BALTA
The BC-Alberta Social Economy Research Alliance

Best Practices in Social Economy and Community Wind

Julie MacArthur
Simon Fraser University
April 6, 2010

For further information, contact the BC-Alberta Social Economy Research Alliance, PO Box 1161, Port Alberni, B.C. V9Y 7M1, (tel) 250-723-2296
Website: www.socialeconomy-bcalberta.ca
e-mail: balta@xplornet.com

Author Information

Julie MacArthur is a doctoral candidate in Political Science at Simon Fraser University. Her dissertation research maps and examines the development of co-operatives in Canada's energy sector. She focuses on how comparative provincial policies have shaped the sector and how broader trends in Canada's political economy create opportunities and challenges for co-ops.

Acknowledgments

The BALTA leads and supervisors for the research initiative which includes this report, ***Prospects for Socializing the Green Economy: The Case of Renewable Energy***, were Dr. Noel Keough of the University of Calgary Faculty of Environmental Design and Paul Cabaj of the Canadian Centre for Community Renewal.

This report has been produced as part of the research program of the BC-Alberta Social Economy Research Alliance (BALTA). Financial support from the Social Sciences and Humanities Research Council of Canada (SSHRC) is gratefully acknowledged.

Social Sciences and Humanities Research Council of Canada
Conseil de recherches en sciences humaines du Canada
Canada

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Introduction

Canada is an energy-rich country and one of the largest producers and exporters of oil, natural gas and hydro-electricity in the world. Energy, whether in the form of electricity (via hydro, nuclear, biofuel or wind) or oil and natural gas, is a staple product for basic maintenance of human life. It also forms the foundation of our economy, providing power for manufacturing, transportation, communication technologies and countless other processes. Important changes in the way Canadian energy resources are owned, produced, distributed and regulated are taking place in various provincial jurisdictions (Calvert, 2007; Hampton, 2003). These shifts are taking place not only in Canada, but around the world (Victor & Heller, 2007) and attracting important comparative work on the relative strengths and weaknesses of various ownership structures, energy sources and forms of regulation.

One major change within the energy sector is the acknowledgement that global climate change is a reality and that human activity, through, for example, the widespread reliance on fossil fuels, is a key contributor. Canada has about 0.5% of the world's population, but contributes about 2% of the total global GHG emissions, and our per capita emissions are among the highest. The energy sector from production through consumption is *the* key policy area for addressing this global challenge, constituting approximately 80% of our GHG emissions (EC, 2008).

Climate change is but one of the key reasons behind this shift to renewables. The other is the recognition that fossil fuels may have reached their peak. New discoveries are less common, and unconventional sources (such as the bitumen in Alberta's oilsands) are expensive to extract. As fossil based sources become more and more expensive over coming generations renewables become both more cost effective and a more secure source to rely upon. Consequently, new and greener energy sources like wind, solar and tidal power are being explored by many different actors in Canada and abroad.

The uptake and development of renewable energy projects is uneven as their success depends significantly on public policy and market structures in various jurisdictions. This uneven development also extends to the specific actors and ownership structures that are driving the renewables sector. In some places, such as Germany and Denmark, farmers and community-based organizations have played a significant role in wind development. In other countries, like Canada, the United States and Mexico, wind development is dominated by large-scale industrial developers.

The purpose of this paper is fourfold: (a) to explore the context and rationale for community based wind development, (b) to outline basic forms and structures of community and co-operative wind projects, (c) to examine financing and policy challenges and opportunities, and (d) to outline domestic and international best practice cases. What is known about this niche of the green energy sector is often contained in diverse literatures that rarely speak to each other. What follows below is a first attempt at drawing together conceptual and practical tools from a wide base to explore, examine and facilitate community based wind projects in Canada generally and Alberta specifically.

Wind Power

While the aim of this project is to understand the social economy's role in renewable energy more generally, wind power is one of the fastest growing electricity sources in the world. It is increasingly becoming a vital source of job creation, and is the most successful source of renewable electricity generation. The latter is particularly important given the challenge global climate change poses to conventional energy systems and sources. For these reasons, this paper focuses specifically on the structure and role of community projects within the wind sector.

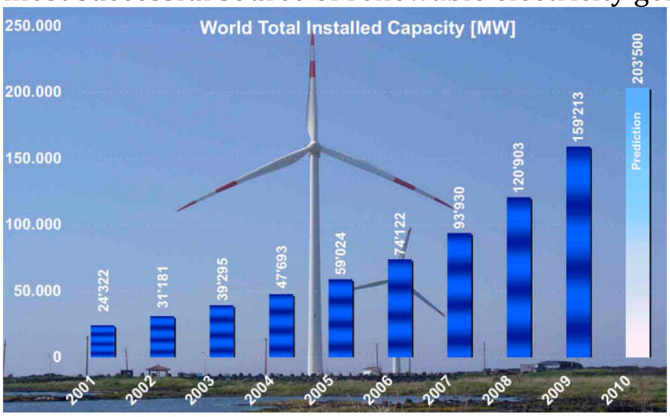

Figure 1 World Capacity Growth (Source: WWEA 2009 Report)

The growth in wind installations around the world is continuing to pick up speed. Global wind capacity doubles every three years (see Figure 1). Canada stands 11th in terms of installed capacity in 2009, with a growth rate last year of 40.1%. This trend persisted in the last 2 years despite the world financial crisis. Geographically, wind development is expanding well beyond the early adopter countries of Europe. Now China and the United States are leading the global pack in terms of their new installed capacity (World Wind Energy Association 2009 report). It is clear that wind development will form a key part of the electricity mix for many jurisdictions in the future. As plans for carbon financing schemes continue to develop one would expect this trend to continue. Greening electricity mixes is certainly one key way for states to address their carbon footprints.

While the environmental benefits of shifting to renewable fuel sources are well documented, the economic and social benefits of such a switch are less so. Wind energy projects create new jobs, often in rural communities, in manufacturing, transportation, and project construction. When communities are part of the project ownership structure they gain additional revenue streams for the community. These projects can also help to empower and educate local communities. Walker et al (2007) argue that a major challenge in the shift away from non-renewable energy sources has to do with the vast range of options available. They highlight the flexibility of fuels that we can shift to as well as the diversity in scale possible; from small off-grid to large centralized systems. This diversity is compounded by a major split in visions between energy systems that are centralized and hierarchical, versus those that are "more cooperative, multi-actor and bottom-up distributed model, linking national policy to local activism and providing spaces for innovation in both the process and form of carbon reduction activity." (2007: p.77) Walker et al argue that the traditional energy system has been highly centralized creating significant spatial and psychological distance between energy generation and use.

Energy strategy documents from around the world identify renewable energy (RE) as a means to address national and regional objectives: security of supply, environmental protection and economic development. Distributed generation (DG) is also increasingly seen as a way to meet both environmental and social objectives. It stands in contrast to highly centralized electricity systems that have dominated (and continue to). DG enables a wide variety of actors to participate. Sheer argues that, "The distributed and local nature of RE also enables new (and non-traditional) actors to enter the energy market, giving individual homeowners, farmers, community groups and small businesses the chance to participate in a sector dominated by large corporations. This encourages competition, innovation and self-reliance (Scheer, 2007; cited in Lipp 2008 p.1).

