

Establishing a Municipal Climate Network in Atlantic Canada

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Abstract

Communities in Canada have influence over nearly 50% of Canadian greenhouse gas emissions and stand on the frontlines of climate change impacts. In order to meet energy objectives, continued coordinated action at the municipal level is essential. However, many municipal governments are constrained with regard to both human and financial capacity. These constraints reduce the ability of communities to seek out the necessary information on best practices and available funding to drive needed changes. The Municipal Energy Learning Group in Nova Scotia serves as a resource for knowledge mobilization among municipal staff and for these staff members to gather relevant information, learn about successful plans, visit projects in action, and network with their colleagues. For the past three years, with support from the Nova Scotia Department of Energy and Mines, QUEST (Quality Urban Energy Systems of Tomorrow) has experimented with various methods of bringing municipal staff from different local governments together, including webinars, facilitated peer-to-peer meetings, workshops, and study tours. Facilitating this group has allowed for an identification of trends in the barriers and opportunities faced by municipalities with regard to climate change, but also in the effectiveness of this model in delivering benefits to the members. The use of inspiration and celebration of success has been an important factor in affecting change. Also, the involvement of representatives from multiple departments has shown that everyone has valuable experience to share and increased engagement and knowledge transfer.

Introduction

Municipal governments are responsible for the delivery of a range of services and the efficient operation of a community. With climate considerations and rising energy costs, municipal governments have become more involved in energy planning and generation. Nearly 50% of greenhouse gas emissions occur at the community level, with the term community referring more broadly than the local government, to encompass all of the organizations operating within the geographic boundaries of a municipality or First Nations (Government of Canada, 2015).

The potential influence of local governments has been recognized by the Canadian Institute of Planners in their 2018 Policy on Climate Change Planning, stating that “Reducing emissions and preparing for the unavoidable impacts of climate change requires a drastic shift in the way our communities are built and function.” (Canadian Institute of Planners, 2018, p. 2). As an authoritative voice in the realm of planning, the institute's perspective will reach a broad audience and illuminate the importance of land use planning to the energy usage of a community. As an example, poor planning can lock a community into decades of unsustainable transportation options, such as

low-density suburbs, where public transportation is uneconomic for the municipality to provide, and personal vehicles become a necessity.

Although only a small proportion of emissions are within the municipality's direct control, from a holistic perspective there is incredible potential for the combined action of the local government, nonprofit organizations, universities, and businesses to collaborate on energy reduction strategies. A systems approach encourages interdisciplinary collaboration through the use of stovepipes and silos, which can be defined, respectively, as “great divides between sectors—between the research community and governments, between the research community and the private sector and between each of these and nongovernmental organizations” and “separations within and between government departments and in universities between academic disciplines” (Dale, 2001, p. xii). Industrial ecology aims to bridge across stovepipes between academia and other sectors, and across silos within the university. An international and multidisciplinary perspective, with a particular focus on incorporating economics and social sciences, is important for developing strong relationships with industry and government. The overarching thinking of industrial ecology ties in well with the

values of the national nonprofit QUEST, where I was the senior lead for the Atlantic Region. My aim broadly was to forge connections across stovepipes and break down silos within the provincial and municipal governments when it comes to energy and climate.

This paper will introduce the history of Canadian municipal climate response, showing why and how the role of municipalities has changed over the past two decades. Once the Canadian context is established, the paper will describe the context within which I worked to establish a municipal climate network, including the unique barriers and challenges for municipalities in the Atlantic region of Canada. It will proceed to outline municipal climate action in the Atlantic with a focus on relevant plans and tying in to national trends. The paper describes the founding of the Municipal Energy Learning Group (MELG) and then outlines a comprehensive survey that I administered to establish a baseline for community energy in the province of Nova Scotia. The following section follows the progress of the climate model and member outcomes. I conclude with a discussion of the success factors of the group and applicability of the municipal climate network model.

Evolution of Municipal Climate Response in Canada

Energy and climate have not always been at the top of municipal priorities. According to a 2005 article on the barriers to Canadian municipal response to climate change, discussion on the

specific role of municipal governments was near-absent in international research (Robinson & Gore, 2005).

With the intention of identifying barriers, Robinson and Gore (2005) administered a survey in 1998 to staff at 392 Canadian municipalities, targeting those with populations of over 10,000. Of the 236 survey responses, 66% reported that no municipal climate action had occurred. In 1998, several barriers were consistently identified as being very important, namely staff time and expertise, lack of funds, and climate change being the responsibility of the provincial or federal government. The list of barriers can be seen in Table 1.

