Empowering the Community

Making neighbourhood renewable energy a reality

A discussion paper for the workshop

April 25th 2007
8.30am – 4.30pm

Vandusen Botanical garden

5251 Oak Street (37th & Oak St.)
Vancouver, British Columbia
V6M 4H1

Community Energy Association
Building local government capacity for sustainability

Sustainability Solutions Group

Contents

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Community Energy Association

Sustainability Solutions Group

Introduction and objectives

We are bringing together a group of municipal officials and planners, renewable energy experts and provincial officials to explore policies to enable and promote small-scale renewable energy in BC communities.

This discussion paper provides an overview of the context for municipal microgeneration policies in BC, and some potential policy options. It aims to help stimulate discussion and provide some ideas for consideration at the workshop.

Background

The BC government has now recognised the urgent need to take action on climate change, turning to clean power, energy efficiency, and moving away from imports of fossil-fuelled electricity. Municipalities have a role to play in living up to the energy and climate challenges of the coming decades, and this workshop aims to explore how municipal governments can enable and promote an exciting part of the solution: microgeneration.

What are Microgeneration technologies?
Microgeneration refers to small-scale renewable energy technologies that produce heat or power: solar air and water heaters, solar photovoltaics, small wind turbines, ground and air source heat pumps, biomass heating, and micro-hydro. For electricity generating technologies, microgeneration includes both grid-connected and off-grid systems. Typically, microgeneration refers to technologies on a scale that involves meeting energy needs for single buildings or developments.

Microgeneration has the potential to contribute to BC's efforts in addressing climate change. It is not a magic bullet—microgeneration is unlikely to ever supply the bulk of BC's energy use—but it can make a real and significant contribution. Microgeneration technologies reduce emissions, increase the security and diversity of energy supply, and recent evidence indicates that they can help to foster more sustainable behaviour, by making people more aware of their energy consumption. However, barriers to microgeneration continue to exist at the local level, such as zoning and permitting rules. Opportunities exist to overcome these barriers and go further in actively promoting and encouraging the use of renewable energy at the local level.

The aim of the workshop is to explore these opportunities, looking at ways to remove barriers and to take active steps to promote small-scale renewable energy in British Columbian communities.

The London Borough of Merton and the 'Merton Rule'
In other parts of the world, municipalities have been at the forefront of promoting small-scale renewables. In the London Boroughs of Merton and Croydon, planning bylaws introduced in 2003 required developments above 1000m^2 to source 10% of their anticipated energy needs from onsite renewables. The policy has led to a revolution in building design, as developers introduce efficiency measures to bring down overall energy use, and include renewable energy systems in new buildings. The policy, known as the 'Merton Rule', has now been adopted by dozens of municipalities in the UK. Adrian Hewitt, one of the planners behind the Merton Rule, will speak at the workshop.

Microgeneration as part of a green building and energy strategy

> *"Small renewable energy systems… can reduce infrastructure costs for utilities, reduce environmental damage related to burning fossil fuels and provide greater security of supply in the event of energy shortages"*
>
> CMHC 2003 [1]

Reducing carbon emissions

British Columbia has now joined the fight to address climate change and minimise the impacts of a warming world. The opportunities here in BC are excellent: BC is blessed with huge renewable resources, has a vibrant alternative energy business sector, and a population that supports action on climate change.

Commercial and residential buildings contribute more than ten percent of BC's greenhouse gas emissions, mostly through space and water heating, which are often provided by carbon-emitting natural gas. Natural gas currently supplies more than half the total energy used in BC households, and space and water heating account for over 90% of building-related carbon emissions [2]. The focus for reducing carbon emissions from the British Columbia building stock must be on space and water heating.

However, electricity use is growing faster than gas. With long-term uncertainty about the potential impacts of climate change on British Columbia's hydroelectric capacity [3], enabling new green power makes sense if we are to maintain BC's clean electricity system in the long term.

