

WORKING PAPER

Enabling community energy planning? Polycentricity, governance frameworks, and community energy planning in Canada

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1. INTRODUCTION

Community energy planning, alternatively referred to as local or municipal energy planning, represents “a process to develop strategic vision documents that outline the energy goals of a local context” and is a growing trend internationally and in Canada (Wyse and Hoicka, 2019, p. 1). As a common component or extension of local climate change mitigation and adaptation planning, Community Energy Plans (CEPs) have gained importance as local governments move to address the impacts of climate change and reduce greenhouse gas (GHG) emissions. CEPs offer a structure to integrate considerations around urban form, transportation, energy sources, buildings, and climate change mitigation and adaptation into coherent and integrated community-level strategies. As such CEPs offer substantial potential to advance community and energy sustainability (Jaccard, Failing and Berry 1997).

CEPs involve complex interactions between local and senior levels of government, publicly and privately-owned utilities, developers, building owners and operators, transportation service providers, community organizations and individual residents. They may engage with federal and provincial policy frameworks around climate change, energy and land-use in varying ways. These policy frameworks have themselves traditionally been relatively disconnected, particularly around the linkages between energy and land-use planning and urban form.

As a result, the development and implementation of CEPs offers potentially important case studies in the operation of what are *de facto* multi-level governance models in the areas encompassed by CEPs. Research suggests that the divided and territorialised energy systems that operate across different levels of government in Canada can impede CEPs (Tozer, 2012; CEA, QUEST and SP, 2016). Focusing on the cases of the Canadian provinces of Ontario, British Columbia and Nova Scotia, this paper assesses the extent to which federal and provincial-level institutional, legislative and regulatory structures enable or function as barriers to CEP development and implementation by local governments. Key gaps and misalignments between

the federal, provincial and local levels are identified, and the broader implications of Canada's CEP experience for multilevel, or polycentric, governance models are examined.

1.1 CEP as Multilevel Governance

Multilevel governance, traditionally seen as “a system of continuous negotiation among nested governments at several territorial tiers—supranational, national, regional and local” (Marks, 1993, 392), has been characterized as having two distinct types. The first is a more hierarchical view of multilevel governance that focuses on the ways in which authority is shared between different levels of government. The second type is seen as more polycentric—a type of multilevel governance emphasizing the “multiple overlapping and interconnected horizontal spheres of authority” (Bulkeley and Betsill, 2005, p. 48). Ostrom, Tiebout and Robert (1961) introduced the concept of polycentricity in their effort to understand whether the delivery of services by public and private agencies to local communities represented a chaotic disarray, as was the common characterization or, as they hypothesized, a more productive system. They argued that polycentric systems involve “many centers of decision-making which are formally independent of each other”, yet function “in a coherent manner with consistent and predictable patterns of interacting behaviour (Ostrom et al., 1961, p. 831).

Polycentric perspectives are increasingly seen as essential to the study of local governance (Hooghe and Marks, 2003), particularly in the context of climate change (Betsill and Bulkeley, 2005). Bulkeley and Betsill (2005), for instance, stress the importance of stepping beyond the local as a frame of reference when analyzing urban sustainability and engaging with the processes shaping local capacity and political will for sustainability initiatives. They argue that urban governance in the context of climate change involves relations between different levels of government as well as “new network spheres of authority which challenge traditional distinctions between local, national and global environmental politics” (p. 42). Ostrom (2012) argues that climate change mitigation requires an improved understanding of the strength of polycentric systems, as the global level is too often seen to be the only one capable of addressing the problem of climate change. Ostrom acknowledges the eventual need for international cooperation on climate change, but argues that building a polycentric system acts to spur national and international regimes to take action.

While there is a growing interest in exploring climate change mitigation strategies through polycentric frameworks, limited attention has been given to community energy planning in that context. Pitt (2010) investigated plans and policies adopted by 17 municipalities in the United States to reduce energy use and GHG emissions. The study found that more polycentric types of multilevel governance structures and knowledge, which include sharing among governmental and non-governmental actors, were important “keys to success” in climate change mitigation planning. Among the municipalities studied, the most successful engaged municipal

staff and elected officials with a variety of different actors, including private businesses, other regional bodies, community members and groups, professional organizations and universities. Bauwens (2017), while not looking specifically at energy planning, considered community-based energy initiatives through a polycentric framework. Bauwens argues that these initiatives are inspired by a self-organization principle, which is central to the concept of polycentric systems. Ostrom's polycentric approach is therefore seen to hold great promise for the analysis of present and future energy systems. Community-based initiatives, as parts of larger polycentric systems, may help to overcome barriers related to public trust and sustainable energy technology diffusion (Bauwens, 2017). Furthermore, in contrast with those who argue common pool resource problems, such as energy, require a high degree of centralization, Ostrom's work suggests that the management of such resources is possible at the local level (Roelich and Knoeri, 2015).

1.2 Research Approach

Provincial governments in Canada hold strong jurisdictional and operational positions around energy services delivery, particularly at the local level. Provinces have exclusive jurisdiction over electricity-related matters and exercise regulatory oversight of natural gas and other fuel distribution systems (Doern and Gattinger, 2003). Except on federal lands, they also have jurisdiction over public and private land-use planning.

This paper focuses on the CEP experiences within three Canadian provinces: British Columbia; Ontario; and Nova Scotia, studied through the Community Energy Knowledge-Action Partnership (CEKAP) project. Provincial case studies are developed through the review of primary provincial and local legislation, policies and plans, and secondary literatures. Interviews were conducted with current and past officials and other actors at the provincial and local levels, including utilities, non-governmental and community organizations, and planning practitioners. The research also draws on research and workshops conducted as part of the broader CEKAP project.

