the legacy of the term still pervades us today as evidenced through interviews with residents of Port Burwell.

This chapter provided the opportunity to discuss the main findings from the research and their relevance to the literature that informed it. In the Conclusion chapter to follow, implications for policy and the future of wind turbine research will be explained. Suggestions for improvement in the context of Ontario wind energy policy and research will particularly be the focus.

Chapter 6:

Conclusion

This thesis involved research looking at the nuances of support and opposition for wind turbines in Ontario. It accomplished this through the case study of the communities of Port Burwell and Clear Creek, Ontario. Both areas had recently become hosts to large wind farms however their level of support appears to be quite different- both in terms of the number of people affected, and the types of concerns they have. It was guided by social and cultural theories of risk which stress the value of context in everyday life (Douglas and Wildavsky,1982). Kasperson's Social Amplification of Risk framework in particular served to explain support and opposition. The study involved qualitative interviews with residents living close to turbines in order to accomplish two central research objectives:

1) To examine the types of impacts that people living near wind energy developments perceive and experience in the context of daily life.

2) To help explain why, given similar 'exposure' and/or proximity to wind turbines, people can be affected or perceive to be affected in very different ways.

This research contributes to the wind turbine and risk assessment literatures. These are broken up into three separate categories: substantive, theoretical, and methodological. This chapter closes with suggestions for future research as well as policy recommendations which are particularly important given the seriousness of the issues

involved. Some people do insist that turbines cause negative health effects while there is also a clear and urgent need for effective climate change mitigation strategies.

6.1 Substantive contributions

On the most basic level this research substantively contributes to Ontario wind turbine literature. It does this through the case study of Port Burwell- an area of high support for local wind turbines. Perhaps because of a lack of understanding in the provincial context or more likely, the growing amount of news that focuses on the negative aspects of wind energy, I expected to find conflict and/or high levels of opposition in whichever site was chosen. As this was not the case, it seems reasonable to assume (especially in combination with Ouellette's findings) that wind turbines can be accepted or supported under the right set of circumstances in particular places. The fact that Erie Shores Wind Farm was planned and built before the Green Energy Act of 2009 seems to be important in this way because it allowed the local government and residents to "have a say". While less than half took part in this, most were aware of the process and perhaps this alone made people feel as though they were in control. In purposively interviewing vocal opponents to wind energy in Clear Creek, Ontario this research also contributes to the understanding of those who have serious concerns and feel victimized by wind turbines built too close to their homes. Nuances of opposition which appear to be misunderstood in the literature and the bulk of media reports may indicate the need to think differently about those who oppose wind as well as the wind turbine debate itself. For example, though it is commonly thought that those who oppose wind turbines do so for selfish reasons, my research points to other more noble reasons.

6.2 Theoretical Contributions

This grounded theory study looked at how different areas can experience wind turbines in very different ways. It contributes to several well-established theories from a variety of literatures.

First, the research provides a good example of Kasperson's Social Amplification of Risk. In Port Burwell it was discovered that risk from the turbines was minimized (attenuated) through the complex interplay of unique factors including social, economic and political characteristics of an area. For example, the fact that tobacco had just left an already historically poor area may have left the community desperate for a new source of income and/or tax revenue. The case study shows that because of the similarity of the exposure sources (turbines) found in other areas, context may play a more important role in risk perception that the characteristics of the risk itself. The theory was developed though the interviews in Port Burwell and later refined through the interviews in Clear Creek and with the policy experts.

Additional work that became part of this thesis also contributes to the Social Amplification of Risk. An important component of the theory is the important role media can play in the development (or diminishment) or the perception of risk a hazard. The media analysis that was conducted through this thesis shows that the type and tone of articles published in the years before and shortly after the development of Erie Shores Wind Farm indicates that the local press may also have played a role in the subsequent support for local wind turbines in Port Burwell. The unique contribution of this work is the local media context. Most studies that utilize Kasperson's theory focus on the effect

regional or national outlets can have. Indeed in the Canadian context, the Newsstand Database (the major source for archived news stories) only contains articles from major newspapers (Lewis and Tyshenko, 2009). This thesis suggests that local media can act as powerful actors in public discourse and perhaps that these types of sources need to be recognized as such.

Secondly, this research also contributes to other literature that is found within environmental risk. The conceptual development of the overall feeling that turbines were safe in Port Burwell but not so in Clear Creek reinforces the ideas brought forth by theories emphasizing the social construction of environmental risk. Even when potential risks were described in physically similar ways, perceptions varied considerably between the two groups. The use of *Relative Evils*, for example, shows that participants from Port Burwell were able to contextualize the risks they were facing as a result of wind turbine development. The fact that most people were not enthusiastic about wind turbines yet supported them because of the "alternatives" suggests that risks can be attenuated through other more dangerous risks or activities. The policy that was chosen, as well as the political identification of each area may also be helpful in the environmental risk literature. Trust is an important concept in this area and it appeared as though it existed in Port Burwell but is notably absent in Clear Creek.

The research also indicates the importance of temporal context in the development of wind farms. Support for wind turbines in Port Burwell was preceded by the 'perfect storm' of social and economic conditions of which Port Burwell was unique. The loss of tobacco and the low levels of socio-economic status in the area was a reoccurring theme during the research and one which appears to have increased support.

Additionally, the fact that Erie Shores was built before the Green Energy Act was established may have had huge implications for why the farm was seen by most to be a success. In the interviews and other sources including policy reviews and newspaper articles, it was clear that the nature of the planning process for ESWF in 2006 was much more open, transparent, and open to debate. The recent calls for a repeal of the GEA by many including the OFA and Conservative Leader of Ontario, Tim Hudak further indicates that the policy is creating the problems and controversy in the first place.

The research more generally contributes to the growing literature on predictors of support for wind turbines and their impacts. Particularly in the North American context, there is a relative lack of research that looks at the effect turbines have on communities and individuals. The fact that I spoke with supporters and opponents of wind energy gives a voice to both sides of the debate and does so in a way that focuses on being empathetic to both . In the literature of years past and media reports of today, those opposed to wind energy developments are often labeled in very negative ways including most prominently, "NIMBY-ists". Though we only spoke to three people locally opposed to wind turbines, the interviews indicate that they do not hold the selfish, deviant, or otherwise ignorant attitudes toward wind turbines as portrayed in the media. Instead, many of their main motivations are grounded in a noble kind of attitude and relate to the non-local, macro-issues of wind energy, not just those in their 'backyard'. In similar ways, we were able to correct a presumption that was created prior to the research about those who live near turbines but do not have them on their land. Because many of the problems noted by the media in Ontario relate to controversy between neighbours in wind turbine communities, it was thought that at the very least there would be strong

feelings of jealousy displayed by those who do not have turbines on their land but do live amongst them. Instead, it was found that those without turbines and even non land-owners are happy for their neighbours' ability to make thousands of dollars per turbine in exchange for a small part of their land. Even when presented with the case for community development (and thus a case where they would get paid) those who did not profit from turbines directly insisted that the policy that implemented Erie Shores was fair enough.