Engaging the community

For most of us, energy use is largely invisible and unconscious. We simply are not aware of stand-by lights, the power ratings of our toasters and lightbulbs, and the efficiency of the furnace. Exhorting the public with campaigns to conserve energy has had poor results in the past, and although most British Columbians are concerned about climate change [4], many feel helpless to make any positive changes in their own lives. Environment Canada's evaluation of the One-Tonne Challenge program found that many people remain unaware of how they can make changes in their own lives to reduce emissions [5]. Encouraging sustainable energy consumption is not straightforward. Energy prices in British Columbia are very low, and do not reflect the true environmental and social costs of energy production and consumption. In any case, many consumers find it hard to link the monthly bill with their day-to-day behaviour. But however difficult it may be, failing to engage with consumer behaviour is not an option if BC is serious about cutting emissions.

Microgeneration technologies help people to see the bigger energy picture, and help to make people more aware of their energy choices and use at home. This sets apart residential-scale energy from larger alternatives. Microgeneration is an effective way of engaging people in better understanding the origins and impacts of energy and the

implications of consumption, and in combating the apathy or sense of helplessness that so often accompanies concern about climate change.

Decentralised power is efficient and robust

Microgeneration technologies enhance system robustness. Through meeting some electrical load locally, less strain is placed on long-distance transmission lines, reducing the need for renewal and upgrade of transmission lines. Furthermore, studies after the 2003 black-outs in Eastern Canada and the US found evidence that a few tens of megawatts of distributed solar photovoltaic (PV) power could have prevented the black-outs [6]. It is important to note, however, that most grid-connected microgeneration systems will not provide homeowners with power during an outage, unless they have installed additional back-up power systems. Most microgeneration systems will automatically shut down during an outage in order to protect the safety of utility personnel working on the lines to restore power.

Microgeneration renewables also provide a hedge against shortages and price hikes in traditional fossil fuel energy supplies. While debate rages about the likely date of 'peak oil' or 'peak gas', microgeneration provides a buffer for homeowners against price rises in heating fuel and electricity.

Growing the smart energy economy

BC is home to world leading microgeneration companies. The growth of microgeneration in BC communities will create sustainable local jobs, and contribute to BC's role as a centre of the power technology industry.

Why not just focus on energy efficiency?

Conservation efforts are vital: they are often the most cost effective way to reduce emissions while improving the comfort in homes and businesses. Energy efficiency must lie at the heart of action to make BC's energy system greener, and a wide range of excellent energy efficiency programs are underway. However, efficiency alone will not be enough to meet the challenges posed by climate change. This workshop aims to look beyond reducing energy demand to explore what municipalities can do to enable more green energy supply.

> "*You can easily imagine people wanting to show off their micro-wind turbines to their friends and neighbours, but it's a lot harder to conceive of anyone wanting to show off their insulation*."
>
> Professor Paul Ekins of the UK's Royal Commission on Environmental Pollution.

The context for municipal microgeneration policy in British Columbia

This section provides an overview of the context for microgeneration in BC, in order to provide a background for discussion about municipal policies to promote microgeneration.

Costs and financing

The major barrier for microgeneration is the cost of purchasing renewable energy equipment. Although the equipment typically has very low running costs, most microgeneration technologies involve large up-front capital costs, and frequently have long pay-back periods. This is particularly true in BC, where electricity prices are among the lowest in the industrialised world. For many homeowners and businesses concerned about reducing their energy bills, upfront costs are a major disincentive, particularly given the difficulty of accessing the sort of financing mechanisms that are available to investors in large centralized energy systems. The cost barrier is less pronounced in new buildings, typically adding less than 3% to building costs, partly because renewable energy can be more cheaply integrated into new building, compared to retro-fitting existing buildings, and partly because the cost can be amortized over a long period in the mortgage.

Connection to the electricity grid

Renewable electricity technologies are often unpredictable in output because of the intermittency in sunshine and wind, and output does not always match domestic demand. As a result, electricity generating technologies, such as solar PV, small wind turbines, micro-hydro and combined heat and power technologies work best when the system is connected to the grid. This allows excess generation to be exported, and shortfalls can be supplied by the grid rather than expensive back-up systems. Getting connected to the grid can be a significant barrier to microgeneration in many jurisdictions, but is relatively easy in most of British Columbia. BC Hydro offers an interconnection process for "BC Clean" generation of less than 50kW, and provides a 'net metering' tariff that effectively pays customer-generators for any electricity they export to the grid.