Some highlights from the most recent World Wind Energy Association report reinforce the importance and growth of this energy sector (2009):

- The industry is developing away from niche communities and in 2009 had a turnover of 50 billion €.
- The wind sector employed 550,000 persons worldwide. In 2012 it is expected to offer 1 million jobs.

- China and the United States are now the leaders in developing new capacity.
- The world leaders in wind for 2009 (as a share of total electricity) were: Denmark at 20%, Portugal at 15%, Spain at 14% and Germany at 9%.
- Community based energy projects are often overlooked but can provide social and economic benefits to a project.

What is Social Economy Wind?

Analyses of wind development rarely examine the issue of public or private ownership. This is unfortunate given the key role ownership and control plays in security and economic development. As Gar Alperovitz (2009) argues, changes in the twenty-first century are opening the way to serious systemic reconsiderations. These arise from innovations borne from crises but also unintended consequences of re-organization within dominant systems. An alternative presented to the state vs. market dichotomy that, in principle, addresses these challenges comes in the form of the burgeoning 'social economy'. While differing conceptions exist, the social economy can broadly be described as an umbrella term for diverse organizations (cooperatives, charities, mutuals) united in their prioritization of local, social (and, more recently, environmental) goals over profit (MacPherson 1999, ICA 2006, Quarter 1992). It is comprised of a loose, transnational network of institutions and / or structures that have, at their heart, a set of ideas rejecting the prioritization of profit as a sole economic motive and asserting the interconnectivity of the economy and society. This umbrella term can be further broken down between social enterprises, which are market based actors (such as co-operatives) and charities or associations (which are not). Social enterprises can also be structured as a for-profit or not for-profit.

Both social economy and alternative energy movements have in common a critique of conventional, hierarchical, centralized social and economic systems. There is also a concern with crisis management and resiliency. Indeed co-operatives, a key social economy organization, historically arose as local responses to the socio-economic dislocations caused by the industrial revolution (Fairbairn, 1990). Embodied in both literatures is a focus on alternative mechanisms of valuation that go beyond GDP to examine social and environmental externalities. What is increasingly being realized is that conceptions of an economy that ignore social and environmental externalities are costly and inefficient. One example of this in the wind industry is where community backlash leads to the cancellation of proposed developments. This backlash is colloquially called NIMBYism (Not In My Backyard-ism). In an industry where years of feasibility studies and approvals are necessary, this is a significant issue of wasted time and money.

A further rationale for re-examining the role of the social rests on a normative belief in the value of participatory and democratic structures in a society. For Jack Quarter, "the social economy represents a quiet revolution in that democracy has been extended, without much fanfare, into a broad array of community organizations". This social economy value of democratic participation is particularly important to the electricity sector, long critiqued (Rifkin 2009, Sheer 2007) for being dominated by bureaucrats, technicians and institutionally hostile to renewable energy.

Furthermore, sectors, such as electricity, that are central to societal development and maintenance are too important to be dis-embedded from public and user control. Sharon Beder's (2003) analysis of the privatization of electricity sectors around the world found that these reforms often had the opposite result to their proponents claims: increased costs and unreliability (Beder 2003).

As a result of these critiques of mainstream power systems the community power movement has developed. At its heart is the contention that local involvement in energy projects is an important step in providing incentives for local change. This involvement needs to go beyond the level of 'consultation' and toward ownership and control. Some advocates of community power projects want them because state and corporate actors were not moving quickly enough toward renewable energy development. In this sense they are an entrepreneurial attempt to be first movers in energy innovations. Others are more concerned with ensuring economic development opportunities for citizens of affected areas. With wind this is an important consideration as the wind resource is free, and geographically tied to an area. Thus, it is just that citizens near a proposed project are given the opportunity to develop their own resource, rather than letting others do so. Developing wind projects thus becomes a foundation for 'community power', injecting much needed resources into community groups and local landowners.

There is an important distinction between community and co-operative based wind developments. While both are often used interchangeably, co-operative wind refers to a particular legal structure for the project. In theory these groups subscribe to the 7 international cooperative principles (add as footnote or figure). Community power is a broader term that encompasses a wide range of mechanisms for community investment into a project. Sometimes this can take the form of a limited liability partnership. The key is for a significant amount of local investment, control and return from the wind resource.

Community based wind projects were popularized in Europe, particularly in Germany and Denmark. In fact, in Denmark, co-operatives were the leading form of wind turbine ownership. In Canada, the installed capacity of community based wind projects is small: Windshare, a 600KW turbine in Toronto and Weatherdancer, a 900KW turbine on the Piikani Reserve in southern Alberta. These represent 1.5MW out of the total 3,432MW (0.04%) across Canada. This picture changes significantly depending on whether wind projects developed with community or co-op participation but not ownership are included, such as the Bear Mountain Wind LP in Dawson Creek, B.C. This number is also projected to increase rapidly as a number of community projects that have been in development in Ontario[1] and in the maritime provinces come online. These projects will be explored later in this paper.

Why Community Based Wind?

Social economy groups interested in generating electricity through wind fall under the rubric of 'community power'. There is a large and growing literature on the contribution that direct ownership of resources has on communities (c.f, Gipe 2009; Warren & McFayden, 2010; Bolinger, 2005, EnvINT 2008; Jacobsson and Johnson, 2000). In short, there are five core arguments for social ownership and control of resources. Social economy energy provision:

1) Combats NIMBYism, through giving locals a stake in the project;
2) Helps educate communities about their resources;
3) Spurs local development and job creation;
4) Keeps profits in communities and builds local capital (financial and human);
5) Provides legitimacy to renewable energy projects.

In addition to this, there is potential for both urban and rural populations to develop their wind resource. In Denmark and Germany farmers played a key role in harnessing the wind potential on their land. In Canada, the Windshare turbine is jointly owned by Toronto residents who are part of the Toronto Renewable Energy Co-op and Toronto Hydro.

The community power model has spread from Europe and is now gaining steam in North America and at the global level. For example, an excerpt from WWEA 2009 report:

> "Another, often neglected success factor of wind are community power ownership models. Such models are re-gaining strength and are expected to contribute substantially to the further growth of wind power in many world regions, by mobilizing additional economic and social support for wind technology"

A key part of the social argument rests on the claim that citizens backlash to wind developments can be overcome by giving them a stake in the project, and by educating the locals about the benefits of wind. Walker et.al. (2007) argue that the initial 'dash for wind' that occurred in the UK caused a significant local backlash. The explanations given for this opposition, despite general public support for renewables, rested on the lack of *real* involvement of the local community in such project. Barry, Ellis and Robinson explore the role of community opposition more fully, particularly the rhetorical constructions surrounding the

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[1] For example, Ontario Power Authority's April 8, 2010 FIT contracts were awarded to 36 community and Aboriginal groups for solar and wind developments (out of 184 projects). One is the M'Chigeeng First Nation's 10MW wind farm and the other is the Pukwis project for a 54 MW wind farm.

term 'NIMBYism'. What they found is that while there is an element of climate change denial in local opposition movements, there is also a strong suspicion of the mechanisms through which renewable sources are being developed. Some concerns, for example, are that utility companies are making money at the community (and public's expense). The basis for some of the backlash was a lack of trust in government, regulatory processes and windfarm developers. For Barry: "Those presenting the anti-wind energy position are keen not to be regarded as motivated by self-interest, but are skeptical of "non-local forces" (state and business) coming in and trying to pull the wool over their eyes with what they see as "PR stunts" portrayed as consultations." p.82 These arguments based on the UK case suggest that overcoming opposition to wind development is not just a matter of more 'information' for a misguided populace (Barry et al.). The key to democratically developing renewables is in actually engaging local people in the development of and profits from projects: community based wind power.