Each province is examined in terms of the following considerations:

- Has the provincial government adopted policies directly related to CEP, such as requirements or incentives for comprehensive municipal energy or climate change plans?
- Do provincial energy or climate change policies make explicit provisions for CEP activities and related initiatives, such as the development of district energy systems, or distributed energy resources (DERs)?¹ Are these activities incorporated into provincial energy or electricity policies and strategies?

¹ DERs involve the integration of a range of technologies, including solar photovoltaic, wind power, cogeneration, renewable natural gas, energy storage, and electric vehicles, into stable and reliable energy resources at a local level (ETNO, 2019).

- Are there specific energy or climate change-related mandates or references in provincial land-use planning policies that are supportive of or enable CEP development? Do provincial planning policies present potential barriers CEP initiatives?
- Has the federal government played any significant role in CEP development within the province?²

More broadly, the assessments consider the extent to which CEP experiences reflect conventional multilevel governance model in which authority is shared between different levels of government, or more accurately delegated from the province to local authorities, versus more truly polycentric approaches emphasizing the “multiple overlapping and interconnected horizontal spheres of authority” (Bulkeley and Betsill, 2005, p. 48).

2. THE CASE STUDIES

2.1 British Columbia

British Columbia (BC) was the first province to develop a framework for local energy and climate change planning. These directions were established in the late 2000s under the then administration of Liberal Premier Gordon Campbell, alongside the introduction of the province’s carbon tax.

2.1.1: CEP Policies

The 2008 *Local Government (Green Communities) Statutes Amendment Act* (Bill 27) established BC’s core legislative framework for CEPs by amending two key pieces of legislation: *The Community Charter*, and the *Local Government Act*. *The Community Charter* establishes the legal framework for municipal powers, while the *Local Government Act* establishes the structure for regional districts, as well as municipal planning and land use authorities.

Bill 27 required local governments to include targets, policies and actions associated with the reduction of GHG emissions in their Official Community Plans and Regional Growth Strategies. It also amended the land use planning provisions of the *Local Government Act* specifically to enable their use for GHG reductions and energy conservation. In addition, the legislation granted local governments the ability to embed energy conservation and GHG reduction objectives in development permit areas, and to exempt developers from development cost charges where subdivisions are designed to reduce GHG emissions (s.559).

The provisions of Bill 27 were intended to enable the signatories of the BC Climate Action Charter (BCCAC) to achieve their Charter commitments. Established in 2007, the BCCAC is a

² The federal Gas Tax Fund (GTF) which provides funding support for local infrastructure projects and initiatives, including community energy systems (Infrastructure Canada n.d.) may be particularly significant in this regard.

voluntary agreement between local governments, the Union of BC Municipalities (UBCM) and the BC government. Its aims to reduce GHG emissions, remove policy barriers to climate action, and foster intergovernmental cooperation (Climate Action Toolkit, 2011). The Charter commits signatories to achieving carbon-neutral government operations by 2012, measuring and reporting on their community GHG emission profiles, and adopting smart growth principles (BC, n.d.). Ninety-six percent of municipalities are signatories to the Charter (Climate Action Toolkit, 2011). Strong financial incentives are provided for Charter participation, including eligibility to receive a grant equal to 100 percent of the carbon tax paid directly in a region via the Climate Action Revenue Incentive Program (CARIP) (BC, 2018a). The funds can support a wide range of municipal actions, including community energy projects and initiatives.

The BCCAC is supported through the Community Energy Emissions Inventory (CEEI), also established in 2007. The CEEI provides local governments with energy use and emissions data. The initiative is overseen by a multi-agency committee headed by the Climate Change Secretariat, Ministry of the Environment. Data is used to create reports in four sectors (buildings, on-road transportation (lower mainland), solid waste, and land-use changes from deforestation) and seven supporting indicators (housing type, residential density, commute by mode, greenspace, floor area, walkscore and proximity to transit) (Community Energy & Emissions Inventory, n.d.).

Further support for CEP activities has been provided through the creation of the Green Communities Committee (GCC), from which came the Climate Action Toolkit website. This resource hub provides guidelines, news, and resources, including the Community-scale Energy and Emissions Modelling tool. The modelling tool allows communities to assess the impact of future land-use changes by compiling existing modelling tools used by other communities and providing associated case studies (Climate Action Toolkit, 2011).

2.1.2: CEP and Energy Policy

BC Hydro, a provincially-owned utility, serves over 95 percent of all end-use electricity customers in British Columbia. The private utility FortisBC serves the remaining customers, located in the south-central region of the province.

The primary electricity planning framework for BC flows from BC Hydro's five-year Integrated Resource Plans (IRP). The most recent IRP dates from 2013 (BC Hydro, 2013) and makes only very limited references to community-based or local energy initiatives. A number of CEP relevant initiatives have emerged in the meantime. The most significant has been the *BC Hydro Sustainable Communities Program* (BCHSCP), which offers municipalities funding and resources to develop community energy and emissions plans and to hire community energy managers for their implementation.

The province's energy policy framework includes other provisions potentially relevant to CEP activities. The BC Energy Step Code, for example, permits municipalities to establish more

stringent building energy efficiency standards than the requirements of the BC Building Code. While initially voluntary, in 2017, local governments were given the option to require that builders meet one or more of the steps in the code (Weir, 2018).