BC Hydro introduced their net metering scheme in 2004, and there are currently 19 customer-generators already connected, with two others currently undergoing technical review. The cost of connection is typically small for such small installations, and BC Hydro provides a two-way meter for free. Fortis BC currently offers no net metering arrangement.

In the new BC Energy Plan, released in February 2007, the BC government announced a new standard offer contract for small generators under 10MW. It is not yet clear whether the price paid by BC Hydro under the contract will provide a meaningful incentive for distributed green power, but significantly the policy indicates that generators will not pay the costs of upgrading the transmission network to connect their generation. If the prices reflect the standard offer contracts (or 'Advanced Renewable Tariffs') operating in Washington State and Ontario, then the Energy Plan means the beginning of a real change in the landscape for microgeneration in BC. Municipalities are well placed to enable and participate in this shift.

Local-level barriers

Recent surveys of small-scale renewable energy in Canada [1] and the Lower Mainland of BC have identified local permitting regulations and practices as a significant challenge for the increased deployment of such technologies. This section explores some of these barriers, and has been developed through reviews of the available literature and interviews with those working in the small-scale renewable industry.

Personal use or commercial use? Property tax and electricity generation

According to one micro-hydro company we spoke to in developing this paper, there have been cases in which local authorities have indicated that they would treat a residence with a micro-hydro facility as an industrial use of the land for tax purposes, rather than residential. The same situation could arise for solar PV and wind technologies. A lack of clarity on how municipalities will treat onsite generation for tax purposes could represent a real barrier to the widespread adoption of these technologies.

A second issue is the additional property taxed levied on the increased value of a home arising from the installation of renewable energy equipment. Such an increase can cancel out the energy cost savings of installing the renewable system. This issue has recently been highlighted in Ontario, where a Standard Offer Program similar to BC Hydro's planned Standard Offer Contract has been in operation for a year [7].

Lack of awareness

For busy municipal officials, there is often not time to spend researching unfamiliar technologies, and the consequence can be delays or refusals for building permits for renewable technologies. This is frequently cited as an important barrier by industry. Potential solutions could include education workshops and briefing notes on renewable energy designed for planners and municipal officials.

Inconsistent permitting rules and fees

Municipal requirements for building permits vary for different technologies. For both solar technologies and heat pumps, some municipalities require building permits while others do not. It is not clear what constitutes best practice.

In addition, the fees municipalities charge for building permits for renewable energy technologies can, from an installers perspective, appear to be inconsistent with those levied for fossil-fuelled energy technologies. For example, in the City of Vancouver, a permit for a residential solar PV system would cost almost $900, while a permit for a similar sized fossil fuel generator costs $300 [8]. These fees, while conceivably reflective of the municipality's costs associated with permitting, create a disincentive for the community to pursue renewables over fossil-fuel technologies.

Solar energy: aesthetics and shading

Some municipalities regard solar collectors as visually unattractive, particularly in heritage areas, and require solar collectors to be invisible from the street. Such restrictions appear to be uncommon in BC, though restrictive covenants put in place by homeowner and community associations are much more prevalent.

Solar energy systems involve a large up-front capital cost, with the investment paid back over many years in the form of lower energy bills. However, if solar access to the site is not protected in some way, the investment is at risk from neighbouring developments (or trees) shading the system. Solar access by-laws have been used in a number of US cities and States, and are being explored in some Canadian municipalities, to remove the risk to solar collectors from shading.

Zoning and siting issues for small wind systems

The Canadian Wind Energy Association recently surveyed municipal treatment of small wind power across Canada, and found "*widely inconsistent and often unduly restrictive regulations*"[9]. In particular, the survey found that:

- in areas with no wind-specific provisions in zoning by-laws, generic height restrictions become a problem for small wind developments.
- Only 5% of Canadian municipalities currently have any provision for wind, and most of these are targeted at utility-scale developments rather than small wind.

> *"Siting barriers have long plagued the wind industry, delaying installations, increasing costs, and frustrating customers. Many land use planners and municipal permitting officials are not familiar with wind energy …Consumers who embark on a small wind energy project without prior understanding of the permitting process may encounter a daunting array of siting considerations and confusing regulations."*
>
> Rhoads-Weaver et al 2006 [9]

Biomass combustion and air pollution

Despite the development of highly efficient wood energy systems that can rival conventional fossil-based heating in terms of emissions [10], two thirds of current wood burning appliances in BC are inefficient and polluting [11]. When wood is burnt inefficiently, wood smoke becomes a major contributor to air pollution with serious health impacts.

