Local Economic and Social Benefits of Corporate and Community Owned Wind Projects in Europe, Japan and North America

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"We cannot tell the precise moment when friendship is formed. As in filling a vessel drop by drop, there is at last a drop which makes it run over, so in a series of kindnesses there is at last one which makes the heart run over." Ray Bradbury, Fahrenheit 457

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Abstract

The current global energy system is unsustainable given its' dependence on non-renewable (and polluting) resources such as coal, oil, natural gas, and uranium. The problems of climate change, resource depletion, and overall environmental degradation are linked to the unsustainable nature of the global energy system and as such this system needs to be changed. The transition to a decentralized energy system based on renewable energy technologies would help to dramatically reduce the contribution of the global energy system to these problems. This transition is in its infancy.

It is the contention of this study that public and political support for renewables and the policies, which support them, is necessary to catalyze this transition to a more sustainable, global energy system. This study compares the local economic and social benefits of corporate and community owned wind projects to determine which ownership structure is more beneficial in terms of local social and economic benefits. It also seeks to determine whether and how the ownership structure of these wind energy projects makes a contribution to overall societal acceptance of renewables and policies that support them. Examples from Europe are used to provide historical context, while contemporary examples are taken from the younger wind markets of Japan, the United States and Ontario, Canada. This study provides preliminary results and recommendations for further study.

Keywords: Wind power, community ownership, corporate ownership, local social and economic benefit, societal acceptance.

Table of Contents

1.0 Introduction

1.1 Scale and Local Social Vitality

Defining the relationship between the scale of wind power projects and their local appropriateness provides the framework for this study. The scale (or size) of a wind power project affects its appropriateness in the context of the area in which it is located. Anne Buttimer provides an example of this issue in a different sector, with her examination of a 1956 Report (to the Committee on Agriculture United States House of Representatives, 84th Congress, by the Subcommittee on Family Farms), which looked at two farming communities in California's San Joaquin valley. This report illustrates the impact of the scale and appropriateness of local activities on these communities' in terms of the differences in their 'lived realities on the ground', which Buttimer terms collectively as the 'social vitality' of the communities, and discerns the causes of these differences (Buttimer 2001, p. 4).

These communities were virtually identical in terms of population, proximity to urban centres and transport, as well as their resource base. The single major difference between the two communities was the scale of the farming that each practiced, with one community dominated by large-scale farms and the other by smaller farms (see table 1 below for average farm size in each community). Buttimer concluded that this difference in scale of farming was the "primary and by all odds the factor of greatest weight in producing the essential differences in these two communities." The differences between the two communities are presented in table 1 below[1].

Table 1. A parable about scale: farm size and social vitality

Features/functions	Arvin (Large farms)	Dinuba (Small farms)
Population	6,300 people	7,800 people
Average size of farm	437 acres	57 acres
Owner operators	20%	50%
Wage hands	80%	50%
Average farm production value	$18,000	$3,300
Trade territory (population)	70,000 people	77,000 people
Retail trade 1943	$2,535,000	$4,383,000
Banks	0	2

[1] Note, amounts in Table 1 are in US dollars. All other amounts are in Canadian dollars, unless otherwise stated.

Newspapers	1	2
All business enterprises	35	62
Grammar schools	1	4 + 1 High School
Local government	County only	Incorporated town; elected official
Associations and clubs	2	14
Churches	6	14
Housing	Poor, crowded impermanent	Modest, adequate, lawns and trees
Street paving	None	All paved
Youth/juvenile delinquency	Serious; few leisure facilities	None; numerous facilities available

(Source: Buttimer, 1998, p. 15)

The differences between the 'lived realities' or 'social vitality' of each community are numerous but when you look at the numbers, it is clear that (for these communities at least) the smaller scale farming system employed in Dinuba provided greater social and economic benefits to the community as a whole then did the large scale farming system employed in Arvin. Buttimer noted that, "[t]he small farms of Dinuba made nearly twice as much money in retail trade; there was a greater wealth of education opportunities, social activities, and local businesses; and the safe, secure neighborhoods had a lower crime rate." She also noted that, while the study didn't focus on the environmental consequences of these different scales of farming, it served to "reveal the multiple facets of scale" (1998, p. 15).

Of interest for this study also, is Buttimer's observation that since the 1956 report was carried out, there has been a "headlong trend toward scale expansion in virtually all dimensions of life: Arvin, not Dinuba has become the model not only in California but throughout the world today" (1998, p. 15), a sobering thought given Arvin's lack of social vitality.

The results of Buttimer's analysis serves as the launching point for this study. This study seeks to determine if this demonstrated relationship between scale and social vitality is relevant today in other parts of the world and whether it is applicable to other activities and projects such as the development of wind power projects. This study provides needed insight into how the scale of wind power development in terms of project size and ownership structure[2], affects its appropriateness and the resulting social

[2] See section 6.

and economic benefits in the local context. This study is also important because it seeks to determine whether there are social or economic reasons for favouring one ownership structure for wind energy projects over another.

1.2 Research Aim and Study Questions

This study aims to build on the insights provided in section 1.1 by determining whether the size of wind projects and their corresponding ownership structures have an effect on the local social and economic benefits of these projects, and as a result the associated level of public acceptance.

The central questions that this study seeks to answer are as follows:

1. Ownership model: are there clear differences between the local economic and social benefits from wind power projects that are owned by local owners (generally smaller) and those projects (generally larger) owned by non-local/absentee owners (also referred to as community and corporate wind projects, respectively)?
2. Social acceptance: Is the ownership model of wind power projects relevant to social acceptance of these projects and the policies, which support them (wind and other renewables in general)?

1.3 Criteria for Evaluation

This study will rely on quantitative and qualitative evidence provided by a review of the existing literature, as well as information obtained through key informant interviews with stakeholders of wind energy projects in Ontario, Canada. These varied data sources and types challenge the ability to draw comparisons and to form meaningful conclusions. For this reason, a multi-criteria analysis (MCA) will be performed in the Analysis and Results section of this study (section 7).

According to Wrisberg et al. (2002, p. 261) a MCA is not an analytical tool in the usual sense as it does not "directly analy[ze] physical information or monetary information… It is rather an analytical tool at a higher level, bringing together results from studies along different dimensions in a structured way." This makes MCA an ideal tool for use in this sort of study. Wrisberg et al. (2002, p. 262) also note that MCA is "typically used for major public investment projects." Wind power development certainly

fits this category, given the amount of investment needed to upgrade electricity transmission and distribution grids in many jurisdictions to allow for the wide distribution of wind power, as well as other decentralized renewables. The evaluative criteria that will be considered in the first of the two MCAs conducted in this study are described in Table 2 below.

Table 2. Evaluative criteria for MCA 1.

Economic
Amount of money that enters the local economy The amount of additional money that enters the local economy as a result of the wind project/s in question.
Tax revenue to the local municipality and State/Province The amount of additional tax revenue received by the local municipalities and by the State or Provincial government of the jurisdiction where the project/s is/are located.
Money received by landowners hosting turbines Money either received by the landowner as a land lease payment for hosting a turbine or by the landowner from owning a turbine on their land.
Social
Local jobs created The number of jobs created in the local area as a result of the wind project/s in question.
Local acceptance The level of acceptance of wind projects in the area in which these projects are being/have been developed.
Broader public acceptance Level of acceptance of wind and renewables in general among members of the wider society.

(constructed by the author)

Once this initial MCA has been completed and the results have been analyzed, a subsequent MCA will be undertaken (section 8) to determine which ownership structure is more beneficial in terms of promoting local economic growth and social vitality. Specifically, this MCA will comprise the evaluative criteria presented in Table 3 below.

Table 3. Evaluative criteria for MCA 2.

Local Economic Growth
Economies of Scale – The cost advantages achieved through expanding the size of a project, company, etc.
Market-Oriented Production –

Producing for market instead of for own consumption (individual, community, etc.).
Economies of Agglomeration – The benefits obtain by firms located near each other, in this case by locating projects close to each other.
Local Social Vitality
Equality of Opportunity – The availability of opportunities for local people to participate in local wind power developments in some shape or form.
Democratic Participation in Decision-making – The opportunity for local people to participate in the decision-making process of local wind power projects.
Social Justice – Justice for the local community in terms of being entitled to share in the benefits of local wind power projects.

(adapted from Buttimer, 2001, p. 8)

This second MCA is important in terms of increasing the rigorousness of the overall analysis by considering criteria, which (due to their more qualitative and theoretical nature) do not fit within the scope of the initial MCA, but are nonetheless critical towards answering the central questions of this study. Also, these evaluative criteria may be useful for policy makers to consider in discussions related to ensuring the greatest local benefits from the development of wind power projects within their jurisdictions.

1.4 Initial Assumptions

The assumptions that have helped to direct this research from the outset are as follows:

1. The current global energy system is unsustainable given its' dependence on non-renewable (and polluting) resources such as coal, oil, natural gas, and uranium.
2. The problems of climate change, resource depletion, and overall environmental degradation are linked to the unsustainable nature of the current global energy system, indicating that this system needs to be changed.
3. The development of a decentralized energy system based on renewable energy technologies would help to dramatically reduce the contribution of the global energy system to the issues of climate change, resource depletion and overall environmental degradation.
4. The transition to a more sustainable energy system is still in its infancy. A catalyst is needed to accelerate this transition if it is to occur in time for it to have an impact on theses global problems.

5. The necessary catalyst is public support for renewables and the policies, which support them (i.e. feed-in-tariffs). Increase this level of support and the speed of renewable energy deployment will increase accordingly.

1.5 Study Structure

This study will be structured as follows. Section 2 will go into the rationale behind the choice of the research aims and central questions of this study. Section 3 will define the limitations of this study and set the boundaries of the system being examined in this study. Section 4 will describe the theoretical frame used in this study. Section 5 will describe the methodology followed in completing this study. Section 6 will provide definitions for several key concepts that are important to this study. Section 7 will present an analysis of evidence compiled for this study as it relates to several evaluative criteria. Section 8 will present a discussion of additional evidence, which is relevant to the aims of this study and also more broadly to wind power policy development. Section 9 will present some brief conclusions and highlight areas for future study.