Though I found no evidence of direct intra-community conflict relating to the wind turbines in the research, I was able to better understand the supposed mechanism of it. Through the theme, *Negative feelings toward the other,* it was clear that there was a real source of distrust and disrespect between the opponents and supporters of wind. The "imaginary" conflict- one which may exist in other areas is explained through this work. It appears to lie beneath the surface, dormant, like a snake in the grass.

6.3 Methodological contributions

There are also methodological contributions that can be teased from this research. First of all, the interviews and general qualitative approach that was taken was shown to be very useful in the understanding of wind turbine impacts. Because it is believed that those opposed to wind energy developments are more likely to come forward with their concerns, this research presents a unique case- one where there may have been no need for huge numbers of people to state that the large majority of the population in Port Burwell is in support of wind turbines. Not surprisingly, the statement of this was confirmed by the work of Ouellette who took a quantitative approach yet found very similar levels of support in Port Burwell. The fact that she found more opposition

members appears to be related to the larger sample size she had. As well, because some people in Clear Creek were suffering from health effects they blame on wind turbines, it may be argued that quantitative methods (or measuring the *number* of people suffering) may not be as useful as understanding how they talk about impacts. In something as serious as health of you or your family, it should not matter that you are a 'minority'. Instead this research valued the experience each person had no matter how much they may "deviate" from the mean.

Secondly, the practices for qualitative rigour used in this wind turbine impact research served it well and improved the thesis as a whole. Investigator triangulation helped by inserting a different perspective into the analysis of the interviews. This allowed for reassessment, and in many cases change of the primary themes developed. It also introduced a dialogue between Dr. Baxter and I that greatly improved the theoretical development of the major findings. Member checking also turned out to benefit the research in many ways. First, as most of the people who were sent the document agreed with the preliminary findings, I was assured that I was "on the right track". This helped my confidence in the type of document used as I briefly thought about using annotated transcripts. Secondly, especially in those residents who disagreed with the findings, I was able to modify and in some cases develop new themes into the research.

6.4 Policy Recommendations

One of the major findings from this thesis is that inadequate or poorly designed policy may be the primary source of much of the wind turbine concern and conflict we

see in Ontario today. Considering this, it is vitally important to list some policy recommendations as suggestions to address these issues:

1) ***Begin to develop more community-driven approaches to wind turbine development.***

   - *This would help with several of the factors (e.g. trust, fairness) we found to help promote support in the pre-GEA development in Port Burwell and which were less prominent in Clear Creek/Cultus/Frogmore.*

2) ***Recognition of the costs associated with living beside turbines.***

   - *As we heard from "Kenneth" some companies are beginning to do this however it seems as though they are the minority; financial compensation (even in small amounts) may help with the inequitable situation we see now in Ontario.*

3) ***Focus planning efforts in areas that are more likely to be supportive of wind turbines in the first place.***

   - *Though it would be an error to force wind farms in communities that have low socio-economic status, it may be that these areas are more accepting of these types of developments.*

4) ***Until more is known about the potential health effects of turbines, expand the setback distance for all residents.***

   - *In an effort the balance the concerns of all people involved, setback distances should be increased to whatever is deemed to be "safe".*

5) ***Modify the Green Energy Act to be more accommodating of various concerns not just human health and the environment.***

   - *While the policy was developed to streamline the green energy approval process, it may also have led to people being 'smart' opposition members- only arguing for issues they know will be accepted.*

6) ***Give communities who do not wish to have turbines in their vicinity the option to choose from other sources of renewable energy systems.***

   - *While the backlash from wind developments has been strong, so too is the need for greenhouse gas emission reductions. Implementing this kind of flexibility into green energy policy across the province may help in both respects.*

6.5 Directions for future research

The findings from this research indicate that future research is needed in two distinct ways. First, because qualitative methods are often criticized for the lack of generalizability, quantitative research should be completed with the aims of further verifying this thesis. While the work of Ouellette helped to show that Port Burwell was indeed an area of high support for wind turbines, the research did not look into the same questions which I did. For example, future quantitative work could attempt to measure the presence of NIMBY in Clear Creek- the community in which I argued there was very little but this was based on just three interviews. While I am confident in the results we obtained and I believe it was the best approach to take, it is possible that some of the findings may not be found on the larger scale that surveying may entail. That is to say, the findings may be place-specific. That being said, it is also unlikely that the research could not have begun to understand the cases of Port Burwell or Clear Creek to the same level without the use of qualitative methods. Secondly, because much of my argument that stated that Port Burwell was accepting because of contextual factors, there is a need to conduct similar research in contexts (socio-economic, political) that are both similar and different. The effect of certain factors such as median income, industry loss, and the type of and implementation of green energy policy all seemed to attenuate risk and/or increase support for wind energy in Port Burwell and so it is important to investigate this more. Isolation of particular community characteristics could be done for instance, by choosing a site that was developed under the Green Energy Act but is higher in socio-economic indicators. Conversely, research should look at the effect of the Green Energy Act itself by studying a site which has a similar community profile.

6.6 Summary

This chapter reviewed the research conducted in Port Burwell and Clear Creek, Ontario and explained the substantive, theoretical and methodological contributions. It also gave some practical policy recommendations based on the findings and analysis of all facets of the research. Finally, it closed with some directions for future research which are important particularly because of the lack of scientific literature surrounding the case of wind turbines in the North American context. The central theme throughout the thesis was that context plays a huge role in the way turbines are accepted (or opposed) in Ontario. This was guided by Kasperson's Social Amplification of Risk which not only helped to explain support for wind energy in Port Burwell but also the opposition seen in Clear Creek. This theory accounted for all relevant findings including the role of policy, socio-economic status, media reporting, and community dynamics. Ultimately, it has contributed to the question of why turbines can be vigorously opposed in one area and supported in others.

