Is Small Beautiful? Attitudes towards community-owned wind energy in Waitati

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A dissertation in partial fulfilment
of the degree of Bachelor of Applied Science
with Honours in Environmental Management
at the University of Otago,
Dunedin, New Zealand

November 2008

ABSTRACT

With the increasing public resistance towards large-scale energy projects such as hydro dams and wind farms, decreasing energy security and a perceived need to reduce carbon dioxide emissions, there is a need to develop energy alternatives. Such an alternative to the centralised, corporate-driven energy infrastructure that exists in New Zealand is community-owned, dispersed, small-to-medium scale energy systems.

There is currently a movement in Waitati, the Waitati Energy Project (WEP), which aims to pursue such an energy system, perhaps through wind energy. With this in mind, the aim of this project is to determine Waitati residents' perceptions of a range of issues relating to community-owned wind energy. While the literature on attitudes towards wind energy is well-established, the area of community-owned wind energy and local energy generation is relatively unexplored. Some academics have identified this as an important knowledge gap.

The research itself consisted of 13 face-to-face, semi-structured interviews. Qualitative data analysis techniques were used to extract key themes from the data, so that the differences and similarities between the responses could be examined.

Generally speaking, it can be said that the Waitati residents interviewed in this study were interested in the idea of generating energy at the local level, although they felt that there would be some difficult financial, political and engineering issues to overcome. There is sufficient foment within the Waitati community that a community energy project could feasibly be established. Waitati also holds an advantage in that there is a group of energy activists, the WEP, which can act as a forum for discussion, debate and information dissemination.

ACKNOWLEDGMENTS

This project would not have been possible without the support of my friends, family and colleagues. I would like to extend thanks to the following:

- First and foremost, to my supervisor Dr. Janet Stephenson, for providing support, encouragement, and the occasional correction in my academic career this year, and for expressing genuine interest in the work I was undertaking.

- Scott Willis and Bill Currie, for helping to grow the germ of a project I had at the start of the year, and for helping to facilitate meetings with those I needed to know.

- The Waitati residents who participated in this study. This project is about you, by you and for you. Thanks for the time you gave me, and I hope this document can help you on your path to energy independence.

- My fourth-year geography colleagues: we were truly in this together. Thanks for the laughs (and beers).

- My flatmates & friends for allowing me to bore them silly while talking about my project. Thanks for the loan of the cars, Ernie and Tom.

- My family for being a constant source of moral (and financial) support, and for taking an interest in my work here at University.

- Tom Waits, your music inspired me to ‘get behind the mule’, and prevented me from becoming like one of the vagrants who inhabit your songs.

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INTRODUCTION

The Parliamentary Commissioner for the Environment (PCE), in their 2006 report entitled 'Get Smart, Think Small', outlined an alternative vision for the future of New Zealand's energy system:

> '*New Zealand's electricity generating system is under pressure as electricity consumption rises each year. The response to this increased demand has been to build more large electricity generating plants. However, there is an alternative. Local energy systems can provide energy services without reliance on remote large-scale electricity generation*.' (PCE, 2006a; p. 7)

In light of the above quote from the PCE (2006a), it is pertinent to further define what local energy generation (LEG) actually is. LEG is referred to by a number of terms: microgeneration, dispersed generation, embedded generation, and distributed generation. Each of these terms refers to the same concept; small-medium scale, localised energy generation systems where the energy is consumed at or near the point of production (Strachan & Dowlatabadi, 2002). This contrasts with more traditional energy generation systems, such as the one currently operating throughout most of New Zealand, where the electricity is generated via a network of large-scale power plants and transmitted nationwide through a comprehensive transmission and distribution network. As demand for electricity increases, more energy generation facilities are constructed. However, the

transmission and distribution network can come under significant strain (Hoff *et al.*, 2006), culminating in power failures such as the ones that occurred in Auckland during 2006 (New Zealand Herald, 2006). There is also significant public resistance to expanding the existing generating base – recently, Project Aqua, a large-scale hydroelectric dam proposed for the Waitaki River was halted by public opposition. Even relatively low-impact large-scale power projects such as wind farms are facing resistance from groups such as the Upland Landscape Protection Society, who oppose Project Hayes, a large wind farm proposed in Central Otago (Upland Landscape Protection Society, 2008).

Some communities in New Zealand are beginning to make the transition towards the PCE's vision of a decentralised energy system. The community that is the focus of this study, Waitati, has established a group called the Waitati Energy Project (WEP), whose long-term goal is to establish some form of community-owned energy infrastructure (WEP, n.d.).

1.1 The Local Energy System

A local energy generation system has several constituent parts. The heart of the system is the small-scale production of energy, known as microgeneration. At current technology levels, this is generally through small-scale wind and solar power plants, as well as some gas-powered power generation. Critical to the effective operation of local energy systems is the need to control, manipulate and store electricity, such as batteries and smart meters. There are also a range of technologies that can be used to support microgeneration, either providing additional energy services, or improving energy efficiency, such as solar water heating. The human element of local energy systems is also important, as these systems require users to be much more active in their operation and maintenance than traditional on-grid systems (PCE, 2006a). Figure 1 below shows in great detail the broad range of technologies that can be utilised in an effective local energy system:

Figure 1: *A potential local energy scheme (PCE 2006; pp. 10-11)*

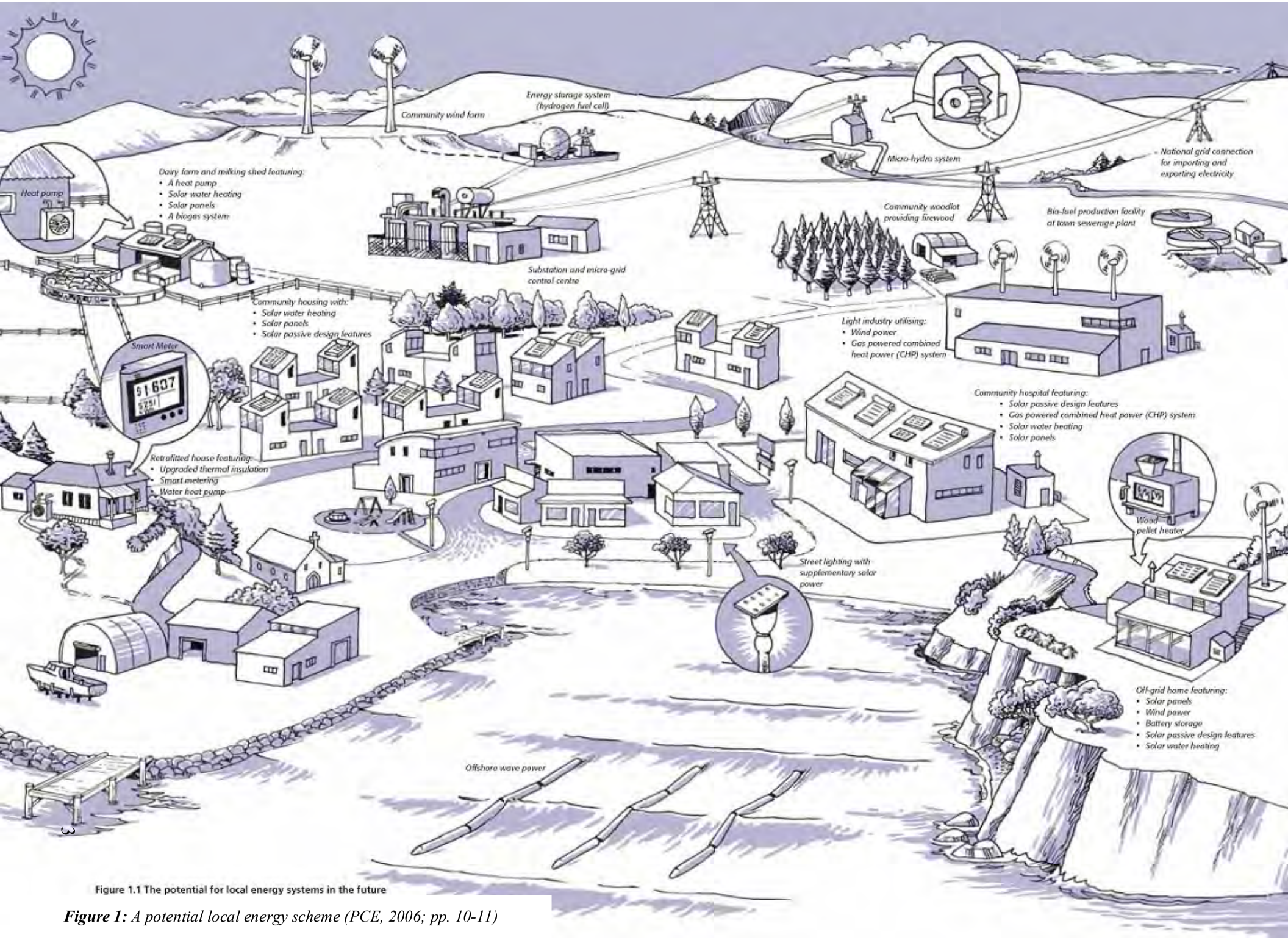

Figure 1: *A potential local energy scheme (PCE, 2006; pp. 10-11)*

1.1.1 Advantages to Local Energy Generation

There are a range of advantages that can be obtained by moving towards the PCE's vision of a more localised system of energy generation. For instance, LEG can enable New Zealand to meet the projected requirement of an extra 150MW of generation capacity every year (concomitant with an annual demand growth rate of 2%). These technologies are relatively easy to install, and additional infrastructure can be installed as demand increases. They may also face less public resistance than other forms of energy generation, such as large-scale hydro or wind power, leading to greater uptake of new energy infrastructure (Ministry for Economic Development [MED], 2007).

Grid efficiency and resilience can be improved by producing electricity closer to the point of consumption. This enables losses associated with distribution and transmission to be reduced. Peak loads are also reduced, thus reducing the likelihood of line failure (MED, 2007).

When energy generation facilities are small, dispersed, and located close to points of consumption, the effects of power plant failure or line overload are reduced, especially when compared to the negative impacts of a failure at a large, centralised power plant. Thus, the security of the energy supply can be ensured (MED, 2007).

Due to the small size of local generation, there are likely to be fewer barriers to those seeking to enter the energy market if this form of energy system becomes prevalent. With increased competition in the electricity market comes the potential for decreases in electricity prices for consumers (MED, 2007).

1.2 The Potential for Local Energy Generation in New Zealand

New Zealand's natural environment is particularly amenable to utilising microgeneration as an energy generation strategy. There is an abundance of renewable energy sources here, such as sunlight, wind and water – much of which is under-utilised, except for large-scale energy generation schemes. Local energy generation systems, being smaller and more localised in scale, have a significantly reduced environmental impact when compared with the development of larger power plants (PCE, 2006).

Despite the advantages to implementing small-scale, localised energy generation mentioned above, and despite New Zealand having an ideal environment in which such an energy system could function, there is a lack of uptake of LEG technologies. This is due to a range of barriers, which make the uptake of localised energy systems difficult.

The major barrier to the uptake of LEG is cost. Many microgeneration technologies are not economical in the short to medium term given current and projected energy prices, although technology advancements are expected to offset this somewhat. Figure 2 below shows the cost of a range of microgeneration technologies when compared with the average rural and urban electricity prices.

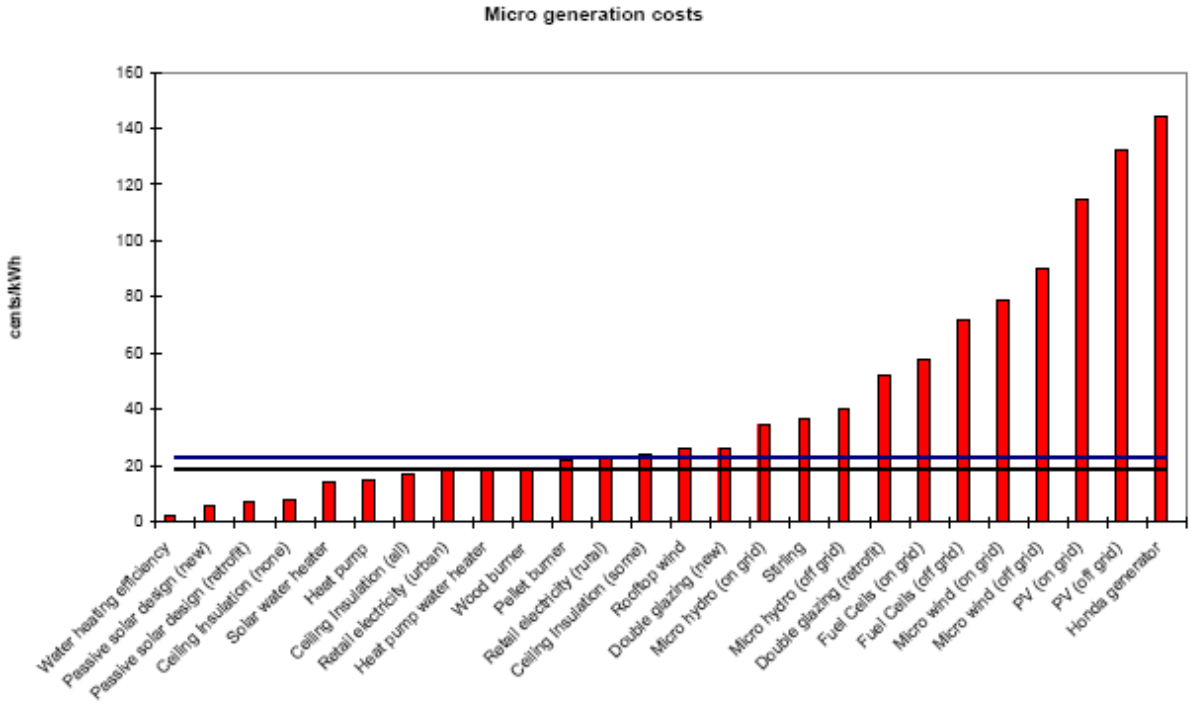

Figure 2: *Graph showing cost of various microgeneration strategies compared with current electricity prices – rural prices are denoted by the blue line, while urban prices are denoted by the black line (East Harbour Management Services [EHMS], 2006)*

With electricity costs forecast to increase over the period of 2010-2020, more of these technologies will become economically viable to the home user. The increased uptake of these technologies is expected to be centred largely in rural areas, and small, relatively isolated settlements, such as Waitati, which have higher electricity costs than urban areas (EHMS, 2006). The uptake of such technologies could also be enhanced by the government giving financial incentives to prospective end-users, such as such as tax relief or capital grants.

In addition to cost being a significant barrier, there is limited awareness of local energy generation and its associated technologies amongst the public. This is brought about in several ways. The technical challenges associated with the installation and operation of local energy technologies are significant, and could be intimidating for those seeking to pursue this energy path. The knowledge issue could be resolved by establishing a

research programme to enhance public knowledge and hence the uptake of local energy generation (PCE, 2006a).

There is also a significant barrier to local energy adoption in that there is currently no established policy framework to encourage communities to develop down such an energy path. An integrated strategy could be useful in resolving the cost and knowledge issues that are barriers to adoption of local energy generation, highlighting and prioritising issues that are to be solved, and excising institutional barriers (PCE, 2006a).