2.0 Rationale

2.1 Rationale for choice of research aims and central questions

In the interests of transparency it is important to quickly explain the rationale behind the choices that have been made in subsection 1.2. In choosing this study's specific research aims, Silverman's (2005, p. 80) warning regarding the 'kitchen sink' approach which suggested that instead of trying to say a 'little about a lot', you should try to say 'a lot about a little (problem)', was taken to heart. This advice is especially pertinent within the field of sustainability science where there are so many interconnections and interrelations between the key areas of focus. Hence, the need for the clear delineation of research aim and the boundaries of the system being studied (see section 3.1) are of great importance.

With the above in mind and using Silverman's (2005, p. 86) advice of determining what puzzle your research is trying to solve, the main questions that emerged as important to a study of this nature were narrowed down to one key research aim (though phrased in multiple parts), and two central study questions. These central questions are valuable, as they attempt to solve the causal puzzle of the influence of the

ownership structure of wind projects on the broader support for renewable energy and on the benefits of these projects to the local community (Silverman 2005, p. 87).

3.0 System Boundaries and Limitations

3.1 System Boundaries

The system examined in this study is spatially vast as examples are drawn from throughout Europe, North America, and even Japan, but these examples all relate to wind energy projects specifically and not other types of renewable energy projects. This study is also focused on two ownership structure categories (those being corporate and community owned projects) generally and does not get into the sub-categories or hybrid ownership structures that exist in various jurisdictions. Temporally, this study uses many historical examples but balances those with more contemporary examples from Ontario, Canada.

3.2 Limitations

In the course of conducting the research for this study, several barriers emerged, which worked to limit the depth and breadth of this research. The main barrier was the lack of completed, locally owned community wind projects in Ontario (where the author was based during this study period) in particular and in Canada in general. In fact, as of May 2009 there was only one example of a completed community wind project in all of Canada. This project, which consists of a 750 kW turbine located at Exhibition Place on Toronto's lakeshore, was erected in 2003 and is 50 percent owned by WindShare, a for-profit local community wind cooperative (CanWEA, 2008).

Due to the lack of community wind examples in Canada, this study has had to largely rely on examples from European countries like Denmark (with these examples coming from the 80s and 90s), the United States (where the examples are more recent) and several other countries. The growth of community wind in United States has occurred mostly within the last decade and has been considerable more brisk that in Canada. For instance, the American non-governmental organization Windustry currently lists 31 completed community wind projects throughout the United States (Windustry, 2009).

These projects provide useful case study examples of the economic and social benefits and/or disbenefits that can come with the development of community wind

projects, but there seems to be a real lack of scholarly research focusing on these projects in general and particularly on the benefits of these projects relative to similar corporate owned wind projects. Lantz and Tegen (2009) furthermore add that, "analyses showing the attributes of community wind projects have often been modeled or projected rather than estimated from actual constructed and operating facilities" and because of this, "the estimated impacts from this body of work often vary widely." Many of these modeled or projected analyses have been cited in this study given the lack of suitable alternatives.

This lack of studies focusing on completed projects made it more difficult to answer the question of whether it is true that meaningful participation in wind projects (i.e. community wind as described above) by local stakeholders limits local resistance (Lantz and Tegen, 2009). These claims have often been made anecdotally and in a range of articles both scholarly and media (cf. Gsänger, 2008 and Scotian Windfields, 2007), but rarely are they backed-up with much evidence such as examinations of similar completed projects in both the corporate and community wind categories and/or interviews with a significant number of participants in each sort of project.

4.0 Meta-Theoretical Frame

4.1 Epistemological Considerations

An interpretivist epistemological approach was adopted for this study. This choice was informed by the fact that the main alternative approach, the positivistic approach, which applies the scientific model of study to the social world, does so in a way that does not make sense in the context of this study. A positivistic approach does not respect the inherent difference between the way that people and the objects of the natural sciences behave, while an interpretivist approach does. A positivistic approach does not recognize the need for the researcher to grasp the "subjective meaning of [the] social action[s]" (Bryman, 2004, p. 13) that are taking place, or how individuals seek to understand the world around them. A question, which is of great importance to this study, as it helps to define what individuals' value or perceive as good or bad things socially and economically.

Had goal of this study been to determine the difference in the local economic impact of wind energy projects that are locally owned and those that are non-locally

owned, then a more straightforward quantitative comparative approach, comparing numerical data from a number of cases to determine the answer, could have been employed. Such as a positivistic approach that is unconcerned with the social aspects of these two ownership models. However, given that uncovering the social benefits or disbenefits associated with non-local and locally owned wind projects are a major component of this study, an interpretivist approach is employed.

4.2 Ontological Considerations

The ontological approach that was adopted is that of constructivism, an approach in which "social phenomena and their meanings are continually being accomplished by social actors" and in which they are in a "constant state of revision" (Bryman, 2004, p. 17). This is important as it means that "social actors" or individuals can work to alter their reality or alter the existing phenomena (social or otherwise) to better serve their purposes. These phenomena are not "external facts that are beyond our [a person's] reach or influence" (Bryman, 2004, p. 16), as the doctrine of objectivism contends. The constructivist approach seems to support the idea that fundamental change in the way that people view the world, and hence the way that they live, can occur at the individual and societal level. This is an idea that resonates with the motivation for this study.

The idea that reality is an individual construct, with each person having her or his own specific version of this reality, also provides important guidance for the data collection and analysis portions of this study. It follows that the information that has been received from the various informants and respondents who have been interviewed and the views of the authors of the papers that have been read will reflect their 'specific version' of reality. The author, in compiling this information, has also been aware that he has been constructing his own version of reality. A point that was taken into consideration when discussing the results of this study and its broader applicability, as well as one which should be kept in mind by those who subsequently read this work (Bryman, 2004, p. 17).

5.0 Methodology

5.1 Description of Research Design

This study employed a qualitative comparative research design, which relied on the examination of multiple-case studies. The reason that this particular design was selected was that it allowed for the utilization of a comparative design within the framework of a qualitative research strategy (Bryman, 2004, p. 55). A comparative design is useful as it allows us to better understand social phenomena as they are "…compared in relation to two or more meaningfully contrasting cases or situations" (Bryman, 2004, p. 53), which in the case of this study would be local and non-locally owned wind projects in both Europe, North America and Japan.

Another advantage of the multiple-case study approach is that it allows for improved theory building because after examining multiple cases, the researcher is in a better position to describe the circumstances in which a certain theory is valid and those in which it is not (Yin, 1984). Though given the boundaries of this system (as identified above) a theory that is generalizable to a great number of cases will not be the result of this study. That said, the intention at the outset was to provide interesting observations, which would stimulate further in-depth research in hopes of developing a theory that could be more generally applied to wind power projects worldwide. Or as Bryman (2004) succinctly put it when referring to essence of a comparative design, one of its strengths "…is its ability to allow the distinguishing characteristics of two or more cases to act as a springboard for theoretical reflections" (p. 55).

5.2 Data Construction/Collection

5.2.1 Description of interviewing approach and sampling design

Qualitative methods were employed to construct/collect both the qualitative and quantitative data required for this study. The main face-to-face component of this study involved a series of semi-structured interviews with a variety of people who could either be classified as informants or respondents from a variety of groups (see section 5.3). The semi-structured approach to interviewing is defined by Bryman (2004) as an approach in

which the "researcher has a list of questions of fairly specific topics to be covered… but the interviewee has a great deal of leeway in how to reply" (p. 321).

This approach was selected because it places importance on the way in which the interviewee understands the situation or in the case of this study, the social benefits (or disbenefits) that they perceive as being related to their involvement (or lack of involvement). This approach allows for the interviewees to raise additional or complementary points that they feel are of value and which ultimately help to enrich the subsequent analysis (Bryman, 2004, p. 321). Furthermore, the questions contained in the questionnaire, which was used in conducting the interviews (see appendix A), can be classed as open questions. The reason for using open questions for this study as opposed to closed questions is captured by Eltham et al. (2008, p. 27) with their contention that the inclusion of open questions ensured that "respondents were not prompted with specific impacts that the wind farm may have had on their lives, but were simply asked to disclose, without the provision of examples, the negative and positive impacts".

Along with the semi-structured interviewing approach that was used in this study, a sampling design that could be broadly classed as non-probability sampling was employed. This sampling approach was chosen because with non-probability sampling "it is their [the subject of the interview] relevance to the research topic rather that their representativeness which determines the way in which the people to be studied are selected" (Flick, 1998, p. 41).

Some interviewees were found when the author (in searching online versions of local Ontario newspapers from areas with wind farms) happened upon an article in the Simcoe Reformer entitled "Norfolk wind turbines: Whirling controversy" (Pearce, 2009). This article referred to some area residents by name and location and this information was used to contact these individuals. An online comment on the article was also submitted, which yielded some interviewees (for comment text see, Appendix C). The author also attended the Annual General Meeting of the WindShare, a for-profit wind power cooperative, which yielded two interviews.

5.2.2 description of literature review approach

The other method of data construction/collection was that of a focused literature search. This search focused on obtaining relevant information from a variety of sources,

including: official documents derived from government sources, official documents derived from private sources, as well as information gleaned from mass media outlets, and of course scholarly research where available (Bryman, 2004, p. 387).

5.3 Analytic Frame

Given the nature of this study, the research strategy and research design being employed, as well as the intended aim of this study, it seemed that maintaining a flexible analytic frame would make the most sense (Ragin, 1994, p. 74). An example of this is that at the outset of this study, the categories of people who were identified as being possible interview subjects were:

- renewable energy cooperative members;
- local owners of renewable energy projects;
- relevant renewable energy 'experts'; and
- relevant government officials.

As this study progressed, however, it become apparent that given the nature of this study, the important categories from which potential interviewees should be drawn were:

- members of wind energy cooperatives with a completed project;
- those in the process of developing community wind projects; and
- farmers who had leased their land to corporate wind power developers.

This determination was based on the fact that the published writings of renewable energy experts could be used in place of personal interviews with these experts and that government policy reports and statements could be used in place of personal interviews with relevant government officials. Information, however, from those on the front lines of wind power development in Ontario, Canada would be harder to obtain through published reports.

6.0 Definitions

6.1 Defining Corporate and Community Wind Projects

Kildegaard and Myers-Kuykindall (2006) define corporate wind projects as projects which are "often 50 megawatts (MW) in capacity or larger, which are developed, installed, and operated by non-local owners or commercial utility companies." The key

part of this definition is that the corporations, which own these projects, are non-local. The headquarters of these corporations are often outside of the State or Province where the project is being developed and nearly always outside of the local community or area in which the project is being developed.