BC anticipates a surplus of “clean” electricity from its large hydropower projects, particularly with the 2017 decision to proceed with the 900MW Site C dam project. This has led to a substantial pull-back in investments in energy efficiency, and the curtailment of programs supporting distributed and renewable energy (RE) resource development (BC Chamber of Commerce, 2016; BC Hydro, 2017; Gaede, Haley, Love and Winfield, 2019). BC Hydro’s Micro-Standing Offer Program for small-scale RE projects was suspended in 2017. A PST exemption provided for RE technologies continues to exist, as does a limited net metering program to encourage behind the meter (BTM) generation.

The province’s 2018 CleanBC plan commits to developing a new BC Hydro IRP within a wider review of BC Hydro’s role and approach. Specific references are given to provisions for “adapting to growth in distributed and district energy and new digital technology.” (BC, 2018, p. 61-62). BC Hydro states that it will file a new IRP with the BC Utilities Commission in 2021 (BC Hydro, 2020).

More broadly, the CleanBC Plan (2018) emphasizes building energy efficiency, with all new buildings mandated to be 80 percent more energy efficient—“net-zero ready”—by 2032. Existing buildings, particularly social housing, are to be retrofitted. 10 percent of new vehicles sold in 2025 are required to be zero-emission passenger vehicles (ZEVs), rising to 30 percent in 2030 and 100 percent in 2040. BC will subsidize new ZEVs and expand electric charging infrastructure. In the short term, low-carbon fuel standards will be strengthened and biofuel production will increase (Lee, 2018).

2.1.3: CEP and Land-Use Policy

In BC, the *Local Government Act* outlines the core planning authority of municipalities, guides decision-making, and is a key piece of legislation impacting CEP development. The Act indirectly supports CEPs by providing local governments the option to utilize density bonus zoning bylaws (Section 904), allowing for density in excess of that allowed in a zoning bylaw. This comes in the form of increased floor space ratio, additional units, or more buildings per parcel of land, in exchange for the provision of affordable housing or amenities, including parks, bike paths, or public squares. The same tool could be used if the amenity provided was a renewable district energy system, or more likely, a green building (Bell, Wilson & Zeeg, 2010).

Community Amenity Contributions (CAC) are utilized by local governments and developers to address the increased demand for community amenities due to rezoning approvals. Contributions can take the form of community amenities (e.g. park space, child care facilities, and libraries), cash contributions, affordable housing, or cash contributions towards infrastructure that

cannot be obtained through DCCs, such as recreation facilities or fire halls (BC Ministry of Community, Sport and Cultural Development, 2014). Vancouver’s Electric Vehicle Ecosystem Strategy utilized unallocated cash from CACs, to fund the construction of new EV infrastructure in the city (Vancouver, 2016).

The 2018 Clean BC Plan highlights the “critical” role of local governments in areas such as “developing new clean energy sources, supporting active and cleaner transportation options and helping B.C. transition to zero waste” (BC, 2018 p. 56, 60). The plan emphasizes that urban planning decisions that make communities livable also reduce energy and emission intensity. There are also references transportation demand management (e.g. development focused on along existing transit routes), and strengthening transportation network infrastructure (e.g. increased options for cycling and walking).

The CleanBC Communities Fund assists local governments and Indigenous communities in developing local energy efficiency and clean energy projects. The \$63 million federal-provincial fund aims to “encourage investments in small-scale, community-owned energy generation from sources such as biomass, biogas, geothermal heat, hydro, solar, ocean or wind power to offset community energy use” (BC, 2018).

BC TIMELINE APPROXIMATELY HERE

2.1.4. BC Summary

The core CEP legislative framework was established through Bill 27 (2008). The provisions were intended to enable BCCAC signatories to achieve their GHG emission reduction commitments. Municipalities are required to include GHG reduction targets, policies and actions in their Official Community Plans (OCP) and Regional Growth Strategies (RGS). Eighty percent of the population of BC has been identified as being covered by a CEP (CEA, QUEST and SP, 2016).

Community-level climate and energy planning initiatives were aided through an extensive infrastructure of supports and incentives, including the Climate Action Revenue Incentive Program (CARIP) the Community Energy Emissions Inventory (CEEI), and energy and emissions modelling tools. The BC Step Code and a variety of provisions of the *Local Government Act* have been employed in the implementation of CEP and climate planning initiatives. The 2018 CleanBC Plan reinforced the roles of local governments in achieving provincial climate change targets, particularly around land-use, urban design and transportation.

At the same time, BC has committed to a major expansion of its hydro-electric generating capacity through the approval of the Site C dam project. The project is seen as being likely to result in a surplus of electricity, which may erode support for energy efficiency and the types of distributed and community-based energy initiatives associated with CEP activities.

BC's overall approach reflects a strong emphasis on multilevel governance, delegating substantial authority and roles to local governments. At the same time, BC's model cannot be said to be fully polycentric, as there are substantial top-down mandates from the province to local governments around climate change planning.

2.2 Ontario

Like BC, Ontario established a relatively substantial suite of climate change policies from the mid-2000s onwards, culminating in the adoption of a comprehensive Climate Change Action Plan in 2016, and implementation of a cap and trade system for GHG emissions in 2017 (ECO, 2019). While the 2016 plan was indirectly supportive of CEP activities, unlike BC, the province never established an integrated policy framework for local energy or climate change planning. Rather, activities were left in the hands of individual municipalities with limited direct support from the province or its agencies.

The landscape has been further completed by the election of a Progressive Conservative government led by Premier Doug Ford in 2018. The Ford government moved quickly to dismantle the province's existing climate and energy conservation policy frameworks (ECO, 2019). The province released a Made-in-Ontario Environment Plan in December 2018 (Ontario, 2018). The plan recognized the climate change problem and included a number of references to potentially CEP supportive developments, including DERs, energy storage, smart grids, and "community-based energy systems."