1.3 Waitati: A Transition Town

Waitati, the township which is the focus of this study, has chosen to explore the idea of developing a community-owned, localised energy infrastructure, which allies it with the PCE's vision for the future of New Zealand's energy system. In addition, Waitati has declared itself part of the Transition Towns movement (Transition Towns New Zealand Aotearoa, [TTNZA] n.d.). This movement originated in the UK, and has since spread worldwide, as a response to '*...the twin pressures of Peak Oil and Climate Change...*' Collectively, these towns are '*…taking an integrated and inclusive approach to reduce their carbon footprint and increase their ability to withstand the fundamental shift that will accompany Peak Oil.*' (Brangwyn and Hopkins, 2008; p. 3)

In Waitati this has meant that a range of eco-friendly projects have been undertaken within the community, from the establishment of the Orokonui ecosanctuary, to the Waitati Edible Gardens, which promotes community-grown produce (TTNZA, n.d.). The Waitati Energy Project (WEP) has been established to help address issues of energy security and affordability in the Waitati area, in the face of a lack of action on the part of central and local government in addressing these issues. They have held a range of meetings, workshops and film screenings on the subject. Their long-term vision is to develop a community-scale energy system, with the possibility of utilising wind turbines:

> '*Our vision is to lower our carbon footprint by developing an energy resilient system for Waitati within 5-10 years. Our vision involves collaboration with… partners who recognise the need for communities to engage in sustainable initiatives and seeks to develop partnerships with other groups, actors and communities concerned with the transtion* [sic] *to a lower energy future*.' (WEP, n.d.)

With a community such as this, that is actively attempting to pursue an energy path that is close to the PCE's vision of a decentralised energy system, it is important to gather information on the attitudes of the wider community towards decentralised energy systems, as this area is poorly-understood (Devine-Wright, 2005b), and groups like the WEP cannot be effective without the support of the community in which they operate.

Attitudes towards community-scale wind energy will be focused on in this study, despite the wide array of local energy technologies that exist. This is because wind energy is a well-known, mature energy technology that is very often a significant element of local energy systems. It also has impacts on the environment which are very obvious and immediate (EHMS, 2006) and so the opinions expressed by participants in this study are likely to be somewhat more strident than those towards less obtrusive energy sources such as solar power.

With this in mind, the purpose of this study is to determine Waitati residents' perceptions of a range of issues relating to wind energy, with a particular focus on attitudes towards community and household-owned wind energy. In order to do this, the following research questions have been formulated:

1.3.1 Research Questions

1. What are the attitudes of Waitati community members towards the concept of wind energy in general; towards the concept of local energy generation through wind energy; towards the idea of communities owning their own energy sources; and what are the perceived benefits and drawbacks of pursuing this energy path?

2. To what extent do these attitudes reflect theoretical concepts of wind turbine resistance, and how are these attitudes likely to impact a community's quest for energy self-sufficiency, in light of these theoretical concepts?

The following section, Chapter 2, is a literature review, comprised of an exploration of the academic literature on public attitudes towards wind energy, where relevant theoretical concepts will be discussed and critiqued. Next, Chapter 3 is a discussion of the methodology employed in this study, which is comprised of a section on the theoretical notions underpinning the study methodology, and a prescriptive outline of the actual methods used in data collection and analysis. Chapter 4 presents the data gathered in this study, namely Waitati residents' attitudes towards a range of wind energy and community ownership issues, and attempts to answer research question 1 by its conclusion. Chapter 5 is a discussion of the results outlined in Chapter 4 in relation to the theoretical concepts discussed in Chapter 2, assessing the extent to which these theoretical concepts can be applied in the Waitati case, thereby answering research question 2. Finally, Chapter 6 concludes this document, presenting the main conclusions drawn as a result of the study and the theory that underpins it, and assesses Waitati's prospects for undertaking a local wind energy initiative. Chapter 6 also discusses the limitations of this study, and the potential avenues for further study that could be explored beyond the limits of this study.

2

LITERATURE REVIEW

The study of public attitudes towards wind power development is a relatively new discipline, having only arisen since the late 70s, when oil price shocks, which caused subsequent rises in the cost of energy generation, brought wind power into the mainstream. As a result, much of the early literature, such as Thayer & Freeman (1987), which discusses public attitudes towards a large scale wind farm in California, is theoretically quite underdeveloped, simply describing the results of their surveys, rather than relating back to a theoretical framework. Recently, the field has begun to incorporate elements of landscape theory into its conclusions (Pasqualetti *et al.*, 2002), as well as ideas about institutional capacity and collaborative planning (Breukers & Wolsink, 2007). Some work has begun to develop theoretical frameworks that explain phenomena unique to the field, which will be discussed later. There is a surprisingly cogent body of literature growing up around this topic, and many studies from different locations reach similar conclusions on the nature of public attitudes towards wind farms. Presently, much of the literature is centred on the United Kingdom (UK), Denmark, Germany, the Netherlands and to a lesser extent, the United States (US).

In this chapter, there will be a discussion of the nature of public support for wind energy based on literature from a range of countries around the world. The idea of NIMBYism, as well as its deconstruction will be discussed. Landscape impacts that wind farms have on the values held by local people will be explored, with particular emphasis on scale, ownership and institutional influences. The dynamics of public attitudes towards wind

farms over time will be discussed, followed by a discussion of a critical concept, the social gap. This concept will be related to notions of spatial tension and an oppositional framework. Then means of resolving the social gap will be discussed. Finally, there will be a discussion of potential blockages to the social gap's resolution, utilising a Swedish case that is then related to New Zealand's current energy and policy climate.

2.1 The Nature of Public Support

Generally, there is strong public support for the development of wind energy at an abstract level – that is, a majority of people support wind power as a concept, an *idea*, recognising its environmental benefits and cleanliness as an energy source. However, wind farm developers still come up against strong opposition from the public when particular projects are proposed. This is known as opposition at the project level (Devine-Wright, 2005b). In trying to examine the opposition of individual projects, there is a tendency for most studies to focus on physical impacts of wind farms, such as visual, auditory, and environmental impacts (Thayer & Freeman, 1987), and only a little work has been done relating to notions of the social construction of attitudes towards wind farms and other abstract, symbolic elements (Devine-Wright, 2005b). This physical focus leads to assumptions that physical and aesthetic concerns are the most common motivators of opposition to wind farms. However, opposition is often directed at the process of wind farm development as much as the final product, something which is often overlooked in the literature (Devine-Wright, 2005b).

2.1.1 Not in my Back Yard!

A popular means of explaining peoples' attitudes towards the development of almost any kind of public good is the 'not-in-my-back-yard' syndrome (NIMBY). This explanation of public opposition at a project level is very widespread. NIMBYism is often used to describe any oppositional attitudes towards wind power, but is increasingly coming under

criticism in scholarly circles. It is increasingly regarded as an overly simplistic explanation, as it suggests that people have positive attitudes towards wind energy, until they are confronted with it, and then they oppose it out of self-interest. The logic of NIMBYism runs thus: locals would oppose a project because they aim to maximise their own utility, that is, they seek to prevent despoiling of their landscapes. However, because they support wind power in principle, they would exhibit support for wind turbines built elsewhere, generating a free-rider problem which results in the economically inefficient provision of wind power (Wolsink, 2000). Thus there is dissonance between public opposition towards wind power at the level of the individual project; and public support for wind power in an abstract sense.

According to Devine-Wright NIMBYism has fairly limited empirical support – if NIMBYism is characterised by a negative relationship between general and local perceptions of wind energy, studies would deliver results showing support for wind energy at a national level, with support diminishing at the local scale. The reverse is generally true – those who support national development typically support local wind energy development (Devine-Wright, 2005b).

Warren *et al.* (2005) tested the suggestion that NIMBYism was a largely irrelevant notion in a series of surveys throughout Ireland and Britain. They found that, although a temporary phenomenon, NIMBYism is actually rather widespread, particularly in determining where wind farms should be sited, where many would prefer them to be located out of sight, in remote areas or offshore. NIMBYism was found to decline over time, perhaps due to people becoming familiar with wind technology. Reflecting this fact was the finding that NIMBYism was more prevalent in relation to proposed wind farms, and decreased after construction was completed.

NIMBYism as a sole cause of public opposition is generally rejected in social science because it only offers a superficial explanation of the causes of opposition to wind farms, telling nothing of peoples' concerns or landscape values (Wolsink, 2007). NIMBYism can be defined as simply opposition for the sake of opposition, and thus it offers no

explanation of oppositional behaviours at all. Labelling all opposition to wind farms as NIMBYism can lead to bad policy decisions, since policy should seek to '*acknowledge the complexity of the situation rather than simplify it on the basis of questionable assumptions.*' (Wolsink 2007, p. 1200)

2.1.2 Other Explanations for Public Attitudes towards Wind Power

With NIMBYism largely discredited as an explanation for peoples' attitudes towards wind power developments, or at most seen as a relatively transient phenomenon, work has focused on unearthing a more accurate picture of the public's attitudes towards wind energy. Some studies have posited that aesthetic factors and landscape values are foremost among wind opponents' concerns. Physical factors such as location, design, size and number of turbines have a significant influence at the project level, but not at the abstract level. In contrast, environmental concerns and wind's cleanliness as an energy source are generally under-represented in opponents' concerns at the project level, but are strongly present at the abstract level of support.

Individuals with negative attitudes tend to cite aesthetic concerns, while those who had positive attitudes towards wind developments tended to do so on the basis of connotative characteristics, such as efficiency, safety, cleanliness and see wind farms as a progressive development (Thayer & Freeman, 1987). Other studies have shown that individuals with positive attitudes towards wind power tend to hold '*global and altruistic*' (Warren *et al.*, 2005; p. 862) attitudes, are concerned with protecting the environment and seek to encourage the development of renewable energy. These views are often combined with oppositional attitudes towards nuclear power and fossil fuels. Additionally, few of these supporters cite self-interested reasons such as financial benefits or subsidised electricity, as a motivation for their support (Warren *et al.*, 2005).

There are a range of physical impacts that many cite as a reason for their resistance towards wind farms in their area. It seems that opponents to wind farms are largely

concerned about the visual impact that turbines can have on landscapes (Wolsink, 2007). Concerns about the visual landscape impacts of wind farms are not entirely unreasonable, as Warren *et al.* (2005) states:

> '*…landscape impacts of wind farms are exacerbated by the fact that the locations with the highest wind resource are often…those exposed upland areas which are valued for their scenic qualities and which are often ecologically sensitive*.' (Warren *et al.*, 2005; p. 857)

2.1.3 Noise and Landscape Values

The noise made by the rotation of turbine blades is also a cause for concern in wind turbine opponents. However, in many studies, there is not a strong correlation between noise annoyance and actual sound level. Annoyance as a result of noise is in fact more strongly related to landscape values and visual impact, rather than to actual decibels. Again, reflecting the importance of landscape values, wind projects are sometimes seen to be an improvement on landscapes which are already heavily modified by human activities, such as industrial or intensively agricultural areas (Wolsink, 2007).

2.1.4 The Scale of Wind Farm Development

The impact of scale (number of turbines) and size (height of turbines) of wind farm development on people's attitudes towards wind farms seems to be somewhat site-specific. Some studies, such as Thayer & Freeman (1987), found that respondents preferred smaller numbers of large turbines to larger numbers of smaller turbines. This study examined peoples' responses to a large-scale, centralised, commercial wind farm, consisting of 6,000 individual turbines (Thayer & Freeman, 1987). A wind farm on this scale has landscape impacts on a far grander scale compared to smaller, more community-based schemes. Overall however, research suggests that people are more in

favour of smaller-scale wind developments, such as single wind turbines, rather than large-scale wind farms (Walker, 1995). Devine-Wright's (2005b) review recognised a similar trend in contemporary literature: smaller wind farms have greater public support than large-scale wind farms. A theory known as the favourability gradient has developed to support this notion. The favourability gradient states that there is an inverse relationship between wind farm size and public support – that is, public support for wind farms declines as the scale of development increases (Lee *et al.*, 1989). Additionally, the public has been found to prefer smaller wind farms even if it means that there would be multiple wind farms in a single locality. Thus, people tend to prefer multiple scattered landscape impacts rather than a single monolithic impact (Warren *et al.*, 2005). Ultimately, the influence of wind farm scale on public opinion seems to be a cumulation of a range of different factors which impact on the visual intrusion of a wind farm into the landscape. These factors include the size, number, colour of turbines, and how they are arranged in the landscape.

2.1.5 The Planning Environment

Another significant factor in the formation of public attitudes towards wind power is the planning environment in which wind power developments are approved for construction, and in which the public can contest these proposals. There are also significant impacts on the manner in which communities can engage with wind energy, both in terms of influencing the outcomes of privately developed wind farm proposals and in having the facilities available to develop their own sources of renewable energy (Warren *et al.*, 2005). In countries such as Germany and Denmark, the planning environment has developed in such a way that the transition towards wind power has been rather smooth as there is a greater emphasis on building institutional capacity, which Wolsink describes as '*knowledge resources, relational resources, and the capacity for mobilisation*' (Wolsink, 2007; p. 1204); and enhancing collaborative planning approaches within their planning systems, which are very underdeveloped in many countries (Breukers & Wolsink, 2007).

The planning systems in the Netherlands' and the UK are still very much in development in terms of encouraging the implementation of wind energy. This means that while wind development continues apace, it is the source of much conflict and controversy. Many European nations have set ambitious renewables and emissions targets for themselves, but have either not achieved these targets, or are not on target to reach these within the prescribed timeframe. It is suggested that the comparatively low approval rates of wind energy projects is due to interaction of local attitudes towards wind farms and the institutional flaws in local planning agencies, rather than the mere presence of negative attitudes (Wolsink, 2007; Toke *et al*., 2008).

Devine-Wright (2005a), in his study of community wind farm development in Wales, provides an analysis of the planning situation in the UK. Wind farm development there has typically been driven by the private sector, with more economic and environmental motivations than social concerns. This has led to great levels of controversy over new wind farm development, with high numbers of proposals stalling, and calls into question the equity and relevance of the current approach to energy development. As a result, many people are beginning to question this method of wind farm development, and are seeking to develop greater community consultation and involvement in the development of energy infrastructure in their area. A view that is gaining some credence, both in the literature and in UK government policy documents is that:

> ' '*...local energy end-users could and should participate in energy planning and their grasp of energy issues as end-users – coupled with their knowledge of local conditions – needs to be fully integrated into the decision-making process.*" (Fielden, 2000; p. 45)

This sentiment was echoed by the Royal Commission on Environmental Pollution, which made a recommendation that communities should analyse their impact on the environment in terms of energy demands, and the tools which can be used to meet these demands. To this end, a range of voluntary private and public sector actors have sprung up in the UK, such as the Community Renewables Initiative, which encourage local

communities to become more involved in their energy decisions, and seek to enhance the development of localised, small-scale energy systems.

This kind of development has been proposed in the past, particularly in relation to the soft energy path. The soft energy path is an idea which posits that energy should be utilised for the greater social good, it should utilise renewable energy sources, encourage efficient energy use, and energy diversity (Lovins, 1977). The idea of community-based energy development also harks back to small-scale development advocates (Schumacher, 1974). These ideas are generally unsupported by policy, with bias towards supply-led rather than demand-led energy development. This necessitates the development of a centralised infrastructure, creating a spatial disconnect between generation and consumption. This disconnect is challenged by the idea of community-owned, renewable and distributed generation. If community-owned energy becomes more prevalent, this spatial disconnect would be reduced and 'human' aspects of the development, such as social capital and community empowerment come to the fore. Economic benefits can also accrue locally through distribution of profits, energy savings, upskilling and employment opportunities for locals, and owning shares in a community wind farm (Devine-Wright, 2005a).

In relation to the UK, Devine-Wright (2005a) argues that the current wind development philosophy is centralised, large-scale and lacks any social considerations. Consultation, local involvement and the embedding of wind energy developments has been superficial at best. This is reflected in the British Wind Energy Association's guidelines, which do not make any reference to local ownership or management (Devine-Wright, 2005a). The focus of public opposition towards wind developments, at least in the UK, has often not been on the turbines themselves, but towards the planning process, which is seen as exclusionary and ineffective; and towards wind farm developers, who are often seen as interlopers.