For Walker et al (2007, p.79):

> one potential accumulative outcome is that explicit involvement in or implicit exposure to community RE projects gives "the public" a positive view of RE more generally, thus supporting RE technology diffusion at both smaller (micro household) and larger (macro utility) scales. Another possibility is that this route of support for new technologies creates a particular "niche", to use the language of sustainable transition management, within which creativity and innovation in the social organization of technology can occur (including different configurations and scales of technology and models of project development and ownership), the necessary support infra- structure can be developed and social learning can take place.

Another potential contribution of co-operative wind in particular is the leveraging of the co-operative movements networks. For example, cooperation among cooperatives is a key tenet of the co-operative movement, one of the 7 principles. In fact, at the 2009 International Co-operative Alliance assembly the keynote speaker was Jeremy Rifkin on the potential of co-operatives as leaders in distributed energy and climate change mitigation. At the local level, energy co-operatives could leverage partnerships with credit unions, homeowners, electricity distributors and transportation cooperatives to build a mutually supporting alternative energy economy.

Another strength of the community energy model plays on the strengths of local grassroots associations. In particular, farmers play a key role in energy cooperative development, as they have in the development of cooperatives more generally around the world. One study in the U.S argues that the multiple associational memberships of farmers can be harnessed to develop successful wind projects. One survey found that 31% of rural respondents would invest in wind projects (Rhoad-Weaver and Grove, 2004). This opportunity for community-based projects to leverage rural associations and co-operative networks may be a key feature in facilitating broad systemic change. Deb Doncaster (Doncaster, n.d.) from the Community Power Fund in Ontario highlights that:

- wind energy offers rural landowners a new cash crop (~$2,000/ yr/turbine or 2-3% of project's gross revenues).
- Although a landowner may receive a lease payment of $2,000 to $5,000 per turbine annually, owning a turbine can double or triple the income.

One challenge that has emerged as 'community energy' starts to permeate policy discourses is the definition of 'community', a challenge that social scientists and philosophers have been wrestling with for centuries. In the UK case, Walker et al describe some problematic examples of the use of community groups: as an investment vehicle for their non-profit legal status, or by defining community as a 'group of buildings'. They argue that in these cases, community energy proponents "have done little to pursue or realize any form of participation, empowerment or wider civic outcome."p.77

Table 1: Co-op & Farmer-Owned Wind Turbines

	Farmer	Co-op	Corporate
Netherlands	60%	5%	35%
Germany	10%	40%	50%
Denmark	64%	24%	12%
Spain	0%	0%	100%
Great Britain	1%	1%	98%
Minnesota	0%	31%	69%
Ontario	0%	<1%	99%

Source: Gipe 2010.
Data from: David Toke, 2005, 2008; Minnesota: Windustry, 2008; Ontario: OSEA, 2008

Table 2. Where the Dollars Go: A Comparison of Different Ownership Structures

	Large Wind Owned by Out-of-State Companies	Small Wind Owned by Local Community Members
$ Stay in Community	**12,200**	**65,900**
$ Stay in State	**5,100**	**100,300**
$ Leave the State	**148,000**	**21,300**

Note: Analysis reflects figures per 1 MW annual generating capacity.
Source: Small Packages, Big Benefits: Economic Advantages of Local Wind Projects – Iowa policy brief: 6- Table taken from Doncaster, n.d.

Market-based Challenges for Community and Co-operative Wind

The broader structure of energy service delivery is changing. With these changes, potential opens up, as do challenges. Many governments around the world have been shifting away from direct service provision and towards more market based and privatized models of governance. In the UK, for example, privatization in the 1980s opened up the generation market to Independent Power Producers (IPPs). These actors range from community co-operatives to large multinational energy companies. Across Canada, community access to power provision is also taking place within the broader context of 'opening up' markets to private power.
In the energy sector this has meant the break up of public utilities into separate areas looking after generation and transmission and the contracting out to the private sector. Lindquist makes the argument that co-ops should be considered in partnerships for alternative (private) service delivery. He argues that they are important for civic engagement, 'rebuilding trust in public services and governance'. Some touted benefits are de-centralization and flexibility.

Some challenges faced by the community projects are similar to those of other wind developers. For example, as an emerging (non-dominant) fuel source, all wind developers face an entrenched energy system of actors and institutions invested in fossil fuels, large hydro and nuclear power. This system affects what the public views as risky, which costs get counted, which constituencies listened to in policy formulation, and so on. Other challenges, like raising capital and the ability to deal with competition, are unique to community groups.

Pricing Signals

One challenge for community and co-operative wind projects is the same for renewable energy projects more generally: pricing. A key issue is that environmental costs are not counted, they are externalized to the public agencies to deal with: for example health bills, pollution (clean-up), spent fuels. This is a broader issue that environmental groups have been highlighting for years. The issue of pricing is critical, as these cost considerations often form the basis of public policy decisions and of public opinion over the viability of fuel-switching (Pattenden, 2007).

The other issue is that infrastructure built 50 years ago has already paid itself off. Therefore, conventional sources look cheaper than they actually are. Pricing of conventional sources of electricity is artificially low. The cents/kwh of coal fired generation, for example, does not include the environmental costs of pollution. In Ontario, the costs of nuclear plants and waste disposal are not calculated in the costs. Energy generation projects constructed many years prior have already recuperated the initial capital investment (Lipp 2008, Cohen 2006). This puts new infrastructure and new technologies at a disadvantage when compared with today's costs. It also weighs the deck against building distributed generation, as the costs of lost energy over long grid lines constructed to supported centralized energy generation is not accurately counted.

These pricing issues provide a major issue for renewable sources getting in to the grid. Taking in to account *real* costs.

Industry Structure/Competition

Another key challenge for community and co-operative projects is that the energy sector is dominated by very large and wealthy (often) centralized players (Cohen 2006, Beder 2003, Doern 2003). All independent power producers are not created equal. What this means for community wind development often does not manifest until one digs into the levels of success for these smaller projects. In the U.K., the 'rush for wind' when policy financial supports went in to place meant that actors who could move the fastest and had the best connections to research on wind sites and to policymakers secured the best sites. Communities are also at a disadvantage in meeting calls for wind at the lowest cost. This is because community groups are rarely able to raise the capital for large windfarms, and that is where the lowest kw/h prices are (due to economies of scale). According to a number of interviewees from Ontario, the result is that larger companies are able to see projects to fruition where smaller, community based projects run out of time, money, volunteers and energy in dealing with the electricity sector.

Which leads to the next issue.

Capital & Financing

Access to capital is a key issue for communities generally. It is an especially important issue for wind projects since they are fairly capital intensive and require years of development, testing before the returns are realized. This means that a financing structure that recognizes the benefits of community-based enterprise is essential. In Germany, farmer-owned wind projects were popular because the government gave loan guarantees to farmers to develop their wind resource (Gipe, 2007). This gave banks the confidence to lend, and the farmers access to much needed capital. Without these types of guarantees, community groups are often restricted to developing either a) very small (1 turbine) projects or b) partnering with larger developers (with reduced control and stake).