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Appendix:

Appendix A

Invitation to Participate in an In-depth Interview

Hello Sir or Madam,

My name is Chad Walker, and I am Master's student working with Dr. Jamie Baxter in the Department of Geography at the University of Western Ontario and I invite you to participate in my study. The purpose is to investigate how wind power generation does or does not fit within your community and the study is funded by the University. If you have lived in the area for six months or more (as of July 1stth 2011) you are eligible to participate in the study.

What am I being asked to do?

If you agree to participate in the study you will be asked to take part in a face-to-face interview at a time and place that is convenient for you. The goal is to get your open and honest opinions of wind turbines, views about wind turbine policy in Ontario, your daily activities (job, recreation, household chores, etc.), and neighbourhood and community relations**.** No personal identification information will be used in any report or publications and all data will be grouped and no personal information will be used in the results. The interview should take approximately 1 to 2 hours to finish depending on how much you want to talk about these issues. The only risks associated with your participation in this study could be discomfort with talking about local controversy and conflict if either exists.

The information collected (names, addresses, aliases, interview transcripts) will be used for purposes of the study only. All personal information collected for the study will be kept confidential and only in the hands of Dr. Baxter, Chad Walker, or Dr. Baxter's future students. All information will be stored in password protected computer software programs or kept in a secured cabinet, and will be destroyed five years after completion of the study using data destruction tools. The findings will be presented in a manner that will maintain your anonymity.

I want to participate, what do I do next?

In order to participate in the study, I ask that you contact me by email, mail or phone as soon as possible- making sure to leave your name, phone number and address**.** If I am unable to answer the phone please leave a message and I will call you back shortly after. 1-2 weeks after this letter was dropped off, I may contact you by phone to remind you of the opportunity to participate in the study and/ or schedule an interview.

Final notes

Your participation is completely voluntary and you may refuse to participate, refuse to answer any questions or withdraw from the study at any time. There is no penalty for withdrawing or not answering any questions.

If you have any questions about the conduct of this study or your rights as a research participant you may contact the Office and Research Ethics, The University of Western Ontario at 519-661-3036 or ethics@uwo.ca or the Principal Investigator or primary researcher of the study.

Thank you for taking the time to read this letter and I hope to speak with you soon,

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If you have any questions about the study and/or are interested in taking part, please contact me (**Chad Walker):**

Email: cwalke26@uwo.ca Mail : (Use provided envelope and please fill out the Consent Form), Phone: 519-854-7969

Principal Investigator:

Working under the supervision of :

Dr. Jamie Baxter, Associate Professor
1407 Social Science Centre
The University of Western Ontario
PH : 519-661- 2111 (ex. 81241)

Appendix B

Wind Turbines and Impacts - IN-DEPTH INTERVIEWS CHECKLIST

- If there is anything I say that is unclear please ask for clarification
- When you feel is appropriate, please elaborate on your answers

Probes:

Tell me more about that…

Could you tell me a story about that…

Test the other side of the argument when feeling it is appropriate.

Community Life

What's it like living here?

What do you like about living here?

What do you dislike about living here?

How do people get along?

Arrival of Wind Turbines

Tell me about how the introduction of wind turbines into the community happened?

What is life like now compared to before the turbines

(probe: individual, neighbourhood, community)

Do you think there exists conflict in the community between those who have and do not have turbines on their land?

If so, why do you think these do exist? Are they based on jealousy?

What are the most important impacts of wind turbines - (probe: explore each impact in some detail)

What are the good things / bad things about wind turbines?

What about social impacts?

How do different people in the community talk about impact X? (Probe: Health problems, noise, visual disturbance, ability to provide clean and green energy, ability for economic development)

What do you think about impact X? (Probe: Health problems, noise, visual disturbance, bird or bat deaths, ability to provide clean and green energy, ability for economic development)

<u>Compensation (specific case if not already talked about)</u>

What is your opinion about the system for compensation?

What role do you feel money plays in “creating” or keeping quiet about negative impacts of turbines? (or may it do both?)

How do you think of those you get paid and do not claim and negative impacts?\

How do you think of those who do not get paid and claim negative impacts?

What role does fairness play?

What alternatives to this model might appeal to you if any?

Do you believe compensation should be based upon distance to turbines or whether or not it is on your land?

Have you ever heard of wind farm community ownership?

If not brought up, talk about European models of community ownership (i.e. usually placed on public/communal land and the benefits ($) is shared through tax breaks, direct compensation, community development i.e. Arenas, etc.)

- *Also, sometimes communities can pool together and own the actual turbines and "farms" themselves (instead of a corporation)*

What do you think about these types of models?

Would you be supportive?

Do you think this would increase support / decrease opposition?

What do you think would happen to all of the perceived negative impacts?

<u>Doing things differently</u>

What do you think about wind energy generally?

What do you think about government's approach to installing wind turbines?

Anything to add?

Appendix C

Vivid descriptions of the interviews (alphabetical)

Interview with "Ann"

Norfolk County, Ontario (August 16 2011)

This interview took place on August 16th 2011at the residence of "Ann". She is in her 40s and lives with her children in Norfolk County. The interview was recorded inside her kitchen. Very little background noise can be heard throughout the interview apart from the occasional noise from road traffic, and a cell phone ring.

Interview with "Barbara"

Norfolk County, Ontario (September 19th 2011)

This interview took place on September 7th 2011at the residence of "Mary". She is in her 80s and lives alone in the Clear Creek area and is a vocal opponent of wind energy development. Because of her problems with the turbines when she is at home, she sleeps in a mobile home located several kilometers from the closet large wind turbine. The interview took place inside that mobile home. Surrounding the mobile home, there is a small wind turbine and a solar panel unit. Because of the lack of power generated by these sources, a backup gas generator was running throughout the entire interview and some background noise resulted.

Interview with "Betsy"

Norfolk County, Ontario (September 6 2011)

This interview took place on September 6th 2011at the residence of "Betsy". She is in her early 70s and lives on a small lot in Norfolk County with her husband. The interview was recorded inside their kitchen. Background noise was very minimal and never affected the quality of the recording. In a couple of instances, the interview was interrupted when "Betsy" spoke to her husband.