Commenting on the UK, but with relevance to the New Zealand situation, Warren *et al.* (2005) argue that the controversy over wind power development ultimately stems from a lack of overarching energy policy, as well as a lack of emphasis on wind farm planning. This effectively leaves local government to deal with wind power development with little

guidance from central government. Additionally, the dash towards wind power has occurred so quickly that a planning framework has not been able to develop to guide it resulting in haphazard development with little consideration of integration with other infrastructure, nor strategic development of the regions in which these developments occur. Cumulative effects are also difficult to mitigate when each wind power development is approved on its own merits. This lack of consistency creates uncertainty for all involved, leading to conflicts between developers and residents, which are expensive, time-consuming and create unnecessary conflict (Warren *et al.*, 2005).

Resistance to wind farms can be reduced to some extent through enhanced planning and consultation procedures, or alternatively, encouraging local ownership and management of small-scale wind farms. In this way, people can internalise some of the negative landscape impacts in the form of economic, environmental and social benefit

2.2 Temporal Variations in Public Attitudes

Public attitudes are dynamic rather than static. Research has shown that public attitudes towards wind farms change over time. Figure 3 below shows the U-shaped development of public attitudes towards wind, as outlined by Krohn & Damborg (1999). Before a wind farm is constructed, public attitudes towards wind farms are typically positive. Positive attitudes steadily decrease once the construction of a wind farm is announced, and continue to decrease over the construction and completion phases of the wind farm. Walker argues that t his is largely due to the prevalence in many countries of the planning model known as ‘decide-announce-defend’. This means that a wind farm location is decided, announced by authorities and developers and then defended against public criticism. This model is unfortunately fairly typical of many planning procedures, and is responsible for generating mistrust and conflict due to a lack of public involvement (Walker, 1995). Public opinion improves again after completion of the project, when the exaggerated perceptions of the impact of a wind farm wear off (Warren *et al.*, 2005).

Initiating more substantial and meaningful consultation processes, as well as enhancing communities' ability to establish their own wind developments on their terms could go a long way to enhancing public attitudes, and reducing their fluctuation over time. Studies like Krohn & Damborg (1999) and Wolsink (2007) have found this explanation of changes in peoples' attitudes towards wind farms over time to be empirically supported by the data they gathered. Although this concept is widely utilised in explaining the development of public attitudes over time, Devine-Wright (2005b) warns against applying this concept universally to all wind developments, stating that attitudes are complex, and that they are subject to a range of site-specific influences.

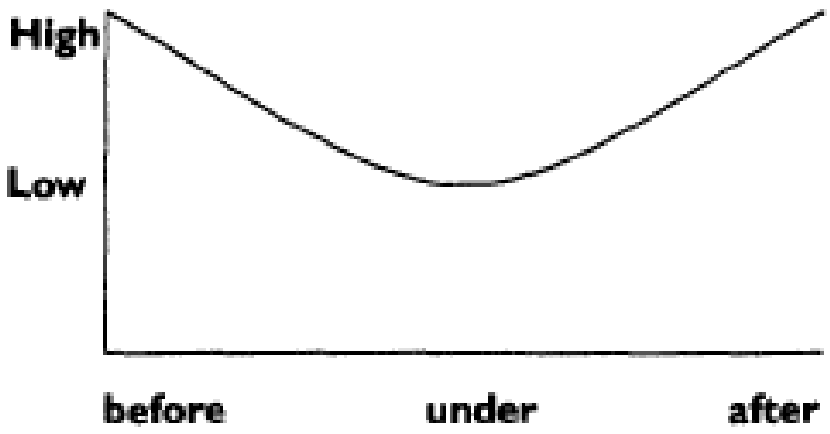

Figure 3: *Level of acceptance of wind energy in an area before, during (under) and after construction of wind turbines (Krohn & Damborg, 1999)*

2.3 The Social Gap

The concerns of the public that have been mentioned previously, that is, the physical impacts of wind farms, the scale of wind farm development, and the planning environment which exists to regulate wind power implementation are all factors which can negatively impact peoples' receptiveness to the construction of wind energy developments of any type in their area. Interestingly, a majority of people support the

idea of wind energy in principle (Devine-Wright, 2005b). This gap between support for wind energy in a general sense, and opposition to specific wind projects has been defined by Bell *et al.* (2005) as the social gap:

> '*…the gap between the* ***high*** *public support for wind energy expressed in opinion surveys and the* ***low*** *success rate achieved in planning applications for wind power developments*.' (Bell *et al.*, 2005; p. 461)

Bell *et al.* (2005) posit three explanations for this gap and the implications they have for policy makers, as follows:

2.3.1 Explanation 1: Democratic Deficit

Opinion polls show strong support for wind farms, with some UK examples showing around 80% support. However, only around a quarter of UK wind farm developments are approved by planning authorities (Bell *et al.*, 2005). Bell *et al.* argue that this comparatively low approval rate indicates that the oppositional minority control wind power development, and that this is largely because of the adversarial design of the planning process, where those who are pro-wind farms have a limited forum in which to actively support individual wind developments. The intention of consultation sessions is generally to air and then solve grievances rather than to express support. To dislodge this deficit, a shift to collaborative planning approaches is necessary. This is done through a shift within the planning apparatus from interested parties competing against one another to a collaborative, consensus building approach; meaningful participation in planning processes rather than top-down consultation; dialogue between the public and policy makers, rather than policy makers 'educating' the public. Finally, it is crucial to encourage the participation of the silent majority (Bell *et al.*, 2005). Walker has also suggested that the 'general public' is strongly in favour of wind development, as are the 'local passive public' – that is, the silent majority. It appears that 'active publics', such as activist groups, are in the minority. However, it would not be appropriate to dismiss their

views simply because they are in the minority, as these viewpoints may represent those who are most directly affected (Walker, 1995).

2.3.2 Explanation 2: Qualified Support

This is the belief held by members of the public that wind energy is a good idea, but that constraints must be placed on its development. Bell *et al.* (2005) argue that the best way to overcome this form of opposition is to accommodate locals' landscape concerns. This is done through attempting to change peoples' minds so that the '*qualifications on their support are reduced or modified*' (Bell *et al.*, 2005; p. 468); or changing aspects of proposed wind farms in order to meet the criteria of support. This requires the effective dissemination of information to the public, although any information provided will be re-interpreted by the public in terms of their individual beliefs. By informing the public, they are more likely to engage with energy issues as they are more visible, familiar and relevant to them. Building trust is also important, as information provided by authorities and developers will be considered suspect when mistrust abounds (Bell *et al.*, 2005).

2.3.3 Explanation 3: Self-Interest

Self-interested opposition towards wind farms can be classified as NIMBYism. This stance is characterised by support for wind power as an abstract concept, but opposition towards wind power developments in local areas for self-interested reasons. It is rational for society to produce wind energy (a public good), but it is also rational for individuals to free-ride on the contributions of others. Thus the public good, in this case, wind power, is not provided, or is provided in a reduced and inefficient manner. Self-interestedness can be appealed to through financial compensation – either in the form of money or in shares in wind farms (Bell *et al.*, 2005).

The social gap is an important concept, because it has been proven to exist through the wide range of surveys on wind energy that have been conducted, and it is important that

it is overcome in order to develop wind resources in an effective and equitable manner. Attempting to resolve the social gap provides challenges for planning authorities in conflict resolution, and reduces complacency by forcing both authorities and potential wind farm developers to engage with, and meaningfully consider, the public's concerns.

2.3.4 Because of the Gap: Spatial and Temporal Tension

In addition to the tension applied to wind energy development by the social gap, there is spatial tension that exists within the wind energy debate '*...in that the arguments in favour of wind power mostly relate to global and national aspects, whereas the case against wind energy mostly relies on local or regional issues.*' (Warren *et al.*, 2005; p. 867) This spatial tension is aggravated by the nature of the impacts of wind farms: while climate change is undeniably important, the impacts are long term, diffuse and large-scale and so they can be 'put off' by the public, private enterprise and government. Conversely, local landscape impacts are very visible, immediate and localised. Opposition therefore arises because wind farm impacts occur on a timeframe that people and institutions can relate to, and little regard is given to the long-term implications of not developing renewable energy sources (Warren *et al.*, 2005). Thus, global or national issues tend to be reduced to background 'fuzz' if peoples' landscapes are under 'threat' from wind farm development (Wolsink, 2007).

The social gap is a phenomenon that has been proven through empirical evidence. If the gap between high public support for wind farms and low support for planning applications can be bridged, there will be greater uptake of wind energy, and reduced conflict in the process. This could be done through both community ownership of wind energy (Hinshelwood, 2000), and through reducing the scale of wind farm development (Walker, 1995), which would be appropriate for a community-based development.

2.3.5 The Four Forms of Wind Farm Opposition

Wolsink (2007) proposes a framework of four forms of wind farm opposition. This outlines the human contributors to the spatial/temporal tensions implied by the social gap, and delineates the types of public opposition that contribute to the social gap. Wolsink's framework is as follows:

1. Positive attitude towards wind power in general, opposition to local projects (NIMBY).
2. Opposition towards wind power in general, opposition to local wind projects (not in any back yard, or 'NIABY').
3. Support for wind power, which becomes negative as a result of being exposed to additional information about the proposed project.
4. Opposition created by flaws in wind farm design, rather than rejection of wind power in principle.

Because the majority of people express support for wind energy, at least at the conceptual level, Wolsink argues that NIMBY and NIABY are unlikely, or infrequent, explanations for peoples' opposition to wind farms. The final two forms of opposition are most likely to represent public resistance to wind farms. However, wind developers and planners continue to utilise the NIMBY explanation to explain the 'social gap' between public support for wind power in general, and resistance towards particular wind energy developments (Wolsink, 2007)

2.3.6 Resolving the Social Gap

As mentioned before, it is necessary to resolve the social gap in order for wind development to occur in a manner which is efficient, equitable and desirable. Increasing society's acceptance of wind energy will smooth the transition to a renewable-based economy. Additionally, bridging the social gap will enable wind power to reach its full

potential as a part of the world's renewable energy base and enable governments to reach ambitious renewable energy targets (Bell *et al.*, 2005)

In Wolsink's (2007) study on public attitudes towards wind energy in the Netherlands, a number of institutional factors that led to the failure to meet renewables targets are outlined, similar in nature to those experienced in the UK (Devine-Wright, 2005a). There tends to be a policy bias towards large-scale wind developments, and energy utility companies as primary developers; there is little unity within the Netherlands' body of policy, and many conflicting policy objectives; insufficient emphasis on planning for the siting of wind farms; and a money lending system focused on capital investment rather than energy efficiency and yield. Policy is typically biased towards economic considerations rather than dealing with challenges such as climate change, energy security and energy diversity. Policy mechanisms also tend to be focused on economic incentives and directed at established market actors.

However, the wind energy market is still rather immature, so it is unclear whether these policies are targeted at the appropriate actors. It is also unclear who is the most relevant actor to effectively implement wind farm technology, as the current bias towards large-scale development is squeezing out smaller-scale entrepreneurs and research institutions. Furthermore, many stakeholder groups are virtually ignored in government policies and industry guidelines, which fosters public resentment towards wind power developments (Wolsink, 2007).

Countries like Germany and Denmark seem to have found a solution. They have adopted a wind market model encouraging local wind cooperatives which fund and manage their own wind farms. This form of ownership tends to be more equitable and garners more active support than the model employed in the UK and the Netherlands. Even in communities where ideas about public consultation, decision-making and local ownership are unfamiliar or unconsidered, these elements are often aspects of wind projects for which there is significant support (Hinshelwood, 2000). Resolving the incoherencies and imbalances in wind energy policy, the structure of the wind energy market, and therefore

the way in which wind energy is implemented are important in resolving the social gap, as it will ultimately encourage more equitable wind development, and significantly less opposition to such developments.

In the UK, some studies have found that local involvement improves the rate of acceptance of new wind energy developments by planning authorities. This suggests that, oftentimes, it is not merely the size of a wind farm that determines the acceptability of a project to planners. Rather, it is the nature of ownership; the extent of consultation and involvement of the community; and the support by local citizens which impacts on the likelihood of a wind project being granted consent (Toke, 2005). There are four principal forms of community involvement:

- Consultation with the community, which is usually limited to public meetings;
- Payment of communities by wind farm developers, with the public increasingly encouraged to purchase shares in wind farms;
- Community ownership, of which there are no examples in the UK.
- Community-led wind farm development, of which there are no examples in the UK (Hinshelwood, 2000).

Official encouragement of local involvement in wind farm developments is an indication of a move towards resolving the social gap. However, despite planning authorities' newfound friendliness towards consultation and local involvement, it is still fairly limited in the UK.

However, there are some positive, albeit inadvertent, policy developments. The UK has in place a Renewables Obligation (RO) system which encourages the development of renewable energy through the trading of Renewables Obligation Certificates (ROCs), which function in a similar fashion to carbon credits. These certificates can be traded for money, incentivising power companies to develop renewable energy sources. Surprisingly enough, despite its slow uptake, there is greater potential for profit from locally-owned wind energy in the UK compared to Germany, due to the RO scheme, and

a naturally windier climate (Toke, 2005). If some of the policy biases towards large-scale wind developers can be ironed out, there is significant potential for local wind energy development in the UK (Devine-Wright 2005a). Profitable community-owned wind co-operatives will be more acceptable to the public at large, and so one could expect the social gap to be reduced somewhat.

2.3.7 Blockages to Resolving the Social Gap

There is a Swedish example that provides an insight into the institutional blockages to addressing the social gaps both in New Zealand and abroad. Khan (2003) discussed the nature of wind power planning in three separate Swedish Municipalities. In Sweden, there is a high degree of autonomy in local government, and a relatively ambiguous central government policy towards wind power. In the three municipalities discussed, there were three quite distinct planning approaches, which led to different ownership and public participation outcomes. The article highlights the need for guidance from central government; otherwise the development of wind farms occurs by trial and error, with unforeseen cumulative effects on the environment and communities. With the impetus for wind development coming from a wide range of disparate private actors, planning occurs at a reactionary, incremental level. Khan (2003) notes that this leads to large-scale, haphazard, wind energy development, which is not implemented on an equitable basis and thus exacerbates the social gap. To solve this problem, he considers that there needs to be communication and collaboration between local authorities, and oversight from central government through the preparation and enforcement of regional plans, national guidelines and standards.

New Zealand suffers from a similar problem. Central government has '*little influence on the location, scale or distribution of wind farms in New Zealand*' (PCE, 2006b; p. 77). Like Sweden, the Netherlands and the UK, this is largely left to private developers and local municipalities, which are not particularly collaborative or farsighted in their approach. In New Zealand, the Ministry for Economic Development (MED) have

released a report which discusses the advantages of smaller-scale, widely-dispersed wind farms (MED, 2006). The PCE has released a similar report advocating for the implementation of local energy technologies (PCE, 2006a).

There are social advantages that countries with extremely advanced wind development, such as Germany and Denmark, have over New Zealand. There is a strong community of energy extension agents in mainland Europe that has existed since the 1970s, particularly in Germany and Denmark (Toke *et al.*, 2008). These extension agents typically take the form of small-scale energy enthusiasts/activists, who provide information and technical assistance to interested parties; consultants who discount their prices for small energy producers; and retail outlets specialising in energy products. These agents provide information, technical support, and discounted equipment for those seeking to begin some kind of local energy initiative. As a result, they have been instrumental to the success of local energy initiatives in Europe (Devine-Wright, 2005b). Knowledge is a key barrier to implementation of small-scale, community-owned or managed wind farms in New Zealand (PCE, 2006a), as such a pool of knowledge, volunteers and activism has not yet matured.