The issue of raising capital for community projects is also one of recognition. It requires lending authorities and governments to understand and acknowledge the community and co-operative 'difference'.

From Pearson's BALTA (2009) work on social economy capital markets… community projects often draw funding from:

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- Government funding (loans, grants, loan guarantees)
- Banks, Credit Unions and Socially Responsible Investing (SRI)
- In 2006, socially responsible lending (lending money according to a social and environmental policy) provided $1.939 billion of capital. Canadian sustainable venture-capital funds provided $449 million. (p.7)

- Other notable social economy financing organisations in BC include: Ecotrust Canada, Community Futures Development Association, Social Capital Partners, and Renewal Partners. (p.8)

Public Policy

Public policy plays a key role in facilitating the development of not only renewable energy sources, but community energy in particular. It is a vital component in the shape and design of new energy systems. This is particularly so given the market based challenges listed above that renewable energy presents. States played a key role in developing conventional energy regimes: funding development of centralized grid systems, supporting the development of nuclear and coal industries, to name just a few examples. Electricity systems are not 'free markets' by any means. They are heavily regulated, and are so important to social and economic systems that the government agencies will continue to play a key role for the foreseeable future. Supportive policies for renewable energy do not emerge in a vacuum, however, they are a result of ideas, structures, institutions and context. Indeed, for some, they key is for a 'policy window' [2](Howlett and Ramesh 2003; Kingdon 1995) to open up, allowing government agencies to enact more radical shifts than political structures would otherwise allow.

Policy choice is only one of a constellation of factors that made RE projects 'work' or not. Political culture and mobilization are also extremely important factors. For example, Cowell and Strachan argue that "European wind power experiences underline the point that policy outcomes may be affected more by the political and institutional context than any technical characteristics of the instruments employed" (2007:286). In this way both 'bottom up' and 'top down' changes are key to developing a new and greener energy regime. It is clear, however, from the literature that two of the most important facilitators of community based energy initiatives is a stable investment framework and supportive policy mechanisms (Lipp 2008, 2009, Gipe 2010). Particularly important from a community perspective is the role of public policy in allowing for participation from a diverse range of actors. Some policies, such as a feed-in-tarriff (FIT), are suggested to be more favourable to community actors (Gipe 2010, Weis 2010).

A number of different policy models exist for encouraging the development of wind power. Models can obviously not be transplanted uncritically from one jurisdiction to another. They can, however, provide guidance to the kinds of challenges that arise. Policy options exist on a continuum between more and less intervention in the

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[2] A 'policy window' is a term used by policy scholars to describe the movement of an issue on to the government agenda and toward action. Kingdon argues that policy windows tend open based on the convergence of three streams: the problem stream recognizing the issue (often via focusing events), the policy stream of disparate proposals being advocated and the political stream of government and public opinon shifts. This perspective is useful for understanding when and why policy shifts take place, and when problems lead to policy action.

marketplace, from consumer-based incentives like net metering to Renewable Portfolio Standards (RPS) and Feed in Tarriffs (FIT). The main debate for RE advocates, according to Lipp (2008) is between RPS and FIT. A distinguishing characteristic as Hvelplund 2001: 7 argues is that the prices of FITs are political while the quantities are market driven. Conversely, the quantities of RPS are political while the prices are market driven. The following list from Pembina's *PowerWedges Forum* discussion paper provides an overview of policy interventions:

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- Carbon pricing
- Subsidies/tax credits
- Feed-in tarriffs
- Emissions standards
- Government procurement
- Green power pool
- Renewable portfolio standards
- Green certificates
- Phase-out regulations
- Technology standards
- Research and development

Consumer based initiatives

One tack governments are taking is to facilitate for consumer-based development of renewable energy. One way to do this is by facilitating access to the grid, through, for example, **net metering**. Net metering takes place when a home or business installs wind or, more likely, solar panels. Their meter records the flow of electricity both ways. They are credited for the electricity they produce and obtain lower electricity bills as a result. The critique of net metering is that it does nothing to encourage broader transformations within the energy sector, and places the emphasis on individuals (with capital) rather than society and industry. It is also aimed at own-use rather than production to generate capital for other purposes (for example, community development).

Another option, less of a policy one, is for **green pricing**. Green Power Programs are a way to stimulate the renewable electricity market by asking consumers to pay more for electricity from renewable sources. Again, these can help develop a consumer driven market for renewables, but do little to guarantee investors long term support, grid access or shift the overall energy mix. Lipp argues that "In most countries these programmes have not been successful in 'pulling' the renewable electricity market with uptake of GPPs remaining low even after several years. In England, after five years of GPPs, less than 0.5% of the UK customer base has signed up for green power (Markard and Truffer, 2006).

Renewable Portfolio Standards- Quotas

With an RPS system, the policy sets a target (usually legislated) for either a percentage of total electricity or total amount of generation to come from 'renewables' by the target date. It does not specify what form of renewables, the price, or who it should provide it. Most Canadian provinces have some sort of RE target. What it does do is ensure a market for renewable generation in a given jurisdiction. Criteria such as local content can be added in addition to the lowest cost bidding.

This mechanism is most common across North America and is seen as more ‘free market’ friendly, since there isn't a direct intervention in pricing, and more flexibility is given to utilities. The RPS was also the policy choice of the United Kingdom in its development of renewables. RPS was also the system that Texas used to develop its wind resources. RPS systems are often accompanies by Green Certificates and penalties for non-compliance with the standard. Nova Scotia and British Columbia both have RPS policies in place.

There are a number of critiques of RPS and quota systems. First and formost, Gipe argues that the targets are timid and seldom met. Another critique is that they lead to a large number of promised and proposed projects, but a low success rate of actually getting ‘turbines turning’. This is because the low cost bids that win the tender systems often run into problems with financing and building the project without a guaranteed price structure.

Feed In Tarriffs

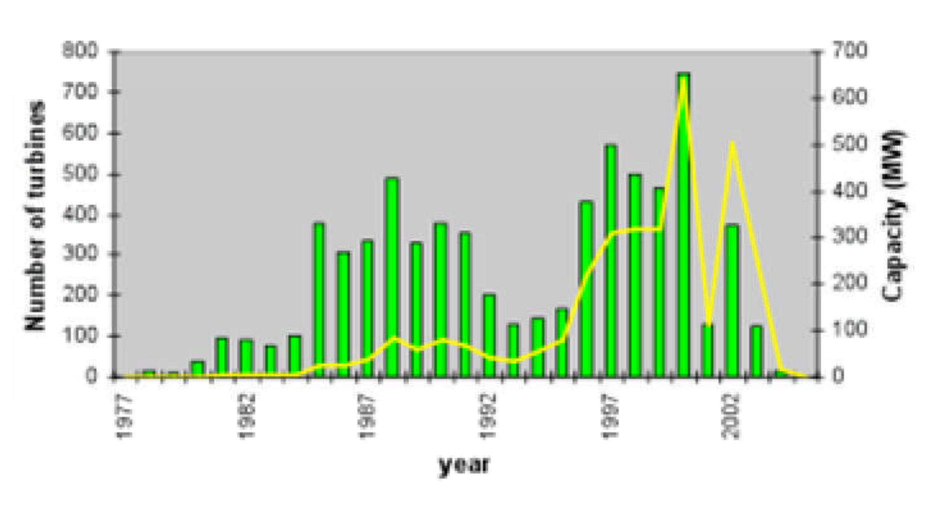
FIT policies, developed in Germany, are most favoured by advocates of community wind power projects. Indeed, according to Lipp (2008):

