Special Report – A Synthesis of PICS-Funded *Social Mobilization* Research

What works – and what doesn't – for engaging people on climate change

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EXECUTIVE SUMMARY

This Special Report from the Pacific Institute for Climate Solutions (PICS) is a synthesis of key findings from a cluster of PICS funded Social Mobilization research projects, conducted in British Columbia (BC) during 2010 – 2014. This report explains "what works" and "what doesn't work" in engaging the public and motivating people to act on climate change solutions. Included in this report is a brief summary of the BC context for social mobilization, as well as key findings from the literature on psychology of behaviour change, social movements, social learning and place-based approaches.

Despite BC's legislated greenhouse gas (GHG) emission reduction targets of 80% below 2007 levels by the year 2050, and the attempts of municipalities to implement Community Energy and Energy Plans (CEEPs), research shows that BC residents are largely unaware of these targets. This is perhaps because climate change is still not "on the radar" as a priority for most citizens – the so-called "silent majority" whose voice is typically not heard in public meetings, planning processes or the media.

The seven research projects described in this paper can help inform BC's future course on climate action. They explore multiple ways and innovative tools to engage and mobilize the public around issues related to climate change, with a focus on communities, the public planning interface and energy and digital media. This report reviews each study, then analyzes the patterns of emerging results across methods, goals, and contexts for social mobilization. It focuses on both top-down municipal processes, and the less well-documented grass roots and innovative third party processes that attempt to reach and mobilize the silent majority.

In general, the PICS research findings support those emphasized in current social mobilization literature, but go beyond them in several new areas, based on evaluation of real-world engagement processes, innovative digital and visual media, and processes for mobilization on community energy issues. The key findings show that social mobilization on climate change can be fostered successfully at multiple levels: from catalyzing dialogue within communities, to changing awareness over the space of a few hours, and actually achieving significant energy savings and carbon emission reductions for collective groups of people over the course of a few months to two years. Most of the PICS social mobilization efforts did reach the silent majority, as in the Greenest City Conversations Project's energy workshops and Facebook engagement of citizens in transportation planning. Other successful outcomes from social mobilization include: a richer, more meaningful type of engagement; increased understanding of the local implications of climate change; and in some cases multiple co-benefits of climate action. They also document some illuminating constraints and failures in attempting to initiate social mobilization on local energy solutions.

Recommendations for achieving social mobilization on climate change reflect these findings: (a) the importance of multiple pathways for social engagement for any particular stakeholder or community group; (b) the key role of digital media in building momentum and interest in community engagement exercises, including structured use of social media and careful application of powerful visual media related to the community in question; (c) the benefits of collective problem solving at neighbourhood scale with 'grass roots' groups; (d) the need for coordinated and mutually reinforcing processes conducted by multiple partners, in both top-down and bottom-up roles; and (e) the important role that third party interveners (such as NGOs, applied researchers, and scientific bodies such as PICS) can play in introducing new tools and stimulating community and government engagement.

1. INTRODUCTION

Social Mobilization was one of five major research themes identified by PICS for the years 2009 – 2014. The principal focus of this theme was to find ways to mobilize British Columbians to think about and act on climate solutions. With BC's GHG emission reduction targets of 80% below 2007 levels by year 2050, municipalities seeking to implement adaptation plans and Community Energy & Emission Plans, and many communities struggling to meet their local GHG emission reduction targets, these findings could be crucial in helping to accelerate climate action and reach BC's objectives. These targets cannot be attained without substantial behaviour change and public support for climate change policies. Such transformations have been routinely identified by scientists and policy-makers as essential in mitigating and adapting to climate change.

In March 2010, PICS hosted a workshop titled 'Social Mobilization for Climate Solutions' with international and local experts in the field. Critical issues identified in the workshop included social acceptance of climate change and its solutions, and how to get public buy-in for effective and sustained social change. It also revealed a shortage of evaluation research on the effectiveness of social mobilization initiatives, as documented in the workshop summary report (PICS, 2010). The workshop led to a call for research proposals, which focused on:

- overcoming social barriers to clean energy solutions
- developing new digital media/tools to engage the 'silent majority'
- improving understanding of the impact of digital media on social mobiliza tion
- methods for evaluating social mobilization effectiveness.

PICS initially selected five main research projects, which were intended in part to develop and/or test ways to achieve real and lasting changes in the ways British Columbians think, live, and/or work. Overall, seven PICS-funded research projects have now been completed, representing a unique cluster of Social Mobilization research projects. This Special Report synthesizes their evaluation findings and recommendations, with the intent to inform and provide guidance to policy-makers, scientists and educators, practitioners, communities and action groups in BC (and at national and international levels), on "what works" and "what doesn't work" in developing social mobilization solutions on climate change.

As background for interpreting the synthesis of BC PICS research, readers less familiar with the field may find it helpful to consult Appendix 1, which summarizes key findings from earlier studies internationally and from BC, providing a brief overview of relevant knowledge on the psychology of behaviour change, social movements, social learning, and place-based approaches to social mobilization, as general guidance on fostering social mobilization on climate change.

1.1 What is Social Mobilization?

Social Mobilization, according to UNICEF, is a "process that engages and motivates a wide range of partners and allies at national and local levels to raise awareness of and demand for a particular objective through face-to-face dialogue. Members of institutions, community networks, civic and religious groups and others work in a coordinated way to reach specific groups of people for dialogue with planned messages. In other words, social mobilization seeks to facilitate change through a range of players engaged in interrelated and complementary efforts".

PICS has defined Social Mobilization in terms of climate change as engagement and motivation of the public and multiple stakeholders to implement climate solutions, through social learning,

social movements, behaviour change, community action, and policy change (PICS, 2010). As such, social mobilization emerges from a range of actors, including citizens, the private and public (government) sectors, and a variety of organizations (including research bodies). This definition recognizes the following distinguishing features of social mobilization, as distinct from mere communications and public consultation:

- Collective action and responsibility, not focused on individuals or single households acting alone
- Preceded by social learning and capacity building
- Usually, but not necessarily, initiated by organized community engagement of some kind, e.g. campaigns, grassroots initiatives, educational programs, regulatory programs and incentives, political movements, etc.
- Transformative over the long term, becoming embedded in social norms and practices (Shove, 2003)
- Scaled-up, moving beyond short-term events, demonstration projects, and early adopters.

Social mobilization should therefore be viewed not just as an intervention or spike in securing public attention and motivation, but as helping to build a step-change in social thinking and practice that delivers climate change solutions.

The areas of focus in the PICS Social Mobilization research program (resolving social barriers to clean energy solutions, new digital media/tools to engage the 'silent majority', the impact of digital media on social mobilization, and evaluating social mobilization effectiveness) represent a subset of issues within the social mobilization field applied to climate change. The emphasis here is towards the general public (the 'silent majority'), rather than declared activists (e.g. environmental non-government organizations [ENGOs]), professional 'experts' on climate change and sustainability (such as local government staff and other practitioners), or policy-makers. All of these groups though are involved in the broader scope of social mobilization.

The projects described in this report also focus most on addressing and evaluating actual solutions (e.g. social action, behaviour change and policy change), consistent with the PICS mandate. Developing a meaningful and emergent dialogue is a vital component of social mobilization (Bendor et al., 2012), especially in areas where there is not yet collective consensus on paths forward. However, most of the projects described here include both a significant dialogue component and a clear link to policy or action. There is not space here to review all the PICS sub-projects, which focus more specifically on fostering dialogue, important though that is (Marshall, 2014).

1.2 Why is Social Mobilization important?

Mitigation and adaptation to climate change are significant goals for many cities and regions in BC and beyond. However, achieving this usually depends considerably on social behaviour, which cannot be regulated under current legislation and municipal powers. While citizens may endorse broad energy mitigation policies, they often resist their implementation via 'smart growth' plans and other mitigation initiatives in their own neighborhoods (Senbel, Girling & Kellett, 2014). Especially in the case of sustainability, which touches upon a diverse array of social, economic, environmental and cultural issues, citizens need to be meaningfully engaged in formulating (and taking some responsibility for) solutions (Innes & Booher, 2010; Robinson, 2004; Robinson & Tansey, 2006; Talwar, Wiek & Robinson, 2011; van Kerkhoff & Lebel, 2006).

Social mobilization is central to any large-scale response to climate change. Overall, its purpose is to:

1. Engage citizens in developing and implementing climate change solutions through collective, informal, organizational and institutional initiatives: both 'bottom-up' and 'top-down'.

2. Change collective behaviour to reduce carbon footprints.

3. Build public support for (and contributions to) low-carbon climate change policies and actions focused on the green economy, ecological resilience and sustainable communities, in order to achieve GHG reduction targets by 2020 and beyond, as well as other provincial climate change goals.

4. Build capacity of communities to plan and carry out climate change adaptation and mitigation (PICS, 2010).

Benefits of public engagement and social mobilization include: promoting citizen self-improvement and social learning (Fiorino, 1989), exercising citizens' rights to influence the political processes, and improving the quality of local decisions made. Also, public participation can make policy development more accessible and transparent, build trust between citizens and elected officials, and promote policy change by increasing public acceptance of decisions (Gore, 2009; Speth, 2008).

BC is unique in the policy context for social mobilization in North America e.g. – there are currently over 125 municipal organizations attempting to become or remain carbon neutral, and community-wide GHG emission reduction targets are also in place for all municipalities (for more details, see Appendix 1. Previous studies have demonstrated high levels of public concern for climate change among BC citizens (e.g. Clean Energy Canada & Pembina Institute, 2014; Harshaw et al., 2009) and several limited social mobilization efforts have been initiated by local/provincial government and communities, though these appear often to be largely uncoordinated. Some grassroots social mobilization efforts have been somewhat effective in, for example, battling proposed fossil fuel pipelines through onsite demonstrations and media coverage. In addition, a few earlier research studies testing social mobilization interventions have been evaluated in BC, including local visioning processes to explore climate change scenarios which were effective in rapidly building awareness and support for adaptation and mitigation policies (e.g. Cohen et al., 2011; Sheppard et al., 2011; Schroth, 2010). However, BC faces a number of challenges and constraints on social mobilization, including: mixed policy signals from higher levels of government; weak public awareness of carbon reduction targets (Rhodes et al., 2014); local climate change issues generally 'off the radar' for citizens; and generally high carbon footprints due to car-dependent commuting patterns and heating of buildings with natural gas. Overall, it appears that broad scale social mobilization on climate change is not yet happening in BC, and therefore there remains a strong need to identify how to promote social action and policy support on climate change in BC.

2. SOCIAL MOBILIZATION RESEARCH AND FINDINGS

This synthesis Special Report collates and highlights the success stories, lessons learned and implications identified through the various Social Mobilization research projects, individually and seen as a whole. These projects comprise:

1. **The Good Life, The Green Life** – led by Shannon Daub, Canadian Centre for Policy Alternatives, and Shane Gunster, Simon Fraser University (SFU).

2. **From Communities of Interest to Communities of Practice: Digital Media as Catalysts for Climate Action campaigns** – led by Dr. Maged Senbel, University of British Columbia (UBC).

3. **Meeting the Climate Change Challenge (MC3)** – led by Dr. Ann Dale, Royal Roads University (RRU).

4. **Greenest City Conversations** – led by Dr. John Robinson, UBC

5. **Measured visualizations as catalysts for mobilization: A prototype for public engagement in municipal planning for climate change** – led by Dr. Ronald Kellett, UBC

6. **Understanding the public uptake and acceptance of a municipal green energy incentive program** – led by Dr. Christopher Ling, RRU

7. **Illustrated Community Energy Guide/Community Energy Explorer** – led by Dr. Stephen Sheppard, UBC

In addition, the PICS Social Mobilization theme supported various other smaller projects and events, including a workshop that brought together government and NGOs to discuss and cooperate on the Carbon Neutral program and a series of workshops involving the BC Mayors Climate Leadership Council (BCMCLC), led by Community Energy Association. While these support important government or NGO-led social mobilization initiatives, the results presented below focus on the findings from the larger research projects directly engaging the public.

The projects summarized below address the goals, methods (very briefly), and outcomes of the social mobilization intervention or other key findings of the research itself. Table 3.1 later in this report provides a summary classification of these studies.

2.1 The Good Life, The Green Life

Documentary film and public engagement about what it means to live a good, green life at the climate crossroads

(Earlier title: A Day in My Carbon Neutral Life: Imagining transformative change, overcoming barriers to action)

Project Team

Shannon Daub, Jonathan Taggart and Tina Barisky – Canadian Centre for Policy Alternatives (CCPA-BC); Dr. Shane Gunster – SFU School of Communication; Josha McNab – Pembina Institute; Amazing Factory Productions; Raised Eyebrow Web Studio.

Project Goals

The project's aims were twofold. First, to understand what leads people from diverse backgrounds to move from concern to action. How do they understand the problem of climate change and its solutions? What is their vision of a low-carbon future, and how do they define their role in bringing it about? How are they taking action and engaging others? What barriers do they see to more widespread and large-scale mobilization? The team explored these questions through ethnographic

research with six case study households (and nine individual participants) around the Lower Mainland region, using documentary film.

The second aim is to use the documentary film created through the research process as a tool to engage people who fall into the "concerned" and "alarmed" segments of the population (as identified by Maibach et al. in the 2009 study, Global Warming's Six Americas), with the aim of helping to catalyze transitions from concern to action.

Project Method

Documentary research: The project sought participants with green values and an existing concern about climate change, varying levels of knowledge about climate change, and various levels of engagement with solutions. Participants were recruited via email and social media using a variety of environmental and social justice networks. Interested people completed an online application survey. Of the 103 applications submitted, 12 households were shortlisted. Interviews were conducted with each potential participant in their home, and six households were selected. Participants then completed a pre-interview questionnaire, followed by a first in-depth on-camera interview. A full-day workshop was held, to allow participants to get to know each other, share their ideas and explore visions for a low-carbon future (using a guided visualization process). A final on-camera interview was then conducted with each household in their homes/local communities. All interviews were transcribed and analyzed, and key themes selected as central components in the seven 'chapters' of the documentary film, subsequently produced by the project team.

Public engagement: The project's engagement work is ongoing. It uses online and offline activities and tools to create low-barrier, highly accessible opportunities for people to discuss the film's themes and how they can become more active in taking action on climate change. A project website was built (http://goodlifegreenlife.ca/), which invites visitors to watch the videos and explore resources linked to each film chapter, for further learning and action. Since the film's launch, many screening events have been organized; a toolkit that includes a discussion guide and film DVD has been developed and promoted to high school, college and university educators; and a social media outreach strategy has been designed and implemented.

Project Outcomes and Findings

Documentary research:

- A green life is a good life: As the research process unfolded, the project's focus shifted to some extent from a more technical emphasis—looking at the participant household's emission sources and barriers—to a focus on quality of life, and the ethical and emotional aspects of decision-making and behaviours. High quality of life was defined by the participants as being able to meet their core needs while also having time to spend with friends and family, time to spend working on projects and passions, being able to walk comfortably in their neighbourhoods, to list a few. It was the participants' focus on quality of life, and an overall desire to be both happy and ethical that had led them to reductions in their own carbon footprints. These findings became a cross-cutting theme that is reflected in the title of the film.

- Climate change as symptom of a larger crisis: Participants clearly situated climate change as the defining problem in a larger ecological crisis. While this could have led to confusion about the specific causes of and solutions to climate change, this was largely not the case for the participants, whose understanding of the basic science of climate change was quite strong overall.

Fig 2.1 – Project participants, clockwise from top left: Leanne and James (Maple Ridge), Tanya (North Vancouver), Heather and Edith (Port Moody), Puente (Delta), Carolyn and Thomas (Squamish), and David (Surrey). (Source: 'The Good Life, Green Life' final report)

- People and community are at the centre of visions for sustainability: Building invigorating and expanding communities was one of the most important goals for all the participants, as a central means to achieve GHG reductions and fundamental changes to the way we live. Community-building became a cross-cutting theme, identified as a key ingredient in a high quality of life and as a key enabler of social mobilization. All participants strongly identified the need to be inviting, non-judgmental and inclusive in order to mobilize others and create positive contexts for behavioural change.