2.4 Conclusion

It can be seen that there is starting to develop a strong, theoretically-grounded literature devoted to studying public perceptions of wind farms worldwide. The underlying causes of peoples' attitudes to wind farms are of prime interest to this study, so it was important to get past superficial arguments such as the NIMBY concept, which is largely discredited in the literature (Devine-Wright, 2005b; Wolsink, 2007), or is at best treated as a temporary phenomenon (Warren *et al.*, 2005). This means that some of the roots of these attitudes can be examined, particularly notions of scale, ownership, and the visual and noise impacts that wind farms may have on peoples' valued landscapes.

The idea that there is a social gap between support for wind power generally, and resistance towards particular wind energy projects reflects the above notions held by the public, and has become a key concept in this literature review, and indeed this study. The four forms of wind farm opposition that Wolsink (2007) posits has also become a key concept, as it provides a useful consolidation of the range of views that many wind farm opponents hold. These theoretical frameworks will provide useful constructs in the data analysis phase of this project.

It appears from the controversy over large-scale wind farms such as Project Hayes (Save Central, 2008) that the social gap between public opinion and actual implementation of wind power is very much in place in New Zealand. Perhaps by pursuing a soft energy path, one of small-scale, dispersed community owned wind farms (among other technologies), this social gap can be resolved. If the village of Waitati successfully pursues an energy path such as this, it has the potential to become a microcosm of the wider nation's quest for energy security, and an example for other settlements to follow.

The literature review presented here has revealed that the area of small-scale wind energy is relatively under-studied. However, '*with moves to develop smaller-scale wind turbines and building integrated wind turbines in urban areas…there is a need to go beyond a predominantly rural, upland, wind farm-focused body of work*.' (Devine-Wright, 2005b; p. 135) This study therefore seeks to document the attitudes to wind power of a community that is actively moving to transition to a more sustainable energy future.

3

METHODOLOGY

The first part of this chapter discusses the broad social research paradigms which have informed this study. Secondly, there is a discussion of the way in which this research was designed. This is followed by a re-examination of the research questions posed in Chapter 1, and a discussion of the methods used to answer them. Then follows an outline of the actual application of methods, from participant selection, to interviews, to data analysis, as well as the handling of ethical issues. Finally, this section concludes with a discussion of potential research limitations.

3.1 Research Paradigms

While there are a multitude of paradigms which have informed social research, three in particular are dominant. These are positivism, interpretive social science and critical theory (Sarantakos, 1998).

Positivism is the oldest of the social science theories. In recent times, it has come under a great deal of criticism, and is largely rejected as a sole theoretical standpoint in the social sciences, although it still dominates the physical sciences. Positivism sees reality as objective and measurable, independent of human consciousness. Under positivism, this objective reality should be measured and described according to strict, scientific

principles. Many social scientists, however, still utilise positivist perspectives to inform their methodologies (Sarantakos, 1998).

Interpretive perspectives contrast with positivism in that they see reality as not objective and independent of human consciousness, but as being socially-constructed and experienced differently by each individual. Correspondingly, interpretive methods are less concerned with objectively treating each study as unique, and are more concerned with placing emphasis on the meaning of social actions rather than the actions themselves (Sarantakos, 1998).

Critical theory arose out of Karl Marx's work, as well as feminist theory. Reality is seen as a construct of the powerful members of society, often to suit their own interests. This perspective lies somewhat between positivism and interpretive social science – critical theorists state that reality can be studied, but it is not value-free, and that researchers should not merely document reality, they should act on it to remove injustice (Sarantakos, 1998).

This study adopts elements from each of these paradigms. From interpretive social science, this study draws on the need to understand why people hold certain attitudes, and the subjective meanings of these attitudes, particularly in relation to small-scale wind power.

Critical theory informs this study in the sense that New Zealand's current energy generation system has difficulty providing for the nation's electricity needs, and that small-scale wind energy (among other technologies) is potentially a viable solution (PCE, 2006a). There is necessarily a tension between the interests of the large energy providers, who are largely motivated by profit, and the interests of community members who may wish for greater self-determination and control over their energy supply (Devine-Wright, 2005a). By asking community members their views on energy issues, perhaps some of the flaws in New Zealand's current way of thinking about energy can be highlighted, and awareness and support for alternative forms of energy can be enhanced.

Whilst the main theoretical touchstones of this study lie in interpretive social science and critical theory, and the majority of the data is qualitative in nature, certain methodological aspects of this study have a positivist basis. This is because positivism provides a strong methodological framework in which to operate, filtering some of the bewildering range of potential research tools and reducing uncertainty on the part of the researcher (Sarantakos, 1998). The positivistic elements of this study will be discussed in greater detail later in this chapter, but include such aspects as the random selection of participants, the use of standardised surveys, the incorporation of some quantitative elements, such as demographic information, and the repeatability of the methods employed.

3.2 Research Design

In a broad sense, this study is a case study utilising qualitative data. This study draws primarily from the cognitive anthropology domain of qualitative research. This school of thought postulates that peoples' attitudes and knowledges are arranged into interrelated categories, which are in turn expressed through language (Jacob, 1988). The study reflects this approach by eliciting responses from participants about wind energy, and then categorising their responses.

As mentioned in Chapter 1, the research questions that this study aims to answer are as follows:

- What are the attitudes of Waitati community members towards the concept of wind energy in general; towards the concept of local energy generation through wind energy; towards the idea of communities owning their own energy sources; and what are the perceived benefits and drawbacks of pursuing this energy path?

- To what extent do the attitudes discovered in the study reflect theoretical concepts of wind turbine resistance, and how are these attitudes likely to impact a community's quest for energy self-sufficiency, in light of these theoretical concepts?

3.2.1 Sample Selection

In using qualitative data gathering and analysis techniques to answer the above questions, the objective is to gain an in-depth understanding of the attitudes of the participants, rather than to hold any pretence to objectivity or representativeness. A sample size as small as the one in this study cannot hope to be representative of an entire community, and the methods described later in the section reflect this. Other studies have typically looked at community attitudes towards large-scale wind turbines. They have employed large sample sizes, ranging from around 100 (Warren *et al.*, 2005) to over 500 participants (Ek, 2005). They tended to utilise a mixture of qualitative and quantitative surveys. Quantitative results at this sample size can be analysed and produce a statistically-relevant, representative result. Due to the small sample size surveyed in this investigation of only 13 participants, there is little point in emphasising quantitative data, as conclusions can be subject to inordinately high levels of statistical error at low sample sizes (Sarantakos, 1998). Thus, depth, rather than breadth of opinion was sought in designing the survey.

A stratified sampling system was selected for this study. In order to make manageable an in-depth, qualitative study within the limitations of an Honours dissertation, a relatively small number of participants were selected. The final number settled upon was fifteen participants. In order to widen the range of responses as much as possible, twelve of these participants were randomly-selected. Names and addresses of all Waitati residents were taken from a subsection of the 2005 Electoral Roll, the Waitati Habitation Index. These names were sorted alphabetically in a spreadsheet, and a random number generator was used to extract names from the corresponding rows in the spreadsheet. Each of the twelve

names randomly pulled from this list of residents was contacted by phone, and arrangements were made to conduct the interviews at the participants' convenience. In the event of people declining to take part, further names were randomly extracted from the list until the full complement of randomly-selected participants was arrived at. In order to gain an understanding of the attitudes of small-scale wind energy advocates within the Waitati community, three names were taken from the Waitati Energy Group's email list, based on their activity within the organisation, knowledge of renewable energy, and ease of contact. Again, arrangements were made to conduct the interviews at the participants' convenience. Only one of these people responded, as the other two were unable to participate for personal reasons.

3.2.2 Survey Design

Six open-ended questions were formulated to provide data to address Research Question 1. Open-ended questions act like 'guiding topics' for discussion, and are meant to elicit responses of some depth from the participants. If points needed to be expanded or clarified, the interviewer can probe beyond the prescribed questions. The questions are listed in Table 1 below, which shows the questions that were asked of the respondents. These questions were designed to obtain the views of respondents on a range of energy issues, working from large-scale, nationalised wind farms, to smaller wind energy alternatives, and gathering respondents' opinions on the scale of wind farm development, as this has proven prominent in the literature (Lee *et al.*, 1989). In questions 3 and 4, the survey explores the support for wind developments at Waitati, which is the crux of this piece of research. The scale issue is reduced even further, down to the level of household ownership of wind turbines. Finally, the respondents' perceptions of advantages and disadvantages of community-owned energy generation were sought. This was done in order to elucidate what Waitati residents perceived to be benefits or costs might arise in establishing a community-owned wind farm.

Table 1: Survey Guiding Questions

1. What is your opinion of the move towards developing large scale wind farms in New Zealand?

2. What size and scale of windfarm development would you prefer, if any?

3. Would you support or oppose the development of wind energy if it were to occur near Waitati? Why?

4. If a wind development were to occur near Waitati, would you prefer it to be owned by the community or would you prefer corporate ownership? Why?

5. Do you have any personal interest in owning a home wind turbine, or would you prefer a community-owned wind turbine, or some other alternative? Please endeavour to give reasons for this.

6. Do you perceive any costs and/or benefits of generating energy locally through small-scale wind turbines?

One quantitative question was included, regarding the participants' preferences for scales of wind farm development. Scale drawings of various-sized turbines were made **[See Appendix C]**, and participants were asked to select their most preferred scale of development. This was intended to give participants a visual representation of the impacts of wind farm development upon a landscape Other studies, such as Thayer & Freeman (1985) have utilised similar visual aids. Demographic data was also gathered from respondents in order to get a sense of the characteristics of the respondents.

3.2.3 The Interview Process

At the outset of the interviews, the respondents were asked to read the information sheet provided, and sign a consent form to ensure that the respondents consented to being interviewed on a free and informed basis. Interviews were conducted either in people's homes or at some other pre-arranged location. Thirteen interviews were conducted, and they ran from around 10 to 40 minutes. The length of the interview was entirely dependent on the respondent, and once the questions were exhausted, the interview was concluded. The interviews were recorded on a digital dictaphone, for ease of reviewing later.

3.2.4 Data Analysis

The initial process of data analysis involved familiarisation with the data itself – that is, transcribing the interviews and reading them over. The interviews were then annotated. Once the review process was complete, a thematic framework was constructed. The main elements comprising this framework were: '*a priori issues…, emergent issues raised by respondents…and analytical themes arising from the recurrence or patterning of particular views or experiences*.' (Ritchie & Spencer, 2002; p. 313) This was done by extracting the essential information that each participant provided in response to the questions asked by the interviewer, and charting that information according to each broad discussion topic. **[See Appendix E]** Next, thematic indices were developed in order to categorise statements made by the participants, arranged according to the indices applied to it – essentially, expanding the thematic framework from individual interview transcripts to the entire data set (Ritchie & Spencer, 2002). This organised the responses of the participants in a logical manner, so that the data could then be discussed, and the similarities and differences between the respondents' positions could be highlighted and more easily discussed in relation to theoretical concepts examined in the academic literature. **[See Appendix F]** Thus, some viable conclusions about the views of Waitati

community members could be drawn, and the implications of those views for the development of community-owned wind energy at Waitati could be assessed.

3.3 Ethical Issues

Any research being undertaken which utilises human subjects must apply for Ethical Approval from the University of Otago Ethics Committee before research can begin. This ensures that researchers behave in an ethical fashion. Such an application was lodged, and Ethical Approval was granted for this study. In terms of the researcher-respondent relationship, Sarantakos (1998) has identified some areas where the researcher must take a duty of care:

- Identification and clarification of the researcher's intentions at the outset of the study.
- The researcher should uphold the welfare of the participant.
- Participants must provide free and informed consent.
- Researchers must respect the participants' right to privacy, anonymity and confidentiality.

Free and informed consent was ensured by providing an information sheet, which outlined the objectives and purpose of the study, the nature of the information that was to be collected and how it will be used, as well as providing contact details of the researcher if the participant had further questions. Once this sheet had been read by the participant, they were asked to sign a consent form, which meant that free and informed consent had been given to the researcher to utilise the information provided by the participant. **[See Appendix B]**

3.3.1 Consultation with Maori

The Ethics Committee suggested that the research presented here would be of interest to Maori, and thus they should be consulted. A short précis of this study was submitted to the Ngāi Tahu Research Consultation Committee, who expressed interest in this project. They felt that it would be pertinent to have a copy of the findings of this study made available to them. Additionally, they felt that a copy of the findings should be made available to the local rūnaka, Kāti Huirapa ki Puketeraki Rūnaka.

3.4 Potential Limitations

There are inherent weaknesses in utilising qualitative methods: there are high levels of subjectivity, and hence reliability and validity of the data become somewhat problematic. This can be overcome somewhat through thorough analysis of the data set, and taking measures such clarifying unclear statements with the participants. Also, especially within this study, where there is a small sample size, representativeness of the data set can become an issue (Sarantakos, 1998). However, as has been stated earlier, it is not the aim of this study to provide a representative cross-section of Waitati residents' views; rather, it seeks to gain an in-depth understanding of a range of viewpoints within the community.

4

RESULTS

This chapter reports on the results of the survey that was conducted on 13 members of the Waitati community. Each question that was asked in the survey will be discussed in turn. The major themes that came out of the resulting discussions will be examined, compared and contrasted, in an attempt to highlight differences and similarities in the respondents' opinions, and selected quotes from respondents will be used to illustrate those points. Respondents are referred to by a capital letter 'R' followed by a number in the order in which they were interviewed.

Ultimately, the aim of this chapter is to answer the first research question posed in Chapter 1:

Research Question 1:
What are the attitudes of Waitati community members towards the concept of wind energy in general; towards the concept of local energy generation through wind energy; towards the idea of communities owning their own energy sources; and what are the perceived benefits and drawbacks of pursuing this energy path?

Table 2 below shows the basic demographic data that was obtained for each respondent, including gender, age and employment status:

Table 2: Demographic Information from Respondents

Gender	**Number**
Male	6
Female	7
Age	
18-25	0
26-35	0
36-45	2
46-55	4
56-65	4
66-75	0
76+	3
Employment	
Full-time	8
Part-time	1
Unemployed	0
Retired	4

It can be seen that, due to the small sample size, there is some bias towards middle-aged people, and there is a dearth of younger people who participated in the study. The majority of respondents were employed full-time.

4.1 Question 1: What is your opinion of the move towards developing large-scale wind farms in New Zealand?

4.1.1 Support for Large-Scale Wind Energy

Generally, there was a very positive response to large-scale wind energy expressed by the respondents interviewed in this study. Out of thirteen respondents, only three expressed negative attitudes towards large-scale wind farms, although in discussion most of the respondents added caveats about the siting, impacts, and transmission issues, associated with large-scale, centralised wind farms. For example, in regard to supporting large-scale wind farms, R7 discussed the need for a range of integrated energy sources within New Zealand's energy system, stating that:

> '*I think that we'll need some* [wind farms] *but I don't think that they're the total answer, nor that large scale is the only option for wind farming.*'

R7 also mentioned that large-scale wind farms do not '*get around*' issues with transmitting energy from remote areas to points of consumption.

R13 had been in support of large-scale wind farms, but had swung to opposition, having found out more about the impacts of wind farms on landscapes, particularly during the construction phase, stating:

> '*...I was in favour of wind, and then I thought, "I need to find out more about this," and so…I went to an information evening…At this information evening I found out about what other people thought and the damage that can occur to the environment just by constructing these things, and so I swung quite strongly against them really.*'

Four respondents saw wind energy as important, as using it represents a shift towards an economy built on renewable resources. One of these respondents, R2, stated that renewable sources of energy, such as wind and solar energy were grossly under-utilised in New Zealand.