Defining the meaning of the 'community' in community wind is a less straightforward task. For the purposes of this paper the definition of a community wind power project will be based on the bi-dimensional approach developed by Walker and Devine-Wright (2008, p. 498) and represented in Figure 1 below. This approach encompasses a process dimension, which is concerned with how the project is developed and specifically who it is developed and run by. It also incorporates an outcome dimension, which is concerned with who benefits from the project in social and spatial terms. By placing these dimensions together Walker and Devine-Wright (ibid, p. 498) created a space in which projects could be compared relative to their differences in process and outcome.

An example is the placement of a 'Utility wind farm' in the bottom left-hand corner of the bi-dimensional matrix. Walker and Devine-Wright (2008, p. 498) describe this placement of the utility wind farm in this quadrant because it is "a project that has minimal direct involvement of local people and is developed by a distant and closed institution, that generates energy for the grid rather than for use in the locality and that produces economic returns for distant shareholders rather than local people." Conversely, their version of an 'ideal' community project would go in the top right and it is described as "one which is entirely driven and carried through by a group of local people and which brings collective benefits to the local community (however that might be defined)—a project that is both by and for local people."

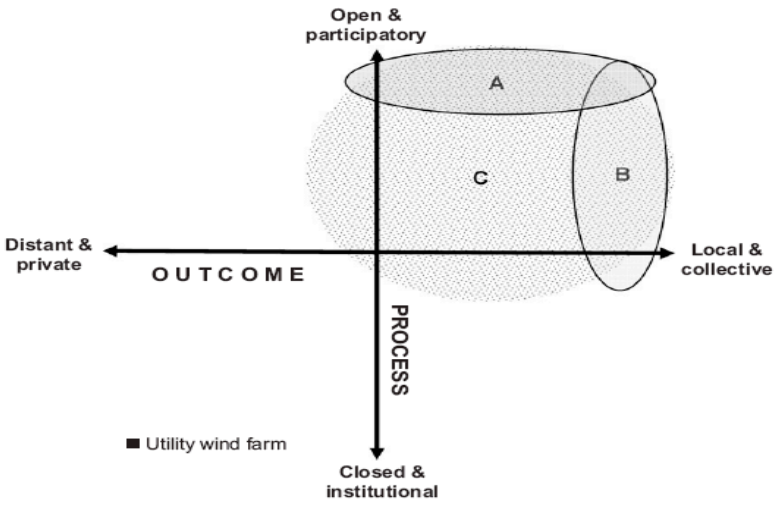

Figure 1. Understanding of community renewable energy in relation to project process and outcome dimensions (source: Walker and Devine-Wright, 2008, p. 498)

6.2 Defining Meaningful Participation

Of the two dimensions defined by Walker and Devine-Wright (2008), the outcome dimension will be focused on in the next section (section 7) as it examines the distribution of the benefits of a project, which are easiest to measure in economic terms. That said, it is also important that the process dimension and the differences between the "Open & Participatory" and "Closed & Institutional" ends of the dimensional spectrum and what falls in-between is understood.

Arnstein (1969) equates citizen participation to citizen power, which she refers to as "…the redistribution of power that enables the have-not citizens, presently excluded from the political and economic processes, to be deliberately included in the future." For energy systems, citizen participation involves empowering citizens to produce their own electricity locally, whereas traditionally power has rested solely with corporate utilities to supply electricity to theses citizens. Arnstein (1969) does not view all that is called citizen participation to be equally empowering and notes that "there are significant gradations of citizen participation", and specifically that there is a fundamental difference between citizens "…going through the empty ritual of participation and having the real power needed to affect the outcome of the process." To aid in the analysis of this issue, the author has developed an eight level typology of participation (see Figure 2).

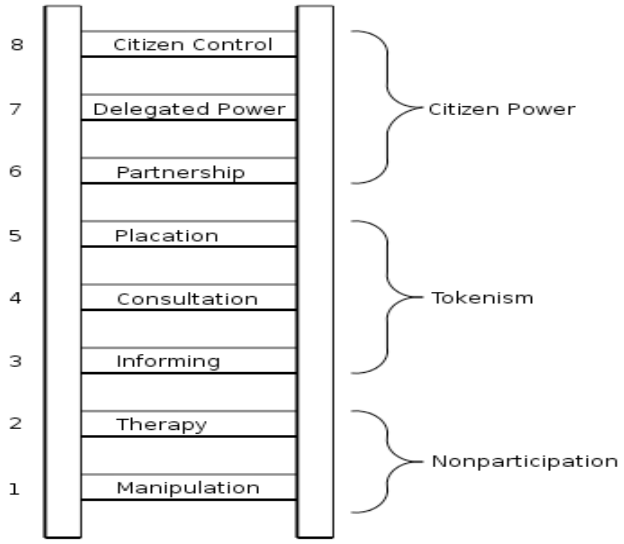

Figure 2. The Ladder of Citizen Participation, indicating the 8 typologies of participation and the three categories into which they can be grouped, with more meaningful form of participation found higher up the ladder (Arnstein, 1969).

Arnstein (1969) refers to the first rungs of the ladder (manipulation and therapy) as non-participation as their purpose is to act as a substitute for meaningful participation, serving to "educate" or "cure" participants without allowing them any actual say in the planning of conducting of the programs. Further up the ladder, informing, consultation and placation fall under the category of tokenism. Though better than the nonparticipatory approaches described above, these approaches are typified by uni-directional flows of information, inevitably flowing from the officials or 'experts' to the citizens.

The three types of participation that Arnstein groups together as representative of citizen power all involve a true redistribution of power, with full or partial power now resting in the hands of the citizens. In terms of renewable energy projects, partnership and citizen control are the most relevant and indeed are pre-conditions for any wind power project to be considered a community wind project. The relative stake of the partners (and thus their control of the project) is important though, as the Ontario Sustainable Energy Association defines community power as "…a class of sustainable energy projects that are owned, developed and controlled in full or in part (50 per cent or more) by residents of the community in which the project is located" (OSEA, 2008).

7.0 Analysis and Results

7.1 MCA 1

Table 4. MCA Evaluation Matrix 1.

Evaluation Matrix	**Ownership Models**	
Criteria	Corporate	Community
Economic		
Amount of money which enters the local economy		x
Tax revenue to the local municipality and State/Province	x	x
Money received by landowners hosting turbines		x
Social		
Local jobs generated		x
Local acceptance		x
Broader public acceptance		x

(note: this table is used to compare the relative advantages of each ownership model, showing which ownership model is judged to be best in terms of the criteria listed)

7.2 Amount of money that enters the local economy

It has been shown that income generated by a wind energy project varies depending on the ownership model of the project, with an example being the United States Government Accountability Office's (GAO) study (2004), shown in Table 5.

Table 5. Comparison of Total Local Income during the Operations phase

Total Income for Wind Projects in Each of the Eleven Counties		
Project Size (MW)	**Ownership Structure**	**Total Income (USD)**
40	Corporate	$14.35 Million
40 (20 x 2MW)	Community	$44.65 Million
150	Corporate	$50.28 Million

(Source: GAO, 2004, p. 81-83)

The GAO study used modeling conducted by the National Renewable Energy Laboratory (NREL), using the hypothetical wind power project scenarios shown in Table 5. The results of this modeling showed that the 150 MW corporate project would generate only approximately 113 percent more income than the 40 MWs of community owned generation and that this 40 MWs of community owned generation would generate approximately 311 percent more income than the 40 MW corporate owned wind project.

Kildegaard and Myers-Kuykindall (2006) strengthen this connection with the findings of their study, which determined that the total value added (or money

introduced) to the local economy during the operations phase of a 10.5 MW wind project, using three different ownership structure scenarios (see Table 6).

Table 6. Comparison of Total Value Added

Total Value Added to Local Economy, Operations Phase of 10.5 MW Wind Project		
Ownership Structure	**Opportunity Cost of Capital**	**Total Value Added (USD)**
Community	5%	$1,259,188
Community	8%	$639,739
Corporate	-	$249,388

(Source: Kildegaard and Myers-Kuykindall, 2006, p. 18)

The results of this study indicate that community owned projects would have a more positive impact on the local economy than corporate owned projects. Community ownership in an 8% opportunity cost of capital (i.e. the expected return that could be achieved through investing this money in the next best manner, i.e. on capital markets) scenario would add approximately two and a half times more value to the economy than the corporate scenario. The community ownership scenario with a lower 5% opportunity cost of capital would generate approximately five times more value than the corporate owned project scenario.

Further evidence is provided by Farrell (2007) who states that, "…the economic impact of a locally owned wind farm can be 25–300% greater than one owned by an outside investor" (p. 381-2). Or as described by a United States Department of Agriculture (USDA) article (Curti and Goetz, 2008, p. 7), locally owned projects are "more likely to use locally-obtained inputs, profits are more likely to circulate locally and the community has an increased chance of retaining higher paying management jobs associated with the project."

7.3 Tax revenue to the local municipality and State/Province

For the local municipality in which a wind power project is sited, it can mean a significant financial infusion in terms of increased tax revenue. Flowers (2001) of the NREL indicated that for each 100 MW of installed wind capacity, local annual property tax revenues are increased by approximately US$ 1,000,000. A lower but still significant figure of US$ 200,000 - US$ 400,000 of additional annual property tax revenue per 100

MW installed wind capacity was quoted by an earlier Southwest Regional Development Commission study (1996, p. 6).

Grover (2005, p. 15) strengthened this analysis by comparing the tax revenue that flowed to the local municipality from a corporate owned and community owned wind power project respectively in Washington State. He concluded that during the operational phase, the corporate project generated $ 15,700 (US) in state and local tax revenue compared to the $ 17,000 (US) that was generated by the community owned project, a difference of $ 1,300 (US) or 8%.

While Grover's (2005) study determined that there was a significant difference in tax revenue flowing to the local municipality and the State from a corporate project and a locally owned community project, this study only looked at a small number of projects within Washington State. Because of this, generalizations cannot be made regarding one ownership model being more beneficial in terms of tax revenue generated than the other.

However, it would seem that a project with local investors would be more likely to generate additional local and regional tax revenue, as the additional income that these individuals received as part owners of these wind projects would be taxed by the local or State/Provincial jurisdiction. This would increase the local/regional tax base to a degree that income that flows to companies that are headquartered out of State/Province would not. As well, these individuals are more likely to spend money within their local community than outside investors are, with this local spending generating additional tax revenue for both the local municipalities and State/Provincial governments (see section 7.1). Again, this would likely not be the case with non-local investors, as they are more likely to spend the income that they earn from these projects where they live, which could be hundreds or even thousands of kilometres from the project site.