The continued research of Gore (2010) follows the increasing involvement of municipalities in climate change and energy, stating four overarching reasons why municipalities have begun to respond to these challenges. These four reasons are: 1) municipalities recognize the local resonance of acting on a global issue, 2) they are persuaded by the moral imperative to do so, 3) there are proven co-benefits, and 4) “increasingly, scholars argue that municipalities are taking action due to their participation in domestic and international networks or coalitions of municipalities—networks where membership obligations are weak, but opportunities for knowledge exchange and learning are high.” (p.35). The MELG, on which this paper is based, is an example of one of these coalitions of municipalities.

Table 1. Ranked Barriers from 1998 Survey (Robinson & Gore, 2005)

Barriers	Very Important %
1. Our staff does not have the training to participate in CO ₂ reduction.	40.3
2. CO ₂ reduction is not a priority for our Council.	40.3
3. Our municipality does not have enough money.	35.0
4. Climate change is not a local government issue.	34.4
5. CO ₂ reduction is the federal government’s responsibility.	33.2
6. This type of work would require too much staff time.	32.6
7. CO ₂ reduction is the provincial government’s responsibility.	29.1
8. CO ₂ reduction is not a priority for our residents.	25.0
9. In our province, we don’t have the legislative power to impact CO ₂ reduction.	12.9
10. The private sector (developers, local business, etc.) would oppose it.	8.8
11. Science has been inconclusive in establishing climate change as a real issue.	6.2

Municipal Context and Challenges

Municipalities in Nova Scotia face many challenges. They are responsible for a wide variety of community services, but population decline is eating away at the tax base that supports these capital and operational expenditures. As of 2016, municipal governments owned nearly 60% of the physical infrastructure in Canada, such as roads, water, and wastewater systems, but relied on federal and provincial funding to support their repair and maintenance (Rothenberg & Bush, 2014).

Climate change is threatening municipal infrastructure with warmer, wetter, and wilder weather. The strains of these intense weather events are more than our roads, culverts, bridges, buildings, and shoreline infrastructure were designed and built for. Canadian municipalities play a key role in climate change adaptation as part of municipal planning, including incorporating adaptation considerations in land-use and infrastructure decision-making and encouraging action at the local level, according to the Public Services and Procurement Canada, Integrated Services Branch & Government Information Services, Publishing and Depository Services, 2018. As of 2016 in Atlantic Canada, the average pie slice attributable to community activities was 60% for energy use and 58% for greenhouse gas emissions (Government of Canada, 2019).

In the last decade, all Nova Scotian municipalities have completed two plans related to sustainability and climate change. In 2009, the release of gas tax funding, annually administered to the provinces, required the completion of an Integrated Community Sustainability Plan (ICSP). The objective of the ICSP process was to help municipalities identify goals for a sustainable future, and to develop a strategic approach related to the natural environment, the social elements of communities, the local and regional economy, and culture and heritage considerations.

In 2013, the gas tax allocation was dependent on the completion of an additional Municipal Climate Change Action Plan (MCCAP). This exercise meant that each municipality now had an assessment of their potential climate risks and the relevant actions to address them. Each MCCAP also included an inventory of both energy use and greenhouse gas emissions, giving local governments a strong base from which to engage in further energy planning. However, there was a large variation in both the quality of these plans and the degree to which they have seen

implementation. Although some communities used consultants and estimated data, others took ownership over the action plan, collecting local information, building internal expertise, and carrying the momentum into effective initiatives. Energize Bridgewater is a great example, where the town of Bridgewater aims to tackle energy poverty through its Community Energy Investment Plan, including innovative finance mechanisms, neighborhood retrofits, and improved community transit. This initiative was recognized in the Canada-wide Smart Cities Challenge and awarded \$5 million toward implementation.

Municipal Energy Learning Group Background

It was integral to my role at QUEST to maintain an overview of the energy system in Nova Scotia and coordinate among the diverse stakeholders to fill any gaps that I discovered. Although communities were a central topic of discussion, the voice of municipal governments was notably missing. I wanted to bring municipal representation to the table, so I started researching active groups and reaching out to the municipal associations in the province, finding a gap in climate support for communities.