> Germany is considered the world leader in renewable electricity development and many accredit its success to the FIT…Denmark also has a long history of using a FIT but in recent years has scaled back its support.(2008:p.7)

FITs are statutory arrangements that set prices for renewable sources. The price set is obviously a political issue, generally described as ‘the price of generation plus a reasonable return’ (i.e. above the wholesale price of electricity). They are also seen as more effective at actually getting turbines in the ground (Gipe 2010). It allows a range of players (communities included) since the price of electricity is guaranteed and not subject to a competitive process (Gipe 2007). If a project meets the criteria specified by the power authority it is granted a contract. Eliminating the competitive bidding process means that lowest cost bids (often by large firms) are not privileged, nor are the corporate connections of larger firms as big an asset (Lipp, 2008). FIT tariffs also allow for differentiated prices based on technology (solar, wind, etc), which proponents argue will facilitate the kind of variety of renewables needed for a more resilient electricity system. FITs have the advantage of supporting a variety of technologies, project sizes and geographic locations (Gipe, 2007) Lipp p.27

Denmark began scaling back its policy supports for wind projects in 2001, and has subsequently seen a significant decrease in wind development. See figure 3.

Figure 3 Installed capacity and turbine installations in DK, 1977–2005



Source: Meyer, 2006.

In Canada, Ontario has been experimenting with FITs and versions of them since 2006, when they initiated their Renewable Energy Standard Offer Program RESOP.
While the RESOP was "..intended for small projects, it is proving to be inaccessible to many small developers and certainly to farmers, community groups and households (Doncaster, 2007). For these groups, the development process is still too onerous and payment for power produced insufficient to enable widespread participation (Gipe, 2007)." (Lipp 2008, p.98). The RESOP at the time was the first in North America for small renewable projects (10MW or less). It guaranteed prices for PV ($0.42 per kWh) and $0.11 per kWh for other sources (i.e., wind, biomass, hydro) for twenty year contracts. All electricity is sold to the Ontario Power Authority.

Ontario has updated and extended the FIT with the *Green Energy Act* that passed in 2009. It now extends past 10MW projects and provides higher rates for community based, first nations and solar projects. The *Green Energy Act* also specifically targeted modifications in co-operative legislation to make it easier for renewable energy co-ops to incorporate. The Green Energy Act is:

A system of Advanced Renewable Energy Tariffs as the primary procurement mechanism for renewable and clean distributed energy to ensure the equal participation of community energy in the sustainable energy sector. The tariffs per kilowatt-hour of generation are based on key components of the German and French models:

- Tariffs are differentiated on the basis of: technology, resource intensity, project scale and location to ensure projects are economically viable in communities across the province
- Prices are set on the basis of cost and a reasonable return on investment
- A minimum profitability index of 0.1 for lowest yield and 0.3 for highest yield green energy projects
- No cap on project size or program size
- No cap on voltage: The tariff includes all behind the meter, all distribution and all transmission connected projects

- 100% inflation protection at 2 levels: within the power purchase contracts, within the tariff program

www.greenenergyact.ca/

FITs are increasingly applied around the world. They were the key policy choice in place in Germany, Denmark, Spain, California, Ontario, Michigan and 18 other EU countries. The relative successes in the development of wind in these jurisdictions has led other areas to look to the FIT model as a 'best practice'. Here in Canada, New Brunswick announced in February 2010 a Community Energy Policy (which includes a modified FIT) to facilitate community based energy projects.

Evaluating Community Wind Best Practices

A wide variety of potential community ownership models exist: share ownership, co-operatives and municipal development of wind resources. There can also be collaborative combinations on projects incorporating each of these forms. With community shared ownership the wind developer allows locals, as individuals, to purchase ownership shares in the project. Local landowners may also receive lease payments for developments on their lands. In co-operative ownership models people form a co-operative corporation, jointly owning and investing in the project. Finally, municipalities can develop wind projects. In December 2009 the city of Summerside, PEI built enough wind capacity to supply 25% of the city's electricity needs, reducing their need to import coal fired power from outside the province. They have plans to double the number of turbines in the next few years, in phase 2 of the project.

One of the most interesting things about community wind projects is that they can take so many different forms, depending on the actors and local contexts. At the core though, the key is for community-based projects to return value to the local owners of the wind resource. When policies are implemented to facilitate and encourage community based wind, as in New Brunswick or Ontario, the criteria is usually 51% ownership and investment from 'communities'. In the Green Energy Act 'Community Member' was defined as:

(i) one or more individuals Resident in Ontario;
(ii) a Registered Charity with its head office in Ontario;
(iii) A Not-for-Profit Organization with its head office in Ontario;
(iv) A "co-operative corporation" as defined in the *Co-operative Corporations Act (Ontario)*, all of whose members are Residents in Ontario.

Source: OPA 2010. *Green Energy Act Rules*.

Clarity over the definition and community stake helps justify mechanisms like the price adder for community and first nations power projects.

While the ideal is 100% community owned, in some jurisdictions cultural, capital or other barriers prevent this degree of penetration. As a result, the best practice cases below highlight a number of different levels at which the community can participate.

Thus, we see a range of projects, from ones: a) wholly owned by co-operative and community groups, to b) joint partnerships with municipalities, to c) minority stakes in projects with large shareholder owned developers. Sometimes the size of the project defines the level of community ownership possible insofar as small projects are more likely to be within reach of community means. Large ones are more likely to be partnerships. On the other hand, this generalization should not be overstated. The experience of German farmers in developing very large projects suggests this trend need not necessarily be so. The particular community and its resources may have more to do with the size limit, than the 'community' nature or not. This was recently raised by Paul Gipe in his feedback to New Brunswick's proposals to cap community wind projects at 10MW. For Gipe, this underestimates and artificially caps the potential of community based ownership structures (Gipe, 2008).

Another consideration in evaluating community energy projects is the symbolic value they play shaping public perception of the possible. Thus, community projects can be used as demonstration projects, as educative tools to engage broader audiences. This value is often cited by participants and initiators of these projects. The value thus goes beyond monetary gain, and focuses on the transformative role that projects can play in shaping public opinions, experiences and through that, policy. Indeed, the interactive role between the constituencies created by community groups and policy change is well documented in the Danish case (Lipp, Gipe, Walker, Johnson). This is also evident in Canada, for example the Windshare co-operative in Toronto started a coalition and created momentum toward what is now the *Green Energy Act*.