2.2.1. CEP Policies

Prior to the 2018 provincial election, a number of programs were established to support energy and climate change planning at the local level. The Ontario Municipal Energy Plan program (MEP) provided funding to communities to assist with energy plan development, increase local understanding of energy use, and help identify energy efficiency and clean energy opportunities (Chandhoke, 2016). However, the program was limited to energy planning for municipalities' own operations, as opposed to wider, integrative community plans.

The Independent Electricity System Operator's (IESO) \$10 million Indigenous Community Energy Planning (ICEP) program directly funds the development of CEPs in First Nations communities. Under the program, current energy needs are assessed and options for conservation and community-led RE projects and initiatives are explored. Approximately 100 First Nations and Métis communities are developing and/or implementing CEPs under the program (Ontario, 2017)

The provincial government released a five-year Climate Change Action Plan (CCAP) in 2016 under the auspices of the *Climate Change Mitigation and Low-Carbon Economy Act*. The plan budgeted significant funding for projects to reduce GHG emissions proposed by

municipalities. The CCAP referenced the planning and development of low-carbon communities through various actions, including:

- Strengthening climate change policies in the municipal land use planning process, e.g., require electric vehicle charging in surface lots and setting green development standards;
- Supporting municipal and other stakeholder climate action e.g., supporting community energy planning, mapping and platforms (Ontario, 2016).

Under the CCAP, a Municipal GHG Challenge Fund was to be funded by the province's cap and trade program. Eligible municipalities could receive up to 100 percent of project costs—up to \$2 million per project—for projects leading to emission reductions. To obtain funding, the municipality had to complete a CEP meeting eligibility criteria. Municipalities developing MEPs could utilize that work path towards eligibility. The program was open to single-, lower-, and upper-tier municipalities (Ontario, 2017a). The program was terminated along with the overall CCAP in 2018.

2.2.2: CEP and Energy Policy

Ontario's electricity and energy policies include no explicit provisions or mandates for CEP initiatives. At best, energy policies have from 2003 onwards included, from time to time, electricity and natural gas conservation, combined heat and power, RE, energy storage resource development, and smart grid development that are potentially supportive of CEP activities. Many of these policies, initiated in the early 2000s, were subsequently terminated under the Wynne and Ford governments.

The province's electricity system planning processes have traditionally been focused on large, centralized generating resources, principally nuclear, legacy hydro-electric assets and coal and natural-gas-fired facilities. The 2009 *Green Economy and Green Energy Act* (a.k.a. *The Green Energy Act*) and earlier initiatives had facilitated the introduction of substantial new RE (principally wind) resources into the system, although these were largely commercial, as opposed to community or municipally-led. Standard offer programs for combined heat and power projects were also established (MacWhirter and Winfield, 2019).

A substantial series of initiatives related to electricity and natural gas conservation was also launched in the post-2003 period. These programs included significant roles for municipally-owned local (electricity) distribution companies (LDCs) in the delivery of electricity conservation programming (ECO, 2019). The LDCs provide electricity distribution services to residential, commercial and small and medium-sized industrial consumers in most municipalities.

The province's Independent Electricity System Operator (IESO) launched a series of regional planning exercises in the early 2010s. These initiatives largely responded to a backlash against the exclusion of local governments from the approval process for new RE projects under the *Green Energy Act*. The planning processes were focussed on transmission grid and electricity needs at regional levels (IESO 2019) They made no provision for CEP initiatives or consideration of grid configuration impacts, operations or energy needs (Winfield, 2016).

Some larger LDCs have shown interest in their potential role in creating, managing or enabling DERs at the local level (EDA, 2017). DERs could play a significant role in CEP initiatives and the LDC's roles in CEP development and implementation. However, the future place of the LDCs in energy system planning and operations is uncertain, particularly in the context of the Ford government's March 2019 termination of their role in energy conservation program delivery (Ontario Ministry of Energy, Northern Development and Mines, 2019). The primary focus of provincial policy under both recent governments has otherwise been the consolidation of LDCs (Mowat Energy, 2016).

The central element of electricity plans, under the Wynne and Ford governments, has been the refurbishment of the Bruce and Darlington nuclear facilities, as well as reducing immediate electricity costs to consumers (MacWhirter and Winfield, 2019). Future procurement of new electricity resources, if needed, is focused on a capacity market system (IESO, 2019a). Such a model is likely to be dominated by the large (~10,000MW) and relatively underutilized fleet of centralized gas-fired generating facilities constructed between 2005-2018, leaving little room for new resources relevant to CEP activities (Gross, 2019). There are also concerns over the potential "stranding" of large, high capital cost, and long-lived centralized generating assets (i.e. refurbished nuclear), with the flattening grid-level electricity demand growth since the mid-2000s and potential for further erosion of grid demand (Rivard, 2019; Carmeron, Carlson and Coons, 2019). Expanded CEP and DER initiatives could be seen as having precisely such impacts, from the perspective of provincial-system actors (Winfield and Gelfant, 2020).

The Ford government's overall approach to electricity and energy policy has been, at best, unhelpful to CEP activities. The *Green Energy Act* was repealed in December 2018, although the feed-in-tariff program under the Act, as well as the CHP standard offer program, had already been effectively terminated by the Wynne government (Winfield and MacWhirter, 2019). The final round of 738 smaller RE projects, which were almost exclusively community, municipality, First Nation or LDC-led, was terminated in July 2018 (CBC, 2018). The province's framework for electricity conservation was dismantled in March 2019 (Ontario Ministry of Energy, Mines and Northern Development, 2019).