- All the participants were aware of the bleak future we face if we do not deal with climate change. This awareness was most clearly articulated following a guided visualization process during the full-day get-together that asked participants to imagine the future 15 years from now. Each of the participants identified the importance of their own engagement—to face the severity of the climate crisis while making a conscious decision to be hopeful. The future visioning exercise, conducted as a collective process with like-minded others, was also a key tool that helped participants move from more fuzzy pictures of what a low-carbon society might look like, to articulate a more concrete and detailed picture.

- Political engagement with climate change is a struggle even for the most engaged: Participants had the greatest difficulty being hopeful about the politics of climate change. During the interviews and discussions, they expressed frustration at the slow pace of progress on climate action by governments, lack of interest in politics and voting among the wider public, and the difficulty involved in impacting government decision-making as everyday citizens. However, none were prepared to discount the

importance of political engagement, and several of the participants called for both citizen/community-driven change and top-down/systemic change.

Public engagement:

This process is ongoing and has not yet been fully evaluated. Initial observations include:

- The film creates opportunities for engagement with climate change by people who may not consider themselves or be comfortable with labels like "environmentalist" or "activist." It does so by offering new/alternative social norms for environmentalism that challenge stereotypes of environmentalists as misanthropic, judgmental, dogmatic, or angry. For some viewers, the film also counters feelings of isolation and powerlessness by showing real-life examples of people who are engaged in alternative ways of thinking and feeling, different patterns of behaviour and engagement, and inspiring forms of community, political and collective action.

- Using the film effectively online has been more challenging than anticipated, likely in part given its length (approx. 30 min) and pace (reflective, thoughtful). However, the project has succeeded in building modest Facebook and Twitter communities (2300+ total followers) via interactive conversations and linking the film's themes to current events.

2.2 From Communities of Interest to Communities of Practice

Mobilization and evaluation through the 'Do It in the Dark' energy challenge

Project Team

Dr. Maged Senbel and Victor Ngo – UBC School of Community and Regional Planning (SCARP); Jonathan Frantz – Ear to the Ground Planning; Metha Brown – Out on Screen; Erik Blair – Metro Vancouver; Mike Blackstock – Sense Tecnic Systems; Rodger Lea and Tom Hazelton – UBC Magic Lab; Melissa Kendzierski and Ashley Webster – goBEYOND (note: goBEYOND is now defunct)

Project Goal

goBEYOND, a youth-led organization seeking to educate, inspire, engage and support youth peers in taking climate action, launched a climate action campaign called "Do It in the Dark Residence Energy Challenge" in November 2011. It was aimed at university students in dormitories at several BC campuses (Totem Park Residence [see Fig 2.2] & Ritsumeikan House at UBC), with the goal of competition between buildings to lower energy use relative to each building's energy baseline. The PICS research team collaborated with the organizers to provide an additional competitive element to foster social interaction in the larger campaign, with 4 challenges (Senbel et al., 2014):

- Do it daily: a set of 11 actions that students were asked to perform each day and report on, ranging from turning off lights or putting on a sweater through to showering for shorter periods in colder water and even sharing fridges;

- Do it together: a set of events organized by individual residences that encouraged students to come together and participate in awareness events, e.g. Dine in the Dark where students shared meals and reduced energy by turning off lights;

- Do it with your politician: a civic engagement challenges that informed students about a local issue relating to sustainability and encouraged them to voice their opinion by contacting a local politician;

- Do it on camera: students were encouraged to create Video Blogs (vlogs) discussing their activities and sharing tips for reducing energy.

The design of each of these competition types focused on providing participants with multiple pathways to engage in the competition activities. The team investigated the role of digital media and social activities in engaging new participants and intensifying their participation in an existing climate action campaign. Specifically, they set out to discover how engaging students in digital media platforms might impact their values and behaviours in relation to climate change.

Fig 2.2 – Totem Park residences at UBC

Project Method

The "Do It In the Dark" residence energy challenge enabled 6500 students across 20 campus residence groups in 6 universities to compete to reduce their building energy consumption over 3 weeks. Students could access a Building Energy Dashboard, tracking energy consumption by building. In addition, students were invited to use a second portal, created by the research team: the 'My Everyday Earth (MEE)' Facebook application that "promoted and rewarded participation in energy saving actions and educational activities, all visible to peers, irrespective of actual energy reduction' (Senbel et al., 2014, p.86). This used integrated media with online student inputs to track action on energy reduction and awareness raising. Participants earned points for engaging in personal and group activities intended to reduce energy use, raise awareness, and create a sense of community around energy conservation. Actions were logged in MEE and displayed by a news feed where participants could see the activities of their peers (see Fig 2.3).

Almost 10% (646) of the students registered and used MEE, allowing the research team to gather data using:

• UBC's hourly energy meter readings over a two year period (from the Building Dashboard)

• Facebook page traffic and My Everyday Earth usage data

• Participant reflections and video logs (vlog)

In addition, two surveys of participants were carried out, immediately after the competition and 8 months later, along with a survey of campus organizers and focus groups with 4 UBC participants

Fig 2.3 - Screenshot of the competition dashboard for individual and group participation. (Source: 'From Communities of Interest to Communities of Practice' final report)

and 6 UNBC participants. A control strategy was used to compare energy usage in one UBC building (Totem Park with 1757 eligible students) with the previous year's energy usage for that building and with another UBC building not involved in the competition in 2011. At Totem Park, 201 (11%) registered and directly participated in the MEE application (Senbel, 2014).

Project Outcomes and Findings

The research team found that engaging youth in competitive activities with their peers was an effective way of helping these individuals achieve short-term shifts in energy saving behaviors and activities. As one person said, "Completing simple, everyday tasks made the competition more meaningful and easy to participate in, as well as formed habits I can continue with in the future." (Senbel et al., 2014). Energy-saving activities involving other people ("Do it together") seemed to be the most popular, involving 97% of MEE participants at Totem Park.

The addition of digital media (Facebook, YouTube and email) increased this effect by creating social networks online within communities that might otherwise have been difficult to reach. Social media often played the role of assisting actions that took place offline. Some competition participants were using social media to communicate and participate, while others simply used it to find out about activities taking place offline. Engagement was also intensified through the use of multiple pathways, which appealed to people with different preferences, thus involving a greater number and diversity of participants. In short, students found the competition exercises to be fun, and enjoyed the social activities around the actual energy saving actions. The social media (with
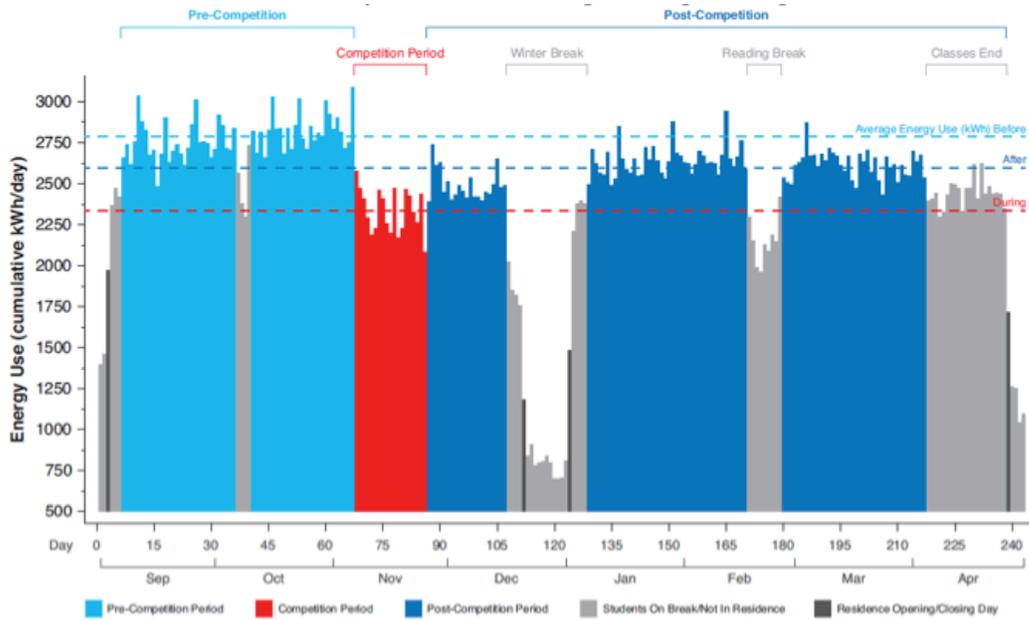
Fig 2.4 – Totem Park daily energy use from Sep 2011 – Apr 2012, showing clear decline during competition. (Source: 'From Communities of Interest to Communities of Practice' final report)

which many students were already familiar) proved more effective than the energy dashboard in terms of use and influence on behaviour.

As shown in Fig 2.4, the Totem Park residents quickly reduced their average daily electricity use by 16% (455 kWh) during the approximately 3 weeks competition period. This level rose somewhat after that time, but remained about 7% (188 kWh) below the previous baseline level for the following term. Comparing the baseline to the overall 6 month period during and after the competition, the average daily energy use decreased by 8.4% (233 kWh). It is not known what the impact of the competition was on overall carbon emission reductions (from both electricity and natural gas sources).

2.3 Meeting the Climate Change Challenge (MC3)

Evaluating innovative municipal and community-led responses and social learning processes on climate change

Project Team

Dr. Ann Dale and Dr. Leslie King – Royal Roads University (RRU); Dr. John Robinson, Dr. Alison Shaw and Dr. Stephen Sheppard – University of British Columbia; Emily Huddart Kennedy – Washington State University (WSU); Dr. Sarah Burch – University of Waterloo (UW); Dr. Meg Holden and Dr. Mark Roseland – Simon Fraser University.

Project Goal

The goals of the MC3 project were two-fold – (a) to identify and investigate innovative municipal approaches to provincial climate policy and document best practices through detailed case studies, and (b) to spur knowledge mobilization between communities in order to accelerate the spread of innovation, local and provincial government partnerships, and lessons from leading communities taking climate action.

Project Method

The MC3 project (and most of the case studies) focused primarily on the public sector, addressing, in particular, the role of local governments, working within a peer network that also includes provincial government staff, consulting practitioners, First Nations, NGOs, and other organizations. The research proceeded in two phases:

> 1. Phase 1: Data Collection and Comparative Analysis – A team of researchers conducted policy analysis and interviews with key informants from a selection of case study municipalities, communities, and stakeholder groups.

> 2. Phase 2: Knowledge Mobilization Strategy – The research team began disseminating research results to practitioners as quickly as possible from the field, via its website (www. mc-3.ca) with summaries of the MC3 cases and background research, on-line e-Dialogues and Live Chats, and a peer-to-peer learning exchange workshop. This enabled leaders and champions from the most innovative case study communities to share experiences with other communities less well advanced in climate change adaptation and mitigation.

Best practice innovations on climate change and sustainable development were analyzed in eleven case study communities in BC– the City of Victoria, Carbon Neutral Kootenays, City of Vancouver, Surrey, Dawson Creek, Eagle Island (West Vancouver), Revelstoke, North Vancouver, Campbell River, Prince George and the T'Sou-ke First Nation community.

Project Outcomes and Findings

This was a large research project with numerous co-investigators, which has been well–documented in several peer-reviewed papers. Consequently, this paper provides a brief summary of overall findings, before focusing in more detail on the two community-led case studies that are closest to the areas of focus in this report (e.g. directly involving citizens, and addressing energy as a central issue): Eagle Island in West Vancouver and the T'Sou-ke First Nation community.

The data from various MC3 projects and publications reveals that provincial leadership is critical for continuing and accelerating innovation, by establishing a level playing field between communities, creating incentive programs, and providing support for local governments in their implementation of climate strategies. There is still much to discover about the co-benefits that emerge between emissions reductions, adaptation planning and the overall development of complete, compact and resilient communities. Another key finding is the sheer volume of collaboration and experimentation on climate policy and local government action already occurring on the ground. Professional associations, financial officers, city engineers, planners and CAOs are beginning to understand the climate imperative. The top four barriers for BC municipalities implementing climate change adaptation and mitigation were – (a) lack of funding, (b) electoral cycle swings, (c) human resources, and (d) lack of leadership (political and official alignment) (Dale, 2013).

MC3 identified four additional critical success factors:

> 1. Establishing systematic frameworks for policy-making and implementation to reduce carbon emissions.

> 2. Institutionalization of climate change: the most successful municipalities integrate climate change within a broader sustainability strategy, set sectoral targets, and lead by example in their own administration.

3. Partnering: strong and collaborative relationships between government, not-for-profit organizations, citizens, and business/industry are essential.

4. Innovative financing solutions to tackle energy efficiency and retrofitting issues.

Based on the research outcomes, a 12-point climate action agenda was proposed for the province related to local government action on climate change. MC3's knowledge dissemination and mobilization strategy has raised awareness primarily among municipal staff, elected officials, and practitioners, both locally about enabling conditions that have fostered innovation in BC, and more broadly about the critical leadership role that the Province of BC is playing in stimulating climate action.

2.3.1 Eagle Island Neighbourhood Retrofit Program

Eagle Island is a small island with 31 houses, located just offshore in the District of West Vancouver. It is a small-scale example of how community-led initiatives can result in action on climate change. The goal of the informal grassroots effort was to engage residents (some of whom are retired and on a fixed income) in a joint effort to reduce GHG emissions and energy losses.

Social Mobilization intervention

The energy retrofit program on Eagle Island began with one resident, Tarah Stafford, becoming motivated to engage in climate action after being reminded of the urgency of the situation while watching 'The Age of Stupid'. A number of years of media silence on Climate Change had lulled her, like many others, into a false sense that the danger had been somehow arrested. She decided to start at a small scale, in her own neighborhood. Stafford, along with the technical and logistical help of District of West Vancouver staff, carried out research on what kinds of home retrofits were necessary to increase energy efficiency as homes in West Vancouver were responsible for more than 50% of the GHG emissions. The initiative developed and spread though holding local parties with neighbours, investigating and communicating rebates/incentives, negotiating volunteer services for "seal-teams" to carry out some retrofit activities, and acquiring some modest support funding. The idea of the parties as well as the subsequent activities was to erase any barriers that people had to getting involved: social, logistical, informational and financial. The first step in carrying out the retrofits was doing audits and thermal imaging to identify and visually demonstrate to home-owners where heat was escaping. Seeing, as they say, is believing. Steve Jenkins (city staff) conceived the idea of a partnership wherein local firefighters were invited into the homes to provide thermal imaging and home safety inspections. The team also negotiated reduced costs for residents by obtaining bulk-buying discounts on necessary items like windows and heat pumps, lower rates on semi-volunteer contractors and low interest retrofit loans.

Project Outcome and Findings

Nearly all of the Island's residents were involved with the program, and the residents were able to increase energy efficiency and reduce GHG emissions in 26 homes (84% of the neighbourhood). Five households chose not to join for various reasons: denial that climate change exists; the fact that the houses were new; or that retrofits had already been undertaken. Others participated who reportedly were not primarily motivated by climate change issues, but did so for reasons including social co-operation and energy or financial savings; others however were more motivated by concern or moral arguments related to climate change, than by economic inducements. "Bringing on the fire department to conduct the thermal imaging of homes proved to be very successful. People liked seeing the images produced by this process as it made energy waste visible. People

also inherently trust firefighters..." (Kristensen, 2012). Apparently, social cohesion and relying on neighbours has increased as a co-benefit of the initiative.

Since conducting their energy retrofits, the community has been looking to other ways to reduce greenhouse gas emissions. Since the island is only reachable by boat, community members have begun working on acquiring electric motors for their barges and getting electric charging stations installed. In this activity alone, there have been 8 tonnes of GHG emissions/year saved so far and it is a continuing trend. The community has not yet assessed the amount of GHG emissions it was able to reduce; this information is still being obtained from the 26 households that undertook some degree of home retrofits.