Project	Community Group	Partner	MW/ #turbines	Project Cost
Middlegrunden (Denmark) 2000	Middelgrundens Vindmøllelaug (co-operative) (50%)	Københavns Energi (Copenhagen) (50%)	40MW 20 turbines	48 million Euro
Samsø, Denmark 1999-2000(onsh) 2002-	Community: Farmers Paludan Fak I/S (co-op) Difko I/S (co-op) 66%	Samsø Municipality (5 offshore) 34%	34MW 10 - 2.3MW offshore 11 1-MW onshore	8.8 million EUR (onsh) 33.3 million EUR (offsh)= 42.1million Euro
Baywind, UK 1996-1997	Baywind Co-operative (100%)	The Wind Co UK (Developer, sold stake to co-op)	3.1MW Harlock Hill 5-500kw turbines Haverigg II – 1-600kw	1.9 million pounds

			turbine	
Bürgerbeteiligung (Coop) Windenergiepark Udenhausen-Mariendorf (Germany) 1996	Bürgerbeteiligung (Coop) Windenergiepark Udenhausen-Mariendorf (100%)		3MW 5-600kw turbines	$3.7 million USD Shareholders:1.85 million DM (US $1.1million)
Bear Mountain Wind 2009-	Peace Energy Co-op	Aeolus Power AltaGas	102MW 34 3-MW Turbines	C$200 million
Windshare (Toronto ,ON) 1998-2002	Toronto Renewable Energy Co-op (50%)	Toronto Hydro (50%)	750Kw 1 turbine	1.8 million (CAN$)

Note- all projects are on-grid

Best Practice Cases: International

The literature on community based energy projects almost invariably points to the European experiences - particularly Germany and Denmark. Many of these projects are now sites visited by people from around the world to learn how the social mobilization took place, what kind of policy supports were needed, and how the projects are faring. Four cases are highlighted here: Middlegrunden, Samsø, Baywind and Windenergiepark Udenhausen-Mariendorf.

Iowa and Minnesota as farm-based examples.

Middlegrunden, Denmark

The Middlegrunden wind project is the world's largest offshore wind project, and the largest based on a partnership between a cooperative and a utility. At 40MW, 20 turbines and 3.4km long it is also a stunning visual representation of 'wind power' used all over the world. The project produces power for approximately 3% of Copenhagen's consumption. The project is 50% owned by a cooperative partnership. Each share is worth 1/40500 of the partnership (www.middelgrunden.dk) and there are approximately 10,000 members of the co-operative. Member investment rented from 500-3000 Euro and was supported at the time of development by making member income from the investment tax free (Volund and Hansen, 2000 p.2).

The genesis of the project came from a working group started by the Copenhagen Environment and Energy Office (CEEO) in 1996. From that, a co-operative was formed in 1997 with the specific purpose of developing wind on the Middlegrunden shoal. Of the 10,000 members, most own 5 shares in the project. The vast majority of members (8,552) are electricity consumers, but some organizations, unions and foundations also bought it (e.g. the Danish Teachers Union). The process of development went through many phases of consultation, with each one resulting in less opposition to the project. The opportunity for the community buy-in is regularly credited for these developments. This was particularly important, since the project is very visible.

The CEEO published an overview of the projects and key lessons in 2003. Here is an excerpt with recommendations:

Recommendations for wind cooperatives on planning and organisation of large wind projects

1 People – potential shareholders, neighbours, interest groups, politicians etc. – must be involved in the relevant parts of the project during the whole process.

2 Problems with acceptance can be avoided, if interest groups and authorities are contacted at an early stage.

3 It is essential to disseminate the appropriate information at the right time. Many initial reservations towards the Middelgrunden project were based on the fear of negative impact. Careful information distribution and dialogue assured that the reservations did not develop into serious problems for the project. E.g. the neighbours were invited on a tour to visit a modern wind turbine, which convinced them that noise would not be a problem

4 Relevant and critical reactions should be taken seriously and it is also necessary to adapt the project in order to meet concerns. In the Middelgrunden project the design of the wind farm was changed. It cost an extra year of planning, but broad local support was assured in the end.

5 The Environmental Impact Assessment should be taken very seriously, and responses in the hearing have to be taken into account.

6 Large project needs a minimum amount of start up capital – or requires a large amount of voluntary work.

7 Be very careful when submitting the tender and writing up the contracts. The contractors, who constructed the foundations, claimed extra costs (see page 22).

Source: CEEO 2003: p.13

Baywind, UK

Baywind was the first UK Cooperative to own wind turbines and was formed in 1996. It was built by a developer and then sold one by one to the community through a series of share offers. The cooperative has over 1300 members. They raised 2millions pounds through share offerings. Minimum is 300, max is 20,000 and "shareholders receive a 20% tax refund on their initial investment under the goverments Enterprise Investment Scheme." (www.baywind.co.uk)

It has become a key player in community participation in the renewable energy sector in the UK. The Baywind project aims to "maximise the regional economic benefits of wind resources while educating the local people about the benefits derived from clean energy projects" (baywind.co.uk.). Interestingly, the company that developed the project, The Wind Co. UK, built it for the purpose of turning it over to the co-op and developing community wind. According to a case study on the Baywind project:

The project was based on a successful Swedish co-operative called Vincompaniet that build Sweden's first co-operatively owned wind cluster in 1990. They set up The Wind Company in 1994, introducing the concept of community-owned wind intiatives to the UK. TWC helped the community to establish the Baywind co-operative and a board of directors was formed. The company carried the financial risk of building the first wind farm and provided its expertise in assisting Baywind to find shareholders.

Once The Wind Co. built the project they worked with the co-operative to raise the capital to gradually buy out the turbines. A 1997 share offer purchased two of the five, then in 2001 Baywind purchased the remaining three. The loans for this last purchase came from to Co-operative bank, suggesting that other social economy actors may be able to play a role in Canadian jurisdictions as well. Their arrangement from the co-operative bank included a savings arrangement so co-operative members could save their buy-in over time. (Sustainable Energy Authority of Ireland report on British Community wind)

One analysis of the project by the *Energy Savings Trust* suggests the following key factors for success based on the Baywind model:

- basing Baywind on the successful tried and tested model of the Swedish co-operatives
- the investment from the community came after much of the risk of the project had passed, so ongoing risks were essentially limited to machinery breakdown (which to some extent was covered by regular maintenance, insurance and guarantees), and whether the wind blew at predicted speeds
- Baywind has a strong presence in Cumbria and a good relationship with the local people.
- the turbines that it owns have been sensitively sited
- equal voting rights: one member, one vote, regardless the number of shares held
- members have consistently received a competitive return on their investment."

Two key developments have come from the Baywind experience. First, they are continuing to develop wind projects in the Cumbria area. The Haverigg project developed by Windcluster Lt. is one example. It was a two-phased wind development. Windcluster build five 225kw turbines in 1992, Phase two of the project was subsequently purchased by the Wind Co UK and The Wind Fund who constructed four 600kw turbines. The Baywind Co-op then purchased one of the four turbines from Haverigg II. The Wind Fund owns the other three.

The second development is Energy4All. It was formed in 2002 out of the Baywind experience to develop the co-op and community power model across the UK. It is owned by the following co-ops:

- Baywind Energy Co-operative Ltd
- Westmill Wind Farm Co-operative Ltd

- Boyndie Wind Farm Co-operative Ltd
- Fenland Green Power Co-operative Ltd
- Isle of Skye Renewables Co-operative Ltd
- Kilbraur Wind Energy Co-operative Ltd
- Great Glen Energy Co-operative Ltd.
-

Energy4All "was created due to daily inquiries received by Baywind Co-operative from people looking to replicate the success of Baywind, the UK's first community-owned wind farm." (http://www.energy4all.co.uk/energy_aboutus.asp). The partnership is set up to act as a clearing house and support network for community based renwables development in England, Scotland and Wales.