The 100,000 inhabitants of Helsingborg, Sweden, are heated entirely through biomass district heating, using technology that emits less pollution than standard natural gas furnaces. 60% of Helsingborg's heating is provided from wood pellets from British Columbia's forests.

BC prohibits the sale and installation of wood-burning appliances that fail to meet emissions standards through the 1994 Solid Fuel Burning Domestic Appliance regulation [11], and some municipalities and regional districts have introduced stricter requirements (the GVRD and City of Prince George, for example). Where efficiency and emissions standards are in place, wood heat offers a sustainable and clean energy source. In particular, pellet-based systems can offer low particulate emissions and high efficiencies. Currently, lack of awareness of available biomass heating technologies remains an obstacle to the clean use of wood heating, and an image of biomass heating as an outdated and dirty technology remains prevalent.

Legislative authority of BC municipal governments

Most microgeneration technologies are integrated into a single building or development. This means that the power of local governments in BC to promote microgeneration is limited, as building standards are regulated provincially. The *Community Charter* prevents local governments from enforcing more stringent building standards (including those relating to energy performance) than those demanded by the BC *Building Code* [12,13].

While it is possible for municipalities to urge the Minister to change the Building Code to regulate higher energy efficiency standards and renewable energy, there is no direct scope for local governments to regulate building standards. It would not, for example, be possible for a BC local government to enact a policy like the Merton Rule, or like Barcelona's Solar Ordinance (see below).

Barcelona: leading a solar revolution in Spain

In 2000, Barcelona introduced a 'Solar Thermal Ordinance', requiring all new buildings above a certain size (292MJ/day hot water) to provide at least 60% of their hot water demand from solar thermal systems. Today, 40% of new buildings in Barcelona now include solar heat collectors, and within four years of the ordinance, per-capita installed capacity of solar hot water had increased 15-fold [14].

Following Barcelona's lead, other cities and towns in Spain adopted solar thermal ordinances, and in March 2006, Spain changed the national Building Code, requiring new buildings to source between 30-70% of their hot water from solar thermal, with the variation depending on defined climatic regions. New Delhi, Cape Town and Rome have all followed the Spanish example, with varying requirements for solar water heating in new buildings [14,15].

Summary: Barriers to microgeneration

- High upfront costs of renewable energy equipment
- Uncertainty around property tax treatment
- Permitting fees and other permitting barriers
- Lack of awareness among municipal staff, developers and potential customers
- Inappropriate regulations that do not match current priorities or technological realities (such as aesthetic restrictions on solar, or inappropriate wood-burning restrictions).

Current policy options for BC municipalities

As discussed above, the legislative authority of municipalities in BC is limited by the Local Government Act and the Community Charter. However, there are a number of tools and policies that local governments can use to enable and encourage microgeneration. This section introduces those options.

Information here draws heavily on two recent reports that examine the policy options available to municipalities to promote energy efficiency and other sustainability measures in buildings: a report by the Sheltair group for the Community Action for Energy Efficiency program [13]; and a report by Susan Rutherford of West Coast Environmental Law on the options for promoting green buildings [12]. Each of the policy options considered differ in their likely impact, their feasibility, and the way in which they influence different potential purchasers of renewable energy equipment (that is, homeowners, developers, businesses and so on).

Information, awareness and policy

Policy Statement in the Official Community Plan

A statement in the OCP indicating the community's support for local renewable energy provides the basis for future bylaws or incentives programs. While in themselves they may have little impact on developers' decisions, they provide a statement of intent about the community's attitude and approach to renewable energy.

A barrier to the development of such a statement is the lack of staff time and resources allocated to preparing and proposing it to council. One possibility might be for a model 'microgeneration-friendly' statement and proposal to be developed for municipalities to adapt to their local conditions.