The Eagle Island grassroots initiative received considerable attention in West Vancouver and beyond. In 2011, Stafford was invited along with the West Vancouver Mayor and officials to present at the United Nations and received a 'Global Green City' award for these and other initiatives in West Vancouver. The grassroots organization, Cool North Shore, has worked with Stafford to expand the program to other communities, and the Cool Neighbourhoods spin-off program, created for this purpose, has established neighbourhood groups in Horseshoe Bay, Edgemont Village, and Blueridge along with 10 other neighbourhoods on the North Shore, as well as other Metro Vancouver locations (Kristensen, 2012).

2.3.2 T'Sou-ke Nation Solar Community Program

T'Sou-ke is a First Nation located on southwest Vancouver Island, with 96 residences on the reserve. Since 2009, T'Sou-ke has become a leader in community-based renewable energy and food security (Newell and King, 2013).

Social Mobilization intervention

T'Sou-ke has become BC's most solar-powered community through their Solar Community Program, a major community effort supported by an initial grant of $400,000 from the Innovative Clean Energy (ICE) Fund, administered by the Ministry of Energy and Mines. The Chief and Council of T'Sou-ke Nation initially sought out funding for the installation of a solar energy system for electricity and heat in administrative buildings. This led to a wider community-based re-localization effort to develop energy and food security. The entire community was able to engage in the sustainability planning processes and energy initiatives, allowing effective outreach from community leaders and energy experts on the importance of energy conservation, and enabling empowerment, input, and a sense of ownership in the program. This approach was interwoven with "the use of culture, traditional values, and historical means of communication" (T'SEG, 2009).

Project Outcome and Findings

T'Sou-ke is now equipped with photovoltaic systems with a capacity of 75 kilowatts of energy (Newell and King, 2013). 38 homes on the reserve have been equipped with solar hot water installations and all 96 houses have been subject to extensive energy saving, providing direct cost savings to individuals within the community. Some energy is sold back to BC Hydro. T'Sou-ke Nation also has developed a community gardens project and low-energy greenhouse, an initiative led by a community resident, with regular cultural activities such as 10 mile diet feasts. The community is not yet self-sufficient in food. The Solar Community Program created a new skilled local work base by training and employing eleven community members in solar energy systems.

T'Sou-ke faces one potential challenge of future leaders not being as supportive of these sustainability initiatives as the current Council.

T'Sou-ke Nation was motivated in part by their struggles with a range of climate change issues including depletion of its traditional fishing industry and coastal erosion due to more frequent storms and higher waves, and their desire to build a strong resilient community (Newell and King, 2013). Taking the ambitious first step of generating renewable energy and building solar arrays, rather than going for the traditional 'low hanging fruit' of energy conservation to reduce demand, "grasped the attention of the community and promoted engagement and the motivation necessary to (reduce) energy demand" (Newell and King, 2013). The T'Sou-ke community has engaged in considerable knowledge mobilization, sharing their experiences on developing solar energy systems and local food sources with other people and communities through partnerships and activities such as an eco-tourism program for visitors.

2.4 Greenest City Conversations Project (GCCP)

Engagement of Vancouver communities through social media, energy workshops and other channels

Project Team

Dr. John Robinson, Dr. David Vogt, Dr. Stephen Sheppard, Susanna Haas Lyons, David Maggs, Karen Fung, Jon Salter, Nick Sinkewicz, Nicole Miller and Ellen Pond – UBC; Dr. Robert Woodbury, Dr. Lyn Bartram, Dr. Alissa Antle, Dr. Kate Hennessy, Dr. Roy Bendor, Jean Hebert, Josh Tanenbaum, Ana Macarans and James Benoit – SFU.

Overall Project Goals

Greenest City Conversations was an innovative and wide-scale research project across multiple disciplinary channels for public engagement on sustainability policies emerging from Vancouver's Greenest City Goals, which at the time were being finalized and publicized. The study's two main goals were to –

1. Facilitate a wide public discussion, and solicit and analyze public attitudes and opinions on, and support for, a variety of sustainability and climate change policies.

2. Provide a comprehensive evaluation of the content and impacts (both qualitative and quantitative) of different modes of public engagement.

Project Methods and Results

Six channels (Fig 2.5) were used to approach the 'problem' of how to engage Vancouver residents on the topic of sustainability – Mobile Apps; Table-top Games; Performing Art; a MetroQuest multi-scenario interface; Social Media; and Neighbourhood Workshops. The last two of these channels are addressed in greater detail below, since they most closely address the focus of this synthesis report on social mobilization that links to energy policy and/or action, with in-depth evaluation results.

Table-top Games: Alissa Antle led the table-top team in designing an educational interactive game called 'Youtopia' for multiple users to engage one another in problem-solving around sustainability-related issues. The game involves placing physical stamps representing land use types on a touch table to build and manage a world of the players' making, with consequences
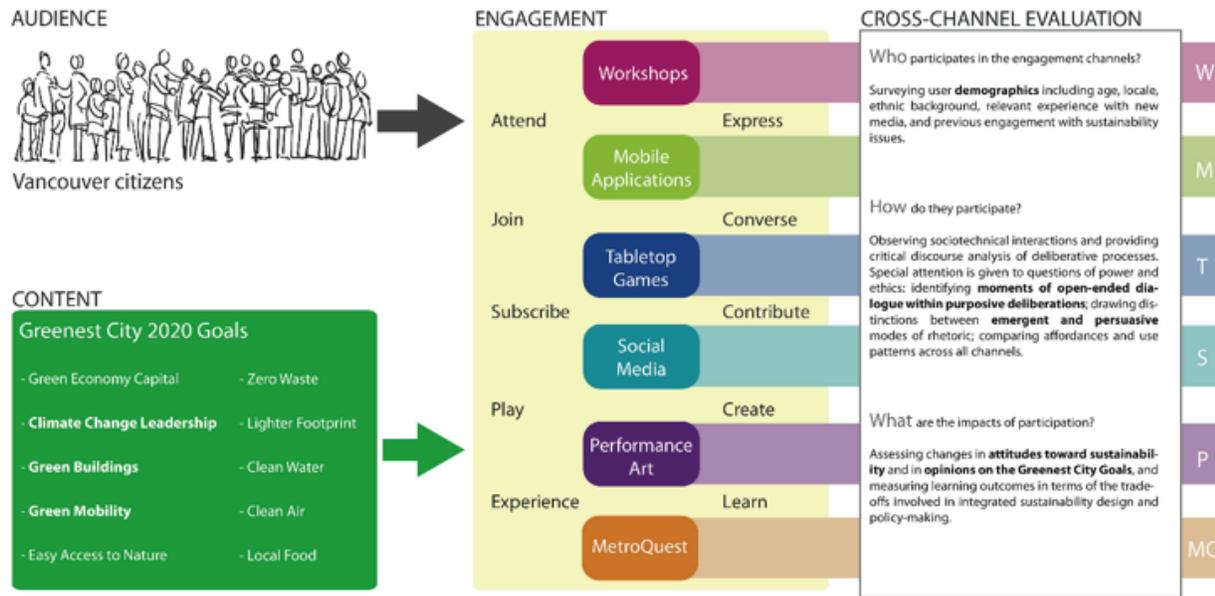
AUDIENCE
Vancouver citizens

CONTENT
Greenest City 2020 Goals
- Green Economy Capital   - Zero Waste
- **Climate Change Leadership**   - Lighter Footprint
- **Green Buildings**   - Clean Water
- **Green Mobility**   - Clean Air
- Easy Access to Nature   - Local Food

ENGAGEMENT
Attend — Workshops — Express
Mobile Applications
Join — Converse
Tabletop Games
Subscribe — Contribute
Social Media
Play — Create
Performance Art
Experience — Learn
MetroQuest

CROSS-CHANNEL EVALUATION
Who participates in the engagement channels?
Surveying user **demographics** including age, locale, ethnic background, relevant experience with new media, and previous engagement with sustainability issues.

How do they participate?
Observing sociotechnical interactions and providing critical discourse analysis of deliberative processes. Special attention is given to questions of power and ethics: identifying **moments of open-ended dialogue within purposive deliberations**; drawing distinctions between **emergent and persuasive** modes of rhetoric; comparing affordances and use patterns across all channels.

What are the impacts of participation?
Assessing changes in **attitudes toward sustainability** and in **opinions on the Greenest City Goals**, and measuring learning outcomes in terms of the trade-offs involved in integrated sustainability design and policy-making.

W M T S P MQ

Fig 2.5 – Schematic representation of the Greenest City Conversations research model. (Credit: Salter, 2011 – by permission)

for energy, food, shelter, and pollution. Players must collaborate and negotiate for resources to be used or conserved. The team integrated 'emergent dialogue' into the games (Tanenbaum, Antle, Robinson, 2014), reflecting the broader Greenest City Conversations Project goal of engaging people in conversations about sustainability that are not explicitly goal-oriented or based on predetermined metrics. The games have been played by hundreds of children aged 9-12, fostering a rich dialogue on choices and sustainability trade-offs (Greenest City Conversations, 2014); evaluation results are not yet available.

Mobile Applications: Jean Hebert first designed an ethnographic study of mobile app users in order to identify key design principles and tools that would serve to support mobile tracking and participation in dialogue with others. The results of the study were fed into the design of a mobile app, which was put to a beta test with 30 users in and around the Lower Mainland. Overall, very simple dialogue tools still promoted discussion, and mobile tracking demonstrated that users traveled via multiple modes throughout most days. Key findings include that users were willing to give up privacy controls in order to participate in this kind of study that they were told would feed into improved transportation policy. This demonstrates a significant advantage for future engagement and data collection by municipalities and transportation organizations (Greenest City Conversations, 2014).

Performing Arts: David Maggs commissioned four artists in different creative traditions (poetry, theatre, music, installation art) to produce artwork inspired by a commissioning document that addresses 'emergent sustainability'. The goal in this channel was to engage artists to explore the impact of artistic creation rooted not in communicating climate change messages derived from scientific analysis, but instead in deeper philosophical questions about the relationship between humanity and the world. The results of the project clearly demonstrated that such engagement was of great interest to the artists and led to each of them creating and performing artistic work based on the commissioning document: a published set of poems; a theatrical play performed in public, redesigned and re-performed; a public musical event; and an immersive public art installation (Greenest City Conversations, 2014).

MetroQuest: An interactive interface using 3D visualizations in this version of the MetroQuest tool was developed by Envision Sustainability Tools and CALP (UBC), in collaborating with game designers and city staff, to present visualizations and sustainability metrics for almost 30 alternative future development scenarios. These scenarios describe a generic urban node of Vancouver under different combinations of urban form/density, transportation, and energy use. The tool was intended for use in engaging the public through kiosks in public locations, over the web, and in workshops, to encourage them to explore the consequences and relative merits of various approaches to meeting sustainability and carbon emission reduction targets. After months of discussion, the City of Vancouver decided not to pursue MetroQuest for Vancouver, and therefore this channel has not been tested.

Overall Project Outcomes

The GCC studies generally suggest that engaging people on the issues of sustainability and climate change should take an adaptive, inclusive, emergent approach, rather than a top-down, prescriptive, one-way conversation (Greenest City Conversations, 2014). Several channels applied and generally validated the Emergent Dialogue approach, which "positions people as social actors, collectively negotiating a shared vision of their desired future. The Emergent Dialogue model is not focused on individual behavior change but instead on social mobilization in support of collective behavior change" (Tanenbaum et al., 2013, p. 3391). This is in contrast to the information deficit model and other persuasive communication approaches, emphasizing a one-way flow of top-down information on pre-conceived solutions. The project demonstrated the ability to stimulate dialogue through social media and games in particular, which enriched and engaged the users on sustainability issues in ways that they themselves helped to determine (see below for more details). The project also demonstrated that different channels for engaging the public on climate change and sustainability issues offered different opportunities for involvement, a crucial realization if diverse types of citizens are to be meaningfully engaged. The alternate modes of engagement attracted different demographics than those typically attending town halls or City of Vancouver online surveys. Planning for Emergent Dialogues promoted peer-to-peer interaction online, in computer based tools and workshops, and in arts performances.

Thanks to its many-pronged approach, findings from the GCCP have been taken up in different ways: at City of Vancouver transportation planning, City of Vancouver community engagement events, and ongoing studies of gaming for social change. The actual impacts are harder to measure, since in most cases the engagement channels were not embedded in a planning or policy-making process. Two case studies that were more closely related to planning processes are described next in more detail; these also demonstrate some of the difficulties of integrating social research into real-world planning processes (Greenest City Conversations, 2014).

2.4.1 Social Media Channel–Exploring Vancouver's Transportation Future (EVTF)

Suzanna Haas Lyons designed, facilitated, and analyzed the results of a Facebook exercise that invited broad citizen input, engaging about 540 interested Vancouver residents on the question of how transportation planning at the City of Vancouver can better meet their needs and desires. Social media is often considered well-suited to promoting citizen participation in policy and planning by 'reaching citizens where they are' in cost-effective and scalable ways (Bendor et al., 2012). This study provided and evaluated an online 'e-deliberation' platform (Fig 2.6). Over about two weeks, enabled by the EVTF 'app', participants engaged in the EVTF Facebook event in small online discussion groups, moderated by the conveners (researchers). Moderators provided guidance on issues, educational material (documents, slide-shows and videos), summarized discussions from

Fig 2.6 – Exploring Vancouver's Transportation Future (EVTF) landing page (Source: Haas Lyons, 2012)

the conversation threads. Participants shared personal stories, explored various transportation issues, and eventually voted on their transportation proposals. The top transportation strategies developed by each e-group were shared in a public Facebook page, providing the opportunity for commenting and 'liking' by others. Nineteen recommendations developed by participants were delivered to the City of Vancouver's Transportation team, which provided responses online. These recommendations therefore informed the draft Transportation Plan in 2011.

Participants reported that their perspectives on transportation issues and transit policy especially had been expanded. New demographic groups (e.g. younger, more media savvy people) were engaged when compared to conventional City engagement strategies such as town hall meetings. Certain, participant types such as cyclists who were more familiar with social media, tended to drown out other types of transportation users within their groups. The Facebook platform allowed multiple forms of discourse and comment, while the moderation kept the discussions on track. Generally, discussions were reasoned and respectful, combining both references to factual informant provided by conveners and comments grounded in their personal narratives and lived experience. Participants reported satisfaction with the experience, particularly receiving rapid feedback to their contributions, and felt a distinct sense of agency in the process. Results in Fig
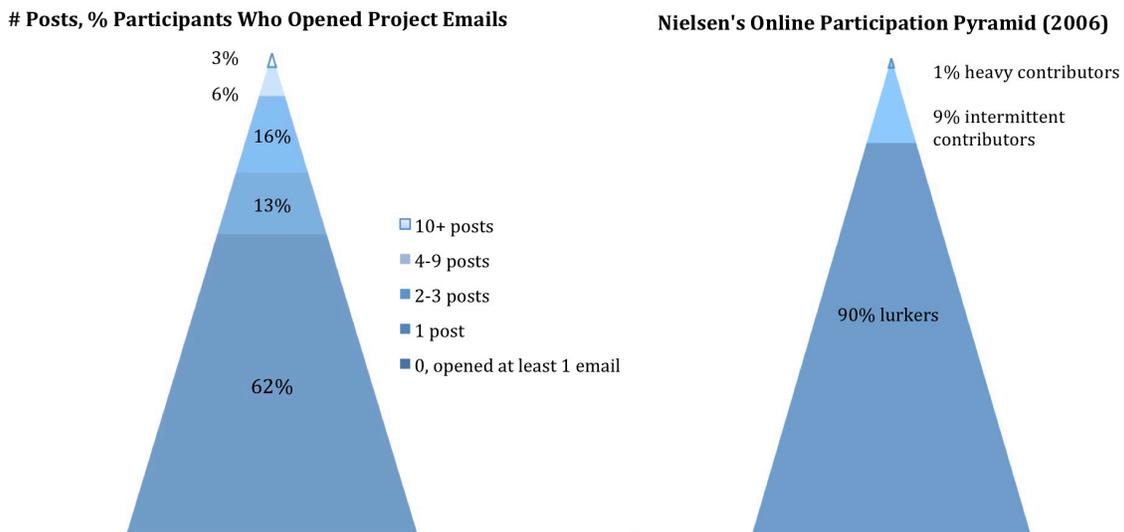

Fig 2.7 – Rate of participation in Exploring Vancouver's Transportation Future Facebook Event as compared with typical rates of online participation. (Source: Haas Lyons, 2012)

2.7 suggest that participating rates were somewhat higher than is typical for online participation (O'Shea, 2014).