7.4 Money received by landowners hosting turbines

According to a scenario developed for use with Natural Resources Canada's (NRCan) RETScreen Clean Energy Project Analysis Software (a financial decision support tool), a 10 MW (approx. 6, 1.65 MW turbines) project developed by 7 farmers in southwestern Manitoba would yield an annual return per farmer of just under $10,000. This is compared to an average annual payment of $4,500 to farmers (in the same area) who

leased their land to a private developer. As was pointed out in this case study, "…given that the developer assumes the risk, secures the financing, and does years of work prior to building the project, the payments the developer offers do not seem unreasonable" (NRCan, 2008).

The RETScreen case study also cites results from a real 99 MW wind project that was completed in 2006 in southwestern Manitoba. This project is a corporate development in which land was leased from approx. 50 local landowners. The annual land lease payments are expected to generate $9.1 million over the 25-year life of the project, which equals an approx. annual land lease payment of $7,280. This figure is still well below what the farmers would receive if they developed their own wind farm but it much more attractive than the $4,500 figure and perhaps a more accurate representation being based on real project data (NRCan, 2008).

For many landowners the key consideration when deciding whether to lease their land to outside wind developers or to develop a wind project either by themselves or in partnership with their neighbours is the economics of each proposition. The annual revenue that they would receive from the wind developers compared with the annual return on investment that they were likely to receive on the amount of money that they would have to invest to develop their own project.

A real-life example of farmers who opted to lease their land to a wind developer comes from the area around Clear Creek, Ontario, where three farmers were interviewed for this study (see Appendix B for full transcriptions of these interviews). Two of the farmers (Peter and Jim Petker) each host one 1.65 MW Vestas V82 turbine on their land and, while one also hosts a substation (Petker et al. 2009). The company which developed this wind farm, AIM PowerGen Corporation (AIM), is based out of Toronto, Ontario (which is less than 200 kilometres from the project site) but is a subsidiary of Renewable Energy Generation limited which is based out of the United Kingdom (AIM, 2009).

According to both of these farmers, AIM provides an annual minimum land lease payment of $5,000 per wind turbine, as well as an additional amount of about $5,000 annually for hosting a substation. Both farmers also receive an additional payment based on the power produced by their wind turbine, which according to farmers in the neighbourhood, ranges from between $3,000 and $3,800, for a total annual income of

between $8,000-$8,800 for the farmer with one turbine and between $13,000-$13,800 for the farmer with a turbine and a substation. Considering that neither farmer had to invest any money to develop this project, this annual payment is pure profit and a welcome source of additional income. Their experiences working with AIM have been quite pleasant as well, making for quite a positive overall experience for the these farmers (Petker et al., 2009).

The third farmer interviewed in this area (John Zachel) relayed a similarly positive experience with leasing land to wind developers (again AIM) to site a wind turbine on his land. He confirmed the minimum annual payment amount of $5,000 and clarified the additional payment, indicating that he receives a payment equaling 3.5 percent of the value of the electricity produced by the turbine. His stated motivation for entering into this agreement was to provide extra income, as farming alone was not sufficient to live on anymore. He also reported having no problems working with AIM and appreciated the fact that the details were taken care of for him by the developer, "I sign a lease and they take care of, I don't have no headache" (Zachel, 2009).

This is a positive situation for these farmers and the rural communities in which they live, but when you look at the numbers more closely it becomes apparent how little the farmers are making in comparison to the corporate wind developers who own the turbines. For instance, given that AIM provides its lease holders with an annual payment of approx. $3,000-$3,800 and that this payment is based on 3.5% of the turbines annual production, each turbine would produce an average of approximately $100,000 worth of electricity annually. Meaning that even with a farmer receiving a total annual payment of $8,500, their share would only equal 8.5% of the gross annual revenue produced by the turbine (though a higher percentage of the net annual revenue). AIM's wind farm is also located in Southern Ontario, an area of generally moderate wind speeds. In areas of higher wind speeds (such as costal areas of Denmark and Germany) Kildegaard (2007, p. 9) indicates that one 1.65 MW wind turbine can generate up to US$ 200,000 (approx. $220,000 Canadian) in annual gross revenue, creating an even greater incentive for farmers and others to own their own wind turbines.

Agterbosch et al. (2009, p. 401) provide further indication of what those owning a wind turbine can expect to make annually. They determined that farmers in the

Netherlands were able to earn a net income of approximately €50,000 per year from their own wind turbine. These farmers, now make more money selling the electricity their wind turbines produce than they do farming, showing how an investment in wind energy can create a new primary source of income whereas leasing your land to wind developers, while lucrative only ever really provides supplemental income.

Importantly from a community standpoint as well, local ownership provides a means for communities to capture some of the additional revenue that would otherwise go to a corporate wind developer (leaving the community) and hold it within the local community, increasing the positive local impact of a wind project exponentially (Kildegaard, 2007, p. 382).

7.5 Local jobs generated

Wind energy projects create 'green jobs' and according to a US Department of Energy (DOE) report (2004, p. 3), they generate more new jobs than conventional fossil fuel projects. In fact, the DOE report (ibid., p. 3) cites a study by the New York State Energy Research and Development Authority, which found that "wind energy produces 27% more jobs per kilowatt hour than coal plants and 66% more jobs than natural gas plants."

Assuming this to be the case generally throughout the US, another question that members of a community in which there were plans to site a wind park should ask would be whether the number of jobs generated by wind projects is at all influenced by the ownership structure of these wind projects?

In a report prepared by the GAO (2004, p. 81-3), the NREL was asked to model the economic impacts of hypothetical wind power projects in 11 counties within 5 states using their 'Wind Impact Model'. These counties were chosen because wind projects were sited in each and the GAO had visited them during the course of their research for this report. The three hypothetical projects examined were a 150 MW corporate-owned project (out-of-state ownership), a 40 MW corporate-owned project (out-of-state ownership); and a 40MW project comprising 20, 2 MW projects each owned by local community members (county residents). The results of this modeling, which examined job creation over the operational period of these projects, are presented in Table 7.

Table 7. Comparison of Jobs for each project

Project Size (MW)	Ownership Structure	Full time Jobs Created
150	Corporate	729
40	Corporate	195
40 (20x2MW)	Community	448

(Source: adapted from GAO, 2004, p. 81-3)

The 150 MW corporate project is shown to create the largest number of jobs, but the amount of jobs created by this project is only approximately 1.6 times the amount created by the community owned project, while being approximately 3.7 times the amount created by the 40 MW corporate project. When viewed in terms of jobs per MW, the relative levels of job creation for each project type become apparent (see Table 8).

Table 8. Comparison of Jobs/MW

Project Size (MW)	Ownership Structure	Jobs/MW
150	Corporate	4.86
40	Corporate	4.88
40 (20 x 2MW)	Community	11.20

(Source: adapted from GAO, 2004, p. 81-3)

The results of this analysis indicate that while there is practically no difference in job creation per MW between the larger and smaller corporate owned wind projects; there is a large difference between those projects and decentralized community owned wind projects. With these community wind projects being shown to generate more than two times as many jobs per MW of installed capacity as the corporate projects.

Grover (2005, p. 15-6) found that while there was no difference in job creation (or other local economic impact) between corporate and community-owned projects during the construction phase, there were significant differences during the use (or operational) phase of these projects. Specifically, the average local economic impact for Washington State per MW in terms of job creation differed in absolute terms by 0.3 and in percentage terms by 25% with corporate projects producing 1.2 jobs and community projects producing 1.5 jobs.

The findings of Costani's (2004) study quantifying the economic impacts of wind development in 6 rural Montana Counties agree with the finding of those studies presented above in that the annual (or operational) phase jobs increased with the percentage of local ownership of the wind project, a result that was consistent over the

range of project sizes. Table 9 illustrates the changes in local job creation as the percentage of local ownership increases.

Table 9. Percentage of local ownership and local job creation.

County	Project size	Percentage of Local Ownership	Local Jobs
Cascade	20 MW	0	10.9
		50	15.7
		100	20.5
Prairie	100 MW	0	24.3
		50	51.1
		100	77.9

(Source: adapted from Costani, 2004, p. 13)

According to the evidence presented above, community owned wind projects delivery more jobs per MW than corporate owned projects. Further study would be needed to support this finding and to determine whether it is applicable worldwide but at least in the US (in those jurisdictions presented), the available research indicates that community wind projects deliver more jobs than do corporate projects.

This does not mean that corporate developers operating outside of their local areas will not be needed to achieve a speedy and significant deployment levels of wind energy, as they certainly will, but the meaningful participation of community groups and local individuals in these wind projects is of vital importance. It is vital because without local people taking control of their own power systems and reaping the rewards of ownership, the transformation to a renewable energy system will continue to be slowed by a lack of popular support, as is shown by the examples below.

7.6 Local acceptance

While problems of lack of public acceptance of wind power might not be so evident in mature wind markets such as Denmark (Ladenburg, 2007), they continue to hamper the development of the resurgent wind industry in North America. Especially attempts to develop offshore wind farms both in the Atlantic Ocean off the U.S. East Coast and in the Great Lakes (both U.S. and Canadian sides), where to date no projects have been completed (cf. Svenvold, 2008; Lindgen, 2009).

One reason for this opposition to the development of wind farms is perhaps rooted in deeper equity and fairness concerns, which are not addressed or even acknowledged during the typical top-down planning process. In fact, it is the application of this sort of

top-down approach to the development of wind energy projects in some countries that is seen as the primary trigger of the 'public hostility' that has emerged thus far (Wolsink, 2005, p. 1205). This public hostility is powerful and projects that are negatively perceived by the public (or vocal segments of that public) can be stalled or even blocked indefinitely (c.f. Flynn, 2008).

Given the problems that this public hostility can cause, it is useful for project developers to consider how to limit it, while building public acceptance. One question that is useful to consider is whether the ownership model of a proposed wind power project affects its likelihood of being accepted by the public?

A study by the NREL (Parsons et al., 2000) concluded that after examining the successful development of wind power in Denmark and Germany, "Local financial participation is key to public acceptance and the largest possible market penetration… because it enables benefits to accrue to the people who bear the localized costs of wind power." (p. 3) They further note that the European experts whom they interviewed for this study reported that, "local public perceptions are usually favorable if financial participation is present and often unfavorable if it is not" (p. 3).

