

The Community Energy Knowledge-Action Partnership

Our Knowledge-Action Agenda, 2016-2019

Contents

Background	2
Our Approach to Knowledge-Action.....	2
Shaping Our Knowledge Action Agenda	3
The Key Challenges	4
Post-Meeting Survey Results: Partnership Input into CEKAP's Research Agenda.....	5
CEKAP's Ongoing and Near-Term Research Activities.....	7
Michelle Adams, Dalhousie University	7
Jamie Baxter, Western University.....	8
Kirby Calvert, University of Guelph.....	8
Mark Jaccard, Simon Fraser University.....	9
Ian McVey, Ontario Climate Consortium (OCC) Secretariat & Toronto and Region Conservation Authority (TRCA)	9
Mark Winfield, Faculty of Environmental Studies	10

Background

The Community Energy Knowledge-Action Partnership (CEKAP) was established in spring 2016 with a *Partnership Development Grant* from the Social Sciences and Humanities Research Council of Canada (SSHRC). Partnership Development Grants provide support over three years (2016-2019) for the design of new partnership approaches for research that may result in best practices or models that have the potential to be scaled up to a regional, national or international level.¹

CEKAP combines strengths from Canadian universities, local and regional governance partners and civil society organizations across three provinces with a shared interest in the successful implementation of community energy plans. Community energy plans are developed by local governments and community groups to support the implementation of energy efficiency and distributed generation initiatives with overall objectives relating to local economic development, and GHG emissions reductions.

Our Approach to Knowledge-Action

CEKAP's approach to research program builds from the principle of 'community engaged scholarship'. In this model, the non-academic community provides direct input into the agenda: i.e., identifying the research challenges and key research themes that will guide the research over the longer term, and then identifying clear and timely research initiatives that might be undertaken in the shorter term depending on resources and expertise.



Figure 1- Community Engaged Scholarship links researchers with practitioners to co-define an agenda based on a shared vision and outcomes, and mobilize knowledge generated

¹ http://www.sshrc-crsh.gc.ca/funding-financement/programmes-programmes/partnership_development_grants-subventions_partenariat_developpement-eng.aspx

Shaping Our Knowledge Action Agenda

The process by which CEKAP has established its short term knowledge action agenda is described in Figure 2 below.