Interview with “Bob”

Long Point, Ontario (October 20th 2011)

This interview took place with “Bob” on October 20th, at his home near Long Point, Ontario. “Bob” lives in Norfolk County with his girlfriend and the two rent the home. Formerly, he lived near Clear Creek, Ontario but moved because of the effects he was experiencing from the wind turbines in the area. He is a man in his mid 20s and from his own admission, works in several areas including accounting. Background noise was very minimal however we did break once for “Bob” to use the bathroom.

Interview with “Charlena”

Port Burwell Area, Ontario (August 8 2011)

This interview took place during the mid-afternoon on August 8th 2011at the residence of “Charlena”. She lives with her partner in the Port Burwell area. The interview was recorded outside on their patio. Some sounds (wind, insects, birds and road traffic) can be heard throughout the recording but did not affect the overall sound quality. There was also one interruption from a phone call that “Charlena” answered.

Interview with “Christine”

Port Burwell Area, Ontario (August 8 2011)

This interview took place during the early afternoon on August 8th 2011at the residence of “Christine”. She lives with her husband just west of Port Burwell, Ontario. The interview was recorded outside on their patio. Some sounds (wind, insects, birds and road traffic) can be heard throughout the recording but did not affect the overall sound quality. There was also two interruptions. One was from a phone call that “Christine” answered and the other when her “bird lady” came to check the status of birds in her chimney.

Interview with “Dave”

Port Burwell Area, Ontario (July 22 2011)

This interview took place during the early afternoon on July 22th 2011at the residence of "Dave". He lives with his wife on a small lot in Norfolk County, Ontario. The interview was conducted in the kitchen of his home.

Interview with "Diane"

Norfolk County, Ontario (September 6th 2011)

This interview took place on September 6th 2011at the residence of "Diane". She is in her early 60s and lives with her husband in the Port Burwell area on a family farm. The couple has 3 turbines on their land. The interview was recorded inside their dining room. Background noise was very minimal and never affected the quality of the recording."Diane's" husband enters the room on a couple of occasions and joins the conversation.

Interview with "Don"

Norfolk County, Ontario (August 16 2011)

This interview took place on August 17th 2011at the residence of "Don". He is in his late 60s and lives with his wife in Norfolk County. The interview was recorded inside their kitchen. For a couple of instances during the interview, "Don's" wife joined us at the table to listen and even commented on some of the questions as well. Because of the brevity of these instances, they were discarded from the interview and will not be analyzed. Very little background noise can be heard throughout the interview apart from the occasional noise from road traffic, telephone calls.

Interview with "Fredrick and Carolyn"

Port Burwell Area, Ontario (August 8 2011)

This interview took place on August 12th 2011at the residence of "Fredrick and Carolyn". They live with each other in east of Port Burwell. The interview was recorded in the downstairs living room of their home. The interview was originally scheduled to be just with "Fredrick" but because of his ailing health and memory loss, "Carolyn"

offered to help with the conversation. Some comments from "Fredrick" were inaudible. In such cases, "Carolyn" would help clarify his ideas and thus the interview was counted as only one person.

Interview with "Henry"

Long Point, Ontario (October 20th 2011)

This interview took place with "Henry" on October 20th, at a local restaurant near the town of Port Rowan, Ontario. He lives near the lakeshore just west of Port Rowan in Norfolk county but for whatever reason found it more appealing to conduct the interview in Port Rowan that day. He is a vocal opponent of wind energy. He also is recovering from recent stroke and his loss of memory and concentration was evident during the interview. Often times he would stray from the topic at hand and/or forget simple terms or words. Background noise was fairly loud being that we were at a popular restaurant but rarely affected comprehension of the interview. When it did, ellipsis were used or [inaudible] was placed in the transcript. Conversation about wind turbines and the community began almost immediately upon meeting "Henry" and so the recording began in the middle of a discussion we were having in order to avoid missing potentially important information.

Interview with "Hilary"

Port Burwell, Ontario (September 28th 2011)

This interview took place with "Hilary" on September 28th, 2011 at her home located just north of Port Burwell, Ontario. "Hilary" lives in Elgin County with her husband. She is in her mid 50s and works as an educator in London, Ontario. She was a former member of the local government of Bayham Township (of which Port Burwell is a part). Her time in local government was instrumental to the eventual construction and successful operation of the Erie Shores Wind Farm. In this way, the interview's questions were different than most other interviews because most related to her experience in that government. Background noise was almost completely absent except for 3 phone calls "Hilary" received during the interview. Although only one was answered, all three interrupted the interview for a least a brief moment and none never seriously affected the quality of the recording.

Interview with “Jerry”

Norfolk County, Ontario (September 19th 2011)

This interview took place with “Jerry” on September 19th, 2011at a local restaurant near Port Rowan, Ontario. “Jerry” lives In Norfolk County but found it more convenient for himself that day to meet at a restaurant instead of his home and he appeared comfortable in that choice throughout the interview. He is a man in his 70s and is a retired teacher and farmer originally from Toronto. Background noise was typical of a somewhat busy restaurant- other conversations, waitresses taking orders and at times made it extremely difficult to understand our conversation. When words could not be identified, [inaudible] or ellipses (…) were inserted.

Interview with “Kelly”

Norfolk County, Ontario (September 7th 2011)

This interview took place on September 7th 2011at the residence of “Kelly”. She is in her early 50s and lives with her husband in the Port Burwell area on a family farm. The couple has 3 turbines on their land. The interview was recorded inside their dining room. Background noise was very minimal and never affected the quality of the recording.

Interview with “Kenneth”

Long Point, Ontario (October 20th 2011)

This interview took place with “Kenneth” on October 22th, at his law office in St. Thomas, Ontario. He is in his late 60s and lives in Elgin county. As a lawyer, he has also played important roles in the drafting of wind turbine agreements in various areas in Ontario. Background noise was fairly nonexistent, and “Kenneth” generally spoke in a clear voice. Only once was a word unable to be indentified and in that case [inaudible] was inserted. It was not suspected that this greatly affected understanding of the interview.

Interview with “Mary”

Norfolk County, Ontario (September 7th 2011)

This interview took place on September 7th 2011at the residence of “Mary”. She is in her 80s and lives alone in the Port Burwell area. The interview was recorded inside her dining room. Background noise was very minimal and never affected the quality of the recording.

Interview with “Matthew”

Port Burwell Area, Ontario (July 15 2011)

This interview took place during the early afternoon on July 15th 2011at the residence of “Matthew”. He lives with his wife and their dogs on a lakefront property in Port Burwell, Ontario. The interview was recorded outside on their patio. Some sounds (wind, insects, birds and road traffic) can be heard throughout the recording but did not affect the overall sound quality.