Three of the respondents even saw protestors or opponents of wind farms as something of a nuisance. R11 stated that they do not offer solutions to New Zealand's energy problems.

4.1.2 Scale

Scale was an issue raised by 6 of the respondents before Question 2, which relates directly to scale, was even discussed. Generally speaking, the respondents who mentioned scale were quite receptive to small-scale wind. R2 stated '*...if it can be done smaller, more localised, it would have to have benefits too*', indicating that communities would benefit through localised, small-scale wind energy. R13 saw wind farms as preferable to alternatives, but similarly sought to reduce the impacts of wind farms on the landscape by reducing the scale of wind farm development, stating:

> '*... I guess my position is now that I would definitely rather see wind than things like nuclear, but I think the scale is all wrong, and there's potential for a lot of damage to the environment.*'

One respondent exhibited an indifferent opinion towards the scale of wind farm development, stating '*I don't care about scale, as long as it works.*' [R1] R3, speaking in relation to large-scale, corporate-owned wind farms felt that large-scale wind farms would be more efficient, and maintain economies of scale. This also relates to his relatively indifferent opinion towards wind energy in general: '*If they...think those are the most cost-effective ways of generating energy, that's fine.*'

4.1.3 Impacts and Siting

Impacts were found to be closely-related to the theme of siting, in that many respondents felt that wind farms should be sited in locations where the impacts could be minimised to the greatest extent. Visual impacts were the most commonly-mentioned impact of concern to respondents. Eight respondents cited these impacts as a concern, or as a

potential source of resistance for wind farm development, particularly in relation to valued heritage landscapes such as the tussock grasslands in Central Otago, as well as local landscapes. R9 summed up these attitudes particularly well:

> '*…there are plenty of places where they could go, but not on countrysides where they are a one-off, not for New Zealand…but for the world, and that's the Central Otago landscape…there are some landscapes…here like, for example the Otago Peninsula, and…the hills at the back of Waitati, where I don't think anyone would like to see a row of helicopters…*'

R2 also saw a tension between the preservation of landscapes and society's ever-expanding need for new sources of electricity, stating:

> '*…I know the country doesn't look anything like it did in the beginning…So it does all change. I don't think we should make it worse though. But then, people need power.*'

Other respondents also mentioned noise and bird strike effects as negative impacts that might make them somewhat wary of large-scale wind energy. Wind turbines were described by R4, who has had experience with large wind turbines in his homeland, as '*making a hell of a lot of noise.*' Bird strike was seen as a particularly pertinent impact if turbines were to be constructed by two respondents [R7 and R9], particularly in relation to the ecosanctuary being set up at Orokonui, near Waitati.

Some respondents mentioned that the impacts of wind farms were preferable compared to alternatives such as hydroelectric power stations and transmission lines [R1]. This was a reason that 6 respondents cited in their support for wind farms. For instance, R11 compared wind farm impacts to the impact of dams, stating '*…if you're comparing it [wind turbines] to dams, then you can't pick a dam up and move it if you decide to change location.*' This statement was echoed by other respondents, such as R9:

> '*…the last thing we want to see on the ranges of Central Otago…is rows and rows of windmills. And of course at the same time, the last thing we want to see is more of our rivers dammed, a I don't think we want to see tall concrete cooling towers or silos as well.*'

Four respondents saw the siting of wind turbines as an important factor in reducing the impacts of wind farms. The respondents stated that it was extremely important to be sensitive to the natural characteristics of an area when siting wind turbines [R9, R11], and that wind farms should be scrutinised almost on a case-by-case basis, in order to minimise their impacts on the landscape [R13]. R2 stated that landscapes that had already been modified, such as McRae's gold mine, would be appropriate for wind farms, as the landscape there has already been '*wrecked.*'

4.2 Question 2: What size and scale of wind farm development would you prefer, if any?

4.2.1 Scale Preference

In general, the respondents did not hold absolute attitudes towards the size (height of turbines) and the scale (number of turbines) of wind farm development – the majority of respondents tended to state that the size and scale of wind farm development was dependent on other factors, which are explored below. Three respondents preferred small-scale, individualised wind turbines [R1, R4 and R6], and two respondents preferred mid-sized turbines as shown on the scale drawings in the questionnaire **[See Appendix C]**, one respondent had no preference [R2], and another said she would prefer no wind development at all [R8]. The remaining five respondents said that the size and scale of wind farm development would ultimately depend on factors such as: 1) the location of the wind farm; and 2) the purpose of the wind farm – whether it is part of the national energy infrastructure, powering a community, or a single household. R3, R7, and R9 argued this point in perhaps the most succinct fashion:

> '*If from a national level, the large systems are obviously going to be the best systems. A large one wouldn't bother me, as long as I wasn't affected by the*

noise. From an issue of generating one's own power…then of course I'd be more interested in the smaller ones, but on a national scale, the bigger, the more they can produce, the fewer that are needed would be in my view probably a better option…' [R3]

'*…I think for big farms, you might as well go for the biggest, there's no point in just having clusters of small ones. But if you're just having…2 or 3…in relation to…a few houses, then I would scale it down…and the more urban the thing becomes, I think the smaller you can go. Otherwise they become a bit big and unsightly.*' [R7]

The point made by R7 above was also echoed by R10. She stated that the closer wind farms are to areas of human habitation, the smaller they should be, in order to minimise impacts. R9 felt that the smallest wind turbines were not necessarily the best option across the board, as they do not provide much electricity:

'*…it's very easy to point at a diagram like this and say, "Oh, that's the one I want, because it's the smallest, the least obvious." But because it's the smallest, it's going to power five-eighths of sweet bugger-all.*' [R9]

R9 also went on to add that he tolerates large-scale wind power on the basis of utility – it can power a large number of households, although small-scale wind energy would be appropriate for individual households, or groups of houses.

R13 added a slightly different slant to the opinions expressed above. She stated that at '*... the small community level, and the…household levels, I think wind could create quite a good solution.*' However, she felt that the very largest wind turbines, as shown on the diagram accompanying the questionnaire **[See Appendix C]**, could not be absorbed by the landscape, and therefore she was likely to be completely opposed to them.

R2 added the point that having small-scale generation near to peoples' homes makes them more aware of energy issues in general, and would make people more careful with their consumption.

4.2.2 Impacts and Siting

The siting of wind farms was considered to be of key importance by seven respondents. It was closely linked with the impacts of wind turbines by five respondents, who stated that wind turbines, no matter the scale, should be sited so as to minimise impacts on both people and landscapes. As a solution to this, R10 proposed that they should be as far away from human habitation as possible. By contrast, R9, when discussing the Brooklyn Hill wind turbine in Wellington, thought that urban landscapes are perfect locations for wind turbines as they are '*…already blighted with houses…*' R5 was unconcerned about visual impacts on the environment.

R4 and R9 cited the need to site wind farms in such a way that both negative impacts are minimised, and the efficiency of the wind farm is maximised, with R9 stating:

> '*…the moment you put something on a skyline, it's much more noticeable. If you're able to put things on the side of a gully where there is a draught going through, which is exactly what they've done for example in the Manawatu Gorge…And whilst they are still reasonably obvious, it's not quite the same as adorning a crest, which is the sort of thing people object to very strongly.*'

R13 also stated that wind turbines should be kept away from landscapes of value, such as coastal landscapes or native bush.

4.3 Question 3: Would you support or oppose the development of wind energy in Waitati, and why?

4.3.1 Support for Wind Energy near Waitati

Respondents tended to be very supportive of the idea of a wind turbines being installed at or near Waitati. Only one respondent [R8] was unsure as to whether they would support such a development. Two respondents offered the caveat that landscape impacts would have to be minimised as much as possible [R9 and R13], while others stated that it would have to be owned by, or at least undertaken in consultation with, the community for them to support it, so that benefits flow back to the community rather than to a corporate [R2, R4, R11]. R2 sums up this position most succinctly, saying that:

> '*...you can cope with something on your own landscape, if you know it's for the good of yourself and your community. But if it wasn't, I think there'd be more opposition to it.*'

R7 suggested that he would support wind energy near Waitati because he believes that there is '*...a big advantage in having power close to…where it's used.*'

Again, siting and impact mitigation were key issues brought up by several respondents, that seem to go hand-in-hand with one another. R13, in particular, emphasises the importance of siting, and of community consultation, stating:

> '*...it should be something that people get to discuss, and no doubt it will create problems, because unless it goes back on the hills beyond where there is any people living…then some people are going to find it close to their backyards and might find it offensive…I do think consultation and negotiation is quite important about the siting of anything like that…*'

R9 also stated that the landscape around Waitati, and the Leith Saddle in particular, would be suitable for a wind turbine in terms of the persistence of winds occurring there.

4.3.2 Energy Issues

The respondents raised a range of points relating to both the current energy situation at Waitati, and the potential solutions and problems that a wind energy development might

bring to Waitati's energy position. Some respondents complained that Waitati suffered from power cuts, which were problematic [R1]. These complaints tended to come from those living somewhat outside the Waitati community proper in the wider Waitati Valley area. Residents of Waitati township felt that power cuts have become less of an issue, particularly in recent years [R7 and R10], and that power prices are more of an issue [R11]. Other respondents also mention power cuts and power prices as an issue in response to later questions.

Two respondents brought up issues of energy efficiency and consumption during this discussion. R8 felt that there is excess consumption of electricity, and that more effort should be placed in conservation. Similarly, R7 argued that New Zealand's houses tend to be very inefficient in relation to heat capture and storage:

> '*Heating systems and buildings, you know, I think it's an area where we're professionally weak, actually, compared to Europe and the Northern Hemisphere.*'

He also stated that it would be irrational to put wind turbines in and then use the energy they provide inefficiently.

There were other issues that respondents raised during the discussion of Question 2. One was the issue of being energy-independent of large corporates, a theme which appeared throughout the survey. R1 characterised his experience with energy companies as rather antagonistic, and saw localised wind energy as a means to be independent of them.

4.4 Question 4: If a wind development were to occur near Waitati, would you prefer it to be owned by the community, or would you prefer corporate ownership, and why?

4.4.1 Preference for Community or Corporate Ownership?

Of the thirteen participants, seven stated that they would prefer that any wind development that might occur near Waitati be owned by the community. R12 argued for community ownership of wind energy on the basis that the community would own and be responsible for, their own energy source.

R13 approached the idea of community-owned wind power from a slightly different angle, saying that the world's current economic, environmental and political situation does not bode well for the future, and that small communities should take it upon themselves to provide for their own energy needs:

> '*…there's a whole lot of stuff happening in the world that makes it not look like it's all happy and rosy…and…perhaps locally to be a bit more aware that we need to be focus not on what was the glorious past, but a realistic future…And also…saying well maybe we can't influence those people in power to be more realistic, but maybe we can, in our own community help ourselves and our neighbours be prepared for a future that isn't quite as rich and rosy as it has been.*'

Four respondents were sceptical of the idea of a community-owned wind turbine. Two respondents felt that a small community would struggle to undertake such a project [R3, R5 and R8]. R3 stated: '*I'm not confident that small communities can work together to generate a shared resource…*'

Finally, there were two respondents [R7 and R10] who were indifferent towards the possible ownership structure of a wind energy development. R7 said that he had no '*strong feelings*' either way, but he did not feel confident that Waitati residents would have the '*time, energy or expertise to do it.*'

4.4.2 Community Issues

An issue raised by respondents with regard to community ownership and management of a wind turbine or small wind farm was the knowledge and expertise that would be required to run and maintain such an initiative. Four respondents mentioned this as a pertinent issue. R9 said:

> '*…are there people with the skills, and not just the financial and engineering, all those sorts of skills, but the political skills to ensure that the community didn't split down the middle at some stage of the journey…*'

Thus, the presence or absence of people with the necessary skills to generate support for, implement, and finally maintain and manage a community wind turbine would ultimately decide the fate of such an initiative. R13 raised a similar point:

> '*I think there's probably a core of people who would be interested in the concept, but you've got to have some pretty good leadership, and you've got to have some people who are pretty smart technically.*'

Another key issue raised by respondents was that of securing funding for a project, either from within the community or externally. One respondent thought that the cost of a wind development would be prohibitive [R8]. To this end, community buy-in was mentioned as being incredibly important by R13, who stated:

> '*If you need the majority of people to buy in and contribute in some way towards this thing then you're going to have to have a lot of people in the community being prepared to be upfront and put some money towards it.*'

R9 made a similar point, stating that solid, long-term investment by community members ultimately generates better outcomes.

R7 stated that there would be difficulty in preventing inequitable ownership of the wind turbine, leading to uneven distribution of benefits amongst community members, which would result in conflict.

'*…I feel that there would be a lot of people who would not be in a position to contribute to the funding or raising of money for such a thing, and then you could get people who could only contribute…differently, and then you might get into…inequitable ownership. You know, some people benefiting and some not, and it could become a bit of a divisive issue.*'

R13 mentioned the importance of utilising models from similar experiences in other countries in order to aid in the implementation of a community-owned wind turbine project, assisting in a range of areas such as management and ownership structures, financing, and conflict resolution:

'*…if there's models already, then that's great, because I think trying to invent the wheel in the first place is quite tricky. But if you've actually got a model elsewhere, then that's probably the sort of thing you want to do.*'

Six respondents mentioned internal conflict or divisiveness within the community as being a major barrier to the implementation of a community wind energy project. R5 and R12 both mentioned 'green' or 'alternative' people as being somewhat obstructive to projects and processes within the community. R11 also mentioned that it was difficult to get people to come together and generate a consensus. R7 felt that there were three distinct groups within the Waitati community, all with different assumptions and beliefs that lead the community to be quite factionalised and divided on certain issues:

'*…Waitati is a community which tends to divide fairly readily, because there is an old, traditional community, there is…a reasonable well-off commuting community, and then there's a slightly alternative, idealistic community, and very often they have different starting points on local issues, and it can lead to community conflict, and I could just see this being a quite tricky one to see through.*'

R3 also felt that conflict within the community would hinder the uptake of such an initiative. This is likely to be due to the lack of defined processes and management structures, meaning that there would be difficulty in addressing residents' concerns and resolving them:

'*There's no infrastructure, there's no management, there's no process; there would be a lot of infighting. There's enough infighting in Waitati over things that they don't control…you end up with emotionally-charged arguments… rather than clear thinking; arguments being driven by local agendas, and I think that's a danger…I know there's been a lot of talk around Waitati as a community generating its own energy, I'm not confident that it would be a successful venture.*'

Further to this point, R11 felt that even the setting-up of an administrative structure that could run a community wind initiative and address the issues and concerns of residents would be difficult, stating:

'*…whether you can actually get a board together that could come to some agreement on it, because the Water Board's been arguing for the last twenty years, and they still don't seem to be able to come up with anything…what I find ends up happening, is everybody just goes round and round in circles, and they're just discussing the same situations all the time.*'

R11 also saw personal ownership of a household wind turbine as a way to provide for one's electricity needs independently of large corporates without having to deal with community infighting.

R13 mentioned how new residents to the Waitati area tend to be less involved in the community, particularly lifestyle block owners. A lack of buy-in from those who are financially prosperous could make it difficult to set up a community-owned wind turbine:

'*There's quite a lot of lifestyle blocks, but some of those are probably reasonably or very-well resourced people, and I'm not sure whether the issue of power for some of them is quite as pertinent as it is to us.*'

In contrast, some respondents [R2, R12 and R13] mentioned the importance of social support networks within the community. R13 discussed how, historically, Waitati has been a place of foment for alternative ideas and ways of doing things, which is an advantage when a community is thinking of attempting initiatives such as energy self-sufficiency:

'*…it's always had a hub of people that were quite well-educated, but also just interested in looking at life in perhaps a slightly different way…*'

R13 also has some involvement with the Waitati Energy Project (WEP), which she spoke about at length. Three other respondents mentioned that they had heard of the WEP [R1, R5 and R9], with R1 having attended some of the meetings that had been held by the group within the Waitati community. Two respondents [R4 and R12] stated that they did not have any knowledge of the WEP and its undertakings. The subject of the WEP never came up in eight of the interviews, which reveals a key information gap for this group. R13 stated that the WEP, at least in the foreseeable future, aims to act as a forum for debate and information-sharing, with the possibility of a community-owned wind turbine being a long-term goal, the pursuance of which would ultimately be dependent on how much money the WEP can raise.