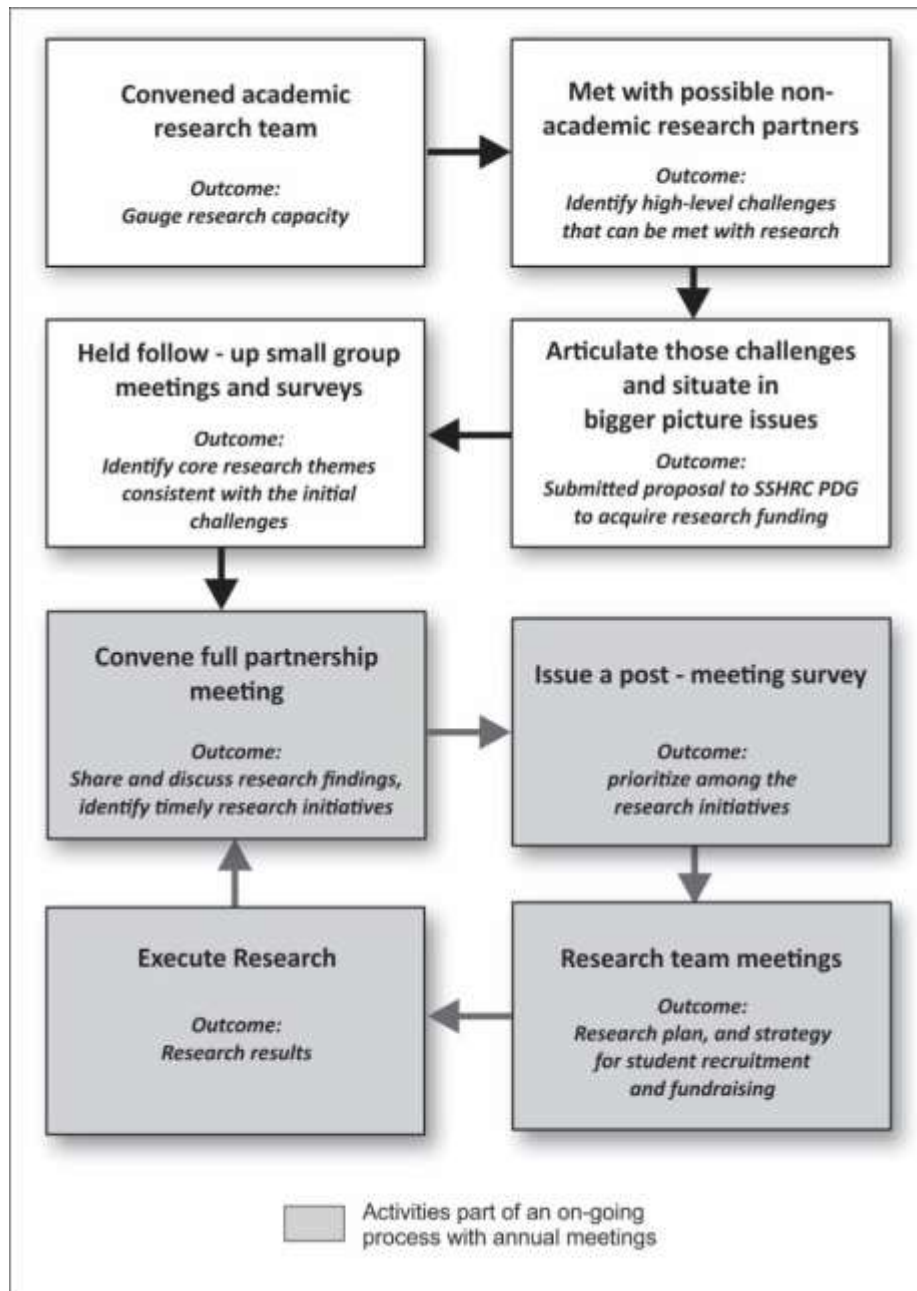


Figure 2: The process by which CEKAP has established its knowledge action agenda (challenges, themes, initiatives)

The Key Challenges

CEKAP's research program is focused on two interrelated challenges. First, aligning institutions and regulations across federal-provincial-municipal orders of government (e.g., identifying the scale at which energy transitions are best managed; ensuring that devolved responsibilities are matched with devolved powers and resources). Second, enhancing local capacity (e.g. through innovative social enterprises, public-private partnerships, and municipal planning systems). Between fall 2016 and spring 2017, CEKAP's academic team collaborated with its non-academic partners to identify six core research themes that cut across these two challenge areas (see Figure 3).



Figure 3: CEKAP's core research challenges and themes

At CEKAP's first full partnership meeting on November 23, 2016, which was attended by 53 people from three provinces in person or by webinar, the partnership discussed those research themes as well as possible research projects within and across each theme. Members of the research team collated the notes from these discussions, and distilled the notes into a clear and actionable set of research initiatives. These initiatives were circulated back to the group through a post-meeting survey in which the partners were asked to validate and prioritize among the research themes. The results of the validation and prioritization process are summarized in Table 1 below, which lists the research themes and initiatives within each theme according to how they were prioritized by all partners who attended the meeting and responded to the survey.

Although new questions will certainly emerge, and specific research activities will be defined by resources and opportunities, Table 1 will serve as a guide for CEKAP's research agenda moving forward. After the summary Table, we provide a brief description of how the individual research partners will meet these priorities through ongoing and intended research activities over the next 1-3 years.