The 2018 Made-in-Ontario Environment Plan included references to energy storage, smart grids, "community-based" energy systems and DERs, and committed to a substantial

expansion of natural gas conservation programming. The province has yet to follow-up in these areas.

2.2.3: CEP and Land-Use Policy

Amendments made to the *Municipal Act* in 2017 permit municipalities to pass bylaws respecting the “economic, social and environmental well-being of the municipality, including respecting climate change.” (s.11). Section 147 of the Act (2017) permits municipalities to engage in long-term energy planning, including consideration of energy conservation, climate change, and green energy.

The *Planning Act* establishes the province’s framework for land-use planning by municipal governments. The Act lays out matters of provincial interest, which the minister, municipal councils, local boards, a planning board and the Local Planning Appeals Tribunal (LPAT - formerly the Ontario Municipal Board (OMB)) must have regard to when carrying out their responsibilities under the Act. The Act was amended in 2017 to include climate change mitigation and adaptation (s.2(s)) in the list of provincial interests.

Provincial Policy Statements (PPS) are made under the *Planning Act* and outline the province-wide vision for land use planning. Planning decisions are required to conform with the PPS. The 2014 PPS introduced references to climate change for the first time. The 2014 document included resiliency to the impacts of climate change in its vision for the province’s land-use system. It also required that land-use patterns in settlement areas minimize negative impacts to air quality and climate change and promote energy efficiency (s.1.1.3.2. a)3, s.1.8); that opportunities for the use of RE systems and alternative energy systems be maximized, (s.1.8.1.f)2); and that planning authorities support energy conservation and efficiency, improved air quality, reduced greenhouse gas emissions, and climate change adaptation through appropriate land use and development patterns (s.1.8.1.). The 2014 PPS was therefore supportive of energy and climate planning by municipalities but did not mandate the development of specific plans to deal with these issues.

A Growth Plan was adopted for the Great Golden Horseshoe (GGH) region, encompassing the area, centred around Toronto, from Kitchener-Waterloo in the west to Peterborough in the east, and from Orillia in the north to the Niagara region in the south, in 2006 under the 2005 *Places to Grow Act*. Planning decisions are required to conform with the Growth Plan. The original GGH Growth Plan made no references to climate change and minimal references to energy issues.

The GGH Growth plan was updated in 2017 (MMAH, 2017) to recognize the impacts of climate change and included climate change adaptation and mitigation in its vision for the region. The 2017 plan also made strong connections to the government’s overall climate change strategy and targets. The 2017 Plan specifically mandated upper- and single-tier municipalities to “develop policies in their official plans to identify actions that will reduce greenhouse gas emissions and

address climate change adaptation goals, aligned with other provincial plans and policies for environmental protection (s.4.2.10).”

The 2017 Growth Plan also encouraged, but did not mandate, GGH municipalities to “develop greenhouse gas inventories for transportation, buildings, waste management and municipal operations; and to establish municipal interim and long-term greenhouse gas emission reduction targets that support provincial targets and reflect consideration of the goal of low-carbon communities and monitor and report on progress made towards the achievement of these targets (s.4.2.10.2).” Other provisions of the plan supported energy conservation in existing and planned developments (s.4.2.9.1.b)) as well district energy generation, RE and alternative energy systems and distribution through community, municipal, and regional energy planning processes, and in the development of conservation and demand management plans.

Proposed changes to the Provincial Policy Statement and GGH Growth Plan

In July 2019 the Ford government proposed a number of changes to the PPS in conjunction with June 2019 amendments to the *Planning Act* made through Bill 108, the *More Homes, More Choices Act, 2019*. With respect to CEP, the proposed change to the PPS of most significance is a focussing PPS energy policies to support a broader range of energy types and opportunities for increased energy supply, including the addition of a reference to district energy systems (MMAH, 2019, s.16.1.1).

The Growth Plan for the GGH was revised in May 2019 (MMAH, 2019a). The changes significantly weakened the plan’s provisions related to containing low-density urban development (Novakovic, 2019). With respect to climate change and energy, the revision removed all references to the previous government’s Climate Change Action Plan, strategy and targets, although the other provisions related to energy and climate change were not changed significantly.

Made-in-Ontario Environment Plan

On November 29, 2018, the Made-in-Ontario Environment Plan (Ontario, 2018) was released as a replacement to the 2016 Climate Change Action Plan and cap and trade system. The plan seeks a 30 percent reduction of the province’s GHG emissions relative to 2005 by 2030 — a significant step back from the 37% reduction by 2030 relative to a 1990 baseline committed to by the former Liberal government.

In terms of CEP, the Made-in-Ontario plan refers to a variety of actions that may support or enable local energy planning. These included changing land-use planning rules to take into account climate change considerations, the development of municipal energy and climate change plans, and commitments to take climate change into consideration in government decision-making. There is also a strong emphasis on energy efficiency and conservation. There has been no action to date to actually implement these directions.

ONTARIO TIMELINE APPROXIMATELY HERE

2.2.4. Ontario Summary

Unlike BC, Ontario lacks a provincially mandated integrative planning framework for CEP. In the time leading up to the 2018 provincial election, the province had made significant moves to enable and encourage municipalities to engage in CEP and climate change planning activities as part of its overall climate change strategy. The 2017 amendments to the *Planning and Municipal Acts*, and revision of the GGH Growth Plan in the same year were particularly noteworthy in this regard.