'*…the group in Waitati actually wants to provide information to people, not only to have grandiose plans to have our own turbine and things like that, which is in a timeframe, way out there…but in the immediate, the stuff that we'd like to do is to probably to help people make some sensible decisions about how to keep warm, how to insulate their houses, to look at their own use of electricity, and how they can…make appropriate decisions, and we can support them in those decisions…*'

4.4.3 Corporate Issues

There were a range of issues raised with regard to corporate ownership of a wind energy development. The first was the notion that corporates can provide the financial, managerial and engineering expertise to ensure that a wind turbine runs efficiently, and is well-maintained, which was raised by three respondents [R2, R3, and R12]. R3 summed up this position particularly succinctly:

'*The benefit of corporates, they've got one thing in mind, their agenda may be slightly off to one side, and they may overlook what we may call some of the more subtle environmental factors, but at least they have the mechanisms, and they're able to engineer those outcomes…*'

Two respondents expressed distrust towards corporate ownership, which formed part of their support for community ownership of a wind energy scheme at Waitati. This theme will be discussed further in relation to other questions asked in the survey later in this chapter. R2 recognised that corporates do bring certain advantages, but that, ultimately, because the power to make decisions is out of the community's hands, corporates cannot be trusted. R13 held the opinion that large power companies would be likely to be suspicious towards small communities seeking to be independent of them. Interestingly, two respondents expressed support towards the idea of corporate (or some other authority, such as a local authority) buy-out if the community was unable to sustain the ongoing management of a community wind turbine

4.4.4 Energy Issues

R8 discussed the storage of energy, particularly through batteries, as being a major issue with community-based or personal generation:

> '*You have to keep them very well-maintained and you can easily just have a wee connection go just suddenly and everything's black.*'

If residents are experiencing power cuts, the potential for intermittency of energy supply through energy storage issues may prove a barrier to public acceptance of the idea of community-owned wind power, as people have to invest money in a new energy system, without a guarantee of constancy of supply.

R13 discussed a range of themes around energy efficiency and reducing consumption. She stated that energy consumption would have to be reduced, and that houses in New Zealand tend to be very poorly-insulated, a problem which she felt was important to resolve. She was also strongly in favour of people retaining log burners, as it is important to retain some heat sources that are independent of the grid, and that wood is a renewable resource.

4.4.5 Government Assistance

An issue raised by one respondent was that of government assistance to communities who are attempting to become energy-independent. R13 felt that government assistance was largely inadequate, with too many conditions attached. She felt that particular pressure needed to be placed in the area of government buy-back of power from small community schemes.

4.5 Question 5: Do you have any personal interest in owning a home wind turbine, or would you prefer a community-owned wind turbine, or some other alternative?

4.5.1 Interest in Ownership of a Home Wind Turbine

Eight respondents were receptive to the idea of owning their own small wind turbine, which would provide electricity to their homes or to the grid in times of surplus. R7 summed up the position of those interested in personal wind turbines perhaps most succinctly:

> '*...I'd be quite interested in having one of those,* [small wind turbines] *because I like the idea of being somewhat independent in terms of power and...who knows what the future is going to bring; and...positively contributing – just being less of a burden on the environment than would otherwise be the case, and being less vulnerable...*'

However, R7 was also concerned over the bird strike casualties that could occur as a result of large numbers of wind turbines being constructed by individual households.

Two respondents had actually gone and explored the possibilities for generating their own personal electricity supply. R11 had recently helped a friend set up a small wind turbine on their property and was looking into obtaining one for her household at the time of the interview. R3 has had some experiences, mostly negative, with trying to set up a personal energy scheme. R3 owns a large property which has several households living on it, which has the necessary conditions for a battery of small energy generation technologies, such as small-scale wind, solar and micro hydro. However, despite being prepared to invest significant amounts of money into a small-scale energy scheme for his property, none of the advisory agencies that he has spoken to offer any concrete advice as to the cost-effectiveness of such a scheme:

> '*…the property that I'm part of, I own 50 acres, and there's a large number of people live on that property, so we're a self-sufficient entity in its own right, but we buy electricity from the network- large amounts of electricity from the network. We have looked at wind, we have access to water, we have looked at solar, and we have looked at some of the free services for consultants to come in from some of the energy groups. However, we haven't had anyone that can confirm that there are some cost-effective ways of generating small amounts of electricity.*'

Five respondents [R2, R4, R8, R9 and R10] said that they would not be interested in owning their own small wind turbine, with two respondents citing the economies of scale of community-scale turbines and ownership structures offer [R2 and R4]. R10 was indifferent to either personal or community-owned generation. Again, R2 cited the importance of community networks as a reason for community over personal ownership, stating:

> '*I think a community one* [wind farm] *would be far better because you've got the support. Everyone's in it together, you're not in it by yourself and struggling away with your own one…*'

R8 was not interested in personal wind energy because she had a family member with a medical condition that meant she needed access to an uninterrupted stream of electricity.

R9 had some interest in solar power for his home, but no interest in small-scale wind turbines.

4.5.2 Community Ownership

The notion of community ownership briefly came up again in the discussion of Question 4 with some respondents. Two respondents expressed their favour for community ownership rather than personal ownership of wind turbines [R7 and R2]. R3 again mentioned that community ownership would be hindered by community infighting:

> '*…if you bring 50 people together from Waitati, you couldn't talk about one topic. The agendas across the board are just so diverse…and that culture of, "My view counts as much as yours," rather than saying, "Well, let's join, look at compromising a bit and trying something that's going to suit not just me, not just you, but us and some others.*'"

Additionally, R3 felt that the Waitati community is a community in name and geography only and that the people are too factionalised to come together to initiate the development of a shared community resource, as illustrated by the quote:

> '*…it's difficult for communities because of that sociological issue of how communities function…Waitati, geographically, is a community, but it isn't when you think of the people…it depends on how you define 'community'. I don't believe there is a core Waitati…community that would say, "We're all for generating power…let's put in the infrastructure.*'"

R3 also discussed the wholesale shift in energy infrastructure that occurred in Denmark during the 70s and 80s. He attributed this shift to massive investment, which was capable because of the large population base living in Denmark:

> '*…Denmark were producing self-sufficient communities, not just in energies, but across the board, running community businesses and all sorts of things. But they had huge investment, there was a cultural shift…*'

4.5.3 Cost

Despite most respondents having some interest in the idea of generating their own energy supply through small-scale wind turbines, two respondents thought that it was still too expensive to be a cost-effective way of generating electricity, and anything more than a hobby or luxury. Even given the magnitude of R3's electricity bills, he still found personal generation to be too expensive:

> '*While the paradigm towards conserving and being…self-sufficient in generating your own electricity…whether its through using our water supply, whether its using solar…at the end of the day, it's too costly…some of the talk around generating one's own power and being self-sufficient is more a hobby, from what we've looked at…realistically, it just doesn't seem to be possible, and we spend $18,000 to $20,000 on electricity…*'

Through his exploration of the potential for generating one's own electricity, R3 found a key problem: the storage of energy. Typically, it is done through batteries, which R3 characterises as an '*...expensive, clumsy way of doing things.*' R7 expressed similar sentiments towards personal generation, although he alluded to it perhaps becoming more cost-effective as power prices rise:

> '*...I suspect it's probably not a hugely cheap option owning a wind turbine, so it might be a bit of a personal luxury, so it's probably not quite economic yet…*'

4.6 Question 6: Do you perceive any costs and/or benefits of generating energy locally through small-scale wind turbines?

Respondents brought up a range of issues in relation to the perceived benefits and costs of owning a community wind turbine, as well as bringing up some of the perceived starting elements that would have to be present in the community to make such a venture successful.

4.6.1 Community Benefits, Costs and Requirements

Two respondents thought that the involvement of community members was an issue that needs to be addressed. R1 stated that due to the location of his residence, he was not very involved in the Waitati community, although he had attended a 'Warm Homes' information evening held by the WEP. This distance from the Waitati settlement is somewhat reflected in the preference for small-scale, individualised wind energy that he mentioned in the discussion of Question 2. This sentiment was also expressed by other respondents who lived in the wider Waitati area in relation to other questions. R11 felt that it was important that if Waitati were to construct a wind turbine, or several turbines, that the community was heavily-involved in the process, and that the intention of the scheme should not be to make money, rather it should be to provide energy for the community. She also felt that there would be a sufficient number of people with the appropriate skills to establish, manage and maintain a wind turbine within the Waitati community, stating:

> '*…my husband has this saying, and it's actually a very true saying, he said. "If you went down your street, we could run a major corporation with the people and the knowledge that's in that street." …I think that there would be enough people out there that would have the background and expertise to be able to do that.*'

Other respondents have mentioned, in response to previous questions that engineering, business, and political skills are of key importance in the success of a venture such as this, although most expressed scepticism as to whether these skills were sufficiently present within the Waitati community.

R2 again mentioned that having power generation facilities near to where she lives would increase her awareness of energy issues and encourage her to monitor her energy consumption more carefully.

As in previous questions, respondents brought up the issue of conflict within the community as a key inhibiting factor to the success of a wind turbine development occurring at Waitati [R4, R8 and R11], as illustrated by the quote:

> '*I just feel that, while the benefits would be great, if you could do community, small wind turbine based without all the arguments and everything else that would go with it. But with human nature as it is, good luck.*'

In addition, R4 felt that the '*alternative lifestylers with funny ideas*' would be the major disruptive force to an initiative such as this, due to their concern over environmental impacts.

The initial investment and ongoing costs of managing a wind turbine were also seen as a key issue by many respondents. R4 and R12 felt that there would be sufficient money around Waitati to set up such a scheme, and R12 in particular felt that the initial outlay would almost certainly be recouped. R1 felt that there would have to be a very large initial investment in order to ensure the quality and reliability of the scheme. He had misgivings about undertaking an initiative like this cheaply, as it could lead to significant problems later on. R7 and R9 reflected this position, stating that if the initial investment is sufficient, ongoing maintenance costs can be minimised over the lifetime of the turbine. R9 also stated that people should be prepared to invest a large amount initially, because '*...there's no such thing as free power just because it belongs to the community, and some people need to remember that.*' R11 and R8, reflecting comments made by R7 and R13 in previous questions, stated that there could be some issues with people who did not want to contribute financially to the project, or people who want to contribute, and cannot afford to contribute the same amount as others. R11 stated that these people would need to be included as much as possible, and perhaps a scheme where people can pay off their share of the costs over time could be introduced.

R3 has explored the idea of generating for himself and the households living on his section in some depth, and feels that the potential energy savings do not justify the capital investment and ongoing costs required to run a personal energy scheme, and that a community-owned wind turbine would be in a similar situation:

> '*…if we knew we were able to make a 20% saving, and control those price increases over the future…we wouldn't have a problem with spending $200,000 to $300,000 on setting a system up…and then knowing that we were going to start making a return on that in 5 or 6 years, that wouldn't be a problem to us. But we haven't had anyone that's confident enough to say, "Yes that's possible, here's what you need to do." All we get is salespeople with gadgets.*'

Ultimately, R3 felt that encouraging energy-efficient buildings and reducing peoples' energy consumption was a more practical way of managing energy resources than communities or individuals generating their own power.

4.6.2 Energy Benefits and Costs

Respondents identified a range of potential energy benefits and costs that could occur if Waitati were to establish a community-owned wind turbine and become self-sufficient. R7 felt that, although there would be some losses, particularly in terms of economies of scale, there was also a range of significant benefits to be gained by undertaking such an initiative:

> '*…you'd probably lose large-scale economies with local generation. But…there are some big benefits. One is…local security of supply, another is that you could be sure that the electricity was more wind turbine than hydroelectric or coal, because you're just not plucking it out of a grid kind of thing, so you could be sure about that. There would be I suppose some transmission savings, there wouldn't be loss of power through lines. The costs, there might be an environmental cost, I mean, in a way it's better not to have anything on the landscape at all than something, but you've got to perhaps be realistic in that we have to live in a world where we need electricity.*'

Two respondents [R2 and R4] also mentioned the environmental costs that R7 mentioned in the above quote. R1 also felt that energy security was a key benefit. Three other respondents discussed the intermittency of energy supply that can come with reliance on wind turbines – when there is no wind, the turbine does not generate electricity. R4 and R6 felt that, because of this potential intermittency of supply, other technologies should be utilised in tandem with wind energy in order to provide true energy security. R4 specifically mentioned that a tidal power plant should be installed at the inlet to Blueskin Bay. R5 and R11 also mentioned that energy security is now a greater issue than ever, as there is increasing pressure on Waitati's energy infrastructure due to the recent influx of residential developments.

Waitati suffers from power cuts, particularly in the wider Waitati Valley area, which respondents have alluded to in previous questions. Generally, residents within the Waitati township did not mention that power cuts are an issue. In the responses to this question however, two respondents within Waitati [R5 and R6] felt that power cuts were frequent enough to be an intrusion, and that if the community was able to generate its own electricity, this issue could be resolved.

Six respondents [R3, R7, R9, R10, R11 and R13] also felt that a community-owned wind turbine would enable them to offset rising electricity prices, as illustrated in the following quote:

> '*There may be some protection against escalating price rises, which are just unilaterally imposed by power companies, which almost looks like on a cost-plus basis, whereas if there was more local control over power supply,…there may be some benefits in terms of being able to leverage just what the price of electricity was…*' [R7]

R9 felt that most people would support a wind turbine at Waitati on the basis of reducing their energy costs, and that environmental or sustainability issues would be less important. R3 made a similar point, although with somewhat more of an anti-corporate slant:

> '*The only thing we don't control is the two massive power supplies…and we know that…we're going to get ripped off. All of us know that for every unit we*

use, most of that is profit for shareholders. That bothers me. I'm more bothered by that than I am about saying, "We want to be clean and green."'

R13 felt that energy price rice rises were governed by large power companies' need for additional investment in new energy projects, and that by undertaking an energy development themselves, Waitati could be largely independent of these price rises.