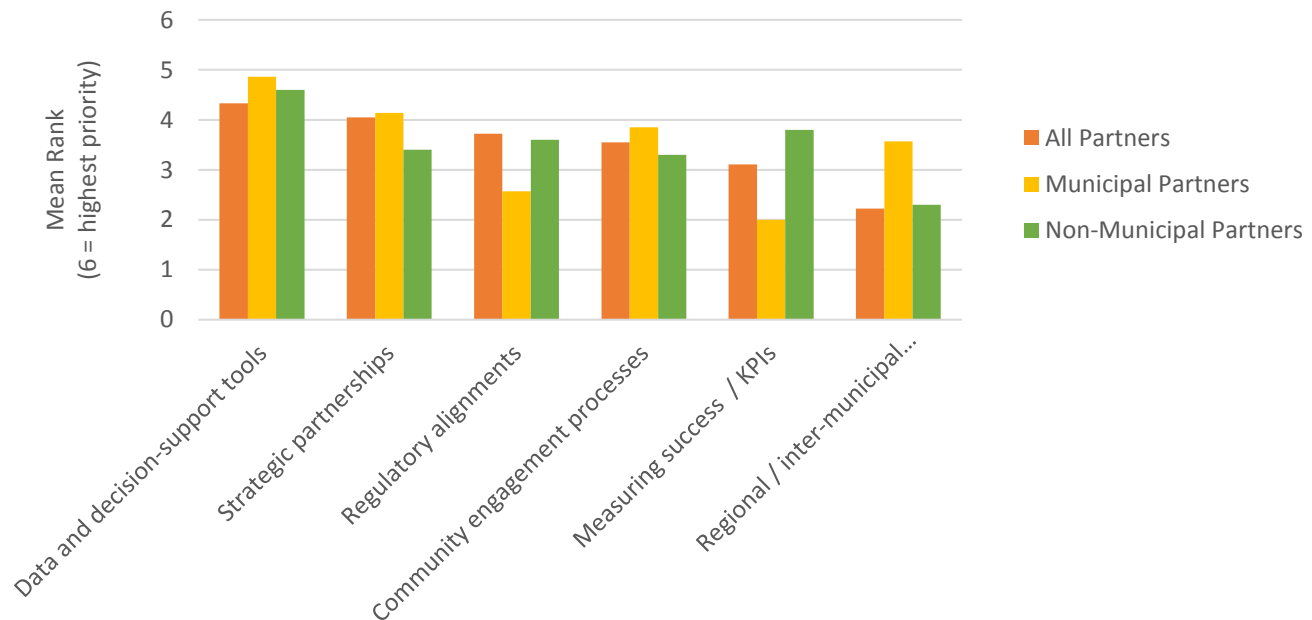
Post-Meeting Survey Results: Partnership Input into CEKAP’s Research Agenda

Table 1: The research themes and questions that emerged through partner collaboration, presented in their order of priority ranking based on post-meeting survey responses

Research Theme	Research Questions
1. Data-driven decisions and decision-support tools: Needs and best practices	What strategic and planning-level questions need support from modeling and mapping efforts? At what scale are they best answered, and what tools are already available for this?
	What are the data needs and how can we optimize the data sharing process to align with modeling efforts?
	What are the barriers and opportunities to develop a 'common GIS' tool across municipalities and utilities, and who is the best entity to develop this tool?
2. Strategic partnerships and stakeholder engagement in community energy planning and project delivery	What role can a utility play? More importantly, how do utilities envision their role in CEP, particularly in the context of other pressures on their business model (e.g., death spiral, new regulations)?
	What partnership models are possible for CEP program and project delivery, and what are their strengths, weaknesses, opportunities, and constraints?
	What motivates or compels (legislates) utilities to work with municipalities on CEP implementation?
3. Understanding the institutional landscape: unlocking the potential of community energy plans	What is the municipal 'sphere of influence' relative to the provincial government as it relates to CEP implementation? How do provincial and federal regulations expand / collapse this influence as it relates to particular initiatives (e.g., district heating, storage)?
	What legislative tools exist at the nexus of energy, land-use, and the built environment?
	How do existing processes and programs around conventional infrastructure funding apply to community energy infrastructure projects, notably district energy? What needs to change in order for infrastructure funding to better support CEP investment?
	Where CEPs have been successfully implemented, what were the governance arrangements within municipalities?
	What are the leadership dynamics where CEPs have been implemented? Are there key “champions” required to drive the process or is it sufficient to view CEP through a lens of a broader municipal strategy?
	What municipal departments are implicated in CEP, and what are the barriers to aligning these departments and embedding energy planning into municipal operations? Is an 'energy office' essential to this, or can it be more decentralized across departments?