The 2016 Climate Change Action Plan made provision for substantial financial support for municipal energy and climate change planning activities. The growing interest of some of the municipally-owned electricity LCDs in DER development was also a potentially important development. However, these initiatives remained poorly integrated with the province's overall energy and electricity policy and planning framework, such as they existed. CEP and local-level climate change planning activities remained fundamentally locally initiated and led processes with individual municipal staff acting as the key policy entrepreneurs drawing together the elements required for such activities (e.g. data, stakeholders, links to OPs) together. Key elements of the supporting infrastructure around data access and analysis and modelling found in BC were never established in Ontario.

The overall pre-June 2018 Ontario provincial framework could best be described as supportive and encouraging of CEP and climate planning, while the bottom-up character of the resulting activities gave them emergent, *de facto* polycentric characteristics. Even within these limitations, CEP and climate planning initiatives were becoming increasingly common. At least 17 major regional, city, or town level plans are in place (QUEST, 2020), along with the City of Toronto's TransformTO climate mitigation and adaptation strategy (Toronto, 2020). These plans cover nearly two-thirds of the province's population (CEA, QUEST and SP, 2016).

As in BC, there are potential conflicts between CEP initiatives and the overall direction of provincial energy and electricity policy. A combination of flat electricity demand growth, a strong commitment to renewal of large centralized generating assets, particularly the Bruce and Darlington nuclear facilities, and the existence of a large, relatively new and lightly used fleet of gas-fired generating capacity has led to concerns over the potential for these assets to be "stranded" by initiatives that further reduce grid-level demand. Successful CEP initiatives could fall into the latter category, although they have so far not had a large enough impact to prompt a negative response.

The Ford government's July 2018 termination of the previous government's Climate Change Action Plan and cap and trade program removed most of the financial incentives and supports for CEP activities in province. The key enabling legislative and PPS and GGH Growth Plan policy provisions have been left intact, so far. The new government's December 2018 Made in Ontario Environment Plan makes references to community-led DER development and the need to address the impacts of climate change, but there has been little substantive action to follow-up on those directions.

2.3 Nova Scotia

Nova Scotia (NS) represents a unique case study of CEP experiences in the context of multilevel and polycentric governance. NS is the only Canadian province where energy utility ownership is almost entirely in the hands of one private company—Nova Scotia Power Inc. (NSPI) owns 97 percent of generation, 99 percent of transmission, and 95 percent of distribution (MacArthur, 2016). There are also six municipal electric utilities, serving roughly 15,000 people, that primarily purchase power from NSPI (NS UARB, n.d.).

NS has experienced a series of significant energy policy shifts over the last decade as it transitions away from coal, although coal still supplies more than 50 percent of annual electricity generation (Ecology Action Centre, 2019). Unlike the BC and Ontario cases, NS has not mandated or financially incentivized the development CEPs, and there has been relatively limited uptake (Wyse and Hoicka, 2019). However, NS has engaged in policy experimentation with several innovative strategies for advancing local energy initiatives at both the community and household/building scale. The federal government has also played a uniquely strong role in encouraging local energy and climate change planning in the province.

2.3.1 CEP Policies

While NS has not specifically mandated community energy plans, the Federal Gas Tax Fund has enabled the development of Municipal Climate Change Action Plans (MCCAPs), which include energy components. The process was first initiated in 2005 when the federal government put forward a New Deal for Cities and Communities, aiming to help municipalities address the challenge of deteriorating infrastructure while attaching a new sustainability agenda.

The new deal facilitated gas tax transfers for communities that produced an Integrated Community Sustainability Plan (ICSP). Grant et al. (2016) identified 51 ICSPs in NS (representing 100 percent of municipalities), examining key features of plans. According to the study, plans included objectives such as climate change adaptation, water quality protection, protected areas designations, and general greenhouse gas reductions. However, although

“community energy systems”³ and district heating and cooling projects were eligible project categories within the ICSP framework, such strategies had far less traction than more conventional activities such as paving roads (Grant et al., 2016).

The second phase of the fund was implemented in 2011, building on the ICSP framework with the additional requirement that municipalities submit a Municipal Climate Change Action Plan (MCCAP). The requirement was unique to NS. The MCCAP template, which municipalities were required to follow, placed a heavy emphasis on climate change adaptation, likely due to the climate hazards already impacting coastal communities (Vogel et al., 2018). A smaller component of the template includes a mandate to outline energy and emission information, and energy goals and actions (Nova Scotia, 2011). Only two municipalities (Halifax and Bridgewater) that created separate CEPs for their communities.

2.3.2 CEP and Energy Policy

Prior to 2007, 90 percent of NS’s electricity came from fossil fuels—primarily coal. A major policy shift took place in 2007 through the *Environmental Goals and Sustainable Prosperity Act*. The Act set goals ensuring the adoption and implementation of a framework supporting a sustainable energy transition and established specific targets: electricity of 18.5 percent RE by 2013; 25 percent by 2015; 40 percent by 2020. While the act was largely goal-oriented and did not mandate concrete actions, the targets have been influential in shaping the energy policies of subsequent governments. According to Lahey and Doelle (2012), the act has largely “succeeded in improving the performance of the Nova Scotia government in implementation of environmental policy commitments” (p. 3). In addition, the 2007 Wholesale Market Rules Regulations in 2007, allowed municipal utilities to purchase power from any participant in the province’s electricity wholesale market, rather than just NSPI (Nova Scotia, 2007).

In consideration of the 2013 targets, the Department of Energy commissioned a consultation process, resulting in recommendations for a community level feed-in tariff (FIT) for RE. In response, the 2010 Renewable Electricity Plan provided for a Community Feed-In Tariff (COMFIT) to encourage community-based RE projects by guaranteeing a rate per kilowatt-hour for electricity sold to the grid over a period of 20 years. The plan also included an enhanced net metering program to allow independent power producers (individuals, businesses and community/not-for-profit groups) to connect renewable electricity projects under 1,000KW to the distribution grid through a meter that measures electricity flows in two directions (People, Power, Planet Partnership, 2016).