Three respondents, R2, R3 and R4, felt that energy storage is a major problem with localised energy generation, and would be a major barrier to community-owned wind energy. R3 illustrated this point as follows:

'*...storage is a big issue. It's a very expensive system to then store, then convert, and then the system of putting it back into the grid and getting those rebates...the process that we see as difficult isn't even the generation, it's this whole storage thing. Massive investment. And it really doesn't give a great return on that investment.*'

4.6.3 Assistance for Communities

Three respondents mentioned that external assistance for communities attempting to generate their own energy and be somewhat independent from the national grid, whether from central and local government or elsewhere, is quite inadequate, both in terms of providing information on how such initiatives can be undertaken, and in providing incentives for communities to take on such a difficult task. R3, having approached a range of government-funded energy bodies, felt that the information they provide is more centred around directing communities to small companies getting in on the sustainability boom, selling '*gadgets*', which he describes as '*dodgy*' rather than generating legitimate, effective energy solutions for those who wish to be self-sufficient. He went on to say of the information provided by government agencies:

'*All we've really seen is a whole new market for small companies producing generators...to small communities that are not going to be that cost-effective... and people are buying them up and getting caught out.*'

R3 was also put-off by the lack of implementation of existing information, such as the Parliamentary Commissioner for the Environment (PCE) report entitled 'Get Smart, Think Small.' He stated:

> '*…if there is something in it* [the PCE report] *that's valid to how people are living their daily lives, that should be fed down…they should be taking that information, trying to package it, trying to give communities a clear steer.*'

Ultimately, R3 thought that perhaps the absence of sound information meant that there was a lack of sound methods of providing at the community or individual household level:

> '*…surely the government could put some money into setting up some groups, whether it's the likes of NERI…the universities…or groups that actually come in and give you some sound information…the reason why we think that isn't happening is because there's actually nothing to sell, there's nothing to give, there's nothing- at the end of the day, it's only big corporates that can generate electricity.*'

R9 also thought that the government could provide more assistance, particularly in providing financial and technical assistance for the initial stages of the project, where the consent process can cripple a project before it even gets off the ground:

> '*…if there were to be community schemes in areas where communities were happy to have them, that there would be some form of government subsidy that helped allay some of the fees, particularly those early ones,* [consents and other compliance costs] *or enabled people to fast-track the hurdles that the RMA currently puts in their way.*'

R9 also thought that a more coherent overall strategy needs to be implemented by the government that would assist communities who wish to provide for their own energy needs:

> '*Until there's an overall strategy that enables communities to do things like this, and there are incentives to do it, I think that communities like Waitati and*

any other would find it difficult…it really is about some form of strategy that is national and enables communities to do things for themselves.'

4.7 Conclusion

Generally speaking, it can be said that the Waitati residents interviewed in this study held positive attitudes towards wind energy in general, although there were some misgivings about large-scale wind farms, particularly in relation to the significant noise and visual impacts they have on the landscape. Of particular interest to many respondents was the idea of generating energy at the local level. Many respondents felt that in order for them to support wind energy developments near Waitati, they would have to be owned by the community itself, which is a goal that the WEP is seeking to fulfil.

The main benefits that were identified by respondents was the ability of communities to be independent of large energy providers; the energy security that such a development could provide, particularly in the face of what some respondents felt was an uncertain future; and economic benefits brought about through savings on energy prices and selling electricity back to the national grid.

Some respondents felt that the engineering, business and political skills needed to galvanise a community, ensure ongoing maintenance of wind turbines, and to maintain profitability of such a venture would be extremely difficult. In addition, another barrier to developing an energy scheme such as this was a perceived lack of government support for communities such as Waitati, who are seeking energy independence.

5

DISCUSSION

This chapter discusses the results that were reported in the previous chapter in relation to the relevant literature. The evidence for or against NIMBYism as a phenomenon existing amongst Waitati residents will be examined in section 1. Various explanations for the public's attitudes towards wind farms that are proposed in the literature will be discussed in relation to the views expressed by the Waitati respondents. This will determine whether these theoretical concepts apply in this case. Their concerns over landscape impacts, wind farm scale and ownership structures will be explored. In relation to these concerns, the social gap, a critical theoretical concept explored in Chapter 2, will then be considered in light of the data gained in this study. Potential blockages to resolving the social gap will be explored in relation to the Waitati case in section 2 of this chapter.

Ultimately, the aim of this chapter is to answer the second research question posed in Chapter 1:

> **Research Question 2:**
> To what extent do the attitudes discovered in the study reflect theoretical concepts of wind turbine resistance, and how are these attitudes likely to impact a community's quest for energy self-sufficiency, in light of these theoretical concepts?

5.1 The Nature of Attitudes towards Wind Farm Development in Waitati

5.1.1 NIMBYism in Waitati?

A common explanation for people's resistance to wind farms in their locality in the public discourse is the not-in-my-back-yard syndrome, or NIMBY. NIMBYism is said to occur when local people oppose a wind energy development due to the perceived negative impacts of wind farms on themselves or their locality, thus being seen to be motivated by selfish concerns. However, they support wind energy being developed elsewhere, creating dissonance between wind power at the local project level, and support for wind power at an abstract level (Wolsink, 2000).

NIMBYism as a theory of wind farm resistance is increasingly challenged in the literature, and authors such as Devine-Wright have characterised it has having limited empirical support. If the logic of NIMBYism that Wolsink (2000) describes holds, then there should be evidence that individuals support wind energy at a national level, but show decreased levels of support for wind farms in their local area. In fact, it appears that the opposite is true: those who support the development of wind energy in a general sense also tend to support local wind development (Devine-Wright, 2005b).

Generally speaking, the findings described by Devine-Wright are supported in this study. Respondents tended to hold positive attitudes towards wind energy at the national scale, that is, large-scale wind farms that are installed for national energy production, although many offered caveats about the need for sensitivity to the visual and noise impacts of wind turbines. This support was echoed by respondents' positive attitudes to wind farms at the local scale. Again, most respondents offered a range of caveats relating to mitigating the negative impacts of wind farms, although some stated that they could overlook those impacts to some extent if a local wind farm was owned by the community. So, respondents do hold some concerns about the impacts of wind turbines on the environment, but these views are not consistent with NIMBY logic; respondents are concerned about impacts both at the national and local scale, which is an entirely different position to NIMBYism, which would express concerns over local environmental impacts, but would not be concerned over environmental impacts elsewhere (Wolsink, 2000; Devine-Wright, 2005b).

However, it is not accurate to simply dismiss NIMBYism out of hand. Warren *et al.* (2005) found that NIMBYism can be present, particularly in relation to the siting of wind farms. This position was reflected by one respondent in this study [R10], who stated that:

> '*I think they should be, as much as possible…away from communities, away from people…I'm really concerned about the impact, especially noise impact, that it has on people, so they sort of have to be away, and if that's the case, then I have no problem with fairly big wind turbines.*'

Warren *et al.* (2005) characterised NIMBYism as a prevalent, but ultimately passing phenomenon, which is present in the initial stages of a wind development, but then declines swiftly. This point is not reflected in the results of this study, as most respondents did not express a NIMBY (Wolsink 2000). This could be attributed to the fact that a wind farm in Waitati is very much a long-term goal for the Waitati Energy Project (WEP), and as a timeline for such a wind farm becomes clearer, NIMBYist viewpoints might reveal themselves.

Several respondents [R5, R9, R10 and R12] held unsympathetic viewpoints towards those that they considered held NIMBYist attitudes, showing both the extent of belief in the existence of NIMBYism, but also that within the sample of this study, there is not a widespread NIMBY position:

> '*…that's what a lot of people oppose, they say, "Yeah, I'm quite happy with wind energy, but not in my back yard, please."…You've got a responsibility to have it in your back yard if you want to use the wind energy.*' [R10]

Wolsink (2007) argues that NIMBYism as a sole explanation for wind farm resistance is untenable. It merely defines resistance towards wind farms as opposition for the sake of opposition, offering no deeper analysis into the concerns of wind farm opponents. This point is echoed by the data gathered in this study – respondents were not opposed to wind farms, but felt that their impacts should be mitigated. The respondents' collective position

could not be characterised as NIMBYism, so alternative explanations for attitudes towards wind farms in Waitati must be sought.

5.1.2 Attitudes towards Wind Energy in Waitati

5.1.2.1 The Impacts of Wind Turbines and their Effect on Public Attitudes

Thayer & Freeman (1987) found that individuals who held negative attitudes towards wind farms have a tendency to cite aesthetic concerns, while those who had positive attitudes towards wind farm tended to do so on the basis of more abstract characteristics, such as efficiency, safety, and cleanliness. To an extent, this phenomenon has been verified by the data gathered in this study. Only three respondents [R4, R8 and R13] opposed the development of national-level wind energy, although two of those respondents [R4 and R13] stated that they would support wind energy at Waitati. Each of these respondents expressed negative attitudes towards the three main impacts of wind farms: the visual impacts of turbines on the environment; the noise impact that turbines may have on the environment; and bird strike, where birds fly into rotating turbines and are killed. In addition, wind farms were seen by respondents who supported them as being clean, efficient and had significantly reduced impacts on the environment when compared with alternatives such as hydro, coal or nuclear power:

> '*I understand we need to look for alternative energy sources, and I think wind is one of them. It seems to be using natural resources, which seems pretty good to me.*' [R10]

> '*…the last thing we want to see is more of our rivers dammed, and I don't think we want to see tall concrete cooling towers or silos as well.*' [R9]

However, Thayer & Freeman's (1987) notion that supporters tend to refer to more implied, symbolic characteristics of wind farms, while detractors cite aesthetic concerns is not so straightforward in this case. Many of those respondents who supported wind farms, both at the national level, and at the local level, also stated that the aesthetics of wind turbines were a key issue for them. It was seen as important to site wind farms in

such a way that the visual and noise impacts of wind farms were minimised, and some respondents stated that certain landscapes should be off-limits entirely:

> '*…there are plenty of places where they could go, but not on countrysides where they are a one-off, not for New Zealand…but for the world, and that's the Central Otago landscape…there are some landscapes…here like, for example the Otago Peninsula, and…the hills at the back of Waitati, where I don't think anyone would like to see a row of helicopters…*' [R9]

Granted, the more idealistic reasons for the support of wind farms were still present in supporters, but they were not ubiquitous, and were definitely tempered with a concern over what could be seen as more aesthetic issues, particularly visual and noise impacts.

In accordance with Warren *et al.*'s (2005) position, supporters did often hold negative attitudes towards what were seen as less sustainable energy sources, particularly hydroelectric dams, fossil fuels and nuclear energy.

In addition, Wolsink (2007) mentioned how wind farms that were located in heavily-modified landscapes, such as industrial or intensive agricultural areas were seen to be an improvement on the aesthetics of the landscape. This position was also reflected by some respondents. Again, this suggests that supporters of wind farms also hold strong landscape values in addition to the more abstract arguments that could be made in support of wind farms.

5.1.2.2 Self-Interest?

Warren *et al.* (2005) found that supporters of wind farms tended not to cite self-interested reasons such as financial benefits or subsidised electricity, as a motivation for their support. This was not the case within this study, as six of the respondents, who supported wind farms, and in particular a community-owned wind farm at Waitati, tended to cite financial benefits as one of the most important reasons for the development of a wind farm in their locality:

'*...you can cope with something on your own landscape, if you know it's for the good of yourself and your community. But if it wasn't, I think there'd be more opposition to it.*' [R2]

'*There may be some protection against escalating price rises, which are just unilaterally imposed by power companies, which almost looks like on a cost-plus basis, whereas if there was more local control over power supply,...there may be some benefits in terms of being able to leverage just what the price of electricity was...*' [R7]

It can be seen that while many respondents subscribe to '*global and altruistic*' attitudes described by Warren *et al.* (2005; p. 862) and Thayer & Freeman (1987), the rejection of financial self-interest described by Warren *et al.* (2005) is simply not in place here. It seems that the ability to reduce energy costs through utilising locally-owned wind farms is a key concern of Waitati residents, in addition to wind power's perceived cleanliness and efficiency.

5.1.3 The Impact of Scale on Attitudes towards Wind Farms

To an extent, there is some conflict within the literature as to how people's attitudes towards wind farms are influenced by their scale, and it seems that the impact of scale on these attitudes is very site-specific. For instance, Thayer & Freeman (1987) found that respondents preferred smaller numbers of large turbines to larger numbers of smaller turbines. Overall however, research suggests that people are more in favour of smaller-scale wind developments, such as single wind turbines, rather than large-scale wind farms (Walker, 1995), and Devine-Wright (2005b) has recognised a similar trend.

A theory known as the favourability gradient has developed to support this notion. The favourability gradient states that there is an inverse relationship between wind farm size and public support – that is, public support for wind farms declines as the scale of development increases (Lee *et al.*, 1989). The positions expressed by respondents in this study have not been so easy to categorise. The general position of respondents was that the scale of wind farms should be dependent on the location and purpose of said wind

farm. Most of the respondents did express support for smaller-scale community and household wind energy schemes, and some had misgivings about large-scale wind farms, but most recognised the importance of these larger wind farms at the national level, that is, in the provision of renewable energy to the national grid:

> '*If from a national level, the large systems are obviously going to be the best systems. A large one wouldn't bother me, as long as I wasn't affected by the noise. From an issue of generating one's own power…then of course I'd be more interested in the smaller ones, but on a national scale, the bigger, the more they can produce, the fewer that are needed would be in my view probably a better option…*' [R3]

The scale of wind farms is an important influence on public opinion in Waitati, although its influence is an amalgam of a range of other factors. Warren *et al.* (2005) characterises these other factors as being primarily visual impacts, including the size, number, colour of turbines, and the manner in which they are arranged in the landscape. A quote from R7 below exemplifies this position, although it was expressed by other respondents: the scale of a wind farm should be appropriate to its location and purpose.

> '*…I think for big farms, you might as well go for the biggest, there's no point in just having clusters of small ones. But if you're just having…2 or 3…in relation to…a few houses, then I would scale it down…and the more urban the thing becomes, I think the smaller you can go. Otherwise they become a bit big and unsightly.*' [R7]

5.2 Is there a Social Gap in Waitati?

Bell *et al.* (2005) formulated the idea of the 'social gap' to explain resistance to wind energy. According to this theory, there is a gap between peoples' support for wind energy

in general, and the opposition people exhibit towards local wind energy projects. The social gap that occurs in Waitati is not particularly obvious, in that there does not appear to be a great deal of dissonance between support for wind energy in a general sense and support for local wind energy projects – in fact, the respondents in this study who were supportive towards wind energy generally were supportive of the idea of wind farms beings constructed in their area. However, there is still evidence of a social gap in Waitati, to a certain extent. It presented itself in the provisos that respondents offered to wind farm developments. To present the reasons for the social gap in Waitati in greater detail, the three explanations for this gap posited by Bell *et al.* (2005) will be discussed:

5.2.1 Explanation 1: Democratic Deficit

In this scenario, Bell *et al.* (2005) argue that the comparatively low approval rate of wind farm projects, despite majority support for wind farms, indicates that an oppositional minority control wind power development, resulting in a democratic deficit. This may not necessarily apply in this case, as there is currently no actual wind project going ahead, and so the requisite consultation procedures have not yet occurred. However, it would still be pertinent to document the concerns of the respondents in this area. Some respondents felt that a robust consultation process would prevent the emergence of a democratic deficit:

> '*…I think that's good that people, you know, do have good argument and things and don't just let everything come and go and not make any opinion.*' [R8]

> '*…it should be something that people get to discuss, and no doubt it will create problems, because unless it goes back on the hills beyond where there is any people living…then some people are going to find it close to their backyards and might find it offensive…I do think consultation and negotiation is quite important about the siting of anything like that…*' [R13]

From the above, it can be seen that Bell *et al.*'s (2005) first type of social gap does not necessarily hold in this case, if there is sufficient involvement of the community in any wind development that may occur at Waitati. The need for consultation that was mentioned by some respondents suggests a willingness to resolve any democratic deficit that may become apparent if a wind development was to occur at Waitati. This reflects Bell *et al.*'s (2005) position that greater consultation and collaborative planning approaches can dislodge a potential democratic deficit.