4. Placing the 'community' in community energy planning: assessing community engagement processes and identifying factors for community support	Where has community engagement been done well and what factors led to its success? Where has engagement failed, and why? How can we define success?
	Under what conditions are CEPs most likely to be supported (or what are the cultural conditions under which CEP are most likely to be supported)?
	Which communities are most likely to engage/support or disengage/oppose, and why?
	What are the data needs to measure KPI and how can we optimize the data sharing process to align with modeling efforts?
5. Measuring success and making the value proposition: Toward standardization of key performance indicators?	What key performance indicators (KPI) are most likely to foster community support? Which are most likely to foster provincial support? Do they align?
	What tools are already available / in use to measure and communicate KPI? (review and best practices)
	How could smaller communities/jurisdictions work together to share resources? What opportunities are there for approaching CEP on a regional scale?
6. Regional collaborations and inter-municipal relationships for community energy planning	How can CEP responsibilities be shared across single / upper and lower tiered municipalities?

Figure 4: Priority ranking across the research themes, broken out by stakeholder group



Other notable highlights from the results of the survey include:

- Support for all research themes was clear and a number of respondents expressed the challenge of prioritizing among them.
- Respondents also highlighted considerable overlap within and across the research themes and encouraged the research team to pay careful mind to this overlap
- Priorities were moderately consistent across CEKAP's stakeholder groups. Both groups placed high priority on the research theme 'data and tools'. Municipal partners prioritized 'strategic partnerships' and 'community engagement' higher than non-municipal partners, who prioritized 'institutional barriers' and 'standardized key performance indicators'.

With all of this in mind, the academic research partners have identified a range of ongoing and intended research activities that will connect to these priorities. These are described below.

CEKAP's Ongoing and Near-Term Research Activities

[Michelle Adams, Dalhousie University](#)

One element of our research focuses on a better understanding of the techno-socio-economic shift in energy generation within Nova Scotia since 2009, when the Province first first announced its ambitious renewable energy targets. We investigate the drivers, barriers, motivations and true costs/benefits associated with the integration of community-based renewable energy (CBRE) into the larger provincial grid. The link between CBRE and sustainable regional economic development is oftentimes hypothesized but there is a paucity of empirically-based work to support it. In addition, using strategic niche management theory as a conceptual framework the intention is to investigate the role of CBRE in providing the socio-technical foundation needed to allow a regional transition to low-carbon energy systems. The outcomes of this research will support a more fulsome understanding of the issues linked to theme 4 (the community in community energy) and theme 6 (regional collaborations)

A second line of research is the cataloguing the relationships between the actors in CEPs and CE projects, to determine whether those relationships are complimentary or competitive, strong or weak, and yield positive or negative results. This model requires the purpose of CEPs or CE projects to be defined in order for it to be applied correctly. This in and of itself could be revealing; is the purpose of a CE project to erect a windmill? Provide energy or financial security to the community? To enhance community relationships and trust? Mitigate climate change? Most likely it will be multiple reasons, with different weightings that need to be defined in each specific case. The purpose of the CE project may have effects on both the relationships it engenders and its ultimate success. Additionally, relationships may have different effects depending on the purpose that we assign them. The model also emphasizes that relationships are apt to change during the course of transitions, which could provide insight into the dynamics of CEPs and CE projects.