Sorenson et al. (2003) provide another take on why Denmark has been successful in deploying wind power historically while other countries have not been. They state that, "The co-operatives, where mostly local people share expenses and income from a wind turbine, have played an important role, especially providing acceptance at a local level, where the possibility of resistance is otherwise high due to visual or noise impacts" (p. 2).

Sorenson et al. (2003) do also point out that in Sweden, where local utilities or private developers have undertaken most of the wind farm development, there has been some success in gaining public acceptance for these projects. Vattenfall (Sweden's largest utility) was able to address public concerns regarding a large planned offshore wind project by, "directly involv[ing] the local public early in the planning phase, and incorporat[ing] the recommendations into the project planning and decision making" (p. 3).

Bolinger (2005) discusses how the difference in the perception of corporate and community-owned projects can affect the level of public support received by each. He points to the fact that for corporate projects local resistance can sometimes stem from the

perception of "'big business' invading their landscape" (p. 5). These large, corporate projects can, according to Eltham et al. (2008, p. 30), serve as lightning rods for controversy, attracting those who take issue with other socio-institutional aspects of their societies and who use the wind farms as proxies to protest against these more significant underlying issues. Bollinger (2005, p. 5) contends that direct community ownership, which gives local people a financial stake in the project and thus an incentive to want it to succeed, may also help to raise the level of public support for wind power and the policies that support it and other renewables generally.

The examples presented in the studies above are largely drawn from parts of the world such as Germany and Denmark which have a long tradition of farmers cooperatives, and to which local ownership seems to come naturally (Mendonca et al., 2009). These examples have also been studied extensively for many years, so let us now look at some less traditional examples.

Maruyama et al. (2007, p. 2768) indicate that in Japan, community wind power has been able to bring together a large number of private citizens who were interested in the concept of "investment as a profit-sharing system", and with their coming together producing the "effects of a social movement", furthering the acceptance of wind power both locally and within the broader public (as will be discussed in section 7.7).

Maruyama et al. (2007, p. 2768) contend that community wind projects can offer a variety of benefits, while typical corporate wind projects are unable to provide such a diversity of benefits. This is due to the nature of community wind projects and their ability to incorporate the three factors of "environment, economics and social commitment… into a single project" offering "various incentives that are mutually complementary for different actors." The important consideration when attempting to boost the social acceptance of any technology is according to Maruyama et al. (2007, p. 2768) "whether or not a system is in place that can generate… a variety of benefits." For wind power, this system would seem to be community wind's local participation and ownership which incorporates the social aspects which are lacking from corporate wind developments given the lack of 'meaningful participation' that they allow for.

Another aspect of promoting local acceptance is defusing local objections and bringing would-be objectors onside. This is often difficult for corporate wind projects

where the developer contracts with some local landowners to place turbines on their land providing them with additional income, while others are left out of the process and out of a share in the resulting profit. This can cause a great deal of resentment among those who are left out and can lead to the project facing greater opposition. As Jobert et al. (2007, p. 2758) note in their examination of a German corporate wind project, "statements such as 'They profit and we have to look at it' were frequent", as were concerns of "a 'stranger'' penetrat[ing] their territory, disrupting it for his own profit."

While private wind developers could address these concerns by seeking to site their projects on public land, ensuring that the municipality would receive the land lease revenue as opposed to a smaller group of individual landowners, it seems that providing opportunities for meaningful local participation would be an easier (and better) way. By allowing local people to participate in the development of these projects and even to buy a stake in them, the scope for dissent is lessened and the scope of the benefits that these projects will provide to the local community is widened.

Some corporate developers do already understand this and have allowed local residents to invest in their projects, with one German project developer reserving 2 of their project's 14 turbines for local ownership. This move appears to have had been a very positive one for the developer, as according to Jobert et al. (2007, p. 2759) "the gesture itself seemed important for local acceptance…. By reducing the gap between a few 'winners' and many 'losers'… local ownership might well have helped to form a network in support of the park" (Wolsink, 2006).

Similar success has been seen in Scotland, where residents of the village of Fintry took matters into their own hands and ensured that they would benefit from a planned local wind project by working out an agreement to buy into it. These villagers "took the developer by surprise" by not voicing opposition to the project but by asking "the company to build an extra turbine and sell it to them" (Scott, 2009). After the initial shock, the developer seized this opportunity, added another turbine to their project, which would be owned by the community through a loan deal (also arranged with the developer). The turbine has already earned £140,000 for the village and could make the village up to £500,000 annually once the £2.5 million initial cost of the turbine is paid back (ibid.).

With only one person objecting to this scheme out of a village of 300 households (Scott, 2009), this project can be seen as a textbook example of how providing opportunities for the community to meaningfully participate in local wind projects leads to high levels of local public acceptance for these projects and a much easier time for the developers in getting these projects approved.

Given the success of this project for both parties, it is a wonder that this was the first project of its kind in the United Kingdom. One of the founding members of the Fintry project sees the "reluctance of developers to really engage a community" as one of the problems that limits such projects but also notes that the community "should make sure their voices are heard early on, and look to see if there is an opportunity for the community itself" (Scott, 2009).

7.7 Broader public acceptance

Bolinger et al. (2004, p. 4) provide a historical picture of Europe at the end of 2000 in which the total combined wind capacity (of Denmark, Germany, Sweden and the UK) was 9,083 MW and of this 7,333 MW (or 81%) was from community-owned wind projects. With the total number of household investors supporting these projects numbering nearly 300,000 households (292,000), this indicates that a high degree of public participation in wind power development led to a high level of acceptance for the wind power projects in general and a large deployment of wind power, particularly in Germany and Denmark.

Bollinger's (2005) contention that opportunities for direct community ownership increase the broader public support for renewables in general appears to be valid in light of the evidence presented thus far but to provide further clarity on this point, the study conducted by Maruyama et al. (2007) will be revisited.

The funds for the initial community wind projects that were built in Northern Japan were collected in unique way, with both a "local fund" and a "Japan fund" being set-up. The "local fund" was aimed at attracting local funding to construct a wind project in the local community, while the "Japan fund" was aimed at attracting funding from other parts of the country. This approach has been quite successful with nearly 2 billion yen as of 2006 (approx. $24.5 million) having been raised from individual contributions

throughout Japan, funding which has supported the development of several community wind projects (Maruyama et al., 2007, p. 2763).

This bringing together of local and non-local citizens to aid in the development of community wind projects has proved to be an important tool for increasing the broader public acceptance of wind in Japan. For instance, in the case of corporate wind projects, "the ripple effect for the local community is limited", while for community wind projects "by introducing the new value of participation and involvement in the project, community wind power creates a relationship between the people who live in a local community and the citizens who live outside that community" (Maruyama et al., 2007, p. 2763).

7.8 Actor interests in wind power projects and resultant benefits

Table 10. Interests in wind power projects.

Actor	Cost	Profit
Citizen	Investment risk	**Dividend** **Social participation** **Sense of ownership**
Developer	Business risk **Social responsibility** **Complementary fund raising**	Income of selling electricity **Realization of mission**
Local Society	Environmental burden	Construction demand Fixed property tax **Tourism** **Human exchange** **Sale of goods**
Financiers	Investment risk Fund-raising	Loan interest

Boldface shows the ripple effects

(Source: Maruyama et al., 2007, p. 2764)

Table 10 (above) provides an excellent illustration of the various societal benefits of wind power projects and the actor(s) that reap these benefits. The most interesting part of this table is the sorts of profits that occur as the ripple effects of citizen participation in wind

power projects. For instance, the profitable ripple effects (which can be termed as the secondary benefits of community power) can be seen to accrue to both the citizens themselves who are involved in community power projects, as well as the broader local society, which Maruyama et al. (2007) view as an actor in and of itself.

Now consider if this citizen involvement was removed from a wind power project. Along with it would disappear the dividend that these citizens would have received, the local spending (sale of goods) that would have resulted, and the jobs that this local spending would have created. As well, the increased social participation or the greater involvement of these citizens in their own community (human exchange) would not exist, nor would their sense of ownership of the project, a feeling that bolsters public acceptance of renewables.

8.0 Discussion

8.1 MCA 2

Table 11. MCA Evaluation Matrix 2.

Evaluation Matrix	**Ownership Models**	
Criteria	Corporate	Community
Local Economic Growth		
Economies of Scale	x	
Market-Oriented Production	x	
Economies of Agglomeration	x	
Local Social Vitality		
Equality of Opportunity		x
Democratic Participation in Decision-Making		x
Social Justice		x

(Note: this table is used to compare the relative advantages of each ownership model in terms of which is best suited to achieve each of the criteria listed)

8.2 Economies of Scale

Achieving economies of scale is important in wind power development as in any business, because they reduce the owners' cost of bringing their product (in this case electricity) to market. For instance, many of the major expenses associated with the construction of a wind park, (the connection of the wind project to the local grid, the renting of a crane to erect the turbines, the staff to install the turbines) are relatively the same whether you have one wind turbine or several. These costs increase as you increase

the number of turbines, but the majority of the costs would be the same as if you were installing one turbine and the per unit cost decrease considerably as more turbines are added (DWIA, 2003).

The importance of achieving economies of scale (even modest ones) is provided by the WindShare co-operative of Toronto, Canada. Their initial plan involved the installation of two wind turbines in downtown Toronto by the shores of Lake Ontario (WindShare, 2002). However, they were only able to construct one turbine as the agreement with the other landowner (the Toronto Port Authority) fell through. This (coupled with the subsequent bankruptcy of their turbine supplier and related maintenance issues) led to the situation where they have consistently lost money and have had to look at developing new projects (i.e. build more turbines) to become profitable, a situation which could have been different if they had been allowed to install another turbine in the first place (WindShare, 2009a).

The problem with achieving these economies of scale, which can make a project profitable, is that though the unit costs decrease (as the project size increases) the initial cost of setting-up a wind park is still high and beyond the reach of many communities. This is especially true given the current international financial 'crisis' which has reduced the availability of credit, making it even more difficult for community groups to raise the necessary financing a utility scale community wind park (i.e. 10+ MW). This difficulty securing financing is one of the reasons why community wind projects rarely exceed 20 MW or even 10 MW. Contrast this with corporate wind projects, which are often in the 100s of MW range and growing. The Government of Ontario, Canada recently awarded long-term power purchase contracts to five companies for the construction of six new wind projects throughout Ontario. These projects total 492.1 MW of renewable energy, for an average project size of approx. 82 MW, with the largest being 101.2 MW (OPA, 2009).