In collaboration with a group of interested municipalities, one year of financial support from the Nova Scotia Government departments of Energy and Mines, Municipal Affairs, and Environment, and the expertise of the Nova Scotia Federation of Municipalities, QUEST Nova Scotia launched the MELG in June 2016. The terms of reference for the group decreed the group would consist of municipal staff members of any interested municipality, with others welcome at the group's discretion. The group decided to start with a frequency of six meetings a year, and to meet around the province to allow for hands-on learning and to alternate driving distances. As a facilitator, I recognized the importance of face-to-face meetings on building partnerships. Initially, meetings included a half day of presentations and a roundtable of municipal updates. I included a webinar option for staff members who were not able to travel or take the whole day.

The focus of the group was on capacity building through presentations, study tours and peer-to-peer sharing, especially focused on successes. It was designed to streamline the process of R&D, "rob and duplicate," an important tactic for efficiency when many municipalities are trying to

overcome similar barriers. I feel strongly that there is no need to reinvent the wheel and cooperation is paramount.

It was essential to speak to the issues that are top of mind for community leaders. Economic development was an excellent starting point. With the local energy efficiency utility, Efficiency Nova Scotia, having their Onsite Energy Managers (OEM) embedded in communities, there are powerful case studies showing the business case of energy upgrades. Early meetings of the MELG focused on projects that were successful at both reducing greenhouse gas emissions, and lowering energy costs, for example Solar City, Energize Bridgewater, the Ellers House wind project, and the work of one OEM who reduced a municipality's energy expenditure by 25% over three years, saving more than \$1 million per year.

The original group was small, but mighty. Only two members were full-time sustainability staff, and the balance held a variety of titles from town planner to director of finance. Since that time, the group has slowly grown both in individual attendees and the number of municipalities represented. The Nova Scotia Department of Energy and Mines has continued to be a loyal supporter of the group and has acted on the recommendations from the 2017 Community Momentum Report.

Year 1: Community Energy Survey and Community Momentum Report

The Community Momentum Report was a deliverable for the Nova Scotia Government in the first year of funding. In 2016, I designed and administered a survey to develop an initial baseline for community energy planning within Nova Scotia municipalities. The intention was to gain an understanding of strengths and weaknesses in municipal energy planning and action (Peverill, 2018). The survey evaluated the variables found to enable or prevent municipalities from pursuing community energy planning, such as council support, staff capacity, and program involvement.

I received responses from 30 of Nova Scotia's 51 municipalities, and the results revealed clear areas of common strengths and weaknesses. Conversations with MELG members on the areas of common success helped illuminate the underlying reasons. It was encouraging to note that some barriers were of lesser import in comparison to the 1998 survey detailed earlier (see Table 1). For example, council support was fairly widespread, with only 7% of respondents working with an

unsupportive council. Also, the mandatory ICSP and MCCAP reports had required municipalities to enumerate the opportunities and challenges associated with their operations, necessitating a recognition that climate change was not solely a provincial or federal responsibility.

However, of the 30 respondents, only five had a full-time staff resource (or more) devoted to energy planning and management, demonstrating that council support did not guarantee devoted staff. Nearly 35% had no one assigned and virtually no capacity to work on energy issues.

Municipalities were notably strong in the areas of physical activity and active transportation, waste management, energy efficiency in municipal buildings and leading by example with renewable energy projects. Through the discussion on these results, four successful strategies or programs were identified, each representing a somewhat different mechanism. The Community Feed-In Tariff (COMFIT) Program was responsible for communities leading by example in renewable energy, where the province acted as a bridge between municipality and utility to secure a power purchase agreement for 20 years for community-owned projects. The strength in the area of physical and active transportation results from a provincial cost-sharing program called the Municipal Physical Activity Leadership Program, which embeds a staff person in the municipality to focus on this issue. This is a tactic that the Federation of Canadian Municipalities also took with the staff salary grant that I will discuss in the next section.

Provincial regulations are responsible for good waste management practices and financial rebates from Efficiency Nova Scotia have allowed for energy efficiency in municipal buildings. The Community Momentum Report further elaborated on areas of weakness and applicability of these four strategies: regulation, financial rebates, subsidized staff positions, and bridging between municipal and utility (or other). Figure 1 shows the value of a municipal climate network in supporting peer-to-peer learning. The distribution of colors demonstrates a distribution of expertise, with even the lowest scoring municipality having excelled in one category, and even the highest scoring municipality having room for improvement.