This research will revolve around two key hypotheses: firstly that complimentary relationships exist between actors representing organizational, institutional and community interests and yield positive results during the development of CEPs and CE projects; and secondly, competitive relationships yielding negative results also exist, and may create bottlenecks in the process. In either case, these will be identified and recommendations for best practices made to overcome them. It is the intention to model the relationships between actors, institutions and organizations involved in the CEP and CE project to

promote broader understanding, with emphasis on revealing the changing nature of relationships over the course of the projects and their effects. The outputs will be linked to theme 6 with the purpose of providing insight to key desirable (and/or undesirable) relationship that influence successful regional collaboration.

[Jamie Baxter, Western University](#)

My group's core research strengths align well with research theme 4 "placing the 'community' in community energy planning"; also where that theme intersects with themes 1 "data-driven decisions" and 5 "measuring success". We could answer questions like: "What is the relative importance of environmental projection versus fiscal prudence as predictors of support for transitioning to lower carbon technology X or Y?". We study how communities view technologies and have historically focused on new facilities like wind turbines (coarp.uwo.ca) and energy-from-waste/waste-to-energy facilities (rewarp.uwo.ca). However the approaches we use can be adapted to community energy planning more broadly. We do this from three interrelated perspectives:

1. Planning (facility siting in particular),
2. The social construction of risk (threat of harm), and
3. how facilities/technologies fit within the everyday lives of residents who are expected to engage with these technologies (meanings in "place").

Our research has engaged with concepts like procedural justice (e.g. community engagement), distributive justice (e.g., benefits distribution), psychosocial health, community conflict, community stigma and community pride. These ideas are rooted in the basic idea that place matters. The historical, spatial, temporal context in which a technology is "placed" is connected to how well-received that technology is. Methodologically we prefer to engage directly with stakeholders including "average residents" through face-to-face interviews and questionnaire surveys. This is more than just polling the populace rather; we deploy these methods to test hypotheses comparatively across multiple case communities. What we learn from comparative work can help identify aspects of current and proposed practices that are experienced similarly and differently from one city to the next. Those findings can be used to generate both "universal" as well as more localized indicators of "success".

[Kirby Calvert, University of Guelph](#)

My group's research strengths lie in two core areas. First, the role of geographic information systems and spatial analysis in energy planning at local and regional scales – specifically, area-based renewable energy resource assessments, spatial decision-support, and map-based public consultation efforts around project siting and planning. Second, governance innovations that can facilitate the transition to low-carbon energy systems, specifically integrated land-use planning and energy planning, and the role of community enterprises that work toward user-centric and community-centric solutions. I intend to lead research projects that will connect to Theme 1 (especially the GIS component), Theme 3 (especially the land-use planning component), and Theme 2 and 4 (especially as it pertains to social housing).

Selected ongoing relevant research projects include:

- **Placing the 'community' in community energy planning.** With support from the City of Guelph, I am undertaking an extensive literature review, documentary analysis, and semi-structured interviews that will share best practices as the City facilitates the update of its community

energy plan. The work involves research along three lines: community engagement and target setting processes, the role of municipal government, and enabling provincial policies and programs. A report will be shared publically in a couple of months.

- **A review of regulatory constraints on renewable energy resource development in Nova Scotia and New Brunswick.** With support from WWF, I am building the regulatory data required to conduct integrated renewable energy maps at local scales in Atlantic Canada. The methodology will be scale and context independent, so that the techniques can be applied in any geography. The report will be released publically in a couple months.

[Mark Jaccard, Simon Fraser University](#)

My group's strength is in energy-economy policy models (in this case at the municipal scale) that help key stakeholder decision makers (local governments, utilities, transportation authorities, developers, higher levels of government) assess the likely aggregate effects on energy use and emissions of their actions and policies. We just finished a major project in this direction - focused on the City of Vancouver but with universal application to other local governments in Canada and beyond.

How does this type of research align with the research themes of our project?