The Official Community Plan of the District of Salmon Arm includes a community energy policy, which states: "*The District encourages the voluntary use of alternative, renewable and sustainable energy producing and recovery technologies for all developments and infrastructure. Examples of these technologies include the use of "green" (or LEED) building design, geo-thermal heating and cooling systems and solar heating devices; micro-hydro, fuel cell, bio-mass and wind power generation systems.*"

Information and training for municipal building officials

Municipal officials play a central role in the installation of renewable energy in buildings as the granters of building permits. In particular, officials must approve 'equivalencies' for innovations that are not covered under the *Building Code*, like many renewable energy systems. The granting of equivalences often creates liability concerns on the part of the local government. The onus is usually on the developer to satisfy these concerns, but this can be time consuming and expensive [12]. Several BC municipalities have employed staff with green building expertise, or have provided training in this area.

Development Checklists

A number of Canadian communities have now introduced development checklists, used to inform developers of planners' intentions with respect to sustainability objectives. The checklist must be submitted along with building/development permit applications, but the measures suggested in it are all voluntary. BC communities with development checklists that refer to microgeneration technologies include: Gibsons, New Westminster, Port Coquitlam, Bowen Island and Vernon.

Clarification of property tax treatment for customer-generators

Clarifying the property tax implications of installing renewables, particularly when net metering or part of a standard offer program, would remove an important source of uncertainty for customers.

Finance & incentives

Discounted Permitting Fees

Discounts on permitting fees can be used to provide an incentive for developers to incorporate renewable energy technologies into their designs. This approach has been used elsewhere to promote solar energy (e.g. Santa Monica and Oakland, CA) but it seems likely that the incentives are so small as to be negligible, since permitting fees form a tiny proportion of overall building costs.

For individual homeowners considering installing renewable energy, however, permitting fees add to the already high upfront costs, and provide a major disincentive. Reducing or cancelling permit fees for the installation of renewable energy equipment would help to remove this barrier, at a small cost in foregone revenue.

Local improvement charges

Local Improvement Charges are commonly used to finance improvements to public goods in local neighbourhoods, such as sidewalks, park space and so on. The improvements are funded by the local government, which recovers its costs through Local Improvement Charge that appears as an item on the property taxes of residents in the neighbourhood. The City of Whitehorse has pioneered the use of LICs for the development of energy systems, and the Pembina Institute has explored the possibilities for the use of LICs to fund energy efficiency and microgeneration [16]. According to their report, "*the main advantage of using an LIC program over alternative methods of financing energy efficiency improvements is that it associates the repayment of the cost of efficiency improvements with the building property rather than with the current building owner. This means that permanent improvements … that have long payback periods are more attractive to home and building owners because both their costs and benefits are passed on to new owners*."

The Central Saanich Energy Committee, a group of concerned citizens working with the municipality of Central Saanich, recently requested a legal opinion on the scope for BC municipalities to use LICs to fund energy efficiency and renewable energy projects. The lawyers advised that indeed, municipal governments do have the authority to use LICs to finance renewable energy and energy efficiency projects [17].

Direct financing and carbon offsets

The local government could directly finance the upfront costs involved in the installation of renewable energy systems in local homes and businesses, and recover these with standing charges. Unlike a Local Improvement Charge, the repayment would be treated as a private loan, rather than as a taxable item, and would be charged to the home or business owner rather than the occupier of the building. This incurs some financial risk, and may be seen as an inappropriate activity for a local government.

A further option would be to consider whether the 'carbon asset' created by the installation of renewable space and water heating systems might make financing community renewables feasible. Financing community renewables could, for example, be a mechanism for a municipality to offset its own corporate emissions. This would enable the municipality to show leadership in environmental stewardship while providing the community with affordable renewable energy.

Regulatory tools

Density Bonuses

Density 'bonuses' are granted when a municipality allows additional density beyond the zoning allotment, in return for the provision of some public good. Planning departments can grant additional density for green building measures, such as the incorporation of microgeneration. Usually, density bonuses are used only in the commercial core, where there is enough demand for additional density, and in cities with pressure for development in such urban centres. There must be density bonus provisions in the zoning bylaw or the OCP for this tool to be effective [13].

Hailey, Idaho
Planned Unit Developments get a density bonus of 10% if renewable energy provides at least 50% of the developments' energy. However, to date this has never been used.

Rezoning

In some North American jurisdictions, local governments can stipulate additional requirements in exchange for a rezoning. There is no legislative authority for this enshrined in the Local Government Act, so it would not be directly legal in BC. However, it is still possible for a local government to use a rezoning application as an opportunity to influence developer decisions.