2.4.2 Neighbourhood Energy Workshops in Marpole and Grand View Woodlands

This GCCP channel involved teams that designed engaging workshops with Vancouver residents on what kind of neighbourhood they wanted to live in, specifically around energy futures. The research goals (Salter, 2015) included:

- Developing a new kind of participatory engagement process, with a focus on building citizen capacity and energy literacy, to help incorporate energy issues into the city's upcoming neighbourhood planning process.

- Evaluating the effectiveness of various tools (e.g. models, scenarios, visualizations) and process components (e.g. presentations and interactive exercises) in engaging participants on community energy, and how they influenced the process.

- Assessing participants' mental models of community-scale energy (an important emerging topic not discussed further here; for details, see Salter, 2015).

Methods: Three workshops were held, one with City of Vancouver planners, and two with residents in the Marpole and Grandview-Woodlands neighbourhoods. The workshop design was based around a fictional Vancouver neighbourhood (called the 'sandbox'), mapped and modelled in 3D for participant orientation, with characteristics similar to the actual neighbourhoods. It was hoped that the workshop participants would be able to explore a wider range of possibilities with the generic 'sandbox' neighbourhood than if the workshop had been centered on their own area. Participants were guided though an introductory presentation on community energy concepts, followed by several exercises including review of pre-prepared alternative scenarios for the 'sandbox' and development of their own preferred scenario using a type of board game puzzle with

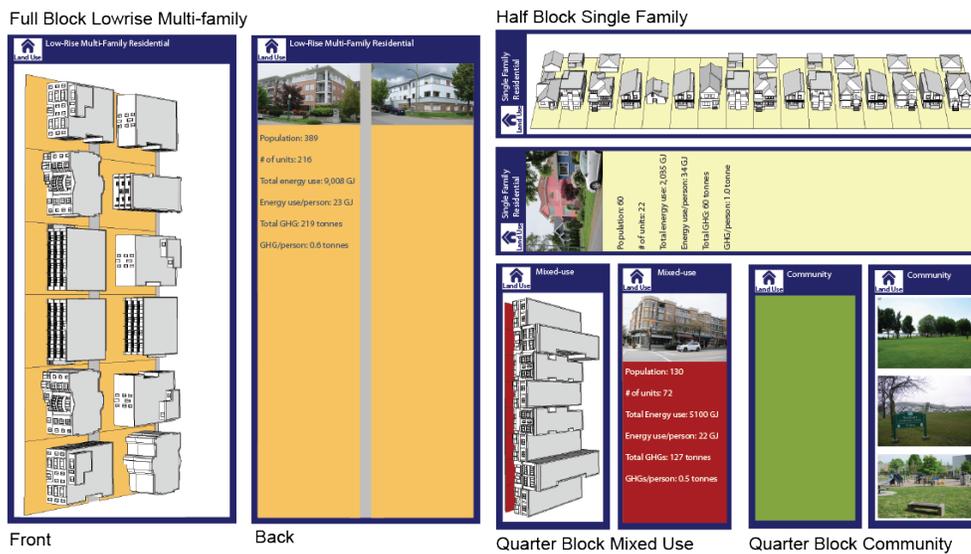

Fig 2.8 - Board game used in the Grandview Woodlands energy workshop to engage participants in designing a local neighbourhood for reducing carbon emissions (Source: Salter, 2015)

energy/carbon cards and neighbourhood visualizations (see Fig 2.8). Participants were surveyed with pre- and post-workshop questionnaires on their knowledge, values, and views on the process tools and components.
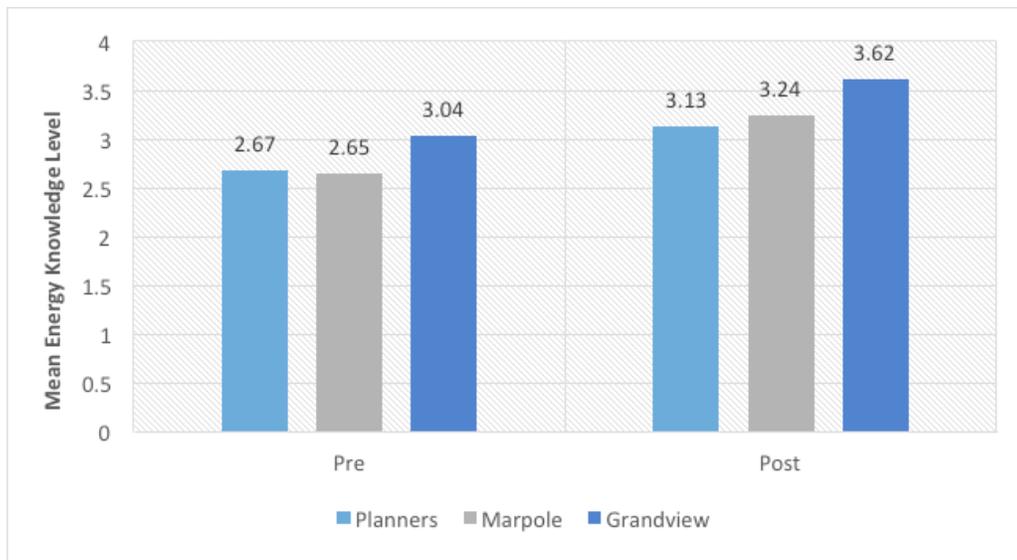
Fig 2. 9 – The mean self-reported energy knowledge scores for the three workshops. (Source: Salter, 2015)

Key Findings: Participants' responses to cognitive questions on the energy sources supplying local communities, showed that the existing energy systems in Vancouver are generally not well understood (Salter, 2105), representing a significant barrier to further discourse and planning. However, Fig 2.9 shows the shifts in self-reported energy knowledge before and after the workshops, with the GCCP overall mean knowledge score moving from 2.8/4 to 3.5/4, indicating effectiveness of the process. Another expected barrier was the proposed increase in density of development to meet sustainability targets, especially in Marpole where controversy had already broken out over this issue. However, after the workshops, participants were asked whether planning for energy and GHG reductions will positively or negatively impact what they enjoy about their community: 84% felt that planning for energy would have a positive impact, especially with strategies that led to more active transportation, transit, & local services, which they associated with social interaction and 'liveliness' of the neighbourhood (Salter, 2015). Results on participant assessment of the workshop process are summarized in Section 3.

Initially, these Community Energy and Emissions workshops were to be thoroughly embedded into the City of Vancouver neighbourhood planning processes. However, timelines and institutional barriers prevented that from occurring, resulting in the workshop outcomes being used primarily for research purposes. Neighbourhood planners for the Marpole and Grandview Woodland neighbourhoods did however attend the workshops and heard participants' input on energy planning in their communities (Salter, 2015). It is not known whether there was any longer term impact on neighborhood planning there.

2.5 Measured Visualizations as Catalysts for Mobilization: A prototype for public engagement in municipal planning for climate change

Revelstoke community engagement and evaluation on urban form and energy

Project Team

Dr. Ronald Kellett and Dr. Cynthia Girling – UBC School of Architecture and Landscape Architecture; Dr. Maged Senbel – UBC School of Community and Regional Planning

Project Goals

UBC researchers with the university's urban-environmental design Elements Lab engaged a cross-section of the City of Revelstoke community in a social mobilization process which asked if public understanding and acceptance of smart growth (sustainable, compact, densified development) would improve if citizens were provided with visualizations about why and how such development can help to achieve the city's climate change targets. Revelstoke had recently adopted a new Official Community Plan (OCP) and was proposing a Unified Development Bylaw (UDB) that would incorporate smart growth principles of zoning and land use to shape redevelopment of the city (Senbel et. al 2013), and reduce carbon emissions. In these city-led public engagement efforts, however, residents expressed concern that the UDB would lead to development that was inconsistent with Revelstoke's existing character (Senbel et. al 2013). For the UBC research team, a key goal was to evaluate "if and how visually clear, understandable, credible 2D and 3D visualizations tied to metrics would affect people's acceptance of smart growth design strategies aimed at reducing energy and emissions." (Girling et al., forthcoming).

Project Method

The workshop study focused on two proposed neighbourhood areas that were designated for higher densities and mixed-use development in the new OCP. These areas ranged from four to six blocks in size, with one located near to downtown and the other in a rural-residential setting. The team employed collaborative exercises which utilized a digital touch-table (where multiple users can manipulate imagery by touching the large screen), combined with live-updated 3D visualizations and metrics on a second screen. This enabled participants to select and arrange buildings in plan view for a proposed mixed-use neighbourhood area. The Revelstoke workshops represented

Fig. 2.10 – Study Area with urban form pieces (Source: http://elementslab.ca/pics-revelstoke/)

the first opportunity to evaluate this new interactive touch-table interface, designed explicitly to facilitate collaboration (including dialogue and interaction) around urban design tasks (Girling et. al, forthcoming). The multi-touch table, intended to be operated by untrained participants

(without direct operation by technicians), interconnects elementsdb, an urban design database and modeling tool, with Google Maps and Google Earth to present plan view and accompanying 3D perspective views of scenarios (www.elementslab.ca, www.elementsdb.sala.ubc.ca).

The Revelstoke process was split into two sessions. The first session was conducted in June of 2012 with 44 participants, and focused on the urban form implications of the neighbourhood centres, with associated data such as population and jobs created (Girling et. al forthcoming). A pre-survey elicited participant attitudes about climate change, energy, smart growth and buildings; participants were asked to develop their own individual scenario for one of the two neighbourhood centres, using a paper map and associated building cards, before working together at the touch-table to develop a collaborative design scenario for the same neighbourhood centre. The subsequent session was held in September with a subset (27) of the same participants, who were introduced to the energy and GHG emissions implications of their designs from the June session, and provided with the opportunity to alter their designs on the touch-table, before filling out a post-workshop questionnaire.

Project Findings and Outcomes

When given additional energy and carbon emissions information in the second workshop, some participants improved the energy performance of their earlier design solutions whereas others chose not to (Salter, 2015). The final designs for both sites ranged from roughly 5-13 times the current population of 42 people, and total projected emissions rose roughly 3-5 times above the current level (approximately 155 tonnes CO_2 /year) (GHG emissions data derived from Community Energy and Emissions Inventory (CEEI) data for buildings and transportation only and scaled to the neighbourhoods). However, per capita emissions fell from the current estimated city-wide average of 3.68 tonnes of CO_2/year to a range of 1.1 to 2.5 tonnes of CO_2/year per capita (Senbel et al., 2013b). This suggests that the citizens had learned from the workshops the importance of density and urban form in reducing energy and GHG emissions, and chose options which significantly reduced at least the per capita footprints of residents, through urban density, building types, walkability to jobs, etc.

However, despite the participants' concern over climate change, with 75% stating that their town should do everything possible to mitigate climate change, there was a limit to how much change in urban form these participants found acceptable. For example in June, the groups' solutions reduced vehicle kilometers travelled (vkt)/person/year over existing conditions by 18% to 40% for the inner city site and 12% to 28% for the rural residential site. In September, five of eleven groups further improved their results and three groups remained about the same. However, despite seeing the metrics "live" as they worked, three groups increased vkt by 2% to 10% in their revised September solutions because they decreased housing density. Participants' comments in the focus groups about what they envisioned for a future Revelstoke embraced the idea of more walkable mixed use neighbourhood centres, but expressed concerns about other aspects of place that they valued, such as physical characteristics (height and scale of buildings) or social and cultural factors (e.g. character and quality of life). Deeply held personal values, particularly about the character, height and density of buildings constrained people's support for urban form changes related to emissions reductions, in the context of growth scenarios (Senbel et al., 2013b; Girling et. al forthcoming).

The energy and neighbourhood design presentation by researchers was the component of the workshop that was highest ranked by participants, followed by the 3D neighbourhood visualiza-

tions. There was a tendency for participants to focus on the visual representations of the neighbourhood rather than the associated numbers and data (Girling et. al., forthcoming).

These public engagement workshops by the UBC team were explicitly not related to the city's ongoing public process, although they may have provided education to these participants. In 2013 the Unified Development Bylaw was abandoned by city council. It is not known if these workshops played a role in this decision.

2.6 Understanding Public Uptake and Acceptance of a Municipal Green Energy Incentive Program

Evaluation of the Solar Colwood initiative

Project Team

Christopher Ling, Charles Krusekopf and Ingrid Mitchell – Royal Roads University (RRU).

Project Goal

The Solar Colwood program initiated by the City of Colwood and funded by Natural Resources Canada (NRCAN) in 2011 was developed with the intention of transforming a whole community towards energy conservation and renewable clean energy (See fig.2.11). The program provided financial incentives for installation of solar hot water systems by householders. The program

Fig 2.11 – Photo of a house in Colwood with photo-voltaic panel installation (Source: Stephen Sheppard)

originally aimed to support 1000 households in the community (15% of the total population) in adopting solar thermal hot water (SHW) technology. In addition, program goals included retrofitting the City Fire Station with solar hot water and photovoltaic (PV) panels; the demonstration of energy efficiency technology; education and research; and the development of electric vehicle infrastructure.

The goal of the research was to evaluate the Solar Colwood Program. The researchers set out to understand the effect an incentives program has on the uptake of SHW technology by Colwood

homeowners, which included understanding barriers and thus how to overcome these barriers in the hopes of assisting the city with developing a more successful program.

It should be noted that the aim of Solar Colwood changed from its original focus due to issues beyond the control of the program. The initial communications/engagement strategy for this project to involve the community was: Save Money (economic incentive)—which will lead to Save Energy (resource incentive)—which will finally lead to Save Environment (moral incentive). The most current aim has been redefined as: "Solar Colwood aims to have 1,000 Colwood residents and businesses take energy saving actions at home, at work and on the road." (Solar Colwood, 2014) However, the research conducted by the RRU team maintained focus on uptake of solar / renewable energy by householders, rather than reviewing the program as a whole.

Project Method

The research team gathered data using the following methods: a literature review; surveys of the 1000 households at the start of the project and two years later; a survey of 1000 households in a neighbouring municipality (for the purposes of comparison); and several interviews and focus groups with installers, energy auditors, City of Colwood and Solar Colwood staff, and people involved with the Solar Colwood program (both those that installed the technology and those that solely expressed interest in the technology) (Ling et al., 2014).

Project Outcomes and Findings

The research identified three broad findings regarding Solar Colwood:

1. The community wasn't ready for the program

2. The economics of SHW technology were not persuasive

3. The program did have numerous other benefits for the City and community of Colwood

The survey results when compared before and after the inception of the program revealed that "Solar Colwood didn't start in fertile ground" (Ling et al., 2014, p.6), and that the city was unsuccessful in reaching the 'average' community member. This was likely due to the fact that the community was unfamiliar with SHW technology in the first place, which inhibited the city's ability to market the grants successfully. Additional key factors in limiting the uptake were: premature ending of federal grant programs; a lack of financial savings in using the SHW technology; uncertainty at the time about other benefits; unclear communication by energy assessors; and a general lack of faith in the city among community members).

Those homeowners that did adopt SHW as result of the Solar Colwood program were motivated by "ideals and desires to 'do the right thing' rather than financial incentives" (Ling et al., 2014, p.8), although incentives supported their follow through. It is unknown whether the results of the program would have been the same if the strategy reversed the messaging, i.e., Save Environment—to—Save Energy—to—Save Money, or if the weak economics would have remained a barrier to the more disinterested residents. The research did find that the Solar Colwood Coordinator and the stories communicated by early adopters of the program were also highly influential in fostering participation.