Interview with “Mike”

Norfolk County, Ontario (August 16 2011)

This interview took place on August 17th 2011at the residence of “Mike”. He is in his late 20s and lives with his girlfriend in Norfolk County on a family farm. “Mike” is the son of a farmer who has a turbine on the property. The interview was recorded inside their kitchen. Background noise was very minimal and never affected the quality of the recording. In one instance, the phone rang and “Mike” answered it. Soon after we returned to the interview.

Interview with “Pete”

Port Burwell Area, Ontario (August 8 2011)

This interview took place on August 8th 2011 at the residence of “Pete”. He is a renter and lives with his son in Elgin County. The interview took place at his kitchen table. Very little background noise is present and overall audio quality is good.

Interview with “Scott”

Port Burwell Area, Ontario (August 8 2011)

This interview took place during the early afternoon on August 8 2011 the residence of “Scott”. He lives with his family just north of the “urban” portion of Port Burwell, Ontario. The interview was recorded his living room with his dog at our feet. *The overall sound quality was good.*

Interview with “Thomas” - Port Burwell Area, Ontario (August 12 2011)

This interview took place on August 12th 2011at the residence of “Thomas”. He is a widowed man in his early 80s and lives just west of Port Burwell. The interview was recorded inside his living room. Some sounds (wind, insects, birds and road traffic) can be heard throughout the recording but did not affect the overall sound quality. There was also one interruption from a phone call that “Mike” answered.

Appendix D

Hello!

Thanks to you and others in your community, we are nearing the end of our research project looking at how wind turbines "fit" in the Port Burwell area. Thank you again for time your participation in the face-to-face interview, and I hope you don't mind that we are now asking for a bit more of your time to give us feedback on what we are interpreting from the interviews.

Specifically we would like your thoughts on:

How do our preliminary findings fit with the way you understand how locals view the turbines in your area?

The comments you make allow us to assess our interpretations, possibly develop new ideas, and move forward to completing Chad's thesis.

In order to accommodate to your preferences, you can send back your comments or concerns multiple ways:

By mail: use the provided envelope

By email: write and send to cwalke26@uwo.ca

By FAX: (519) 661 -3750 (attn: Chad Walker or Jamie Baxter)

If you have any questions please call (519-854-7969) or email (listed above).

Once again thank you very much for your help and we wish you the best,

Chad Walker and Jamie Baxter

The University of Western Ontario – Department of Geography

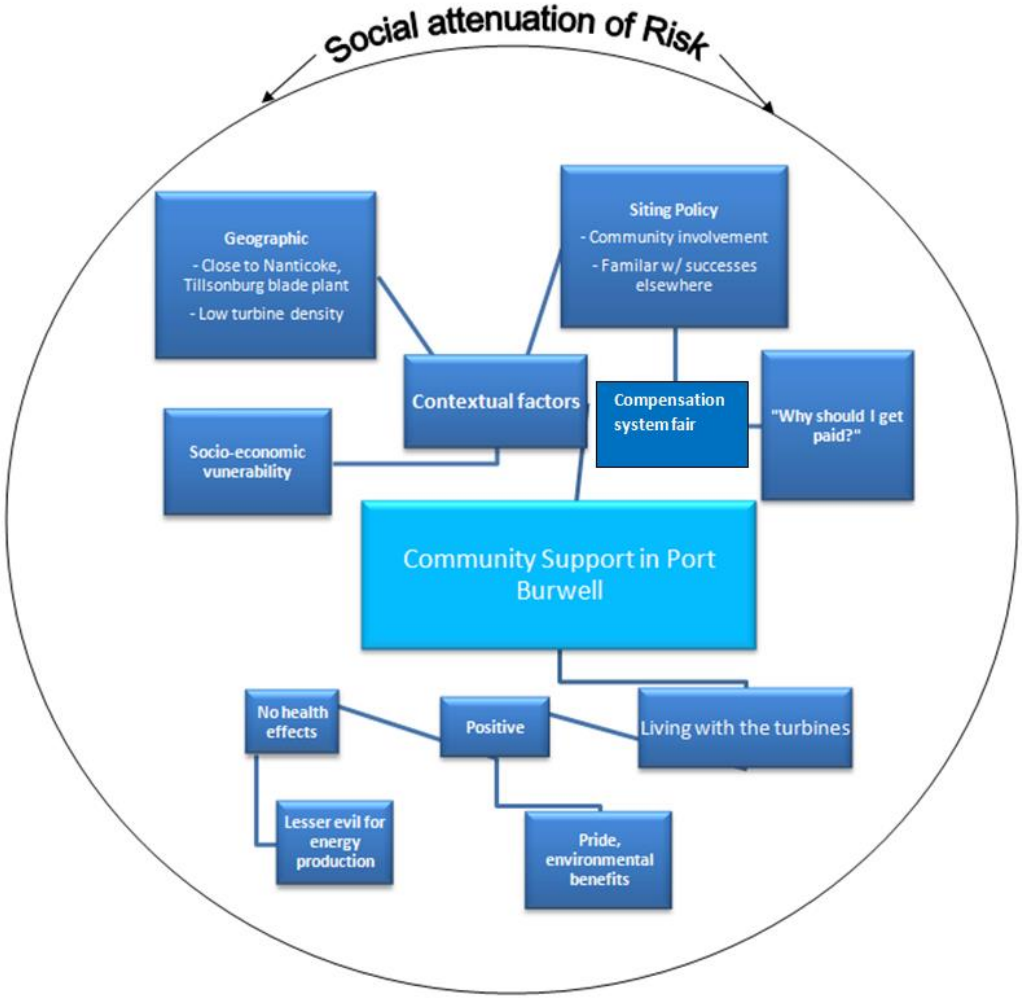
Group	Number Interviewed	Reason for inclusion	Key findings
Port Burwell area residents	16	To gain understanding of the impact wind turbines have had on a community (personal, social, economic)	Area of very high support for wind turbines; a case of "success" (from the government perspective)
Clear Creek* (concerned residents)	3	To juxtapose the majority lack of concern against those close by who are concerned	Felt very different about the planning and policy process (cheated, insulted, etc.)
Political/legal experts	2	To learn more of the steps taken that encouraged community support/acceptance	Policy process may have a huge impact on if turbines are supported in a community

*Clear Creek was the name given to those living in the vicinity of one or more of the following wind farms: Clear Creek, Cultus or Frogmore. These people were selected specifically because we wanted to speak to people nearby who were very concerned about turbines. That we had to go further east to these three developments contributed to our thesis about the role of the policies around turbine siting. We felt we would not have as complete a picture of what is "going on" without hearing from those who are concerned about turbines, despite the fact they are not living near the "Erie Shores" wind turbines.