To create the same amount of generating capacity it would take 25 community owned projects of 20 MW. The total cost associated with setting-up these community projects would also be considerably higher than that of the large corporate projects, given the increased labour, equipment and infrastructure costs to set-up and maintain these smaller and more geographically dispersed projects.

It is much easier for corporate wind developers to achieve the necessary economies of scale to make their projects profitable and this is why, in the absence of strong government support for Community wind projects, the vast majority of wind projects in Ontario, Canada (and indeed throughout North America) are owned by corporate wind developers.

8.3 Market-Oriented Production

Market-oriented production would seem to be easier for corporate wind projects to achieve given their typically larger scale and relatively easier time that they have of raising capital and securing financing for their projects. Another factor is that historically, community groups have undertaken wind projects to satisfy their own local consumption and were not set-up to feed large amounts of electricity into the grid. This is certainly not the case across the board, but it still represents a decidedly different mentality to that of the corporate wind project, which is developed solely to feed electricity into the grid and is generally unconcerned with the local picture or supplying for local needs.

8.4 Economies of Agglomeration

In the same way that it is difficult for community groups to raise sufficient capital and financing to fund the development of utility scale community wind parks, it is also difficult to achieve the economies of agglomeration, which could be achieved through the siting of wind projects close to each other (allowing for sharing of infrastructure costs, maintenance staff, local grid capacity, etc.).

The problem is that if you are a corporate wind developer, you do not draw your capital or financing (generally) from the area in which you are developing a project and so you are not limited by the availability of capital or financing in that area.

The opposite is often true for community wind cooperatives who initially seek to raise capital and financing for their project locally and who might be prevented either by regulations or resources (marketing budget, lack of contacts in and knowledge of the areas further away) from expanding their fundraising efforts beyond their local area.

So, as with their greater ability to achieve economies of scale, it is also easier for corporate wind developers to achieve economies of agglomeration by siting their wind

parks closer together, creating in essence one large wind park and reducing the associated cost of each of the adjacent projects.

8.5 Equality of Opportunity

In terms of allowing local people an equal opportunity to participate in wind power development in a meaningful way, the evidence presented in this study clearly indicates that a community ownership structure would be best suited for this task. The reasoning behind this statement is straightforward.

First, members of the local community and not an outside corporation develop a community wind project. Second, while a corporate developer might offer opportunities for local participation, these opportunities are less meaningful than those offered by community wind developer as they do not usually include decision-making power or the ability to purchase an ownership stake. Finally, by purchasing one ownership share in a community wind cooperative, an individual is entitled to the same number of votes (one) as the largest shareholder in that cooperative.

Compare this to an individual purchasing shares in the parent company of a large, corporate wind developer. They would be lucky to be able to purchase any voting shares at all and could only purchase a small quantity out of the thousands (or millions issued) for the same amount of money, as the minimum investment in a wind power cooperative would cost.

8.6 Democratic Participation in Decision-Making

As section 7 illustrated, democratic participation in the decision-making regarding wind projects is not a hallmark of corporate wind projects. While some corporate developers are better than others (e.g. the Vattenfall and Fintry examples provided in section 7.6), local people are only able to participate to the degree that the developer allows and as such the process is not wholly democratic. In comparison, a community wind project that is owned by a local cooperative, which is governed by a ‘one member, one vote’ constitution is the essence of democracy applied to the governance of a wind power project.

A community wind project is as democratic as the coop members/owners make it, with the decision-making power resting in the hands of those local people who choose to

take part in developing the project. An example of a community that recognizes the importance of having this control over the decision-making process are the Chippewas of Georgina Island First Nation, an aboriginal band who call Georgina Island (an Island in Lake Simcoe in Ontario, Canada) home. The Chippewas of Georgina Island are developing a 20 MW community wind park on their land in collaboration with a local community wind cooperative. Their motivation for developing a community owned wind park as opposed to leasing their land to outside wind developers, was described by Band Chief Donna Big Canoe and Band Councilor William McCue as follows:
"The decision was based on the fact that the First Nation wanted some control in the actual decision making process regarding the windmill operation. We saw the opportunity to get community input into the development size and operational procedures" (Big Canoe and McCue, 2009).

Fintry, Scotland provides an example of how local people while starting their involvement later on in the process, achieved similar benefits by buying one of the turbines from the private developer. In this way, they were able to gain the ability to democratically decide how to use the revenue received from the sale of their turbine's electricity. The community "decided from the start that any money raised would be used for energy improvements", and because they owned this turbine they were able to make this happen. The municipality might have been able to direct the tax revenue that it received from the wind farm developer for this purpose, but the community ownership approach seems to have worked quite well in Fintry where, "half of the 300 households have already had roof and cavity wall insulation fitted, and some residents have seen their heating bills cut by hundreds of pounds a year" (Scott, 2009).

8.7 Social Justice

As with, achieving democratic participation in the decision-making process, promoting social justice would not seem to be a natural part of the mission statement of corporate wind developers. This is a goal that would be much more likely to be included in the manifesto of a community wind power cooperative.

An example of this is found by comparing the 'About Us' sections of the AIM and WindShare websites. On the AIM site they describe their company as follows:

"AIM utilizes wind power which is one of the cleaner and more environmentally friendly forms of electricity generation to develop projects ranging in size from less than 10MW to utility grade facilities of over 150MW throughout Canada and internationally" (AIM, 2009).

Contrast this, rather typical statement that could be found on the websites of any number of renewable energy companies, with that of WindShare:
"WindShare's mission is to demonstrate leadership and action in the community wind power sector, and to develop community power projects that are sustainable economically, environmentally, and socially. WindShare provides an alternative to large, centralized energy generation with the development of local, profitable and inclusive community power projects" (WindShare, 2009b).

Given the two 'About Us' statements above, it seems clear that an ownership structure in which the local community is in control would be much more likely to conduct their project in a way which promotes and nurtures social justice both within the project and the greater community. As well meaning as a corporate wind developer might be, being from outside the community, they have less of an understanding of the needs of that community and are less likely to be able to successfully promote social justice as an outcome of their project, even if it is part of their corporate mission statement.

To draw on the Chippewas of Georgina Island First Nation again, as an example of the goals of community wind developers, what they were hoping to achieve through the development of their community wind park was as follows: "An economic development project that will create some employment and eventually generate own source revenue, plus ensuring that we limit the impact on the environment to our natural resources" (Big Canoe and McCue, 2009).

In the end, non-local ownership means that the ultimate decision-making power for these projects will reside outside of the area in which they are being developed, creating a spatial separation between those making the decisions and those living with the consequences, those reaping the rewards and those dealing with any problems that arise. This situation makes the achievement of a socially just project difficult, if not impossible.

9.0 Conclusions

The interviews from Ontario that were conducted, coupled with the experiences of those in other countries that were presented from the available literature and media sources do seem to indicate that community projects are better for the local economy and in terms of creating public acceptance for wind projects and the policies which support them. However, the sample size of those interviewed for this study is far too small and not sufficiently representative to generalize about the benefits of community owned wind projects versus those of corporate owned wind projects.

This study also forwarded the contention that corporate ownership of wind energy projects will continue to be necessary for reaching the scale of deployment required for a fundamental transformation of our energy system. Corporate developers must; however, heed the message that providing opportunities for meaningful participation for local citizens will allow their projects to progress more smoothly and will likely save them a lot of time and money that would have otherwise been spent battling objectors.

Another key problem related to the issues of scale and appropriateness came to light over the course of this study. Large-scale corporate wind projects are economically rational in terms of reducing the construction and operating costs of wind projects but not economically rational in terms of producing the maximum local economic benefit. A clash between shareholder benefit and that of the individuals in the local community emerges. Also, while the smaller scale of community owned wind projects has been shown to be more appropriate in terms of local social benefits, it is more difficult to raise the necessary capital for such a project in the local area than it is for an outside company to finance a much larger project on the global markets.

All of this points to the need for more research into hybrid ownership structures for wind power projects, ones that combine aspects of community and corporate ownership structures. This research is needed to inform the debate about how to maximize the local and regional benefits of wind power projects, while ensuring the public acceptance that is so necessary to the broad and rapid deployment of not just wind but all renewable energy technologies. As only by recognizing the different strengths that corporate wind developers and community wind groups bring to the table will it be

possible to develop hybrid ownership structures that take local realities into account, while helping to accelerate the deployment of wind power worldwide.

In an Ontario, Canada context while the interviews conducted for this study do not represent a statistically significant sample of those involved in/affected by wind farm development in this province, the information that they have provided can be viewed significant in terms of providing a starting point for further research.

Given the insights that have been gleaned from these initial interviews, conducting a greater number of interviews with stakeholders throughout Ontario should yield some very interesting results and it is the conclusion of this study that such further research would certainly be warranted. With the large number of wind projects that our currently under development in Ontario alone (both corporate and community owned), conducting such a province-wide survey in the next few years would be a very useful exercise.

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Appendices

Appendix A: Initial Interview Questions for each stakeholder group

Chief and Council of the Chippewas of Georgina Island First Nation:

1. What motivated your community to develop a community-owned wind park as opposed to leasing your land to outside wind developers?
2. What do you hope to achieve for your community through the development of this wind park?
3. How would you describe your experiences with the process of developing the wind park so far?
4. Has this process yielded any unexpected benefits or created any unexpected problems so far?

People living near wind turbines:

1. How would you describe your experiences living near a wind turbine?
2. How would you describe your experiences (if any) with the wind power developer?
3. Given your experience, would you consider leasing your land to a wind power developer in the future?
4. Given your experience, would you consider purchasing your own wind turbine either by yourselves or in cooperation with your neighbours?
5. In your opinion, has the location of the wind turbines in your area yielded any unexpected benefits or created any unexpected problems for yourself, your neighbours, or the local community?

Landowners who have leased their land to turbine developers:

1. What motivated you to lease your land to a wind power developer?
2. How would you describe your experiences working with the wind power developer thus far?
3. How would you describe your experiences living near a wind turbine?
4. Has this process (i.e. Leasing your land and living with the turbine) yielded any unexpected benefits of created any unexpected problems so far?
5. Had you considered purchasing your own wind turbine either by yourselves or in cooperation with you neighbours?