5.2.2 Explanation 2: Qualified Support

This is where members of the public believe wind energy to be a good idea, but believe that its development should be constrained somewhat in order to minimise the harm done to the environment in the process. Qualified support is perhaps the most likely explanation for the social gap apparent in the responses offered by participants in this study. Most respondents offered their support for wind farms at the general level, and also expressed support for wind developments to occur at Waitati. However, many respondents also added provisos to their support, stating their concern for the potential visual, noise and bird strike impacts that a wind farm or turbine may have on the character of the Waitati/Blueskin Bay area. Accordingly, respondents felt that the siting of the potential wind farm would have to be incredibly sensitive to these concerns so that opposition to such a project could be minimised:

> '*...the moment you put something on a skyline, it's much more noticeable. If you're able to put things on the side of a gully where there is a draught going through, which is exactly what they've done for example in the Manawatu Gorge...And whilst they are still reasonably obvious, it's not quite the same as adorning a crest, which is the sort of thing people object to very strongly.*' [R9]

Another key concern impacting on the social gap present at Waitati, which will be discussed in more depth later in this chapter, was the ownership structure of any potential wind farm which might be constructed there. Some respondents felt that, in order for

them to offer their support to a wind farm near Waitati, that it would have to be owned by the community, for a range of reasons:

> '*...I would support it as long as the local people get the benefit out of it.*'

> '*...I would support it, because I believe there's a big advantage in having power close to the sources of where it's used...*' [R7]

> '*I...think it may be a good idea to be self-sufficient.*' [R10]

> '*I certainly would be more inclined to go for a community-owned thing than a corporate, because I feel that we'd end up in exactly the same situation where we are...*' [R11]

Bell *et al.*'s (2005) second explanation for the social gap, qualified support, is perhaps the most apt fit to the situation in Waitati. This is where a gap arises as a result of people's recognition of the need to mitigate the impacts of wind developments, resulting in resistance to wind energy implementation in certain places or under certain conditions. The Waitati respondents' support for wind developments in their locality, combined with their concern over potential environmental impacts, and their desire for a community-based ownership structure of such a wind development, suggests that this is a reasonable, although not a sole, explanation for the social gap in Waitati.

Bell *et al.* (2005) argue that the best way to overcome this form of opposition is to accommodate locals' landscape concerns. This solution does not perhaps go far enough in the Waitati case, as many respondents expressed concern over how a hypothetical wind energy development would be owned, with many favouring community ownership, in addition to addressing their concerns over the landscape impacts that a wind farm might have.

5.2.3 Explanation 3: Self-Interest

Bell *et al.* (2005) have characterised self-interested opposition towards wind farms as coming from a NIMBYist standpoint. Self-interestedness can be appealed to through financial compensation – either in the form of money or in shares in wind farms (Bell *et al.*, 2005). There is evidence of a self-interested position to some extent within the Waitati respondents. Many respondents stated that they would prefer any wind energy development near Waitati to be initiated and owned by the community. Part of this support for community ownership was related to wider issues such as self-sufficiency and ensuring a secure energy supply for Waitati in the face of an uncertain future. Another distinct part of this reasoning revolved around financial self-interest. As has been discussed in the previous section, many of the respondents felt that the prices they were paying for electricity were too high, and that a community-owned wind farm that generates power for the community could reduce their power bills:

> '*The only thing we don't control is the two massive power supplies…and we know that…we're going to get ripped off. All of us know that for every unit we use, most of that is profit for shareholders. That bothers me. I'm more bothered by that than I am about saying, "We want to be clean and green."*'

> '*There may be some protection against escalating price rises, which are just unilaterally imposed by power companies, which almost looks like on a cost-plus basis, whereas if there was more local control over power supply,…there may be some benefits in terms of being able to leverage just what the price of electricity was…*' [R7]

> '*I would have though that most peoples' interest in finding alternatives for power are not just about their conscience, but also about their bank balance, and I would think that anything else beyond that is probably not as important as generating a form of power that you find to be reasonably economical. That's the point.*' [R9]

Other respondents also felt that profits from generating electricity could be re-invested back into the community, providing a host of other flow-on benefits:

> *The benefits are of course, that it is producing energy and things, but as a benefit for a community, you want part of it to be a financial benefit as well… something to go back into the community.*' [R11]

In conclusion, the social gap between support for wind farms generally, and less-than-full support of specific wind farms is present in the Waitati case, to a certain extent. Of Bell *et al.*'s (2005) three explanations for the social gap, the second and third seem to reflect the data most closely. The first explanation, democratic deficit, does not yet appear to be present, as the responses gained from the participants have suggested that people are willing to engage in a robust and equitable consultation process if a wind development was to occur at Waitati, in order to air any grievances, and prevent the development of this deficit. The second explanation that Bell *et al.* (2005) provide, qualified support, is very much in place, as respondents tended to support the development of wind energy, but have expressed that it should be constrained to minimise its impact on the environment and the community. The third explanation, self-interest, is also present, to an extent. The general feeling here is that if the community is to incur the potential costs of having a wind farm in their locality, then they should take it upon themselves to ensure that the benefits accrue to them through developing and owning the wind farm as a community.

5.2.4 Resolving the Social Gap at Waitati

The social gap can be said to be present in Waitati, and it is a phenomenon which has been supported by empirical evidence in other cases also (Bell *et al.*, 2005). The next step, then, is to resolve the social gap – that is, what strategies can be employed to reduce the dissonance between people's support for wind energy generally, and their opposition towards wind energy projects in their locality?

The current system of wind farm development is heavily-biased towards large-scale, corporate-owned operations with top-down implementation. Inevitably, this approach leads to resistance from the public, and causes proposals to be held up in the consent process. Increasingly, this method of wind farm development is coming under scrutiny, and there is an increasing willingness on the part of communities to take greater responsibility for the development of energy infrastructure (Devine-Wright, 2005a). The

increasing unpopularity of large-scale, corporatised wind farms is reflected by many respondents in this study, who often expressed distrust towards the motives of energy companies, and saw advantages in communities controlling their own electricity sources:

> '*You see if it's community-owned, they would tend to take more care and… know the feeling of their own community when they're making decisions, whereas a corporate, they can just make the decisions behind the desk…*' [R2]

> '*…it's an idea of well, we could all hunker down and look after ourselves, as individuals, but maybe a better idea is to try and create a whole community that's got a raised awareness of where the future might be, but also look at some ways that we could be self-sufficient, I suppose. Or less dependent on big power schemes run by corporates.*' [R13]

The development of this centralised infrastructure creates a spatial disconnect between electricity generation and consumption in the minds of electricity consumers. This disconnect is challenged by the idea of community-owned, energy generation. One respondent reflected this position:

> '*I suppose there'd be a sense of satisfaction that, you know, that's where our power's coming from. You can see it working, and it's using something that's renewable.*' [R2]

If a community-owned wind farm is constructed at Waitati, there is potential for this spatial disconnect to be reduced and 'human' aspects of the development, such as social capital, community empowerment and an enhanced awareness of energy issues and energy consumption become more prevalent – a view supported by Devine-Wright (2005a).

A solution seems to have arisen in Western Europe, particularly in countries like Germany and Denmark. They have adopted a wind market model encouraging local wind cooperatives which fund and manage their own wind farms (Hinshelwood, 2000). Several respondents discussed the importance of adopting such models:

> '*…if there's models already, then that's great, because I think trying to invent the wheel in the first place is quite tricky.*' [R13]

The existence of other cases of community-owned wind farms proves that the challenges surrounding a development such as this are not insurmountable. In order to fully overcome these challenges, there would have to be a significant paradigm shift in New Zealand's energy policy, which is currently heavily biased towards large-scale, centralised wind farms (PCE, 2006b). In a similar vein to the experiences with wind energy development in Germany, New Zealand's energy policy and planning must dissociate itself from this bias towards centralised, large-scale wind farms, and become more accustomed to smaller-scale, localised, and decentralised wind farms (Breukers & Wolsink, 2007).

Profitable community-owned wind co-operatives will be more acceptable to the public at large, and thus the social gap could be expected to be reduced somewhat (Toke *et al.*, 2008). These economic benefits can return to the community through distribution of profits, discounted energy prices, the potential upskilling and employment opportunities for locals, and owning shares in a community wind farm (Devine-Wright, 2005a). The financial benefits that a community-owned wind farm can bring were a significant motivator of support for many respondents in Waitati:

> '*…just me getting to work from where I've luxuriously decided to live- I'm spending way more money on transport fuels than I am on food currently, and that's just completely insane…So, if there's any way that as a community or an individual, you can cut down on that cost, then that's a huge driver, and that's a massive benefit. If it's owned as a co-operative that doesn't have a profit motive, and if it was done really well, then I can see the possibility for electricity to be generated at a lower cost. To me, there's this long-term concern that just like everything else, the price of power is just going to get astronomical.*' [R13]

It can be seen that community-owned wind energy can reduce the social gap between support for wind farms generally, and opposition towards local wind projects. By owning the wind farm or turbine themselves, the spatial tension between energy production and consumption can be resolved, perceived negative corporate influence can be reduced, and

financial benefits can accrue to the community. In addition, community ownership suggests more input by local residents into the siting of a wind farm, allowing impact mitigation to be maximised. This resolves Bell *et al.*'s (2005) second explanation for the social gap. Community ownership also encourages far greater local consultation, as local residents are presumably shareholders in such a development, which resolves the democratic deficit, Bell *et al.*'s (2005) first explanation for the social gap.

5.3 Blockages to a Community-Owned Wind Farm at Waitati

In terms of policy, New Zealand has a significant problem in attempting to resolve the social gap. The policies that are present in New Zealand that are designed to encourage renewable energy development are very limited, and central government has little influence on some of the most important aspects of wind farm development, such as scale and location (PCE, 2006b). Like examples in Sweden, the Netherlands and the UK, this is largely left to the private developers and local municipalities, which do not collaborate well with the public, nor are they particularly far-sighted when it comes to taking into account the potential cumulative impacts of wind farms (Khan, 2003). This lack of central government oversight and support was identified by some respondents as a key blockage to encouraging community-owned wind farms, and therefore reducing the social gap. One respondent felt that, if anything, the information and services provided by government energy groups was akin to collusion between government and energy technology manufacturers, designed to sell people '*dodgy*' [R3] products. The lack of overall guidance and strategy provided by central government was roundly criticised:

> '*…surely the government could put some money into setting up some groups, whether it's the likes of NERI…the universities…or groups that actually come in and give you some sound information…the reason why we think that isn't happening is because there's actually nothing to sell…at the end of the day, it's only big corporates that can generate electricity.*' [R3]

> '*Until there's an overall strategy that enables communities to do things like this, and there are incentives to do it, I think that communities like Waitati and any other would find it difficult…it really is about some form of strategy that is national and enables communities to do things for themselves.*' [R9]

However, some movement on this issue is beginning to occur. In recent years, the 'soft energy path' proposed by Schumacher in 1977 has begun to gain some attention, and agencies such as the Ministry for Economic Development (MED) has released a report which discusses the advantages of smaller-scale, widely-dispersed wind farms, which is an encouraging sign (MED, 2006). The PCE has released a similar report advocating for the implementation of local energy technologies (PCE, 2006a), although this study indicates that these reports are not widely read or implemented:

> '*…if there is something in it that's valid to how people are living their daily lives, that should be fed down…they should be taking that information, trying to package it, trying to give communities a clear steer.*' [R3]

There are certain social advantages that countries with extremely advanced wind development have over New Zealand. Present in these countries is a community of energy extension agents in Europe that has existed since the 1970s, particularly in Germany and Denmark. Today, these activists typically take the form of small-scale energy enthusiasts or activists, consultant and retailers (Toke *et al.*., 2008). These agents provide information, support, and equipment for those seeking to begin a local energy initiative. As a result, they have been instrumental to the success of local energy initiatives in Europe, leading to their widespread adoption. Knowledge is a key barrier to implementation of small-scale, community-owned or managed wind farms, as such a pool of knowledge, volunteers and activism has not yet matured in New Zealand (PCE, 2006a).

5.4 Conclusion

The theoretical concepts described in Chapter 2, which are also compared and contrasted with the data, tend to be quite apparent in the Waitati community. Respondents tended

not to hold NIMBYist viewpoints, and their attitudes towards wind farms were shaped by other factors such as landscape impacts, and some of the more progressive, positive aspects of wind farms such as their cleanliness and efficiency (Devine-Wright, 2005b; Wolsink, 2007; Warren *et al.*, 2005). Scale was also an influence on respondents' attitudes towards wind farms, although it was intertwined with landscape impacts.

Waitati residents are generally supportive of wind energy development in the Waitati area. There is a social gap present, and the predominant position of the respondents was one of conditional support – that is, they would support wind energy if the impacts of any potential wind turbine was mitigated as much as possible. An additional proviso that was added was that any wind farm that was established in the area in the future would most likely have to be community-owned. The keys to resolving the social gap at Waitati may lie in community ownership of a wind turbine. This has benefits in that the spatial tension between energy production and consumption is reduced, perceived negative corporate influence can be excised, and there is potential for financial benefits to accrue to the community. As in any community, conflicts will arise over the direction of an initiative such as the one the WEP wishes to undertake. By engaging in an open and conciliatory consultation process, the WEP can reduce this conflict to a great extent (Bell *et al.*, 2005).

The knowledge base that exists at Waitati could be a major blockage to establishing a community-owned wind farm also, with most respondents expressing some misgivings as to whether there was a sufficient financial, political and technical knowledge base to undertake such an enterprise. There is also a role for central government, but the policy is immature, and a comprehensive framework needs to be developed to encourage communities to develop their own energy sources and become self-sufficient.

6

CONCLUSION

Waitati residents have generally been found to be supportive of wind energy, particularly at the local level. Community ownership of wind farms was seen by Waitati residents to be a potentially viable solution to the current energy problems there: power cuts and high energy prices. Community ownership of such a wind development was also seen to be a to be a key way in which the impacts of any wind development occurring near Waitati could be mitigated, or at least made more acceptable to the wider community. It can be seen that there is sufficient foment within the Waitati community that a community energy project could be established. Waitati also holds an advantage that many Western European towns and villages have (PCE, 2006a) - there is a dedicated group of energy activists, the WEP, which can act as a forum for discussion, debate and information dissemination for the wider community.

However, there are still challenges for groups like the WEP in attempting to shift the community onto a soft energy path. Many respondents felt that issues with financing such a project, managing conflict within the community, and having the skill base necessary to ensure ongoing management of a wind energy project would be difficult to surmount.

With enough community support and shrewd management of the challenges of such an energy path, Waitati could potentially become a microcosm of the wider nation's quest for energy security, and an example for other settlements to follow.

6.1 Limitations and Further Research

There were some significant limitations in this study. The small sample size meant that the sample was prone to bias, and the ages of the respondents were strongly skewed towards older age brackets – for instance, no one under the age of 35 was interviewed. This may have had an influence on the level of support for local ownership that was found in this study, as other studies have found that older males tend to hold greater levels of support for locally-owned wind farms (Devine-Wright, 2005a).

A more refined questioning technique could have been used to elicit deeper levels of opinion, particularly from the less-responsive participants. This could involve documenting the flow of conversation in particularly fruitful interviews, and applying those diversions to interviews where respondents were less forthcoming.

There are also issues relating to the small sample size utilised in this study. The representativeness of such a small data set applied to the entire Waitati could be subject to some scrutiny (Sarantakos, 1998). However, as has been mentioned in Chapter 3, this study has not aimed to provide a representative cross-section of Waitati residents' views; rather, it has sought to gain an in-depth understanding of a range of viewpoints within the community.

There is significant mileage in this project, and a similar project with expanded scope could be undertaken, perhaps utilising a greater sample size for the qualitative data collection and introducing a quantitative data element in order to establish a representative cross-section of views across the entire Waitati community. It could also be fruitful to sample the attitudes towards wind energy in another community that has not progressed as far down the energy-independence path, and to contrast the results with those found at Waitati, in order to determine the potential social conditions that might be conducive to the development of community-owned wind energy.

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APPENDICES

Please find attached in a pouch at the rear of this document a CD containing the Appendices pertinent to this study. The Appendices are in lettered folders, and correspond with the following:

Appendix A: Ethics Approval & Maori Consultation

Appendix B: Information Sheet and Consent Form

Appendix C: Survey Form

Appendix D: Interview Transcripts

Appendix E: Tabulations

Appendix F: Thematic Tabulations