Summary diagram

The following figure summarizes Chad's main thesis, that community support for wind turbines in the Port Burwell area is a function process of **risk attenuation** (low concern) supported by at least three key contextual factors (**Socio-economic vulnerability**, the type of **policy** and **geographic variables**)

The figure attempts to simplify much of our understanding of why some communities support wind energy projects and others do not. **In the two cases we studied we believe that (1) the right contextual factors as seen in Port Burwell may lead people to (2) perceive the planning and policy process as being "good" or fair and that wind turbines deserve to be in the area. This may be leading to high levels of support which may cause even more initial acceptance for future developments and/or new issues.** Conversely, it was seen that Clear Creek had lower levels of (1) and (2) which may have been why the turbines were not overwhelmingly accepted.



The focus of interview analysis is to develop themes/concepts that help explain "what is going on here?" and we use quotations to represent those themes. We present some of the most important and/or memorable ones here.

Theme: Policy changes views

"Scott" talks about how a farmer in the Port Burwell area had a negative idea of wind but changed his mind once he understood that he would receive direct lease payments if he had a turbine on his land.

THEME: Compensation system Fair - Farmer's needed a break

What is perhaps more interesting is that others in the community are actually supportive of the idea that their neighbours receive direct compensation while others do not. For instance Scott goes on to say that he is fine with the fact that money is given only to the landowner and that farmers deserve the compensation.

"Just like, like there's some guys that have gas wells and no different than if they discover gas. If they discover the wind on your property, you've just won the lottery as far as I'm concerned… a lot of these farmers have been struggling and, you know things are well, prices

Others talked about how difficult the transition from tobacco to other crops has been for the farmers and the turbines are seen as a source of stable income for this hard working group.

"And so, the people here are left with trying to find some way to make a good living without tobacco. And uhhh, the lease payments from the turbines doesn't make up the difference but it helps, you know, some of these farmers are happy to know that they've got a guaranteed amount of money coming in every year for a relatively small part of their farm." – "Matthew"

Theme: Dissatisfaction with the government and/or policy

The opponents interviewed all seemed to be very disappointed with the government. They often noted that the government is biased and that they refuse to conduct "good" scientific research and it has not been proven that turbines DO NOT cause health problems.

*"*And so what they could do is wrap themselves in a cloak of green, this is green energy, its non-polluting, it you know all of the spiel about green energy and they did not have to do anything to mitigate our situations." – "Barbara"

"I mean if it's something as important as people's health and the government is still choosing not to do anything about it? How can you have any respect for the way that they're operating or what they're trying to do? – "Bob"

Theme: Environmental Benefits and Local Pride

*"*Well its certainly safe and it's not burning coal and, well I guess we don't have a nuclear power plant whereas Nanticoke I think might be the closet one but….ya its, again I think it's great. The fact that it's green it's just its great" – "Mike"

The consensus among the people in Port Burwell Chad spoke with was that the turbines had a positive effect on the environment. People like "Mike" would refer to things like

cleaner air and/or a better future. Also important was the fact that opponents all believed that the turbines had a negative effect.

Theme: – Lesser Evil Argument

> "You know, it certainly ain't no damn train. Uh, friends of ours live right, had train tracks right in front of the house, stayed overnight and man it just jump right out of bed when you hear the damn train, house was shaking and everything. So (laughter) there's no comparison, by no means" – "Dave"

> "Like I think there's more critters killed on road kill (laughter) you know than actually probably actually by the wind turbines." – "Mary"

One person suggested, "it certainly ain't no damn train" when referring to his tolerance of what sound the turbines do produce, while others talked about relative pollution. Though some did mention some problems (e.g. bird deaths) this feeling would often be almost immediately offset by a positive statement or another more problematic case (e.g. Mary explained wind turbines kill less often than car traffic).

Theme: Negative attitudes toward the other

Supporters and opponents had negative things to say about the other group. Though few talked about open conflict or open hostility in the community, positions nevertheless seem quite entrenched with reference to the other. Thus, there seems to be more tension than conflict whereby the "opponents" and "supporters" show a certain lack of respect and disdain for each other, but they do not have a public forum to exchange these concerns. They are in many cases separated by geographic and political (county line) boundaries. It is very difficult to tease out the impact of this tension from the usual community squabbles and gripes, indeed it likely exacerbates existing divisions. Yet, we expect these negative sentiments towards the "other" work against well-being to some degree.

"…probably a lot of those same people that are complaining would go out and complain about gas but they might go out and buy one of these high-powered yachts that's gonna burn hundreds of gallons of gas in a day, you know. It all depends on where your priorities are I think." – "Betsy" (Supporter)