A total of 331 homes received home water and energy savings toolkits, and 758 individuals signed up for the Solar Colwood newsletter. By March 2014, however, the program only achieved 34 installations of SHW. Nonetheless, as a result of the program, there were 73 installations of

air-source ductless split heat pumps (DSHP), and 171 homes undertook other energy retrofits. Overall, 229 homes have taken home energy assessments, leading to the 171 which undertook retrofits. This demonstrates that social mobilization programs such as Solar Colwood may have positive outcomes that do not necessarily take the form of the original objectives, and thus could afford to adopt a more open and inclusive set of objectives at the outset to improve success in education and adoption of energy saving and green technologies.

2.7 Community Energy Explorer/Illustrated Guide to Community Energy

Developing a social learning tool on community energy for non-experts

Project Team

Stephen Sheppard, Rory Tooke, Joseph Lee, Nikki Ng and Sara Barron – University of British Columbia; David Peacock – Lloma Designs; Sara Muir-Owen – Pacific Institute for Climate Solutions

Project Goal

The Community Energy Explorer (CEE) is an interactive and visually compelling web-resource, designed to inform citizens, elected officials, and municipal staff about community energy, and stimulate discussion about the energy choices that communities face. The CEE is based on the
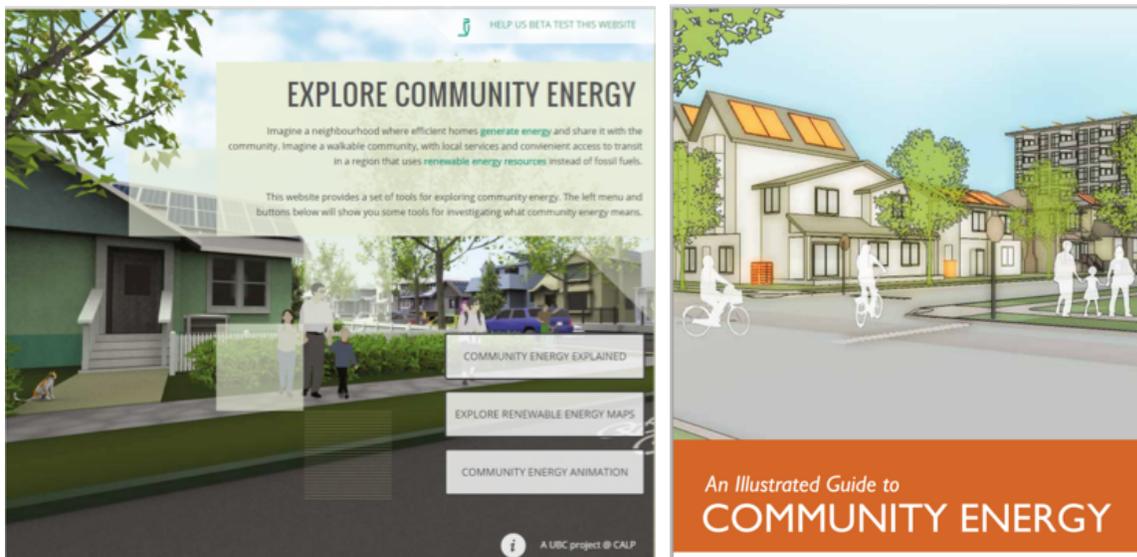
Fig. 2.12 – Images of the Illustrated Guide and the Community energy website

"Illustrated Guide to Community Energy" (Barron et al., 2013) (http://www.energyexplorer.ca/guide/) which provides a comprehensive overview of community energy concepts, a review of renewable energy types, mapping of renewable energy sources in the Metro Vancouver region, and scenarios of alternative urban form and energy supply with carbon emission implications in typical Metro Vancouver neighbourhoods. The research team was unable to find a similar product on this topic anywhere in the world.

Because many aspects of local or community energy are unfamiliar to the public and as yet hard to see in real life, the intent of both these tools is to provide an attractive and engaging avenue for building literacy on and openness to community energy, at an early stage in an energy plan-

ning or social mobilization process. It is hoped that these resources can improve community engagement and energy literacy, crucial to implementation of Community Energy and Emissions Plans (CEEPs), and help foster behaviour change, develop citizen support for energy projects, and meet municipal emissions reduction targets. The intent is for the Guide and CEE to be used by practitioners to enhance and facilitate their own community engagement activities, as well as for it to be used directly by community groups, schools and the public as an educational resource.

Project Method

The Illustrated Guide was developed at CALP (UBC) with input from project partners, city staff in Richmond and Surrey, regional expert panels convened by Metro Vancouver, and a small number of local members of the public and non-expert stakeholders. The latter were convened in a few short focus group-style workshops in their home communities, to review drafts of the guide and comment on the accessibility, clarity, attractiveness and relevance of the content and graphics.

Based on recommendations from the public focus groups, the CEE web interface was designed and developed as an online resource, to provide a more accessible and engaging version of the guide, with new interactive mapping of regional renewable energy supplies, new demand mapping, and many more animated features. The CEE is currently still in development at the beta-testing stage, with review as a proof of concept by beta testers and regional expert committees, through a series of webinars, presentations, and demonstrations over the next few months.

Project Outcomes and Findings

Non-expert stakeholders reviewing the Illustrated Guide reported that it was useful and effective in conveying new and important information on community energy, in a form that the public could relate to their own experience and communities. A deliberate attempt was made in the Guide to link the technical information to meaningful social issues as well as economic and environment implications.

Early feedback on a preliminary version of the CEE running on iPADS was obtained at the Metro Vancouver Symposium on Community Energy, hosted by CALP and QUEST in September 2014. Responses were generally positive, with some suggestions for improvement and several questions from potential beta-testers on how they might apply it to actual ongoing projects with communities. The current proof-of-concept version of CEE is viewable at www.energyexplorer.ca. It is being used in community engagement in the West Vancouver's Community Energy and Emissions Plan process. The CEE and Guide together provide a template which is replicable for other regions of BC and beyond, such as Ontario.

3. SYNTHESIS DISCUSSION AND CONCLUSIONS

This section summarizes key findings across the range of research projects, to identify clear examples and common patterns of what worked and what didn't, in terms of mobilizing societal groups on climate change issues, as the basis for specific recommendations to various actors within society (Section 4). The section first lays out the categories of research projects undertaken, within a framework for different kinds, processes, and stages of social mobilization on climate change. It then compares the findings and outcomes of the various studies, in the context of the main research questions and other relevant research in BC and beyond

3.1 A framework for classifying the PICS Social Mobilization research projects

The research projects can be organized in terms of the following factors:

1. Whether or not the research project involved an official governmental planning or outreach process, and if it did, what stage was it in that process: non-process related interventions include local social movements or initiatives, and NGO campaigns; process interventions are usually within formal planning or policy-making processes from some level of government (often municipal) or public information programs. Planning processes may have several stages.

2. Type of intervenor attempting to catalyze social mobilization (e.g. grassroots group, government, or 3rd parties): Intervenors are defined as agents or organizations who attempt to catalyze social mobilization within a societal group. Many interventions are "top-down" e.g. from provincial or local government, as in official planning processes. Others are 'bottom-up grassroots or voluntary actions initiated by groups of citizens or stakeholders themselves, within an affected community or societal group; these may be independent of or triggered by official processes (e.g. pipeline siting, rezoning applications). Third party interventions may come from organized and funded NGOs, businesses, or as in many of these PICS studies, researchers interacting with a community. Researchers therefore can be a 3rd party intervenor, evaluators of the efforts of another intervenor, or both the intervenor and evaluator. Where PICS researchers were evaluators only, the social mobilization interventions may predate the research or continue beyond the duration of the funded research.

CATEGORIES		Good Life Green Life	Do it in the Dark	Eagle Island Retrofits	T'Sou-ke Solar Community	Transport Facebook	Energy Workshops	Revelstoke Urban Form Workshops	Solar Colwood	Community Energy Explorer
				MC3		Greenest City (GCCP)				
Independent of formal process		✓	✓	✓	✓					✓
Relates to formal process						✓	✓	✓	✓	✓
Type of intervenor	Grassroots/community			✓	✓					
	3rd party [1]	✓	✓			✓	✓	✓		✓
	Government					✓	✓		✓	✓
Focus of study	Building Energy		✓	✓	✓		✓	✓	✓	✓
	Broader sustainability /GHG issues	✓		✓	✓	✓	✓	✓		
Number of people engaged (approx.)[2]		Approx. 3,000 to date; (Research: 6 households / 9 people)	646 students (registering on MEE Facebook tool)	26 households	96 households	750 Vancouver residents (Research: 537 registered on Facebook)	70 approx. Vancouver residents	44	1600 homeowners	50+ users to date
Geographic scale		Metro Vancouver	6 university campuses	Small neighbor-hood	Small neighbor-hood	City of Vancouver	30 block neighbor-hoods approx.	3-6 block neighbor-hoods	Municipality of Colwood	Metro Vancouver
Tools/digital media used		Video, website, social media, workshops & film screenings	Video, social media (especially Facebook), energy dashboard	Thermal imaging, email	Unknown	Social media, especially Facebook	Graphics, mapping, 3D visualization, physical collage /game	Graphics, mapping, 3D visualization, touch-table	General public information (e.g. website, emails, etc.)	Graphics, mapping, 3D visualization, interactive web interface.

Table 3.1 – Classification of PICS Social Mobilization research projects.

1. Darker shading indicates where the PICS research team took the role of 3rd party intervenor attempting to catalyze social mobilization, sometimes in partnership with other 3rd party intervenor, e.g. NGOs.

2. Numbers directly engaged by the intervenor, based on those numbers that have been recorded; with web applications it can be difficult to know how many users have been engaged.

3. Scope or focus of the study (e.g. energy related or not); some included broader sustainability issues such as food, though the projects discussed in depth here were strongly related to climate change mitigation or energy more narrowly.

4. Goal(s) or intended outcomes of the study, ranging from stimulating dialogue to education/learning, to actions and behaviour change that reduce carbon emissions.

5. Geographic scale (community-wide v. neighbourhood or project specific).

6. Number of people engaged directly by the intervenor(s) during the course of the project.

7. Engagement tools/methods used (e.g. kind of digital/visual media used) involving: settings, e.g. online, workshops, open houses; types of media, e.g. graphics, video, 3D visualization, interactive games or modelling; and devices such as touch-tables, mobiles, computer screens or immersive settings. Many of these tools are referred to here as visual learning tools if they rely on graphic visual displays rather than mainly text and numbers.

Table 3.1 presents a summary of these factors for the research projects. All of the projects carried out some sort of evaluation of the actual social mobilization intervention, which in most cases included a formal quantitative and/or qualitative analysis of participant responses. Some projects, such as Good Life Green Life and Community Energy Explorer, have been completed so recently or are still underway, so that it will take more time to assess their full impact.

It can be seen from Table 3.1 that of the 9 projects (or sub-projects) shown here, four involve only non-planning processes, initiated by non-government parties; two of these ('Good Life Green life' and "Do it in the Dark') reflect 3rd party interventions with subject groups, while two of the projects studied grass-roots efforts initiated by the community (Eagle Island retrofits and T'Souke solar community).

The other five projects related to local government planning processes in some way (see Table 3.2 for a simplified representation of the stage of the process within which the activities occurred). Only one of these (Solar Colwood) represented a post-hoc evaluation of a process in which the

STAGE IN FORMAL PROCESS	PROJECTS				
	Greenest City (GCCP)		Revelstoke Urban Form Workshops	Solar Colwood	Community Energy Explorer
	Transport Facebook	Energy Workshops			
Prior to formal process (outreach/social learning)			✔		✔
Early planning interactions, e.g. workshops, social media activities	✔	✔	✔		
Plan development/review activities e.g. workshops, social media	✔				
Plan/policy implementation, e.g. decision-making, design, construction, bylaws, etc.					
Stakeholder implementation/ action, e.g. private retrofitting /construction, behaviour change, etc.				✔	
Post planning/ policy evaluation				✔	

Table 3.2 – Stage of Social Mobilization in relation to formal processes

research team was not also an intervenor. All five of these projects address community energy, although the GCCP Facebook project focused primarily on transportation options while the rest focused more on building energy or urban form.

Three of the projects (the 2 GCCP sub-projects and Revelstoke) represented action research projects embedded in real-world municipal processes during their active phases (as opposed to pre-planning or post-hoc phases). These projects are in general focused on fairly early plan development and associated community engagement, although the researchers' experience with the GCC social media channel, applied to the City of Vancouver's transportation plan, showed that in some situations there is not really a single sequence of stages, as suggested in Table 3.2. Instead, each department of the city may have their own sequence of activities on a planning issue, which are not necessarily in sync with other departments. In this case, the transportation staff felt that some issues had already been resolved and should not be re-opened with the public, suggesting that this phase of community engagement was somewhat later in the cycle.

The Community Energy Explorer project represents a proactive regional scale project intended to support social learning and energy literacy of the public, ahead of individual city plans or proposed energy projects; it is also the only research project still actively in development.

As such, these projects reflect a diversity of social mobilization aims and activities, with a focus on sustainable energy solutions. Overall, an estimated 9430 individuals have been contacted through these social mobilization interventions, with approximately 3000 actively engaged in the PICS-funded research evaluations of those projects.

3.2 What can be learned from the findings and outcomes of the Social Mobilization studies?

Drawing on the criteria identified in the original PICS call for research proposals, the key findings described below address the following critical questions :

- Did the projects achieve (or document the achievement of) successful social mobilization on climate change? If so, what stage or level of social mobilization and what outcomes were achieved?

- Did the social mobilization interventions get beyond the "usual suspects", ie. reaching participants in the middle 60 percent of the public?

- What drivers or combinations of factors foster success in social mobilization?

- Did any projects overcome social barriers to sustainable energy solutions or shed light on how such barriers might be overcome?

- What new digital media/tools were developed to engage this 'silent majority', and what impact did they have on social mobilization?

Secondary questions addressed more briefly in this Special Report include:

- What methods should be used for evaluating social mobilization effectiveness?

- How do these findings relate to previous findings locally or internationally?

- What gaps remain in the research to aid our understanding of social mobilization mechanisms?

The analysis of key findings across the studies is summarized in Table 3.3. This is structured to reflect a range of possible outcomes at different levels of social mobilization, from fostering citizen dialogue to achieving tangible reductions in carbon emissions. It also summarizes possible

enabling factors identified in each study. The chart is intended as a rough guide to patterns of outcomes, and represent the interpretations of the authors based on available information, with input from representatives of the research teams wherever possible. It should be noted that intended outcomes of the various projects differ widely, based on research team objectives and stage in community planning in which the relevant projects were embedded. No one project could be expected to achieve all these possible outcomes. Thus, 'Solar Colwood,' 'Do it in the Dark', Eagle Island retrofit and T'Sou-ke solar community attempted to catalyze "doing" something to reduce emissions, whereas the other projects were more focused on exploring ways people could be engaged, informed, or involved in policy development.

While some projects involve top-down planning processes, this Special Report focuses more on the less documented grassroots and innovative 3rd party processes that aim to reach the silent majority. For evaluation of other municipal planning and engagement programs in BC, see MC3 papers (Newell and Dale, 2015; Burch, Herbert & Robinson, 2014; Burch et. al., 2014; Shaw et. Al., 2014), and results from other community engagement channels in the GCC project (O' Shea, 2014).

3.2.1 What successful social mobilization outcomes on climate change look like

A number of patterns emerge from the comparison of PICS social mobilization projects, which begin to answer the questions on what works and what doesn't. This report documents success at various levels. Most of the projects were successful in achieving some social mobilization outcomes, but of those which deliberately sought to achieve GHG or energy use reductions, some were more successful than others.

Among the projects occurring outside of a planning process with the goal of reducing energy use or emissions, citizen action led to substantive carbon emission reductions and/or energy savings. The non-government led 'Do it in the Dark' and Eagle Island projects mobilized collective behaviour change and collective retrofitting of homes, respectively, attaining 20% energy savings in the former case and retrofitting 84% of neighbourhood homes in the latter. The community-led T'Sou-ke solar community project has installed solar hot water on 40% of households and estimated 30% reduction in electricity consumption in residences. By contrast, the government-led solar initiative in Colwood, despite significant cash infusions, was not very successful in its original goal of promoting solar hot water (installed in 3.4% of targeted homes) and achieving broad technological uptake or collective action, for reasons that include a strategy focused on a weak economic rationale with unreliable incentives, lack of pre-preparation of the community, and lack of trust in the city. However, it should be noted that the two community-led projects (Eagle Island and T'Sou-ke) both occurred in small-scale communities with strong sense of identity and boundaries, where it was relatively straightforward to involve most people in the community.