Individuals who have joined/invested in wind power cooperatives:

1. What motivated you to join/invest in a wind power cooperative?
2. What do you hope to achieve through your involvement with this cooperative?
3. How would you describe your experiences working with the cooperative to develop your wind project?
4. Has your involvement with this cooperative yielded any unexpected benefits or created any unexpected problems for yourself?

Appendix B: Transcriptions of Video-taped Interviews conducted by the Author

(Note: '…' used to indicate pauses in speech, not omission of words. I have tried to capture the flow of conversation as accurately as possible but discrepancies between these transcriptions and the videotaped interview will exist. The interviews were videoed to maintain transparency and as I believe that they are more interesting to watch than the text is to read.)

Interview 1: Peter, Jim and Cathy Petker, conducted on Saturday February 14, 2009 near Clear Creek, Ontario

Jeff- So I'm here with Peter and Jim Petker, some gentlemen who have wind turbines of their land. And I just wanted to ask you a few questions. What motivated you, first off to lease your land to AIM, to the wind developer?
Peter- I guess, in our case it was something new, and you know environmentally, it's good and maybe it sounded like a good deal money-wise as compared to what we get for crops. It's superior really to what we can make off that little bit of land.
Jeff – Sorry and how much land were you saying again that the turbine uses up?
Peter – I've got a turbine and a substation. And in my case, half an acre is all it takes up. Basically like a mud hole you have to work around and we still have ninety-five percent of the land to rent out, or farm.

Jeff – And Jim you were saying it's about the same for you?
Jim - Ya, mine probably be a little less because I just have the windmill. The access, my access road is a little bit longer than his because they put it in the centre of the field, like the location for clearance on the houses and stuff. I got a little more laneway but it's nothing, it wouldn't be a half acre.
Jeff – Right and you were saying that the company guaranteed at least $5,000 per wind turbine, per year?
Peter – Ya, plus a percentage of the output.
Jeff – Plus a percentage and you were saying that that is equal to about, um from what you've been hearing from people, about over $3,000?
Peter – Around $3,000 and some say $3,800 but I don't know…like at the farms, there's six towers to a farm and they're grouped together, they're divide six ways evenly you know, so if your turbine doesn't turn it doesn't mean that you're not making income off the other five. So there all tied-in.
Jeff – Oh, they're all tied-in, ok.
Peter – The six are tied-in but the eighteen are not tied-in, just the six.
Jeff – Ok, the six are tied-in. So you and your neighbours are kind of, the land is grouped, ok. And you make something off of having the substation on your land as well, too?
Peter - Ya, it's about $5,000 (per year).
Jeff – About $5,000, ok. Um, so how would you describe your experiences working with AIM, the wind developer so far?
Peter – I would say, uh, no problems at all.
Jim – They were really good.
Cathy – Excellent… they were weren't they (in response to Jim's comment). They're very accommodating and patient with a lot of the people around here. But they were, oh my goodness, wouldn't you say? They were very good to work with.
Jim – They're considerate.
Cathy – Considerate.
Jim – Real considerate, ya.
Jeff – Ok, that's great. Um, ok, just a few more. And living near the turbines, have they caused any problems at all?
Peter – Not for us. For some people it seems to but…I think it's like you (Cathy) mentioned in your letter, a lot of it is in their head.
Cathy – Well, yes…
Peter – And it's mostly by people who don't have them of course.
Cathy – I think there's a lot in the imagination and basically some of them were not well before the windmills came in, so you know, I don't think you can blame it on the windmills.
Jeff- And you guys don't mind the sight of them too much?
Peter – No, I think they're quite spectacular. And a lot of people, more people drive by here, come to this area to see them…
Jeff – Like me for instance.
Peter - …which is quite new.
Jeff- Ok, that's interesting. Um, has it at this point in the process, as you've been going through it, having the wind turbines, working with these guys, yielded anything kind of unexpected in terms of benefits or problems? Like, is there anything that you've noticed?
Peter – Ours haven't been in long enough for us to really find out the benefits.
Jim – No, we've only really been working for over a year now. We've had no issues with them whatsoever.
Peter – The only issue, a little bit was when they were constructing, the roadways and stuff…
Jeff – Naturally, a little bit of an inconvenience there.
Peter – Ya, a little bit of an inconvenience and a mess but they do a good job of tidying up afterwards.
Jeff – Right, so this area is pretty… you know your neighbours around here? You know everyone?
Peter – Ya.
Jeff – Has this, um, sort of affected the feel of the community at all? Like are people…
Peter – Only the ones who moved here and, say in the last five or ten years. They seem to, I don't know, find something wrong . You know and can't really uh, at first it was birds. We were the first ones that Jim came to see and that was six years ago. A lot of, this is a biosphere area and is great concern about the, first of all, the swans. And, uh, when that didn't work out they moved to butterflies and humming birds. Like, birds are a little smarter than that. It's proved to be, really, somewhat silly and they bring it up at council, costly to AIM and but anyway…

Jim – Ya, they've had a lot of studies from the Ministry and the Government did stuff.
Jeff – Hasn't found out to be a problem?
Peter – It's not as though they just came here. They've had studies from all over, from North America, experts that have studied what the effect of windmills on birds and it's minimal to non-existent.
Jeff – 'Cause the blades turn pretty slowly there…
Peter – Ya, oddly enough, I don't know if I should bring this up, but they find that bats, more bats than birds…
Jeff – More bats than birds, right.
Peter – Not very many, maybe because there aren't that many bats around but bats have a tendency to…get hit by them. or something which is hard for me to understand because bats have radar.
Jeff – Ya, it might be with the way they navigate, get around, it's possible, ya. Ok, that's interesting, um last question. I was just wondering if before this, or with [your experience with] this project, had you guys considered at all getting together with your neighbours and buying the turbines yourself?
Peter – Ah…I've heard people talk about it but ah, unless you've got, say, a factory farm, or something it's $25,000 – $30,000 for a turbine, so for us it really wouldn't be feasible to have one but…
Jim – A hundred years' worth of hydro.
Peter – Some are talking of building them like…
Jim – Well there's a lot of farms up Niagara way and stuff, there are quite a few where there are big farms and big barns and stuff…
Jeff – Yep, they're looking to do that ya.
Jim – You see quite a few up already.
Jeff – But, even in terms of I know some, there are some people who get into the community wind farms with the bigger turbines like you see here but maybe only a few of them, is there been talk about that around here at all?
Jim – Not too much that I've heard of, I haven't really heard much about that.
Cathy – What they talked about was them in the lake, right in Lake Erie.
Jeff – So, offshore ones?
Cathy – Yes, offshore. So whether they will proceed with that at a later date, it's hard to say.
Peter – But again as Jim mentioned, like there's what you call a Clear Creek ridge out in the lake, which would be ideal for wind turbines. But the big problem is ice. There's four to five, ten feet thick and if it all moves, what kind of a base to withstand you know and that's a big problem there.

*** Continuation of interview 1.**
Jeff – Did she just move into the area?
Cathy – Ya, from Toronto.
Jim – Toronto, some years ago.
Jeff – So some years ago and she's just been kind of looking for things that are wrong with…
Peter – Ya.
Jeff – And the wind turbines were kind of an easy one, I guess eh?
Peter – Ya. Like I always feel that… if you move out of Toronto or Hamilton, um if it's so good there and you can improve it here, like why'd you leave? Clean-up where you came from, before you talk about, uh…
Jeff – And you'd think the lack of tall buildings and the relative lack of noise and traffic here would make people happy. A few wind turbines doesn't really change it that much, does it?
Jim – When you get people that, um, hear a tractor running in the morning and it drives them absolutely crazy, yet they lived in downtown Toronto with non-stop cars for thirty-five years, now all of a sudden one tractor is a real problem. It kinda makes you wonder, 'cause there's trucks, there's trains, there's streetcars, they must of heard traffic sounds before? Now you hear a tractor in a field like a half-mile away, so you walk across saying it's causing a problem.
Peter – Well, I should say at my age, why old people like to complain. Especially when they move to where they really have nothing else to do. That's the problem really. They don't have any hobbies and ah…

Interview 2: John Zachle and Brenda Jackson, conducted on Saturday February 14, 2009 near Clear Creek, Ontario

Jeff – So I'm here with John Zachle, and ah, thank you for answering some of my questions. Um, what I

was wondering is what motivated you to lease your land to the wind developers when they came by?
John – Well, it's extra income. Farming, was no way to farm.
Jeff- Ya, there wasn't as much money in it. And you said they give you $5,000 a year as kind of a base?
John – Ya, $5,000 a year plus it cannot exceed three and a half percent.
Jeff – So you get three and a half percent of what…
John – Of what she (the turbine) produce. That's what, I signed by the lawyer.
Jeff – Ok, and how would you describe working with AIM generation, the people who put up the turbines?
John – Well, they landscaped it good and the famer don't lose no land through this. It's like working around a water hole. In the field.
Jeff – So you can still…what have you been planting around there?
John – Oh ya, we put beans, corn…
Jeff – So it's no problem, it really doesn't affect that too much.
John – No, don't interfere nothing.
Jeff – Ok, perfect. Um, and living beside the turbine, have you noticed anything?
John – No, no difference. I sleep, like a horse.
Jeff –Sleep no problem. Do you notice the sound at all?
John – No. Not at all.
Jeff – No, it doesn't bother you? Has…
Brenda – In the daytime when you're outside you hear the sound but it's nothing, unless it's raining or snowing…It's nothing.
John – You can hear it (shrugs).
Jeff – It's not as much as the cars going by the road I guess?
John – No, no cars make more racket.
Jeff – Ya I could imagine that, I've been trying to listen, to hear and I couldn't hear 'em very well. Um, as well, just the process of living with and having the turbine, has there been anything unexpected that's come up? Good or bad?
John – Nice, fresh air, there's no residue, nothing. No maintenance for the government. You know, we don't have no white helmet guys [hydro one employees] running around here.
Jeff – You have some problems with the coming from Nanticoke [large coal-fired power plant, on Lake Erie, east of Clear Creek]?
John – Yes, I was on three puffers [asthma medication].
Jeff – You were on three puffers, ok. So, you're always working outside I guess.
John – Well ya, I've been farming all my life… I'm in my eighty-third year now.
Jeff – Going strong…Had you, I don't know, 'cause I know a bunch of people in this area that have turbines on their land. Had you and your neighbours ever considered buying the turbines yourself? Um, putting the turbines up yourself? Was that something you guys had thought about?
John – No, that don't pay. Because I see on television there is a guy either from Switzerland or Austria and the Ontario Hydro told him, if he produces hydro then he can hang in the grid. Now he spent a million dollars and he, they wouldn't let him connect… Hydro is stumbling block.
Jeff – So it needs to be easier for people to connect and then maybe it would be a little easier for that to happen?
John – Well ya, Hydro won't let 'em.
Jeff – So they [AIM Generation] basically just, this wasn't a hassle for you? They, you know, you sign a lease…
John – I sign a lease and they take care of, I don't have no headache.
Jeff – Ok, so it was an easy thing. That's great, so overall it's been a good…
John – Oh ya, it's been a win-win situation.