Samsø, Denmark

The Samsø case is a fascinating example of a complete energy system transition. In 1998 the island began a 10-year project of becoming 100% renewable, inspired by a government competition. One of the most interesting things about the project—and there are many—is that it was financed completely by locals. Shares were sold to locals, and the revenues were guaranteed by the national feed-in-tariff policy. It is not only about wind, but about combined heat and power, and various other technologies working together. The population of the island is only about 4,200 people, and it has succeeded in becoming 'carbon-negative' and 100% renewable-electricity powered. The island sells excess power to mainland Denmark, which off sets vehicles emissions and fossil fuel burning furnaces.

The project happened in two stages, the onshore turbine development and the offshore. The 11 onshore turbines (11MW) were developed in 1999-2000 and are owned by farmers, individuals and co-operatives. The total cost of this project was 8.8 million Euro. The offshore turbines were started in 2002 to offset and compensate for transport emissions on the island. Ten 2.3MW turbines were built, of which half are owned by the municipality of Samsø and the other half are owned by co-operatives and farmers. This project came in at a total cost of 33.3 million Euro.

The wind development on the island is owned by a flexible combination of farmers, co-operatives and the municipality. It is this kind of partnering, in addition to the lack of external reliance on funding that makes the Samsø case so interesting. The Samsø Energy Academy describes the ownership breakdown as follows:

> Samsø's wind turbines are organized in several different kinds of ownership. Five of the 10 off-shore wind turbines are owned by the island municipal government, the Municipality of Samsø. The proceeds from the windmills will be reinvested in future energy projects as Danish law does not allow local municipalities to earn money by generating energy. Three of the off-shore turbines are privately owned, for the most part by local farmers who have pooled resources to buy an off-shore wind turbine. The last two are sold on a cooperative basis to many small shareholders. One of these cooperatives is

organized as Paludan Flak I/S, a locally based initiative. The other is a professional investment foundation, Difko I/S. The 11 1MW wind turbines established on the island as one of the energy island's first projects are also owned in different ways. Nine are owned privately by local formers or small groups of farmers. Two are owned by locally based cooperatives with many small local shareholders.
Source: http://www.energiakademiet.dk/front_uk.asp?id=74

Bürgerbeteiligung (Coop) Windenergiepark Udenhausen-Mariendorf

Locals in this project were involved in siting and planning of the 5-600kw Vesta turbines near Kassel, Germany. The wind project is owned by a co-operative with 565 members. They sell power to the grid. The total cost was 6.15million DM (US$3.7 million). The project loans were paid off in June 2009 (9 years after the project was built). The cooperative owns the land the project is on as it bought the land from a local farmer. Shares were 2,500 DM each ($1500).

This case illustrates the key role that farmers can play. In fact, in *Wind power in View,* the authors argue that German farmers pioneered wind development in that country through the 90s. These actors made up at least half of the federal government's 250MW plan, and held many shares in small wind investment companies. Some of the reasons given for the key role of farmers are the connection they have with their land, their possession of prime land for development, and that they are used to investing in new technologies to improve their prospects. (p.85)

Hoppe-Klipper and Setinhauser describe the financing arrangements in the project: "the shareholders invested 1.85 million DM (US $1.1million) and the state of Hesse issued a grant for 1.47 million DM (US $0.9). The remaining 2.84mmillion DM (US$1.7mmillion) was financed with a loan from a German fund with revolving low-interest loans for environmentally beneficial projects." All 65 members of the cooperative were from the region. "The Udenhausen-Mariendorf experience demonstrated that raising sufficient capital only from small investors who purchase 2500DM to 500Dm shares is difficult if not impossible. Indeed, the participation of some large investors or the use of loans is indispensable. However, although shares of 2500Dm contribute little in the economic sense, they are successful in anchoring the project in the community."p.96. Gipe also notes an important expense: the interconnection fees to get the project on the grid were $150,000 USD.

The shareholders of the project have an open house party/BBQ every summer at the project and visitors come to learn about the project. In this way the project contributes to diffusion of best practices locally and internationally, as well as continuing to engage the local community (not all of whom are supportive).

Best Practice Cases: Canada

In Canada, community wind projects are just starting to take operational shape. Communities were inspired by the success of the European examples (Lipp 2009 interview; Joyce McLean interview2009; Gipe interview2010). While some communities have been actively pursuing projects for almost 10 years, a range of problems, from grid connection, to policy supports to volunteer burnout have resulted in very few projects actually built. This picture may be set to change very soon as jurisdictions across the country are starting to support these types of developments (E.g. Ontario, New Brunswick, Nova Scotia). The early adopters like Windshare in Toronto played key roles in educating others about what to do (and not do). In the following pages, Windshare (TREC) in Toronto, Ontario, and Bear Mountain Wind Co-op in Dawson Creek, B.C. will be profiled. There are a number of other projects not covered here that also deserve mention: Weatherdancer 1 in Alberta (a municipal utility-FN partnership); and Pukwis Energy Co-op in Ontario (a 54 MW wind farm joint venture between the Chippewas of Georgina Island First Nation and Windfall Ecology Centre).

Windshare (TREC)

The Toronto Renewable Energy Co-operative (TREC) is a non-profit co-op started in 1997. It had its genesis in the Toronto Green Community Initiative in the early 90s (Ferrari, 2009), insofar as that program helped to bring together a group of environmentally conscious residents. They were inspired by the Danish experiences with community wind and set about to develop a wind project of their own. They received grants to study sites in 1999, eventually settling on Exhibition Place, in downtown Toronto. The utility scale 750kw turbine is a 50-50 joint venture between the municipal power utility, Toronto Hydro (Energy Services), and a for-profit co-op that TREC created for the project, Windshare. The Windshare turbine is the first urban 100% community wind project in North America (windshare.ca).

There have been a number of other wind-projects proposed by co-operatives through Ontario and across the country, but none have yet succeeded with the level of co-operative ownership (50%) that the Windshare has. The co-op has 600 members (as of July 2009), 99% of whom are from Toronto. Minimum investment was $500, and the average investment in the project was between $1000 and $2000 (Ferrari, 2009). According the President, Evan Ferrari, community members kept wanting to join the project even when they were fully subscribed, so part of the money ($250,000) is now waiting in a blind trust account until more projects can be developed.

The project has had two very important impacts on the community energy sector in Ontario. The impact of the Windshare project is far greater than the contribution to the Ontario grid. It is (and was intended to be) a symbol for locals of the potential of new and renewable sources of electricity. The co-op does educational tours of the turbine site and has in their mandate a role for educating the public. In fact, 200,000 people a day drive by the turbine on their daily commute as it is just off the Gardiner expressway.

The second key impact has to do with the role that TREC members have played in developing the Ontario Community Power Fund (CPF), The Ontario Sustainable Energy association, and from that the recent *Green Energy Act*. For example, Deb

Doncaster, the executive director of the CPF was a founding member of TREC. Brett Kopperson is on the board of the CPF and is a key player in developing the Pukwis Energy Co-operative. Indeed, most of the core players of the Ontario community energy sector have ties back to TREC and the Windshare project.