³ The ICSP framework defines a community energy system as “co-generation or combined heat and power projects”

COMFIT was unique in Canada in that the feed-in tariff was specifically aimed at community-owned renewable electricity projects. COMFIT eligible proponents included municipalities, First Nations, co-operatives, universities, community economic development investment funds (CEDIFs) and non-profit groups (Halifax, 2010). Eligible resources included wind, biomass combined heat and power, small-scale in-stream tidal and run-of-the-river hydro (Nova Scotia Department of Energy, 2011).

A major policy shift occurred in 2013 when the province determined that increased domestic RE generation would no longer be necessary to reach its 2020 targets. Instead, NS would import electricity generated by Muskrat Falls, a large hydroelectric project in Newfoundland and Labrador, through the Maritime Link underwater cable (Nova Scotia, 2015).

The COMFIT program was cancelled outright (Abreu, 2015). In addition, net metering capacity was reduced from 1,000KW (1MW) to 100KW. The reduction would exclude major projects from communities and organizations such as Mi'kmaq communities, municipalities, and nonprofit organizations, some of which were already in the planning process when this legislative change was made (Ecology Action Centre, 2015).

With respect to energy efficiency, in 2014, the *Electricity Efficiency and Conservation Restructuring Act* was amended to require demand-side management (DSM) initiatives be provided by a “franchise holder”—Efficiency One, which would have the exclusive right to supply NSPI with reasonably available, cost-effective efficiency and conservation activities for a ten-year term” (Efficiency Nova Scotia, 2017a). Efficiency One is an independent non-profit organization and is the operator of Efficiency Nova Scotia, Canada's first energy efficiency utility (Efficiency Nova Scotia, 2017a; Haley, Gaede, Love and Winfield, 2020).

Efficiency Nova Scotia has recently partnered with the provincial government and municipalities to offer the Property Assessed Clean Energy (PACE) program. Under the program, homeowners can finance energy improvements through payments tied to a local improvement charge. Charges incurred during home energy improvements are included in PACE charges, and these are attached to the property rather than the individual (Efficiency Nova Scotia, 2017b). Funding was provided by the province for the first year, while subsequent years are paid by individual municipalities (Efficiency Nova Scotia, 2017b). Halifax, Lunenburg, Bridgewater and Richmond have since introduced by-laws enabling the mechanism.

In 1998 the provincial government combined all existing legislation relevant to municipalities into one Act called the *Municipal Government Act* (MGA). The Halifax Regional Municipality (HRM) separately falls under the HRM Charter (Nova Scotia, 2017a). In 2018, amendments were made to both the MGA and HRM Charter enabling municipal councils to make bylaws facilitating district energy systems. The changes were made based on needs

emerging for the proposed Cogswell District Energy system, located in Halifax (Halifax, n.d.). The HRM has also completed several smaller district energy projects, including the Alderney 5 district energy system, completed in 2009 and owned by HRM, and the Solar Well Pumping project, completed in 2015 and owned by Nova Scotia Community Colleges (NSCC) (QUEST, 2015).

The most recent provincial energy plan, *Our Electricity Future: Nova Scotia's Electricity Plan 2015-2020* (2015), introduced new measures to encourage independent RE generation. In 2016, the Renewable to Retail program allowed individual homes and businesses to purchase electricity directly from producers. These producers use NSPI's systems to deliver their output but are required to pay tariffs to NSPI (Nova Scotia Power, 2017). The results of the new approach uncertain, but the tariffs have been criticized as a significant barrier to program uptake (Chronicle Herald Business Editor, 2016).

In 2017, the provincial government introduced an amendment to the Renewable Electricity Regulations. These are intended to establish a Solar Program for Community Buildings, a less expensive alternative to COMFIT. Unlike COMFIT, the program only applies to solar projects (Nova Scotia Department of Energy, 2011). The largest allowable solar array is 50kW (Nova Scotia, 2017b). Under COMFIT small-scale projects could be up to 6MW (Abreu, 2013). Finally, while the program includes non-profits, charities, universities, colleges, and Mi'kmaw bands, it excludes community economic development investment funds and co-operatives. For homeowners, the new SolarHomes program, which provides rebates for solar PV systems, began accepting applications in 2019. The program is funded by the federal government and is administered by Efficiency Nova Scotia (Efficiency Nova Scotia, 2019).

2.3.3 CEP and Land-Use Policy

The MGA authorizes municipalities to develop and adopt a municipal planning strategy and land use by-law. (Nova Scotia, 2017c). Prior to the establishment of the COMFIT program, by-laws and land-use plans had been developed without consideration of renewable resources. Post-COMFIT by-laws and plans made specific reference to wind turbines—with no mention of other renewable resources (Calvert et al., 2016). Under these provisions, King's County used setbacks and other tools effectively ban large-scale turbines within the municipality (Delaney, 2012).

2.3.4 Community Energy Plans in Nova Scotia

Two notable examples of efforts at community-level energy plans are “Energize Bridgewater” and the Halifax CEP.