Interview 3: Brenda Rebry, conducted Saturday February 14th at the Clear Creek General Store, Clear Creek, Ontario.

Jeff – Ok, so I'm in Clear Creek at the General Store and this is Brenda Rebry and she runs the store. I'm just wondering, um how you would describe your experiences with the wind turbines, living near them?
Brenda – They don't bother me at all…Really.
Jeff – They're good, you can ah, is the noise a problem at all?
Brenda – I don't even hear it anymore…I don't even hear it.

Jeff – Do you get some people like me coming in to look at the wind turbines?
Brenda – Oh yes, lots of them. Lots of people.
Jeff – I see you've got a hat on as well. And those are one of the hats over there [hats have Lake Erie Windmills emblazoned on them]. And so you sell these to some of the tourists that come by?
Brenda – Oh, in the summertime they go like hot cakes.
Jeff – Oh, that's great. It's a nice area. Ok, um, well I've got another question for you. Have you had any experiences with the wind power developer, AIM, the guys who are building these? Sure. I knew the first ones that started it, very nice people.
Brenda – Nice people… So they've had meetings in town I take it. Oh yes, they've held meetings.
Jeff – So you feel like you've been pretty much informed as to what's been going on?
Brenda – Oh, ya. Yes, even before they started.
Jeff – Ok, well that's good. Given your experiences, would you ever consider leasing land to a wind farm developer if you had the space?
Brenda – Well, if I had the space, of course. I only, I sit on an acre.
Jeff – Ok, but if you had the space, you would definitely consider it?
Brenda – Ya, if I had fifty acres I would think nothing about it.
Jeff – Ok. Likewise, if you had the space, do you think you would consider purchasing one [wind turbine] for yourself? Have you ever thought about that?
Brenda – My son and I, we're a partnership, and we've thought about it. Having one. But, it's pretty expensive.
Jeff – Ya, so do you think that this is something that there needs to be more government support, or to make it easier people who want to do this?
Brenda – Yes. I do.
Jeff – Ok, Um…and given, just generally with the windmills being where they are, have you found any unexpected benefits or any unexpected problems with them being located here?
Brenda – None.
Jeff- No? It's a pretty good situation? I guess did you expect people would be coming by to have a look at them?
Brenda – They do. In the summertime it's just…
Jeff – Was that kind of surprising to you though?
Brenda – Well ya, that so many people, well, the windmills, the windmills. Ya.
Jeff – It's pretty neat, I saw the display down there [informational display board describing features of the wind farm, down the road from the store] and it's a nice thing to have near by too.
Brenda – Oh, yes.
Jeff – Does it seem like having the wind turbines around, has it been a good thing for the community generally? Or has it been problematic?
Brenda – Well I know some people who don't, they say it bothers them but I don't know, I have… one, two, three, four right there. And the back of my property, it runs quite a ways down. When I go outside with my dogs of course I hear a little wuss (sound the turbines make) but it's not annoying… to me anyway.
Jeff – And so most of the people around here, do you think are pretty much ok with them (the turbines), or…from what you hear.
Brenda – Most of them are.
Jeff – Do you think that some people are unhappy that they didn't get to have one on their land?
Jeff – That's part of it?
Brenda – I think so (smiles).

Interview 4: Julian Duncan, conducted at the WindShare wind power cooperative AGM, Tuesday March 10, 2009, Toronto, ON

Jeff – Mr Duncan, ah, you're a member of the WindShare cooperative, correct?
Julian – Yes.
Jeff- How long have you been a member of WindShare for?
Julian – Since it's inception, which, sometime around 2002 I guess.
Jeff – Ok, perfect. So, what motivated you to join WindShare?
Julian – Well, I was working a mechanical engineer and I found the wind turbines interesting and at that

time there wasn't very many in Ontario. So, I saw this co-op as a way to learn more about the machines and see if it'd be an industry that was interesting to work in. And to learn about wind power production in the real world, rather than just reading about it in magazines.
Jeff – That's great. Ok, so what do you or I guess what did you hope to achieve through your involvement with this cooperative?
Julian – Well, the cooperative was initially pitched sort of as an investment and they had a projection for a return and I looked at that and thought that would be interesting if it came about but it wasn't the real motivator. For me it was really to be involved in the experience of putting-up the turbine. To see it happening and to sort of get that sense of satisfaction when you drive by and say, I helped do that. You know on the waterfront there, that's partly my doing.
Jeff – Great, great. Ok, how would you describe your experiences thus far working with the cooperative to develop this project?
Julian – Um, I haven't been involved in the working level much. I monitor it occasionally, through email and through the website and I've been out to the AGM about half the time, I think. This is the first time I've been out in the last couple years. I always find it interesting to come out and see what's happening but ah, my main experience is things happen slowly, and you know it's very difficult to succeed. You know, that's what I've learned.
Jeff – Fair enough. Ok, so thus far has your involvement with the cooperative yielded any unexpected benefits or created any unexpected problems for yourself.
Julian – No, I don't think I've had any unexpected benefits or problems. I mean I've observed sort of the intermittency of wind power, because when I drive down the highway there and I look and see is that turbine turning and oh, it's not. It's windy today and I wonder why that is? So, you know it's sort of a more personal experience to see that.
Jeff – So you feel sort of more personally involved in the process at least?
Julian – Ya, that's right.
Jeff – I guess the social experience of being a part of the coop, how have you found that?
Julian – That's a-, it's been interesting. I've been out to a few of the information sessions that they hold and it's good to be invited to these sorts of things because you get a perspective from people who are very close to the actual work. You know, as opposed to reading it in the media, the literature or second-hand experience right?
Jeff – Great, thank you very much.

Interview 5: Larry Satler, conducted at the WindShare wind power cooperative AGM, Tuesday March 10, 2009, Toronto, ON

Jeff – So you're a member of the WindShare cooperative?
Larry – Actually, I'm a representative of a member.
Jeff – Representative of a member, ok. So, how long has the member that you are representing been a member of the cooperative?
Larry – One hundred percent of the organization.
Jeff – Of the time, so that was since, ahh…
Larry – I guess, since 2002.
Jeff – Ok, since 2002. Alright, so I guess you've been involved with this process since then?
Larry – In the sense of being an active member at general meetings, yes. I've not been a committee member nor on the board.
Jeff – Ok, basically, what motivated you to get involved with this project?
Larry – Well, the corporate member is a cooperative, who is the member of WindShare. And, I'm the coop guy at our cooperative.
Jeff – And sorry, what's the name of your cooperative again?
Larry – Ontario Natural Food Coop.
Jeff – So, what motivated, I suppose the board, if you're privy to that, to involve themselves with WindShare?
Larry - Well, 'cause we're a natural, we're in the business of distributing natural and handmade food, so environmental issues are part of our mandate. And I'm also interested in technology, so I have both a personal interest and a structural interest…in WindShare.
Jeff – Ok, perfect, so what was the hope to achieve from being a part of this cooperative?

Larry – We were basically supporting the cause.
Jeff – Ok. So it was more of an, altruistic, or…
Larry – Well, it was philosophical and then there, the risk to us was relatively low. So, the two complement each other.
Jeff – Ok, How would you describe your experiences so far with the cooperative?
Larry – Ah, interesting. The experience that the cooperative has had with its first turbine has been ah, as you heard in the AGM, ah there's been lots of twists and turns and surprises and ups and downs. Both on a technological level and a financial level.
Jeff – So for you and I guess for the group that you are representing, has your involvement yielded any unexpected benefits or yielded any unexpected problems thus far?
Larry – No real problems and the benefits for me personally have been a closer learning curve with respect to alternative energy, which didn't exist previously, it didn't exist to this degree before.
Jeff – Ok, excellent, thank you very much.

Appendix C – Text of comment submitted to the Simcoe Reformer website and subsequently posted both online and in the print edition of the paper (exact date unknown but in-and-around Feb. 8th)

RE: Norfolk wind turbines: Whirling controversy

I found this article and the variety of views expressed in it to be quite interesting. I am a Masters student researching the social and economic aspects of wind farm development and as such it interests me to see the very opposite views of those who live similar distances from these wind turbines.

I would like to try to come-up with a better explanation of why this is and to help with this I would like to talk to anyone who lives near these wind turbines. If you are interested in talking to me, I would be happy to come down and interview you in person.

I feel that the social aspects of wind power development especially have not been properly addressed and that is why I am trying to collect the experiences (both positive and negative) of those who have live near these projects.

Please send me an email or call me at: 905-713-3392 if you are interested.

Thank you,

Jeff Harti

Appendix D – Text of email answers to study questionnaire provided by Chief Donna Big Canoe and Councilor William McCue of the Chippewas of Georgina Island First Nation. Received April 21, 2009 (Responses in **bold**).

1. What motivated your community to develop a community owned wind park as opposed to leasing your land to outside wind developers.
The decision was based on the fact that the First Nation wanted some control in the actual decision making process regarding the windmill operation. We saw the opportunity to get community input into the development size and operational procedures.

2. What do you hope to achieve for your community through the development of this wind park?
An economic development project that will create some employment and eventually generate own source revenue, plus ensuring that we limit the impact on the environment to our natural resources.

3. How would you describe your experiences with the process of developing the wind park so far?
Very educational, having no basic knowledge of wind energy it has been very eye opening to see what other sources of power that we can rely on that is safe to the environment.

4. Has this process yielded any unexpected benefits or created any unexpected problems so far?
It has created a new awareness in the alternative energy sources, it also raised our communities interest beyond the normal expectations of nuclear power. It has also opened our eyes to the OPA [Ontario Power Authority] and how they control the amount of watts that can make or break a community project of this size.