In addition to these networks, the project played an important role in shaping public policy in Ontario. The co-op encountered many challenges, for example, with co-operative regulations requiring 50% business with members, and with interconnection regulations and costs. Evan Ferrari points out that *"*the additional amendments under the green energy act and amendments to the cooperative corporations act… Almost every one of the 12 things was something that Windshare hit up against." The feed-in-tarriff will not affect the Windshare project (since it was built under the standard offer program), but future developments that Windshare is working on will see an increased revenue from 11c a kwh to 13. The group had lobbied for a differential price for generating power close to load centres (i.e. downtown) to account for the efficiencies of reduced line loss and higher property taxes, but were unsuccessful in this. Generally speaking though, the *Green Energy Act,* recognized a number of the challenges that the Windshare project persevered through.

For the Windshare President, there are a number of key lessons that other community based projects should be aware of. First, he argues that projects should develop a minimum of two turbines or none at all. This is because if there are technical problems with the one machine, the whole revenue stream is cut off. Two turbines provide more security. Secondly, if the one turbine breaks down the symbolic impact is significant: i.e. wind is not a 'reliable' source of power (Ferrari, 2009). For advocates of renewable energy systems, this is not the public education message that needs to be sent. Another important lesson has to do with the complexities of interconnecting with the grid. Originally, Windshare was intended to be a net-metered project. Only after Toronto Hydro estimated a cost of $300,000 to upgrade billing systems did they start looking at other options and structures. As it stands, power from the project is sold to the grid, and does not come off the member's bill, as was originally planned.

Another issue with connection affected Windshare's second development project: Lakewind. Lakewind is a 20MW (10, 2MW turbines) project near Kinkardine, Ontario that is a partnership between 2 co-ops, Lakewind Power Co-operative (another TREC spinoff) and Countryside Energy. The project has been stalled for a number of years despite having the wind data, feasibility studies completed and secured land because the Ontario Power Authority reserved a section of the grid for power coming from the Bruce nuclear plants. This area, called the Orange Zone, also happens to be in some of the windiest territory. The community groups have received assurances the Orange zone will be lifted soon, but this raises the issue of connectivity and transmission capacity (real or perceived) for community groups wanting to sell to the grid.

TREC continues to expand. They are still working on the Lakewind project, as well as Solarshare[3], and Toronto Hydro has approached Windshare to see if they're interested in a large-scale ($200million) offshore Scarborough Bluffs project. (Ferrari, 2009).

Bear Mountain Wind- Peace Energy Cooperative

The Bear Mountain Wind project was initiated by the Peace Energy Co-operative (PEC) of Dawson Creek, British Columbia. The project is a 102 MW windfarm consisting of 34- 3MW turbines over an 8km bluff in B.C.'s Peace Region. It started producing electricity in late 2009 and is B.C.'s first utility scale wind project, producing enough energy to power most of the South Peace region of B.C. The interesting thing about this project is that the co-op does not own (at the time of writing) any royalty share of the project. Its role was to secure the lease and bring the community on board. The Bear Mountain project was developed by Aeolus Power from Vancouver Island and AltaGas from Alberta.

The Co-op was formed in 2003 to develop renewable energy resource for B.C. and Alberta. The Co-op partnered with Aeolus to start the project, having secured the lease for the area from the province. Peace energy co-op has 378 members
While there is no royalty paid for the use of wind, the co-op did receive part of a 'finders fee' that Alta Gas paid to Aeolus, and worked with the project developers to maximize the benefits to the community. For example, the co-op had in its agreements with Aeolus a focus on maintaining hiking trails near the site and using local labour where possible. The co-op also has an option for partial share of the revenue stream. The co-op is currently raising capital to exercise this option.

PEC negotiated a developer's fee with Aeolis based on a percentage of whatever amount Aeolis would receive as its developer's fee from other development partners. PEC negotiated this with Aeolis before AltaGas entered the picture.
Like Windshare, PEC is now looking into other projects, such as distributed heating and energy systems like they have in Norway. This PEC project is called Centennial Green.

Conclusions

These best practices have barely scratched the surface of the range of diversity that exists in community and co-operative wind projects. The upcoming BALTA symposium in Red Deer will help inform what models of development might work in the Alberta and BC context: large scale partnerships with corporations or municipalities, education and consultation, small 100 percent local projects. What is clear so far is that the policy options available to support these developments are as unique as the communities they govern. The communities highlighted here differ considerably in their resources—financial and natural—as well as their

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[3] Solarshare is a TREC initiative in which the Solarshare co-op partners with community members with roof space (companies, schools, etc) and develops (financing, insuring, maintaining) up to 250KW of PV.

conceptualizations of the 'possible'. What is clear from all of these cases, however, is that community and co-operative based wind projects are possible across a range of contexts. Moreover, they can range from the very small (500kw) to very large (100MW). What is also clear is that energy systems are already beginning to shift toward renewable sources, they are at an increasing level of mobilization within governing bodies and communities to work on a transition path away from fossil fuel reliance.

What remains to be seen, of course, is the character of this transformation. Two RE paths diverge on the issues of distributed versus centralized generation. They also diverge on the issue of ownership: community and public or corporate and private. These divergences are creating real political tensions between different policy choices: between a FIT and an RPS and between differentiated pricing for communities. The difference is a renewably powered electricity system that is dominated by local and community ownership, as in Germany and Denmark, or where local and community power play a more peripheral and marginal role.

The successful projects outlined above illustrated that community and cooperative wind projects play a number of roles in job creation, education, reducing CO2 emissions and shifting public policy. They also demonstrate that the specific corporate form is not as important as the values that underpin the association. Across the board these seem to be: re-localization of economic benefits and production, empowerment and education, and awareness of our environmental footprint. Whether a co-operative structure works to institutionalize this, or a farmers association, the key is to build on structures that engender trust and participation. In risk-averse communities skeptical of wind, a model like Baywind or PEC may make more sense, where the project is sold to the community gradually after being built. Institutional flexibility is the key to getting projects in the ground and running. This lesson is clear in the literature and in interviews with key people in OSEA (Bolinger and Wiser 2006; Gipe 2010; Alkalay 2010; Stevens 2009).

What is also clear is that there are real political issues at stake. This is certainly the case in the debate over the beneficiaries of RE development funded by ratepayers. While it is often argued based on the Danish cases that community power can help overcome opposition to the cost increases associated with wind and renewables, thorny issues of the definition of 'community' persist. Walker cautions that

> "Perhaps the critical judgment here is the extent to which the "shallow" use of the term community, to include essentially technical projects with minimal local collective involvement or benefit, is corrosive of deeper principles of socialized, locally-led and owned distributed generation." Walker et al P.78

There is a danger of the community power sector being swallowed by the partnerships that are so common in Anglophone and North American jurisdictions.

Finally, co-operative and community based wind projects are just a starting point. This is true conceptually, as part of a broader energy sector transformation, but also practically. In the cases of TREC, PEC and Baywind, one project was just the beginning of a range of associations, networks, and projects that move both within the energy sector (to solar and heating), and beyond (to eco-tourism and education). It is here that the real value of these projects lies, as the social and financial foundation to an expansive project of community re-generation.

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