- (1) It demonstrates advances in CEP tools and thus helps specify key data needs.
- (2) It directly addresses institutional (and behavioral) barriers to CEP.
- (3) It involves stakeholder engagement.
- (4) The results are presented in terms of several key performance indicators.

This work can be integrated with the work of other members of the partnership. For example, "how do you estimate what effect your actions and policies are likely to have in future (or had in the past) on energy use and emissions in your community?" Another example might be how we can redesign our modeling tools so that they can be better used in community engagement exercises.

[Ian McVey, Ontario Climate Consortium \(OCC\) Secretariat & Toronto and Region Conservation Authority \(TRCA\)](#)

Research strengths lie in policy and institutional analysis linking provincial land use and municipal policy to pro-climate decision-making by local and regional authorities. Ian is also actively researching effective collective action frameworks to drive local and regional climate mitigation planning and implementation, including approaches to stakeholder and community engagement. Current research projects include:

- ***"On the Path to Net Zero: Integrating Land Use and Energy Planning in Ontario Municipalities"***, which consists of five case study analyses of "net-zero" developments in municipalities across Ontario to understand whether and how innovations in municipal policy and governance influenced or enabled land developers to integrate advanced energy approaches, such as micro-grids and district thermal networks, into their projects. Project outcomes will be communicated to the municipal sector to increase understanding of how existing and proposed provincial legislation in Ontario can be used by municipalities to advance low carbon and net zero energy objectives.

- ***“Reviewing the effectiveness of Investments in Renewable Energy for Social and Affordable Housing”***, which is a detailed socio-economic and technical program evaluation of an Ontario provincial government program which invested upwards of \$70m in Ontario’s municipally administered social housing sector. Research involves in-depth interviews with municipal social housing service managers, as well as housing providers, to understand preferred investment strategies for energy retrofits and renewable energy technologies. Emerging out of this research is proposed future work to build clear guidance for municipal social housing portfolio managers on how to integrate low carbon energy planning into existing capital asset management, and how to leverage innovative financing tools such as energy performance contracting (EPC) to scale up investment.
- ***“Review of Community and Stakeholder Engagement Processes in Ontario municipal community energy plans”***, which consists of a desktop review of community energy plans and interviews with municipal staff to understand how community and key stakeholder engagement was utilized in developing and implementing plans.

[Mark Winfield, Faculty of Environmental Studies](#)

The current work of the Energy Research Group within the Sustainable Energy Initiative is focused on the impact of disruptive technologies within the energy sector. We have recently completed a research project on smart grids, and in addition to our work on Community Energy Planning through CEKAP, are currently engaged in a project looking at policy frameworks related to energy storage technologies in Canada, the United States and European Union.

Our work has highlighted the potential impact of ‘behind the meter’ developments around the integration of distributed energy generation and energy storage through smart grids on traditional utility business models. The role of “aggregators” of these types of developments into grid scale resources is emerging as a major focus of this work. Local distribution companies in Ontario, who are likely to be central actors in community energy initiatives, have recently expressed strong interest in playing this sort of role with respect to distributed energy resources as “Fully Integrated Network Orchestrators (FINO).”

Within CEKAP we are charged with examining provincial level regulatory and policy frameworks affecting community energy planning, with particular focus on Ontario, Nova Scotia and British Columbia. In Canada CEP operates at the juncture to two provincial major regulatory and policy frameworks, the first related to land-use planning, and the second related to energy. With respect energy to the roles that different actors in energy systems (gas and electricity) are permitted to play under existing regulatory regimes has large implications for their ability to participate in CEP initiatives. Similarly, the rules around the types of activities that can be supported through gas and electricity rate bases, or undertaken by utilities or their non-regulated subsidiaries outside of the utility regulatory framework will have significant impacts on the viability of CEP.

Our future work within CEKAP will identify specific barriers to CEP initiatives within the existing land use and energy regulatory and policy regimes, and way in which these barriers can be addressed.