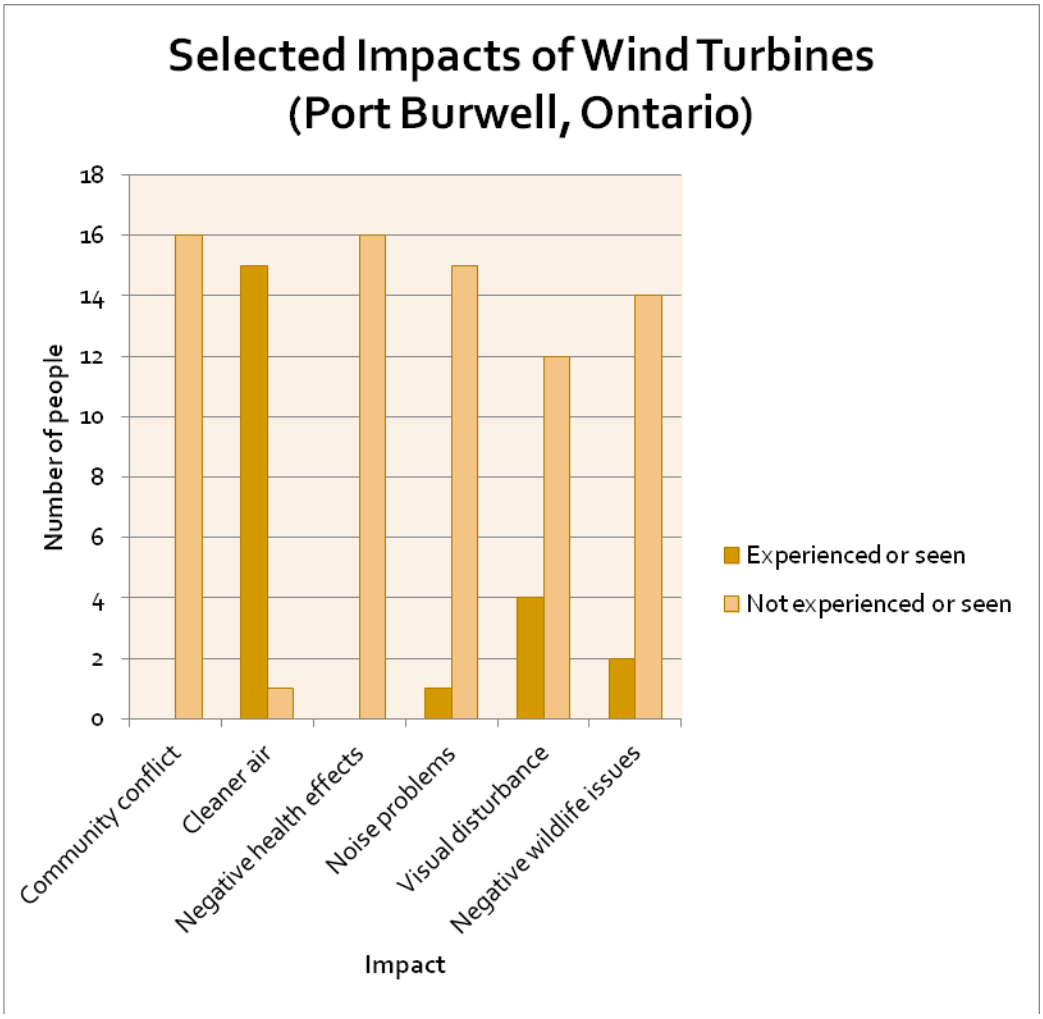
"And, I hear other people complaining, "oh the wind turbines, uh, affect our health" and I'm scratching my head saying, "unless it lands on you, chances are it's not going to hurt you" – "Pete" (Supporter)

"Like this is really serious stuff and you know for them to be so flip about it and really only be concerned about whether they're gonna get their paycheck in the mail every month from the wind turbine you know at the expense of our health I mean it's really upsetting" – "Bob" (Opponent)

[1] *All names are fake (pseudonyms) to help protect anonymity*.

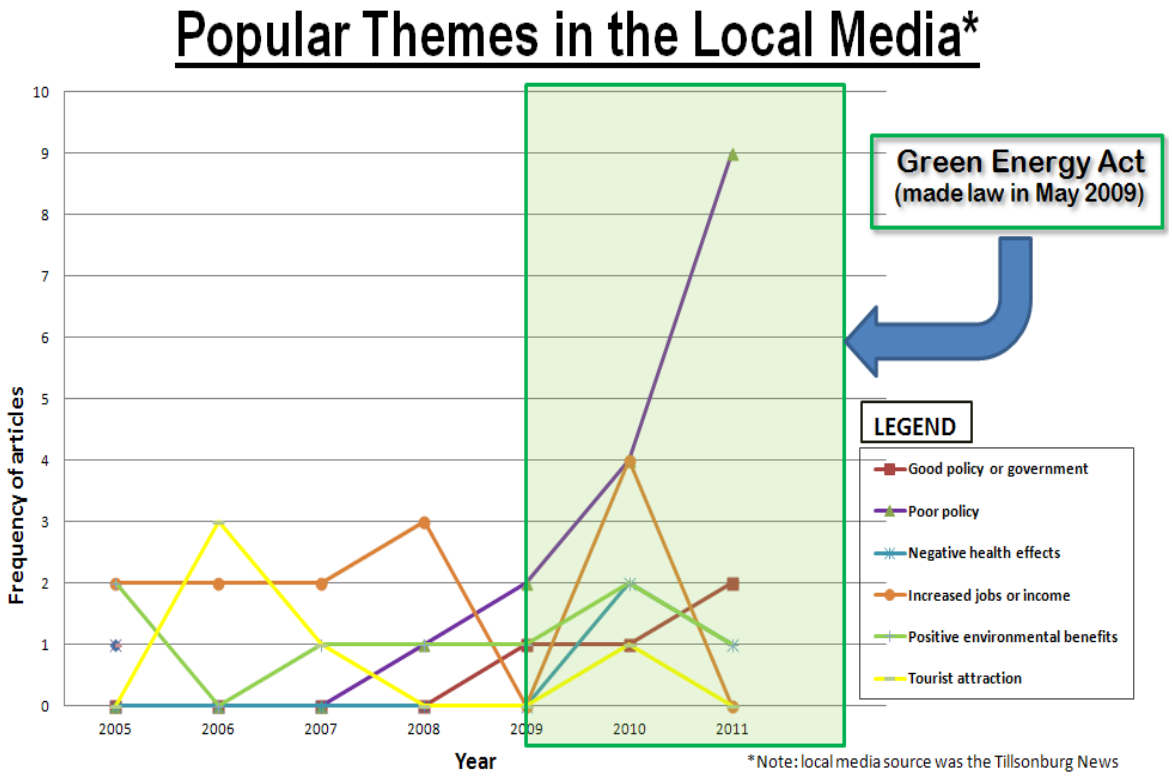
Figure 1 – Port Burwell: Community opinion on important wind turbine issues

Note: Though our sample is not large enough to make statistical inferences, we asked people to refer to their community. This table was not created to represent the Port Burwell area as a whole. Although we used random sampling to select our participants, the total sample was not large enough to draw strong conclusions- instead; it gives us an indication of what could be the community's opinion on important issues surrounding wind turbine installations.