All four of these projects, all of which were launched three or more years ago, have also demonstrated that significant co-benefits (such as spill-over climate mitigation actions or improved social cohesion) can be realized from social mobilization initiatives, whether successful in their original intent or not. For example, energy audits and retrofits surpassed the energy savings of the planned solar hot water installations in Colwood (Ling et al., 2014). Similar findings were reported by participants in 'The Good Life, The Green Life'. This suggests that such projects should be looking for multiple positive outcomes that would increase their perceived value to funders and decision-makers.

OUTCOMES & CONTRIBUTING FACTORS		Good Life Green Life	Do it in the Dark	Meeting the Climate Change Challenge (MC3)		Greenest City Conversations (GCCP)		Revelstoke Urban Form Workshop	Solar Colwood	Community Energy Explorer[i]
				Eagle Island Retrofit	T'Sou-ke Solar Community	Transport Facebook	Energy Workshops			
MEASURABLE RESULTS	Actual GHG reduction/energy saving		✔✔	✔✔[9]	✔✔				✔	
	Progress toward achieving GHG targets		?						?	
	Per capita GHG reductions	?	?	✔✔	?				?	
	Reduced vulnerability to impacts/ improved resilience			✔	✔					
	Co-benefits realized	✔✔	✔✔	✔✔	✔✔				✔✔	
REAL ACTIONS TAKEN	Social behaviour change (positive)/ collective action	✔	✔✔	✔✔	✔✔				×	
	Mitigation actions taken, e.g. facilities built, technology installed	?		✔✔	✔✔				✔×	
	Adaptation actions implemented									
POLICIES ENACTED	Sustainable development pathway adopted				✔✔		?		✔	
	Mitigation policies adopted				✔	?	?			
	Adaptation policies adopted				✔					
COMMUNITY ATTITUDES/CAPACITY IMPROVED	Mitig/Adapt. policy support increase	?	?	?	?	✔	?	×	?	?
	Broader cultural shift or ripple effect on values/perceptions/ norms		✔	?	?				×	
	Increased community capacity			✔✔	✔✔		✔	✔	?	?
	Increased motivation/concern/ caring about climate change/energy	✔	✔✔	✔✔	✔	?	?	?	?	?
	Shifted/increased awareness/ understanding of climate change etc.	✔	✔✔	✔✔	✔	?	✔✔	✔	✔	?
	Increased/improved community dialogue on climate change/energy	✔	✔✔	✔✔	✔✔	✔✔	✔	✔✔	✔	?
PROCESS EFFECTIVENESS/ ACHIEVEMENTS	Integrated decision making or design development					?	?	✔		
	Community-led planning			✔	✔✔					
	Social movement ongoing/ripple effect	✔	?	✔✔	✔✔				?	
	Effective community engagement - reaching beyond the usual suspects	✔✔	✔✔	✔✔	✔✔	✔✔	✔	✔✔	✔×	?
	Effective community engagement - engaging/rewarding experience	✔✔	✔✔	✔✔	?	✔✔	✔✔	✔✔	?	?
	Effective partnering[10]		✔	✔✔	✔				✔	
	Peer-to-peer learning (among practitioners)[11]								✔	
	Neighbour to neighbour interaction		✔✔	✔✔	✔✔		✔	✔✔		
	Action campaign event(s)		✔✔							
	Preparatory social learning	✔		✔	✔		✔	✔	×	?
ENABLING FACTORS	Financial incentives applied/ available to users			Yes	Yes				Yes	
	Government support of intervenor			Yes	Yes				Yes	Yes
	Compelling visual media used	Yes	Yes	Yes	?		Yes	Yes		Yes
	Active social media used	Yes	Yes	Yes	?	Yes			?	TBD
	Fun activities	Yes	Yes	Yes	?		Yes	Yes		TBD
	Emergent dialogue/co-creation	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
	Spiritual/community values engaged	Yes		Yes	Yes		Yes	Yes		

Key:

▧	Intended outcome		✔✔	Strong positive result overall
×	No positive result overall (for intended outcome)		?	Outcome unknown or uncertain (lack of available data)
✔	Weak positive result overall			

Table 3.3   Key findings of PICS research & outcomes of selected Social Mobilization interventions

At other levels of social mobilization outcomes, many of the projects were successful in increasing the public's knowledge and awareness of climate change issues. A few projects also demonstrated evidence of improved citizen motivation and capacity to act on climate change or energy issues. All of the projects to date provided effective community engagement in some ways, with clear evidence they had stimulated new dialogues, at least among the direct participants. Most of the projects provided effective community engagement in providing a meaningful experience to participants and stimulating new dialogues, at least among the direct participants.

With the possible exception of the T'Sou-ke community with its distinct First Nation governance context, the studies detailed in Table 3.3 did not document a strong impact of community engagement on policy support, policy development on sustainable pathways, or policy change, even among those studies that were embedded in a planning process. However, these studies were carried out fairly early in a process which still continues, so there has not been time to assess long-term impacts. Such impacts on policy are also notoriously difficult to trace (Cornish, 2013). The study with perhaps the clearest relationship to policy is the Revelstoke project where, despite use of popular and compelling interactive exercises and visual learning tools in the engagement process, the city's proposed planning codes did not achieve public acceptance, due to stronger concerns about protecting community character against the perceived impact of substantially increased density. However, the process was successful in advancing understanding and acceptance of the underlying shifts towards sustainability, if not to the degree proposed by the city. The engagement of the Vancouver public via the GCCP channel of Facebook did inform the development of the city's draft Transportation Plan, and 54% of users at the end of the process felt that their views were taken seriously by city conveners, relative to only 39% of local citizens engaged via previous face-to-face events (Bendor et al., 2012).

No clear examples were found of community-led planning, where locals drive an actual planning process, as in Transition Town processes for example (Hopkins, 2008). This movement appears to be rare or nascent in BC, for reasons that are not clear. The projects closest to true community-led planning are the T'Sou-ke community-wide initiatives and the less formal collective retrofitting effort of the Eagle Island residents. In terms of cultural shifts, increased capacity to tackle climate change, and increased motivation or caring, it seems that most of the planning case studies did not explicitly set out to mobilize or record these specific impacts, and results are therefore inconclusive. These important goals of social mobilization seem not to be a high priority in such social mobilization initiatives.

3.2.2 Reaching beyond the 'Usual Suspects'

None of the projects appeared to scale up social action beyond the direct participants (with the possible exception of the Eagle Island initiative which spawned the Cool Neighbourhoods movement), or to 'go viral', although the social media applications attracted the largest number of truly engaged participants (Do it in the Dark and EVTF Facebook).

Most studies from both the non-planning and planning process projects demonstrated the ability to reach components of the silent majority and the normally disinterested who seldom show up in typical engagement and planning processes. In particular, these included the social media intensive projects, the within-community initiatives of Eagle Island and T'Sou-ke, and the neighbourhood energy workshops, especially in Marpole and Revelstoke (communities facing controversial densification). In the two cases using intensive social media (GCCP EVTF Facebook and 'Do it in the Dark'), the high level of involvement seems to be related to the relative youth and online savvy of certain stakeholder groups (students and cyclists), which may not extrapolate

to other segments of society, but which represent types of people often missing from conventional engagement processes. Among the other non-planning process GCC projects, the Tabletop games channel, the mobile apps channel, and particularly the performing arts channel all demonstrated the ability to attract different types of users beyond the usual suspects (O'Shea et al., 2014).

3.2.3 Drivers and enablers of success in social mobilization

The successful outcomes observed above appear in several cases to be related to a combination of social media techniques, compelling visual learning tools, and in some cases a focus on fun social activities, e.g. competitions, interactive or game techniques and parties! (see below for further discussion of these drivers).

One key factor that distinguished the 'Do it in the Dark' and Eagle Island case studies is the close spatial proximity and locational identity, contributing to the intensity of social activity and neighbour-to neighbour interactions. Other study findings suggest that a strong sense of place and/or community are important motivating factors (e.g. Salter, 2015, on GCCP energy workshops; respondents in Good Life. Green Life video). Cultural and community values, where explicitly engaged in the social mobilization process, appeared to favour success. Key factors too were peer pressure/co-operation/competition with neighbours, as shown by Laskey (2013). Other factors unique to these two projects include effective partnerships with other actors in joint efforts (e.g. NGO and AV experts with 'Do it in the Dark', and city staff, firemen, and local businesses with Eagle Island), relatively low-costs to the target groups, and skillful planning of social events and sustained campaigns or activities by a community champion or team of 3rd party intervenors and community organizers.

In the examples studied, financial incentives did not appear to be a pre-requisite for stimulating public interest, good public engagement and learning. Where they were a factor in initiatives to implement climate-friendly solutions, they appeared to play a supporting rather than lead role, relative to other supporting or constraining factors such as public knowledge and peer pressure/co-operation. Ling at al. (2014) however found that among community members interested in household energy improvements, the proportion prioritizing cost savings can vary widely between BC communities, and in some cases represent the majority of interested homeowners.

The provision of climate change or related information by itself, though cited by various participants as essential or helpful, appeared not to be enough. All projects with the possible exception of Solar Colwood, deliberately placed particular emphasis on one or more of the other enabling factors listed in the bottom rows of Table 3.3, rather than relying on information delivery alone. The approach of encouraging an emergent dialogue among study participants was embraced in some way by all the other PICS-funded interventions; each involved some form of open discussion of options, co-creation of information/process/ scenarios, or other creative inputs, even for those embedded within an official planning process. It is tempting to single out the more information-led top-down strategy of Solar Colwood as a reason for its limited success, although it is perhaps more typical of many government led processes.

It should be noted that in achieving the outcomes noted above, many of these projects went beyond what is typically implemented in community engagement exercises on planning and public education processes. In other words, PICS was seeking innovative and evidence-based methods; the third party researcher-led interventions, by their nature tend towards more innovative processes, with outcomes that perhaps exceed those occurring in general practice.

This raises the issue of replicability. Should the two projects achieving the most action on energy savings or GHGs be considered 'one-offs', requiring intensive efforts from the intervenors or local champion that are hard to replicate? It is true that the Cool Neighbourhoods program that developed from the Eagle Island experience has not seen quite the same level of uptake in other pilot neighbourhoods across the North Shore, but this may be for reasons of geographically dispersed neighbourhoods (relative to Eagle Island), rather than limits of replicability. Both methods may be replicable under the right conditions (see below), and also appear to be the only ones with ongoing social movements or lasting impact. Financial support of the intervenors (as distinct from the end users/citizens) may be crucial. It is not known what the ongoing costs (or success) of repeated 'Do it in the Dark'-style campaigns might be, but the Cool Neighbourhoods movement appears to have secured funding from North Shore Municipalities working together (McKay, 2014), for an ongoing program. When compared with the top-down Solar Colwood program, the other energy-related campaign outside of a planning process, the two non-government projects appear to be cheaper, faster, better grounded, more holistic, and more effective in securing change on-the-ground.

These results should not be taken as evidence that government-led initiatives cannot work, or that local government should have a smaller role of in social mobilization. Support of the Eagle Island project by the District of West Vancouver was a crucial enabling factor in providing technical guidance, staff time, encouragement and visibility form councillors, and resources. In the planning-based studies, municipalities and Metro Vancouver provided considerable support for the innovative methods being tested in the PICS social mobilizing projects, as well as a structured platform of engagement and participatory decision-support that enables citizen education and reinforcement of citizen action across a wide geography.

Strategic implications emerging from these results include:

- grass roots and third party organizations should pursue their own initiatives too, and look to partner with government whenever possible to take a multi-pronged and coordinated approach to social mobilization. The difficulties of embedding 3rd party or community-led initiatives within politically motivated local government regimes however should not be underestimated.

- local and regional government should upgrade their engagement and social mobilization methods and incentives, learning from best practices tested by other municipalities and partnering where possible with third parties and community-based groups to deliver more effective, richer engagement processes, as described in these PICS projects.

3.2.4 Overcoming social barriers to sustainable energy solutions

The PICS studies (particularly on planning-based projects) have identified various social barriers to implementing energy solutions to climate change. These barriers may operate at the engagement level or implementation/action level. Barriers stemming from public attitudes include:

- Lack of interest in energy issues: Local scale decision-making related to a community's stated goals to reduce energy and emissions could directly impact individuals' day-to-day lives, but making that connection is challenging (Scannell et al, 2013). The Colwood survey indicated that the city has struggled to reach the 'average' community member, although it did successfully engage a minority of people who were predisposed to join in on these issues.

- Low levels of knowledge and understanding among citizens and in some cases even practitioners on components, relationships, and energy sources in local communities (Salter, 2015), e.g. the links between land use and GHGs explored in GCCP Energy Workshops.

- Negative perceptions of density associated with lower per capita carbon emissions, with sometime limited understating of the range of density and urban form options;

- Lack of trust in city planners, and perceived lack of agency in being able to influence city planning outcomes

- Lack of visibility of others doing something about climate change, with rare demonstration projects or examples of collective action (Sheppard, 2012). Social norms play an important role in constraining or reinforcing how individuals act upon their personal beliefs.

- Shortage of champions or NGOs ready to organize campaigns, social media etc.

Other barriers to effective mobilization that reflect institutional constraints included:

- Lack of accessible information: The available information to support residents' decisions on energy options in Colwood was limited and participants had to do extensive searching for information (Ling et al., 2014).

- Researchers or other third party intervenors who are wedded to ineffective but traditional ways of engaging participants, e.g. through one-way overload of factual or science-based information

- Authorities that are not interested in deeper engagement, with preconceived planning decisions or tight control of messages.

- The unstable nature of incentive programs, a significant disincentive to residents and investment in the energy efficiency industry (Ling et al., 2014).

The PICS projects provide some evidence of overcoming such barriers on energy issues. For example,

- GCCP's neighbourhood energy workshop game raised awareness of the massive role of transportation and transit in GHGs, and Revelstoke's touch-table scenarios raised awareness of the links between density, land use and GHGs.

- GCCP's transportation Facebook project increased trust though 3rd party involvement and more interactive dialogue, e.g. social media with mediated and responsive interaction. Projects are believed to have more public support if the outcome of engagement is seen to have a 'genuine' impact on policy (Haas-Lyons, 2012).

- Provision of multiple channels for engagement with different affordances, appealing to different kinds of people, as shown in the 'Do it in the Dark' project and GCC overall project.

- Eagle Island's observability, making local action visible to others through community get-togethers and collectively organized work teams, as recommended by Rogers (1962) and Labay & Kinnear (1981), a program seeking to influence behaviour or change practice needs, as is enabled in small neighbourhoods.

- The Community Energy Explorer web platform is designed to help overcome the lack of readiness of communities faced with a major decision on energy supplies or

plans (as in Colwood), by providing a simple but engaging and locally relevant online guide to key concepts, issues and precedents.

The GCCP energy workshops and Revelstoke project highlighted the importance of linking energy proposals to common themes identified by participants, notably quality of life, sense of place, environmental impacts and social interactions and motivations. Participants were able to relate energy information from the workshops with what they valued about a community. Securing behaviour change may depend on whether it is compatible with the values of the target audience.

Approaches that did not work were therefore those that were unable to overcome the barriers described. Most notably, the initial Solar Colwood efforts, even with funding incentives, failed to meet their intended uptake in the community due to top-down planning without early involve- ment, lead-up and community buy-in being established, or compelling economic benefits. With- out socially-driven fun activities or compelling social media campaigns, the community remained largely disinterested and unengaged. It is now widely understand in the literature that providing scientific, technical or policy information on energy or climate change is ineffective in motivating people without a way to make it personally meaningful and connected to people's lives. Tradi- tional top-down forms of communication seldom draw citizens to attend public presentations and meetings in large numbers. The successful experiences of people coming together in the Eagle Island and Good Life Green Life projects, to share knowledge, and ideas, highlight the opposite situation where behaviour change is stymied because people think they are on their own in doing something about climate change.