Years 2–4 and Member Outcomes

The focus on success stories was well received by the group members and, over time, the learning group participants were noticeably inspired by the

updates of their peers. Common areas of interest were identified, including the gap between desired policy changes and municipal authority within the existing legal framework, further application of Property Assessed Clean Energy (PACE) financing and other innovative financing models, communicating the business case to council and funders, and the benchmarking of corporate buildings (Peverill, 2018).

It is difficult to measure the outcomes of an endeavor when the aim is capacity building and creating connections. The carbon emissions reductions and cost savings that occurred as a result of the group are impossible to measure. However, there are several developments that resulted directly from the MELG. The effectiveness of the group structure was recognized early by Futures Commission Merchant, contributing to QUEST being awarded the contract as the Regional Climate Advisor for the Partners for Climate Protection Program in Atlantic Canada. This helped us create a municipal working group for communities in New Brunswick and Prince Edward Island and lay the foundation in Newfoundland and Labrador.

The types of greenhouse gas emission reduction projects that moved most quickly were those based on previous success. The aforementioned COMFIT Program had made community-owned energy generation projects, namely wind, economically advantageous through a 20-year power purchase agreement. Several of the larger projects were a collaboration between smaller municipalities or municipal utilities. The contracts and other legal documents that were drawn up to define these partnerships were made available for use by other MELG members.

Nova Scotia communities were national leaders when it comes to the uptake of PACE financing. Solar City was an award-winning program designed by Halifax Regional Municipality to finance solar on residential properties. The sharing of lessons learned and details about the Solar City Program at MELG meetings directly influenced the Solar Colchester program. A local nonprofit organization, Clean Foundation, designed a Clean Energy Financing program in collaboration with several Nova Scotia municipalities, creating a replicable model. Due to the open conversations and data sharing additional municipalities felt less risk and instituted clean energy financing. In particular, a small town and nearby county joined together to share the administrative and communications activities.

Municipalities also built on the relationships formed at MELG and teamed up to share an onsite energy manager through Efficiency Nova Scotia. A certain amount of electricity reduction potential is necessary to allow the energy manager to be effective, so generally only large municipalities qualify. Collaborations between smaller towns and counties allowed them to take advantage of these energy experts.

The ability to target, and consult with, municipalities who are already interested in community energy and climate change action led to high application rates to the provincial Low Carbon Communities Initiative in 2018, and Futures Commission Merchant staff salary support funding stream. Through the latter funding, five municipalities in Nova Scotia were granted subsidized climate staff positions.

As the network strengthened, there was more interest in expanding membership outside of municipal staff. At the request of existing municipal staff members, some elected officials, employees of the Regional Enterprise Networks and staff from other nonprofit organizations were invited to meetings. The Western Regional Enterprise Network saw the economic development potential of community energy and collaborated with seven small municipalities to create a regional energy plan, including doing a greenhouse gas emissions inventory and forecast.

Academic Involvement

Nova Scotia is home to 10 universities and when we broadened MELG membership, I began to establish relationships with staff and faculty in relevant programs. Over the two years we held meetings at Nova Scotia Community College, Dalhousie University, Acadia University, and St. Francis Xavier University. Touring the green infrastructure projects at these institutions inspired solar installations and building retrofits at several of the member municipalities. Municipalities also partnered with Dalhousie's Management Without Borders, where a group of interdisciplinary students take on a research project for an external partner. The group visited the Renewable Energy Lab at Nova Scotia Community College, where the more technically inclined forged partnerships to pilot microgrid and storage technologies. We also engaged in and celebrated community-engaged research, such as the Community Energy Knowledge Action Partnership (CEKAP). In August 2018, we had a day-long meeting with

researchers from the University of Guelph, who did a case study of community informed mapping for renewable energy in Annapolis County, Nova Scotia (Jahns, 2019). In late 2019, St. Francis Xavier University presented its recently launched Climate Services and Research Centre, where the staff is eager to work with communities on climate modeling and adaptation planning. Thirty MELG members spent the day with 10 researchers and faculty to uncover common interests.

Discussion

Local communities are strongly impacted by climate change and have influence over a large percentage of Canada's greenhouse gas emissions, but they often lack the capital and staff capacity to plan and act. How, then, can we harness the collective knowledge without overburdening municipal governments? How do we help them bridge the intention-action gap?

Although the barriers to municipal climate response are being systematically removed, I believe that municipal climate networks are an essential and underused enabling tactic. In 1998 the majority of municipalities in Canada did not recognize climate change as a local issue of importance, did not feel pressure from residents and therefore, climate change and community energy were not priorities for the council (Robinson & Gore, 2005). Furthermore, staff time and financial resources were lacking, as well as staff expertise.