BONUS Analysis: *The following chart was created from articles in Tillsonburg News (We assume this is the "local paper", though many of you likely read dailies from wider market papers) In order to better understand the area and local issues surrounding wind turbines, Chad conducted a mini media analysis. The themes in the articles seem consistent with what we found in the interviews, and the chart is a very crude way to represent some of the themes in the 102 articles he read. Please feel free to comment on this chart as well.*

> *The increase in reporting about "Poor policy" after the introduction of the Green Energy Act (GEA)- was put in place reinforces the idea that the reason for relative contentment with turbines in the Burwell area is in part due to the fact the turbines were not put there under the GEA but instead through a far more participatory process.*



If using mail or FAX, please fill out and return only the following section. If using email, please include your response to the question:

Statement: The interpretations in this document fit with the way I understand how locals view the turbines in my area.

Strongly Agree	Somewhat agree	Neither	Somewhat disagree	Strongly disagree
☐	☐	☐	☐	☐

Please Comment Further:

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If the following section was not enough to fulfill your comments please feel free to write on the back of this document and/or include your own piece of paper.

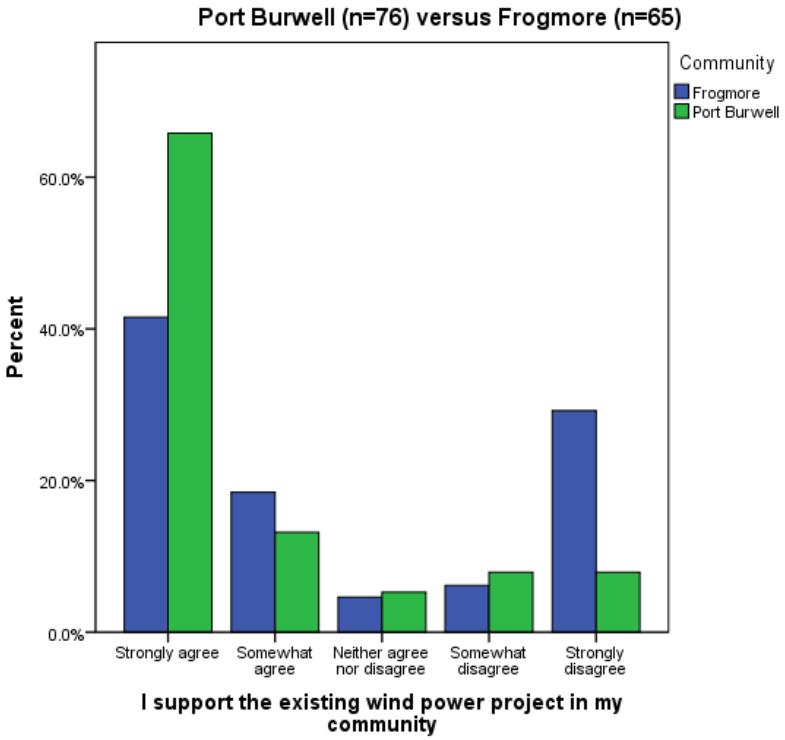
Thanks again for your time.

Chad and Jamie

Chad Walker – M.A. candidate, Department of Geography Western University.

Jamie Baxter – Associate Professor, Department of Geography Western University

Appendix E



Appendix F

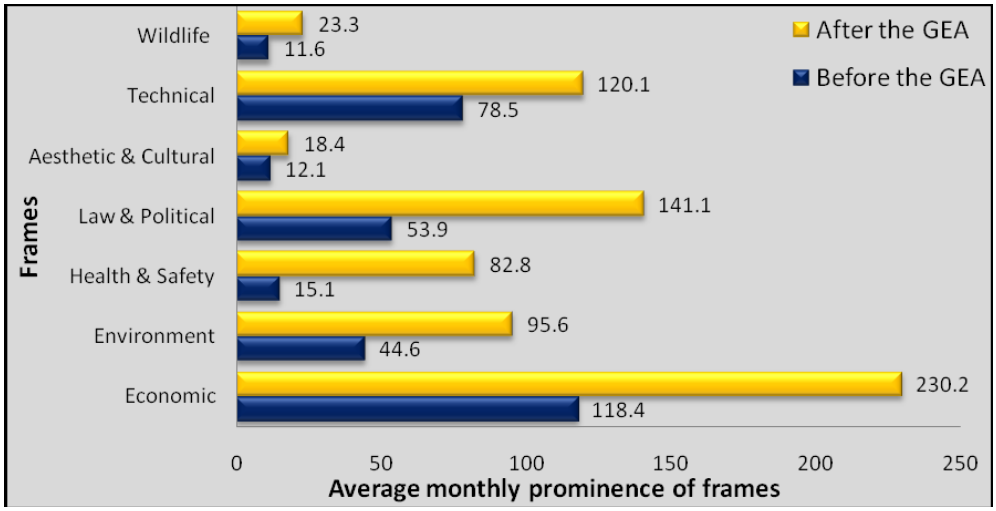


Figure G

Use of Human Participants - Ethics Approval Notice

Principal Investigator: Dr. Jamie Baxter
Review Number: 18028S
Review Level: Full Board
Approved Local Adult Participants: 0
Approved Local Minor Participants: 0
Protocol Title: Wind Power in Ontario: Financial Compensation and Wind Turbine Impacts
Department & Institution: Geography,University of Western Ontario
Sponsor: Social Sciences and Humanities Research Council

Ethics Approval Date: June 16, 2011 **Expiry Date:** July 31, 2012

Documents Reviewed & Approved & Documents Received for Information:

Document Name	Comments	Version Date
UWO Protocol		
Letter of Information & Consent		

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above named research study on the approval date noted above.

This approval shall remain valid until the expiry date noted above assuming timely and acceptable responses to the NMREB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the UWO Updated Approval Request Form.

Members of the NMREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussions related to, nor vote on, such studies when they are presented to the NMREB.

The Chair of the NMREB is Dr. Riley Hinson. The UWO NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Signature

Ethics Officer to Contact for Further Information

Grace Kelly (grace.kelly@uwo.ca)	Janice Sutherland (jsutherl@uwo.ca)

This is an official document. Please retain the original in your files.

Curriculum Vitae

Name:	Chad John Ryerson Walker
Post-secondary Education and Degrees:	Bowling Green State University Bowling Green, Ohio, USA 2007-2010, B.A. (Cum Laude) The University of Western Ontario London, Ontario, Canada 2010-2012, M.A.
Honours and Awards:	Western Research Graduate Scholarship 2010-2011, 2011-2012 Three Minute Thesis – UWO Finalist Michael Troughton Award (UWO)
Related Work Experience:	Teaching Assistant The University of Western Ontario 2010-2012