3.2.5 New digital media tools and processes to engage the 'silent majority'

This section summarizes whether the tools and processes developed and applied in the PICS projects were effective in engagement and action. The section is structured around different modes of delivery for social mobilization: social media, workshops, and visual learning tools (including games).

Social Media

Social media can play an important role in drawing in and retaining participates in planning or educational processes (Haas Lyons, 2012), in terms of –

- Ability to facilitate low-barrier, accessible conversations that are inclusive of many varying perspectives
- Can lead to larger communities of people interested in the topic, based on word-of- mouth, leading to larger networks of participants
- Campaigns and competitions can create new online communities that are inclusive and diverse, leading to actions that people may not have been able to achieve indi- vidually (Senbel et al., 2014).

Facebook in particular, offers significant strengths for public deliberation on policy development, such as potential access to large numbers of citizens, convenience of participation and reflective opinion sharing. Over 50% of North Americans have an account (Socialbakers, 2012b), offering significant potential to reach citizens in a place where they already spend their digital time. The Facebook interface is simple and well known, which increases public capacity to use the tool (Haas Lyons, 2012). It offers an open-ended mode of discourse, allowing participants to integrate various styles of expression, personal experiences and opinion without being forced to reach

consensus (Bendor et al. 2012). Embedding government-led public engagement in a social media venue like Facebook offers a promising opportunity for strengthening the public-government relationship, if the discourse is guided or mediated by the site manager and feedback to participants is regularly provided. This channel is also flexible, allowing customization by social mobilization intervenors for things like point systems to allow tracking of progress,

However, Facebook's demographic trends and outreach challenges require careful planning to

Element	GCCP	Revelstoke
Workshop Goal	- To build citizen capacity to incorporate energy issues into upcoming City of Vancouver neighbourhood planning activities	- To investigate if public understanding and acceptance of smart growth would improve if participants used visualizations to explain why and how smart growth can help achieve energy and emissions reductions.
Scale	- Neighbourhood to community scale. - Sandbox = 30 blocks. - 2040 time horizon	- Neighbourhood scale - Small neighbourhood centres within the City of Revelstoke (4-6 city blocks) 2030 time horizon

Scenarios	- 3 pre-developed limited pathways.
	  - Technology
	  - Integrated Land Use
	  - Behavioural/Cultural
	- Participants constructed a negotiated scenario in small groups.
		- No pre-developed scenarios
		- Participants created individual scenarios using paper-based materials (June workshop)
		- Participants negotiated a final group scenario in small groups (2-6) at the touch-table (June workshop).

Table 3.4 – Use of scenarios in workshop design for GCCP and Revelstoke projects (Source: Salter, 2015)

ensure representative public participation in e-democracy efforts. A key trade-off in online deliberation is that, unlike face-to-face workshops which typically last several hours, online processes can be very brief, sometimes just seconds of interaction. This impacts the depth of participant learning (Haas Lyons, 2012), and in the Do it in the Dark campaign much of the usage was primarily to co-ordinate with friends, rather than contribute to an online dialogue (Senbel et al., 2014).

Workshops

The GCCP and Revelstoke projects provide evidence of the effectiveness of workshops and their associated media tools to engage and to shift participants' knowledge) and in some cases attitudes. Participants in both projects reported increased awareness of key energy/land-use relationships, though the Revelstoke participants articulated a density threshold above which their pre-existing concern over community character prevailed. In both cases, these workshop provided innovative interactive exercises which were important for learning and providing a stimulating experience, either through touch-tables or a scenario board game. Collaborative activities like these enable better dialogue, learning about multiple perspectives, emergent themes, and greater understanding, acceptance and building trust amongst a group of people (Innes and Booher, 2004).

In the GCCP energy workshops, the interactive exercises were the highest ranked component of the workshop (Salter, 2015). The role/involvement of the workshop/event facilitator and/or project coordinator (the one communicating/interacting with the public) is also key, and a well-crafted, highly visual explanatory slide presentation was also important in providing structure and key messages before interactive sessions (Salter, 2015). In terms of content, it is vital to show participants the importance of multi-facetted action: e.g. combining density and mixed land-use with transformed vehicle fleets, energy sources, household fixtures and appliances, and altered human

behavior, if we are to meet BC's community targets for reductions in carbon emissions (Senbel, et al., 2013).

Both energy workshop studies demonstrate the key role that alternative scenarios play in framing future projections meaningfully to lay-people. The GCCP developed the innovative idea of a generic digital neighbourhood (termed the 'Sandbox'), as a safe place to play, representing a familiar but not place-specific environment), which enabled broad place-based learning without resistance from threatened homeowners. Research has also shown the importance of narratives associated with such scenarios, though this aspect was not strongly developed in the PICS projects. Results suggest the importance of combining pre-prepared illustrative scenarios (as in GCCP, CEE) to build initial knowledge, and interactively user-generated scenarios (GCCP, Revelstoke) to develop more in-depth understanding of trade-offs and constraints with climate change solutions (Salter, 2015), as described in Table 3.4.

The workshop format also proved valuable in bringing together the diverse participants in the Good Life, Green Life project to learn that others shared their experiences, and to explore visions for a low-carbon future. While not using specific visual learning tools, the guided (mental and verbal) visualization process was also a key tool that helped participants articulate a more concrete and detailed conception of the future.

Visual Learning tools

Several of the projects employed some kind of powerful visual imagery:

- **Thermal imaging** proved a powerful motivator of retrofits at Eagle Island and elsewhere.

- **Video** represents a powerful DIY social interaction medium among active campaign participants ('Do it in the Dark'), as well as an engaging and revealing communication/mobilization tool for a wider audience (Good Life, Green Life).

- **2D and 3D visualization**: researchers including Sheppard (2012) have identified the need for less abstract futures in climate change discourse. Experiential visualizations allow people to acknowledge important sense of place values. Measured visualization using digital technology can represent abstract numbers in a semi-realistic form (as in the Elements DB tool: Kellett, 2014). They can communicate complex concepts through clear, accessible information, establishing a common language across diverse groups (Senbel and Church, 2011). They can also address important aesthetic or qualitative concerns (Sheppard, 2005). Visualization has been shown to make climate change causes, impacts and future solutions more tangible and visible to people, helping overcome disinterest (Revelstoke) and potentially disbelief or denial (Sheppard, 2012), though the PICS studies in general did not encounter such attitudes. Visualizations can be very effective in making future scenarios meaningful, as demonstrated in the PICS workshop studies and visioning techniques used to enhance standard planning procedures (Pond et al., 2010; Sheppard et al., 2011).

- **Touch-tables** enjoy popularity and immediate appeal with participants (Revelstoke, GCCP children's game), especially in combination with 3D overview perspectives on urban design workshops, though they were not the interfaces most highly ranked by participants in Revelstoke. Also, they are not as portable or simple to use as other visualization methods/interfaces.

- **Games**, both manual, digital, and social, were used in GCCP Workshops, Revelstoke, GCCP's touch table project (Antle et al., 2014), and 'Do it in the Dark' exercise. They helped to engage and build learning as well as develop social relationships with peers. If activities and imagery are made sufficiently entertaining, they have the potential to engage members of the public who might not otherwise be motivated to participate in a dialogue on climate change (Tanenbaum et al., 2013). Processes and activities that participants engage in during gameplay are more persuasive than the information that is layered on top of those processes (Tanenbaum et al., 2013). There is an important role for competition as social gameplay: for 'Do it in the Dark', it was a major motivation.

The PICS examples of games in the planning process were structured and tightly tied to content, unlike many educational games where the content being delivered has little to do with the gameplay itself (NASA, 2012). However, with the exception of GCCP (Antle et al., 2014), the games were not designed to be strongly persuasive, and had little true 'gameplay' or game mechanics of an entertaining nature. These avenues appear very promising with wider audiences, and are currently being explored in the Future Delta 2.0 educational videogame on climate change designed by CALP for high school students (www.futuredelta2.ca).

4. RECOMMENDATIONS AND SOLUTIONS

This section of the Special Report provides general summary recommendations applicable to most players involved in social mobilization. It also provides more specific recommended solutions tailored to the responsibilities and potentials of various intervenors in BC: upper level and local government; climate scientists; and community–based/citizen groups. These recommendations stem from the findings from PICS projects reported above and/or previously published research and guidance on social mobilization. In most cases, the PICS research findings and recommendations support those currently emphasized in the social mobilization literature, but go beyond them in several new areas, based on evaluation of real-world engagement processes, innovative digital and visual media, and processes for mobilization on community energy issues. While prepared with the BC context in mind, many of the proposed solutions may apply more widely.

4.1 General Recommendations for Social Mobilization

This section offers general principles for effective social mobilization by diverse actors and intervenors. These principles address both the planning of social mobilization initiatives and the focus and framing of content and innovative approaches for carrying out social mobilization activities.

Planning of Social Mobilization:

1. Be clear about the intended outcomes of social mobilization interventions: for example, is the goal more public discourse or widespread behaviour change? Is it early or late in a formal process? Is there already a consensus justifying a persuasive approach or is there contention that calls for an emergent dialogue?

2. Plan for the long-term: short-term projects or programs, even if well-funded, are often not very effective in achieving long-term impacts/solutions (Ling, 2014, Pers Comm). They can stimulate substantial dialogue and some activity, but need to be followed up and actively maintained/built upon, if to be successful in the future.

3. Prepare the ground: allow lead time to foster initial social learning before the project is formally introduced to the community (e.g. to build awareness, explain the process, explore their values and concerns, get their suggestions, get them comfortable with the idea, etc.). Good initiatives are unlikely to be successful if introduced to a community that is not particularly interested in the issue and does not see solutions that address their concerns (Ling et al., 2014).

4. Build and maintain trust: this is particularly important for government and businesses, and often requires collaborating with or leadership by representatives of the citizen groups or stakeholders involved. People respond best to people they trust and feel comfortable with, and the most persuasive source in trying to develop new social norms "are not experts, academics, advocates or activists, but every day, 'ordinary'.... people whose words, ideas and experiences can serve as compelling evidence" (Gunster, 2011).

5. Coordinate with partners: work with other bodies and groups from government, business, civil society and stakeholder organizations in a multi-faceted approach, as in the Eagle Island retrofit project, to provide resources and local knowledge, and build community appreciation of actions that are widely supported.

6. Create a community profile: identify those groups who are affected or not engaged, through stakeholder analysis of different demographics and interests.

7. Within the identified audience, engage with groups, not just individuals: mutually reinforcing collective action (as with Alcoholics Anonymous) tends to be more successful than reaching out to individuals or scattered households. The topic of climate change can be too large and overwhelming to expect people to take on as individuals. If people think that no one else is taking action, they may feel isolated and unable to make a difference. Also, existing networks are often more efficient at involving people than new mechanisms.

8. Provide multiple pathways for engagement: campaigns or projects with various ways for people to become involved are likely to be more successful than those that only provide one channel for engagement. The 'Do it in the Dark Campaign' used video, facebook, different group activities, and competitions to attract participants. Don't put all your eggs in one basket. Digital media may not work for some groups. Engage with people in the places they spend time, eg. coffee shops or sports events.

9. Use credible facilitators: the credibility of the organizer, researcher, sponsor, etc. is important for recruitment and success of the initiative, in terms of science, social connectivity, and practicality.

Focus and Framing of Content and Innovative Approaches:

11. Explicitly address people's values: many people are more likely to take action based on their personal values than on a technological argument, financial incentive or other forms of engagement, though these can be important support mechanisms once a community is engaged. For example, the hands-on "name the neighbourhood" exercise in the GCCP energy workshops clearly identified local values and concerns, and demonstrated to residents that the intervenors were listening and interested in learning what was important to the community.

12. Emphasize co-benefits: it isn't necessary always to lead with climate change issues, but don't hide them either; many communities may not be ready or fully open to a climate

change specific agenda, but respond to shared values or common ground (Marshall, 2014) such as energy efficiency, cost savings, or the 'cool factor'. At the same time, climate change realities can and should be introduced, as green benefits or 'doing the right thing.'

13. Focus on solutions: too much doom and gloom on climate change impacts can turn people off, whereas many can get behind positive action that has social. Recent CCPA workshops on Climate Justice with members of the public adopted a policy of 75% solutions to 25% problems in guiding discussion of climate change issues.

14. Explore the future: most people have never been involved in a structured look at their own future: it can be a novel, eye-opening exercise. Using scenarios or visioning exercises on sustainable or alternative futures, "placing people and, more importantly, community at the centre of a vision of sustainability" (Gunster, 2014) can be transformative (Schroth, 2010).

15. Make information local, immediate, tailored, and tangible: because climate change science is normally considered global and very long term, relating information to a personal and/or local level will make it more meaningful (Scannell et al, 2013; Moser, 2010; Sheppard, 2012).

16. Use compelling visual learning tools: making things visible (e.g. energy, climate change impacts, adaptation solutions) with simple or sophisticated visualizations can be powerful (Cohen et al., 2011). Images that are based on data but tell memorable 'stories can improve understanding and engage participants who enjoy visual media and 'cool' technology. Processes that go beyond visual experiences, as in hands-on interactive or creative exercises and physical activities such as field walks or tree-planting, can be very effective and rewarding for participants.

17. Make it fun: provide social activities or exercises such as games, competitions, storytelling where participants can be creative and contribute their own ideas, while building relationships with like-minded others and attracting more people.

4.2 Recommendations for governments and institutions

Governments and large organizations such as Crown Corporations or utilities such as BC Hydro, may sometimes instigate their own top-down social mobilization efforts intended to reach implemented solutions (as in Solar Colwood), but also play a crucial role in framing, enabling and supporting social mobilization activities undertaken by multiple actors.

Recommendations to **all levels of government** (including provincial, regional and local) include:

1. Develop a multi-facetted but coordinated and collaborative approach to any direct social mobilization efforts, coordinating top-down efforts and incentive schemes with parallel initiatives by 3rd party and community-based partners, as proactively as possible. Well-planned joint studies add value to each organization's work, relative to working in silos or reinventing wheels, and networks can be shared for efficient participant involvement.

2. Provide more sustained support for grassroots social mobilization at neighbourhood scale, without driving or taking control of the initiatives. Such support can include providing: stable ongoing funding programs for local volunteer organizations and community-based NGOs; media support/dissemination to reinforce the messaging; in-kind resources (such as West Vancouver Sustainability staff time allocated to the Eagle Island project or potentially

a Climate Action Advisor for strata councils); and providing affirmation of community-led efforts

3. Take leadership in providing or hosting 'one-stop shopping' via online information hubs that are easily accessible via Google search, structured in a way that allows each neighbourhood or sector to find information tailored for them, and that are fun, attractive, and intuitive to use. For example, websites such as LiveSmart BC (developed by the Climate Action Secretariat) provide a valuable source of information and support to all British Columbians and should be continued. It is also possible that regional governments may be a good scale for accessing data and resources (such as the Community Energy Explorer www.energyexplorer.ca) to support local climate action, enabling comparison among communities and sharing of locally relevant contacts and success stories.

4. Maintain and widely publicize the provincial and local carbon emission reduction targets: for such an important and transformative policy of declaring targets of 80% reduction in carbon emissions by 2050 to be so little known among BC citizens (Rhodes et al., 2014) is extraordinary. A major campaign to build awareness of the existence, need for, and benefits of these targets to ordinary citizens is long overdue. The concept of an overall carbon budget for everyone could help shift the social norms of the public (e.g. "the status quo is no longer acceptable," "doing my bit" etc.), and support local governments in their attainment of OCP and CEEP targets, if we are to move away from high carbon lifestyles.

5. Maintain and widely publicize other impressive but little known achievements of BC's governmental climate action program, such as: reductions in province-wide GHG emissions since 2010; the Carbon Neutral program for public entities; and other municipal innovations such as district energy plants running on renewables, which can produce important symbols of local resilience. Higher levels of government should support municipalities in developing demonstration projects that are highly visible in the community (Sheppard, 2012) and applicable to local businesses or private buildings.

6. Develop training programs to embed innovative practices in real-world planning projects and train practitioners and staff in successful new techniques of social mobilization.