The MELG survey in 2017 shows that council support is no longer a significant barrier (Peverill, 2018). However, at that time staff resources were consistently lacking. The Federation of Canadian Municipalities Staff Salary Grants awarded in Nova Scotia doubled the number of municipalities that had a full-time energy and climate change staff resource, addressing that gap in the short term and adding significantly to the overall energy literacy in the MELG. An effective municipal climate network can create efficiencies in staff tasks by allowing access to diverse experts and templates of policies, programs, and projects that have been de-risked through implementation.

Although staff time is still listed as a barrier, each year that the MELG has operated, the group has grown in absolute number, in the diversity of organization type, and job title. Through yearly formal working group surveys and informal conversation, I have confirmed that the group is considered valuable by the members, the

Government of Nova Scotia, and the Federation of Canadian Municipalities.

I believe there are a few simple explanations for the success of this group. The first is trust. QUEST is viewed as a non-threatening entity, with a mission to help communities become Smart Energy Communities (see <http://greenenergy.world/index.php/smart-energy-communities/>). Another related success factor is the relationships built through face-to-face interactions. A review of the engagement details from the meetings call-in option showed that it was not a good method for engagement. (The webinar platform, GotoWebinar, tracks the attentiveness of attendees.)

Municipal working groups that did not prioritize in-person meetings—such as those in New Brunswick and Prince Edward Island, Ontario, and Alberta—did not see the same growth or member outcomes as the MELG group. The Community Energy Planning Implementation Network in Ontario was the inspiration for MELG, but that group struggled to find the right approach over the following years. The combined New Brunswick and Prince Edward Island group met primarily over teleconference, and attendance was low. The willingness to travel to meetings may be a unique feature of Nova Scotia.

Having hosted both in-person and remote meetings, I believe that relationships built in a more informal and open forum enable participants to ask more loosely formed questions. By this, I mean it is more acceptable to not be an expert. Members feel at ease asking for more explanation, examples, and details. People are more comfortable saying “I don't know.”

I think this is particularly important when it comes to areas of rapid technological change and complex social behavior change and engagement on very important community values. This is especially true when the municipal players do not have the luxury of becoming experts, because climate change or community energy planning is a small part of their job description, or not included whatsoever.

Another success factor that was unveiled was the importance of encouragement. During the roundtable portion of each meeting, there is an expectation that each person speaks. Often municipal staff are so embedded in their projects or programs that they do not recognize how innovative their approach or project actually is. In this, the role of an informed facilitator is important. I strive to continually inform myself

on topics related to community energy planning, allowing me to act as a key contact providing background information and creating connections between relevant players. With that information as a foundation, I am assertive during group discussions to prompt others to share the expertise and experience that I know they have. Sometimes it is joked that we are a support network, rather than a working group, building up the confidence of municipal staff by assuring them that they are on the right path.

Hands-on learning has proven to be an efficient way of learning about innovative projects when visiting communities. Study tours appeal especially to visual learners and also give an opportunity to resolve questions with experts while in front of a certain system.

Although originally the group's inclination toward building on success was simply my informed preference, a more science-based rationale for this approach was collected over time. For example, the book *The Influential Mind: What the Brain Reveals About Our Power to Change Others* (Sharot, 2018) laid out evidence that humans are inclined towards action when they are presented with a positive state or reward. Alternatively, negative information or threats cause the freeze or flight reactions, causing inaction or distancing from the problem.

It would be interesting to test the applicability of this model elsewhere in Canada. Higher level governments with ambitious CO₂ emissions reductions targets should consider funding municipal climate networks as a forum to kickstart or maintain the momentum of, climate change and community energy planning, programs, and projects. Although there is a role for national and international programs such as the Partners for Climate Protection program, the Global Covenant of Mayors, Global Reporting Initiative, and the Carbon Disclosure Project, I believe that local similarities, examples, and networks are more powerful for inspiring action. Therefore, it is essential that members are encouraged to share.

The specifics of the group need to be determined by the members, but it is also important to have a dedicated facilitator to act as a navigator and connector. The group could be organized by a different type of organization, such as an economic development organization, academic institution, or environmental nonprofit. Academic involvement is crucial to keep community energy research grounded in the local context, and to continue to advance the understanding of practitioners on the ground.

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