When a developer applies for a re-zoning, the local government staff can suggest that their support for the application is conditional on the registration of a covenant requiring renewable energy installation [13]. According to West Coast Environmental Law, "*Staff cannot promise the re-zoning will be granted, as staff cannot bind council to a decision and council cannot close its mind before a re-zoning hearing, but staff can promise their support of the proposal – a significant hurdle for any developer*" [12].

Expedited approval process

Expedited development or building permit application processing can be granted in return for the provision of onsite renewable energy systems. Unlike many of the other regulatory tools, BC municipalities do currently have the legislative authority to do this. Such a system could be tied to a checklist or points system, such as that operating in Port Coquitlam. Scottsdale, Arizona has successfully used such a system to promote green buildings. However, some municipalities already offer 'fast-track' processing as a way to encourage commercial development in their municipality, and adding a new level of processing time might interfere with the system.

Solar access bylaw

As indicated earlier in this document, solar access bylaws or easements protect solar installations from the risks of future shading. They are common in the US, and are under development in some Canadian municipalities, such as Sarnia, ON. Montana also has provision to protect access to wind.

Specific zoning provisions for small wind

Zoning by-laws specific to small wind enable more straightforward permitting, which both encourages uptake of wind energy installation and reduces the administrative burden associated with permitting. Canadian municipalities that currently have or are pursuing wind zoning by-laws include Pincher Creek, AB; County of Kings, NS and Windsor, ON. The Canadian Wind Energy Association has produced a model zoning by-law for small wind systems [9]. Small wind power is not appropriate in all areas of BC, and this measure is therefore restricted to areas in which the wind resource is sufficient.

Leading by example

Civic Building Code

Several BC municipalities have introduced civic building codes, requiring that all municipal buildings be built to high efficiency standards, usually based on an existing industry certification scheme such as the LEED green building certification. A recent report commissioned by the Regional District of Nanaimo reviews these schemes in BC [18].

Demonstration and deployment projects

Some BC municipalities have become active renewable energy suppliers themselves, through involvement in demonstration and deployment projects. Such projects provide an example to the community, and provide an excellent way of raising awareness and understanding of neighbourhood-scale renewables.

The Hyde Creek Community Centre in Port Coquitlam was upgraded in 2004 with a solar water heating system, resulting in annual savings of $4000.

Summary: tools for municipalities to champion microgeneration

Policy	Advantages	Disadvantages	Examples of Use
Information, awareness and policy			
Statement in OCP	Simple	Low effectiveness?	Burlington, ON Salmon Arm BC
Information and training for officials	Speeds processing; helps spread good practice	Cost	None known
Development checklist	Raises awareness among developers; simple	Low effectiveness?	Gibsons, Vernon, New Westminster, Port Coquitlam, Bowen Island
Clarification of property tax	Removes potentially major barrier		None known
Finance and incentives			
Discounted permitting fees	Simple	Incentive negligible for developers; greater for homeowners	Oakland, Santa Monica
LICs	Overcomes up-front cost barrier to microgeneration	Legislative authority unclear; heavy staff commitment	Under investigation in Central Saanich
Direct financing	Overcomes up-front cost barrier to microgeneration	Heavy staff commitment; may be inappropriate activity for municipality	None known
Regulatory			
Density bonusing	Relatively straightforward	Staff time, requires significant development pressure	Hailey, ID
Re-zoning bonus	Can provide strong incentive to developers	Legislative authority weak	None known for renewables.
Expedited approvals	Provides developers with incentive to incorporate renewables	Staff time; could interfere with existing fast-track incentives	None known for renewables; used for green buildings in Scottsdale, Arizona.
Solar access bylaw	Provides certainty for solar installations	Low effectiveness?	Sarnia, ON
Wind provisions in zoning by-law	Removes a significant barrier to small wind	Only suitable for areas with good wind resource	Pincher Creek, AB; County of Kings, NS; Windsor, ON
Leading by example			
Civic building code	Guarantees uptake within the civic building stock	Limited to municipal buildings; places financial burden on city's resources	Richmond, Vancouver
Demonstration and deployment projects	Enables deployment of renewables, raises awareness	High cost	Many BC local governments have installed some renewable energy

Community Energy Association

Sustainability Solutions Group

Empowering the Community: workshop sessions

The purpose of the workshop is to generate useful discussion about the barriers to microgeneration in BC communities, and the feasibility and likely impact of measures that municipalities can take.