In particular, **higher levels of government** such as the Province of BC and utilities, should:

7. Maintain consistent messaging to the public across policies relating to climate change (e.g. moving away from fossil fuels and towards carbon targets, encouraging renewable energy, etc.) to avoid confusing would-be actors or providing dis-incentives to parallel climate action by society at large. (e.g. "if the government doesn't care about carbon emissions, why should we?").

8. Provide stable, long-term and simple-to-understand financial incentives for householders and building owners, for low carbon energy implementation and energy conservation/retrofitting (e.g. eco-audits, feed-in tariffs for local energy, Pay as you Save schemes, etc.). Variation, uncertainty, and complexity of incentive schemes are disincentives to all but the most committed householders. Government and industry need to be able to demonstrate significant benefits to home-owners from low-carbon energy technologies for residences that outweigh the upfront costs and inconvenience of installation.

9. Ensure that industrial scale or private sector renewable energy developments (such as wind or run of river) are developed in cooperation with affected communities, and that such com-

munities receive a share of the revenues, green jobs, or other benefits, as is common in other countries (Elliott, 2003). This could avoid barriers of public opposition to green energy projects.

10. Reintroduce climate change to the High School curriculum, with particular reference to the targets and actions in place in BC, and clear linkage to projected conditions and solutions that the youth of today will see in their own lives. Such interventions, mediated by our children, could have a ripple effect on parents, possibly helping to re-shape social norms and voting behaviour about action on climate change. The current absence of a required climate change curriculum in schools is morally questionable, contributing to lack of knowledge and capacity in our youth in facing known future threats (and solutions) in their own lifetime.

Local and regional governments have some unique opportunities to implement their own social mobilization measures through planning processes and construction projects (e.g. Community Energy and Emission Plan implementation). Formal community engagement as part of planning processes provides an ongoing, already-budgeted opportunity not only to get public input to decision-making and policies, but also to inform and encourage community action. As such, local/regional governments should:

11. Prioritize building public literacy on energy and climate change issues, and the benefits and methods of reducing carbon emissions, especially at the small neighbourhood level where people are more likely to know each other and could act collectively.

12. Implement richer and more engaging participatory planning methods as developed and validated in the PICS studies; these should use social media and visual learning tools in structured processes with future scenarios, following procedures that have been shown to work in applied research. Specific recommendations within such processes include:

- Follow best practice in engaging people through open, inclusive, collaborative and transparent planning processes (Beierle and Cayford, 2002). For example, participants should comprise a broadly representative sample of the population affected by the policy decision, and stakeholders should be involved as early as possible in the process to maximize buy-in (Haas-Lyons, 2012)

- Use a variety of social media exercises, to draw in some user types not typically represented in planning meetings, and mediate or structure the discourse to provide balanced views and regular feedback to participants.

- Use tools to augment participants' abilities to visualize, remember, analyze, measure, compare, and communicate with each other (Girling and Kellett, 2000). The tools used should be adaptable to each situation, and present adequate information in ways that are clear, credible, engaging, and meaningful to the user group (Girling and Kellett, 2000; Sheppard, 2012). There are increasing online resources that provide clear and compelling graphics for staff to use, e.g. Community Energy Explorer – www.energyexplorer.ca

- Use interactive workshops: rapid feedback from participants enables a more iterative process in which scenarios are improved with each successive cycle. Iteration typically elevates participants' satisfaction and confidence in the results (Kwartler and Longo, 2008).

4.3 Other recommendations to climate scientists, researchers, practitioners of various disciplines, and large NGOs

As potential 3rd party intervenors, usually charged with dissemination of important scientific or technical information to the public and information users, scientists and practitioners can play an important role in building capacity of citizens and organizations to plan for and act upon climate change solutions. In order for scientific messages to reach the intended audience, the primary lessons from the literature and PICS social mobilization findings (beyond those in Section 4.1) are:

1. Go beyond one-way communications with lectures to invited audiences of 'the converted' (the information deficit model), by taking the discussions to target groups on their turf, using their language and media channels, and opening up an interactive two-way emergent dialogue which is driven in part by their concerns, values, questions, and ideas.

2. Organizations like PICS could expand the role of local coordinators at universities within regional communities, and promote highly visible demonstration projects and active educational outreach with regional organizations, as has been done by UNBC's Campus coordinator with demonstrations of electric vehicles, carbon footprint calculations, etc.

3. If not provided by local government, academics and others can effectively conduct visioning exercises on sustainable or alternative futures with visual tools or other innovative exercises that can capture public and media attention. Illustrate the benefits for current and future generations, use jargon-free language, and follow up with participants and the news media on the results of visioning exercises.

4. Develop persistent networks between researchers, practitioners, and civil society leaders, to sustain the messaging from new research or mobilization exercises.

4.4 Recommendations to community groups

Organizers or participants in grass roots climate change initiatives have considerable agency if they work together with neighbours at the local level, within stakeholder groups, or within communities of practice, as demonstrated by the Eagle Island and T'Sou-ke experiences, as well as similar initiatives such as Cool Neighbourhoods (Northshore), Green Bloc (Vancouver), Project Neutral (eastern Canada) and Transition Streets (UK). Key recommendations include:

1. Identify and support champions and 'lieutenants' who can motivate and organize others

2. In place-based initiatives (e.g. establishing community gardens or local climate change action groups), work in small discrete areas with concentrations of interested neighbours, where any activities or changes are highly visible and accessible. Workshops or activities should tap into people's 'sense of community', recruiting a diversity of people who share interest in the same neighbourhood, and fostering shared responsibility and collective action.

3. Seek partners among NGOs and allies in local government who are able to provide resources, information and advice on technical issues, and perhaps some sort of stable 'scaffolding' for community-led activities.

4. Investigate grants that may be available to support community initiatives from foundations and government, and seek sponsors from local businesses, e.g. providing discounts on energy retrofit supplies (as in the Eagle Island buyer's club).

5. Experiment with 'do-it-yourself' visual media to help spread ideas and attract attention of other participants.

6. Explore possibilities for citizen science and engagement (contributing information to municipalities or other organizations on things like bird habitat, street tree monitoring and maintenance, etc.).

4.5 Recommendations for Further Research on Social Mobilization

Some of the key research priorities and questions that remain from the earlier PICS workshop in 2010 or have emerged from the recent PICS Social Mobilization research include:

- The need for more evaluation studies, and more longitudinal research

- Determining appropriate methods for evaluating social mobilization effectiveness

- Following up action-oriented projects over time to obtain harder evidence of outcomes such as GHG reductions on Eagle Island and T'Sou-ke communities

- More research needed on characterizing and modifying people's mental models on energy and climate change in Canada

- How can social mobilization processes and activities in British Columbia be more inclusive and take account of class, race and gender?

- Given limited resources, how can we be strategic about which sectors to prioritize in mobilizing society? (e.g. online communities, sectoral, grassroots volunteer initiatives, and community planning processes)

- The role of popular media as a change agent, and in creating new social norms towards social mobilization on cc.

- Mobilizing the scale of transformation necessary to meet targets in the context of a political economy, heavy path dependence, and significant interests in maintaining the status quo

- Role of civil disobedience and protesting, including the potential for campaigns engaging citizens through already established communities of interest, such as educators, fishermen, grandmothers, youth, outdoors enthusiasts, farmers, etc.

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APPENDIX 1: THE CONTEXT FOR SOCIAL MOBILIZATION RESEARCH IN BC

The psychology and sociology of social learning and changing behaviour on climate change

This section highlights key findings from earlier research that provides some general guidance on fostering social mobilization on climate change, and can contextualize findings of the PICS-funded social mobilization studies on the prioritized research questions.

Social scientists such as environmental psychologists have identified many barriers to climate change action (Gifford, 2011), many of which are perceptual rather than physical or economic. Marshall (2014) has argued for new ways to break down the silence or absence of climate change in meaningful public conversations. Researchers and practitioners have recommended ways to overcome these barriers and identified enabling conditions or drivers of social mobilization. These call for much more than the traditional, one-way flow of conventional scientific information from scientists and experts to lay-people (information deficit theory). They recognize the key role of social context, group dynamics, and collective social and cultural norms (Shove, 2003; Moser and Dilling, 2007). They seek to lower perceptual barriers about climate change while increasing the motivations for wider action, through various stages and avenues of social learning and hands-on action, in collaboration with others.

Key recommendations for fostering social change on climate issues include community engagement and social learning (Pahl-Wostl, 2008), to build awareness, motivation, and capacity among socio-cultural groups by:

1. providing understandable, scientifically credible information in meaningful ways through use of novel, vivid, and concrete imagery (APA, Pike et al., 2010)

2. experiential learning – learning by personal experience through active social involvement (Weber, 2006), often involving some emotional involvement that establishes "… a personal state of connection with the issue of climate change"… " (Lorenzoni et al., 2007) which is inspiring, motivating, and long-lasting.

3. using messages which balance negative and positive information: emphasizing environmental losses and the risks of inaction in combination with positive implications of action to avoid a sense of helplessness or numbing (Moser & Dilling, 2007).

4. co-production of knowledge with stakeholders through engaging, collaborative processes to create buy-in and a joint willingness to act (Robinson and Tansey, 2006; Robinson et al., 2011).

5. tailoring the engagement process to the audience, framing information to reso¬nate with participants' values, and providing positive reinforcement, peer pressure and modelling of appropriate perceptions and behaviour by those who are trusted or looked up to (Moser and Dilling, 2007; CRED, 2009; Maibach et al., 2009; Marshall, 2014)

6. invoking the power of place and community in fostering care and action - making climate change local (Leiserowitz, 2007, Sheppard, 2012).

7. emphasizing importance co-benefits of climate action, such as building social relationships, saving money, protecting health, and increasing local control (Gifford,2011)

BC Context for Social Mobilization

There are a number of characteristics of BC that affect its ability to foster social mobilization for climate solutions. Indeed, BC's policy experimentation is unique in North America; for example, there are currently over 125 municipal organisations attempting to become or remain carbon neutral. In addition, many British Columbians are already feeling the massive and highly visible local impacts of climate change (e.g. mountain pine beetle) (PICS, 2010).

BC offers several advantages for advancing social mobilization (PICS, 2010):

1. Provincial government that is leading the action and setting a positive policy context for social action since 2007, for example, by:

    a. Creating and implementing a BC Climate Action Plan, with supporting and enabling legislation.

    b. Setting aggressive GHG emission reduction targets for the province and requiring local governments to do likewise. Most local governments in BC (e.g. Metro Vancouver, Comox Valley Regional District, Dawson Creek) have already set targets close to or exceeding the provincial targets of 33% reductions by the year 2020 and 80% by the year 2050 (relative to 2007 baseline GHG emissions) (http://www.islandstrust.bc.ca/climatechange/pdf/ghgemisionsreductiontargets.pdf)

    c. Implementing a carbon tax.

    d. Initiating a LiveSmart BC incentive program.

    e. Hosting regional forums and sector events on climate action.

2. High levels of public concern for climate change among BC citizens (see for example Clean Energy Canada & Pembina Institute, 2014; Harshaw et al., 2009). Current BC population opinions have been documented in the Clean Energy Canada/ Pembina Institute (2014) survey commissioned by PICS, in an online poll on "British Columbians' opinions on climate change and clean energy". The poll was conducted among 802 adult BC residents, and found that concern levels were high (67.3%) and considerable support (78.3% agreement) for BC to transition away from fossil fuels to using cleaner sources of energy to help prevent climate change from getting worse.

3. Fairly regular mass media mentions of climate change issues, though mostly focused on extreme events (impacts) and pipeline proposals (relevant to causes of climate change), rather than solutions.

4. Multiple though limited social mobilization efforts underway (formal and informal), as described above.

5. Generally, not much strident opposition on climate change measures to date, with the possible exception in some quarters of the carbon tax and municipal offset programs.

BC also faces a number of challenges and constraints on social mobilization (PICS, 2010):

1. Mixed messaging: weak federal-level messaging and action on climate change.

2. Mixed policy signals at the provincial level (e.g. subsidies to oil and gas industry, home renovation credits withdrawn, then re-instated).

3. Climate action targets are not well understood or 'on the radar' of the general public (see Rhodes et al., 2014). This study conducted at Simon Fraser University found that the BC population is largely unaware of its climate change policies and GHG emission reduction targets, and that citizen knowledge of climate policy is not associated with higher policy support. The results suggest that even after aggressive climate policy debate and implementation in BC from 2006 to 2009, most British Columbian are unaware of climate policies. The findings suggest that individual characteristics – such as values, trust in environmental non-government organizations and the renewable energy industry, and beliefs about the negative consequences of climate change – have stronger associations with climate policy support.

4. Many communities, households, citizens and businesses have high carbon footprints relative to the footprint necessary to achieve climate stabilization, but concrete awareness of this is low.

5. Low residential and industrial energy costs.

6. Lack of guidance to the public of how to meet the reduction targets.

7. A very rapid learning curve among experts on climate change in the province over last 7 years, leading to a lack of capacity beyond these experts at many levels, inside and outside government, and poor in-depth knowledge by citizens on local impacts and effective solutions; if anything, the gap is widening between government experts (e.g. energy managers) and the public.

8. Various social mobilization efforts underway that are not closely coordinated or monitored.

9. Some effective mobilization against some potential climate solutions, e.g. certain forms of clean energy such as run-of-river, micro-hydro, wind power, and biomass.

10. Significant resource constraints, especially budgets at the provincial and local government levels.

11. Shortage of experienced, trusted "translators" between the science of climate change/solutions and the public/communities.

The extent and effectiveness of past social mobilization initiatives

Social movements on climate change and related issues have emerged internationally and appear to have been effective in promoting awareness and to a lesser extent social action. Examples include various 350.org campaigns and events globally, the Al Gore Climate Reality Leadership Project to train speakers across the world, and most pertinently to this paper, the Transition Town movement (Hopkins, 2008) focused on building local community resilience. However, these efforts appear not to have captured the mainstream of public concern and action, though strongly supported by a minority of people in many countries and locales.

In BC, grassroots social mobilization efforts have been somewhat effective in, for example, battling proposed fossil fuel pipelines through onsite demonstrations and media coverage, and in advocating the 100 Mile Diet through book publishing, educational and media events. Programs maintained by PowerSmart at BC Hydro, the Live Smart site at the Climate Action Secretariat in the BC Ministry of Environment, and the PICS website have been effective in disseminating guidance to home-owners and interested individuals. Municipalities have conducted many public engagement processes around land use and energy planning activities related to climate change, but these have focused mostly on corporate public assets and new development planning, not on the much larger existing private building stock; these processes have also commonly been poorly attended by the general public. Overall, widespread engagement and action within the silent majority (sometimes called the "unconverted"), and reaching of tipping points on social norms, appear not to have been achieved through any of the above methods, alone or in combination.

The effectiveness of actual social mobilization interventions on climate change in practice has not been extensively studied in BC or elsewhere. A few precursors to the PICS social mobilization and evaluation studies discussed in this Report have been documented. Local climate change visioning processes to explore local future scenarios have been carried out with three BC communities, and have been shown to be effective in rapidly building awareness and increasing self-reported support for adaptation and mitigation policies (Cohen et al., 2011; Sheppard et al., 2011; Schroth, 2010). Longitudinal effects of social interventions are rarely researched or documented (Beierle and Cayford, 2002). However, Cornish (2013) and Schroth et al. (in press) found that iconic landscape visualizations of future local climate change projections were clearly remembered years later by municipal staff, and credited with bolstering the confidence of local government staff on addressing climate change issues at the time. Direct impacts on policy has typically been hard to establish, though Schroth et al. (in press) record several climate change initiatives enacted on the ground by local government as a direct outcome of a joint visioning process with researchers. These trends and examples suggest there is considerable need and potential for testing effective social mobilization approaches and tools which address community-scale climate and energy issues using digital media.

Overall, however, it appears that broad scale social mobilization on climate change is not yet happening in BC (moving beyond government programs for public facilities), and therefore there remains a strong need for an improved understanding from research on what could work to promote social mobilization in BC.

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