‘Energize Bridgewater’

Bridgewater, a town of just over 8000 residents, developed an ICSP in 2010. The plan outlined Bridgewater’s intentions to create a local energy management plan aiming to reduce energy consumption, introduce RE to municipal facilities while educating municipal staff and visitors, explore the potential for district heating and cooling systems as well as RE generation including solar, wind, geothermal and hydro (Town of Bridgewater, 2010). In 2015, the community secured funding from the Federation of Canadian Municipalities’ Green Municipal Fund (GMF) and the provincial government. From there, the community began a comprehensive engagement process—“Energize Bridgewater,” an 18-month community-wide initiative aiming to achieve a local, efficient, RE economy (Town of Bridgewater, 2019). Following this community engagement, Bridgewater combined energy transition goals with a strong emphasis on energy poverty alleviation. As such, Bridgewater became the recipient of \$5 million from Infrastructure Canada after winning the Smart Cities Challenge (Town of Bridgewater, 2019). Bridgewater represents a unique case within the Canadian context because of the bottom-up approach taken on in a province where, although community-based energy projects have gained ground, CEP development has been limited (Wyse and Hoicka, 2019).

Halifax Community Energy Plan

Halifax was an early adopter of CEP development in 2007. Since then, the Halifax CEP has been characterized by starts and stops, and the plan remains incomplete. The original goals of the 2007 plan were, broadly, to: improve the energy efficiency of buildings; increase transportation choice and efficiency; increase industrial energy efficiency; encourage energy-efficient land use planning; increase efficiency of infrastructure; increase energy security and diversify energy supply; educate and engage residents and businesses; and demonstrate local government leadership (Halifax, 2017).

In 2016, Halifax released an updated report that more specifically outlined potential community initiatives, including: Investigating Property Assessed Clean Energy (PACE) Financing; Researching Neighborhood District Energy Opportunities; Investigating Building Code and Land Use Bylaws for New Developments; and Create an Energy Hub for Residents (Hayter, 2016). Halifax is currently undertaking a further process for the development of the Community Energy & Climate Action Plan, which was expected to be completed in 2019 (Halifax, 2018).

NOVA SCOTIA TIMELINE APPROXIMATELY HERE

2.3.5 Nova Scotia Summary

Nova Scotia, unlike the BC and Ontario, lacks either a mandated and incentivized CEP support framework. While there has been limited CEP uptake, MMCAPs, which include an energy component, have seen considerable growth, reinforced by requirements linked to the federal gas tax transfer program. However, the focus of these plans has been on climate change adaptation rather than mitigation. NS has seen significant policy experimentation encouraging community-based energy initiatives. These initiatives (e.g. COMFIT and enhanced net metering program for projects under 1,000KW) emerged through NS's efforts to diversify the utility ownership structure and transition from coal to RE. With mounting criticism that small-scale community-based energy was too expensive, the province shifted its focus to the Maritime Link with Newfoundland and Labrador, claiming this would be a more affordable way to reach RE targets. As a result, local energy policies have since focused more on energy efficiency and building-scale, rather than community-scale, generation.

3. ANALYSIS AND DISCUSSION

Among the three cases, BC emerges as offering the most comprehensive policy framework around local energy and climate change planning activities, including direct mandates for local climate change targets and planning, supported with strong financial incentives and infrastructure for data access and modelling support. BC is also notable for the consistency of its focus on the roles of local governments in climate change mitigation, maintained through the Liberal Campbell-Clark and Liberal-NDP transitions.

Ontario's approach has been more incremental, and only really began to mature through 2016 CCAP and 2017 amendments to the *Municipal and Planning Acts* and revisions to the GGH Growth Plan. Financial support for local-level energy and climate change planning have largely been withdrawn in the aftermath of the 2018 election, although the key legislative and planning policy provisions remain intact for now.

The Federal government's role has been marginal in Ontario and BC, but central to municipal initiatives in Nova Scotia. Federal gas tax funding has been essential to the development of Municipal Climate Change Action Plans in the province. Nova Scotia's overall approach has been inconsistent, at times encouraging local level energy development through initiatives like the COMFIT program and then pulling back. True community level CEP efforts have only really emerged in Bridgewater and Halifax, and been very much bottom-up efforts.

In all three cases, local energy planning initiatives and activities remained poorly integrated with provincial-level energy policies. Instead, in all three provinces, energy policies have emphasized expanding or renewing large, centralized electricity-generating resources: Site C in BC; nuclear refurbishments in Ontario; and Muskrat Falls and the Maritime Link in Nova

Scotia. These directions emerge as important short and long-term constraints on CEP supportive policies, particularly around energy efficiency, RE and DER development.

The case studies reveal the complexity of locally focused initiatives. The multilevel character of CEP governance is evident in all three provinces. The case studies share an emergent polycentric character in that in all three cases a wide range of local actors have been involved cooperatively in CEP development. This is particularly evident in Ontario and Nova Scotia, where CEP activities have been fundamentally locally driven, and local initiatives have struggled with shifting provincial directions. BC's framework was also built on municipal initiatives, particularly the 2007 BC Climate Action Charter.

At the same time, provincial mandates, and financial and educational support, such as those present in BC and were emerging in Ontario before the 2018 provincial election, seem essential for widespread CEP uptake to occur. Where such frameworks have been absent or unstable, such as Nova Scotia, CEP activity has been limited. In this sense, the engagement of many local actors notwithstanding, CEP activity within the three provinces, so far, fits more within a traditional model of multilevel governance than true polycentricity.

CEPs offer substantial potential to advance community and energy sustainability, while reducing GHGs emissions and strengthening local resiliency in the face of the impacts of climate change. While local leadership is essential to successful CEP development and implementation, the experiences in all three provinces highlight the importance of stable and consistent enabling and supportive policies from senior levels of government in advancing CEP initiatives. These include appropriate enabling legislative and policy frameworks, financial supports and incentives either from provincial or federal sources. Support in terms of data access and modelling capabilities also emerge as crucial elements.

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