Participants will be split into groups, each with a flip chart onto which the tables below will have been pre-written. Each group will nominate a scribe and a reporter. At the end of each session, the groups will report back on their findings.

Session 1. 1.00-2.00pm

Barriers to microgeneration in the community	Importance
High permitting fees	
High upfront costs of microgeneration technologies	
Lack of awareness (in particular among municipal staff)	
Zoning and permitting rules may actively discourage renewable energy	
Property tax guidelines may be unclear for customers who are 'net metering'	
Lack of 'right to light' legislation puts solar systems at risk of future shading	

Session 2. 2.00-3.00pm

The legislative authority of BC municipalities with respect to promoting green building and renewable energy technologies is limited by the Community Charter and Local Government Act. However, there are still a number of measures municipalities can take to support microgeneration in the community:

Actions that can be taken now	Impact	Feasibility
Statement in OCP		
Information and training for municipal staff		
Development checklists		
Clarify property tax		
Discounted Permitting fees		
Local Improvement Charges		
Direct financing		
Density bonuses		
Rezoning		
Expedited approvals		
Solar access laws		
Wind-friendly zoning by-laws		
Civic Building Code		
Demonstration and deployment projects		

Coffee Break 3.00-3.15pm

Session 3. 3.15 – 4.00pm

Next steps and strategies for enabling community microgeneration

Municipalities acting alone can only do so much to promote small-scale energy. Partnerships among municipalities and with higher levels of government, community groups and industry are likely to be necessary to enable broader change. This session will explore strategic next steps for advancing community level renewable energy in British Columbia.

Questions include:

- What is the right forum for moving these issues forward? Would the formation of a working group on community renewables, made up from the Province, interested municipalities and others be appropriate/feasible?
- How can small-scale renewable energy, particularly renewable heat, be better integrated into efficiency and green building initiatives?
- What supports do municipalities need to advance local renewables, and who should/could be supplying these?

Appendix: microgeneration technologies in BC

Technology	Description	Cost indicators	Potential in BC
Solar Photovoltaic (PV)	Flat panels or tiles, usually roof-mounted, which generate electricity	60-90 c/kWh, or $15,000 for a 2kW panel (for a single family home). High cost can be offset if used as a roofing material.	Estimated total generating potential of more than 400MW on BC residential and commercial buildings
Solar Heating	Solar water and air heaters are used in parallel with traditional heating systems.	Solar water heaters cost around $8000 for a single family home.	Solar hot water systems are suitable for a majority of residential and commercial buildings.
Small wind	Small wind turbines (1-100kW) are best suited to sparsely populated areas with consistent wind.	12-46 c/kWh, or $50,000 for a 10kW system. A single family home 1kW system would cost around $6500.	There is a good resource for small wind in BC, especially along the coast and in the Cariboo and South Okanagan regions.
Geo-exchange /heat pumps	Ground-source heat pumps take warmth from the ground and transfer it inside buildings, using much less electricity than traditional electric heating.	Installation for a single family home costs around twice as much as a conventional electric system, but operating costs are often 25-50% lower.	A recent report identified commercially viable potential for more than 10,000 units in the GVRD alone.
Micro-hydro	Hydro projects come in a variety of scales. Here, we are considering systems of less than 1MW, and as small as 1-2kW. Such installations have minimal environmental impacts	Upfront capital costs are around $3-4000 for a 1kW system, or $20,000 for a 10kW system. Larger systems provide power at around 5 c/kWh.	There are estimated to be several thousand suitable sites available in BC for systems between 1-100kW.
Biomass heating and combined heat and power	When burned cleanly, wood can produce both heat and electricity at low cost and high efficiency. Systems can range in scale from a stove to heat a single room to a district energy system for whole developments.	Costs vary hugely with the range of possible technologies. Upfront costs are high, but fuel costs very low.	The resource in BC is enormous. One in three households already use some form of wood heat, which accounts for 4.5% of residential energy use. Most is currently burnt inefficiently.

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