



# Advancing Integrated Community Energy Planning in Ontario: A Primer





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\* The views expressed herein do not necessarily reflect the views of the Province of Ontario or the Ontario Power Authority.

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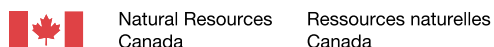
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**SECTION A: PURPOSE OF THIS PRIMER: DEVELOPING COMMUNITY ENERGY PLANS IN ONTARIO**

Across North America, governments are looking for new ways to manage the many challenges related to energy use including long-term reliability and security, costs, emissions, pollutants and other social and environmental impacts. Communities – the places where we live, work and play – are at the centre of these challenges. Communities account for almost 60 percent of Canada’s energy consumption and a business-as-usual scenario indicates that their energy use could increase by 75 percent by 2050 when compared to 2006, according to the Canadian Council of Energy Ministers.<sup>1</sup> Managing energy use is fundamental to ensuring sustainable development and to protect the fundamental well-being of Canadian communities.

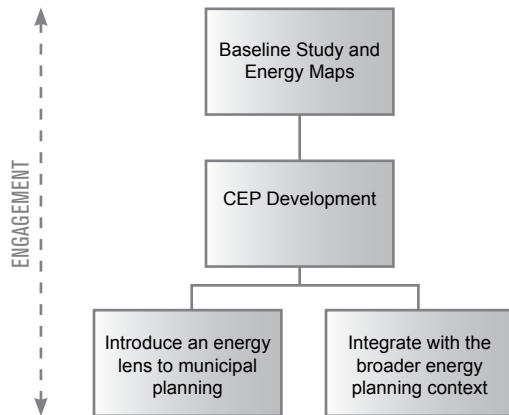
To address these mounting challenges, increasing numbers of municipalities are now developing Community Energy Plans as a way to document local priorities for how energy should be generated, delivered and used in the community now and into the future. Once approved, municipal staff can communicate and sell this vision within the municipal corporation and to external planning bodies. Community energy planning is an important way that municipalities can more formally participate in energy planning in Ontario.

This primer is designed to help municipalities understand how they can work within the current regulatory framework to plan their communities’ energy future. This will require getting the right groups around the table and figuring out how to share information in a timely and efficient manner among stakeholders in order to be effective.

This primer provides a rationale for why municipalities play a key role in integrated energy planning in Ontario, how municipalities can get started planning an integrated energy future and how to engage local partners. It provides an overview of current energy processes in Ontario and identifies opportunities for municipalities to better provide input to and have regard for other electricity and natural gas planning processes. It also looks at opportunities for municipalities to introduce an energy lens to land use and growth planning processes.

This document incorporates and builds upon feedback received from stakeholders as part of a series of phone interviews and a roundtable workshop which was held on April 23, 2013, the main outcomes of which are summarized in Appendix A.

FIG. 1 COMMUNITY ENERGY PLANNING PROCESS



**WHAT IS COMMUNITY ENERGY PLANNING?**

A Community Energy Plan (CEP) is a comprehensive, long-term plan to improve energy efficiency, reduce greenhouse gas emissions and foster local sustainable energy solutions in the community. Community energy plans (CEP) evaluate a community’s existing energy use and greenhouse gas (GHG) emissions in order to:

- Accurately measure community-wide energy consumption and GHG emissions;
- Identify and implement solutions to improve energy efficiency and conservation;
- Help develop community priorities around renewable energy and other energy infrastructure projects; and,
- Integrate energy conservation and sustainability into the local planning process.

<sup>1</sup> Council of Energy Ministers. (2009). *Integrated Community Energy Solutions: A Roadmap for Action*. Retrieved from: <http://oe.nrcan.gc.ca/publications/cem-cme/9529>

### *BENEFITS OF MUNICIPALLY LED COMMUNITY ENERGY PLANNING*

CEPs are guided by an integrated energy approach, which takes municipal, utility, transportation and other public and private infrastructure investments in a community and finds opportunities to:<sup>2</sup>

- **Generate economic development opportunities and investment** - many municipalities are working hard to promote local economic development. Energy security and reliability are important to quality of life for residents and the bottom line for businesses. Local generation and energy retrofits can reduce energy costs and increase energy security and reliability for residents and businesses while creating high quality local jobs and keeping energy spending within the community.
- **Secure energy reliability, resiliency and diversity** - through local planning and policy development processes municipalities are responsible for identifying local priorities and ensuring resources are available to support their achievement. Understanding local context and incorporating local priorities is vital to ensuring energy plans and projects are responsive to and supportive of community needs. Integrating energy and land-use planning, working with key stakeholders on infrastructure planning and identifying local energy resource opportunities can improve energy security, increase diversity of energy sources and result in improved reliability of energy systems and resiliency to extreme weather and geopolitical events.
- **Reduce environmental impacts, including greenhouse gas emissions** - an integrated, community-based approach can improve energy efficiency and identify local energy opportunities that result in reduced greenhouse gas emissions, improvements in air quality, and healthier communities. Where energy infrastructure is located can impact the quality and character of neighbourhoods and the health of the natural environment. Municipalities can identify appropriate land uses and protected areas through their planning processes.
- **Use energy more efficiently while providing better energy services** - how communities are planned will impact where and how much energy cities use and what energy supply infrastructure is needed to meet those needs more than any other planning process. Efficient communities developed through integrated land use and energy planning not only use less energy, have lower energy costs and generate less emissions but can also benefit from higher quality energy services delivered through integrated energy systems, shorter commutes and more vibrant, compact, mixed-use communities.
- **Set a local vision for energy** - through local planning and policy development processes municipalities are responsible for identifying local priorities and ensuring resources are available to support their achievement. Understanding local context and incorporating local priorities are vital to ensuring energy plans and projects are responsive to and supportive of community needs and establish a local vision for the future.

### *WHY NOW? COMMUNITY ENERGY PLANNING: AVAILABLE OPPORTUNITIES AND RESOURCES*

**Municipalities have a receptive audience** - In the summer of 2013 the Ministry of Energy initiated two engagement processes aimed at identifying ways to strengthen municipal input through better regional electricity planning, large energy infrastructure siting and renewable energy procurement processes. The recommendations from the regional electricity planning and siting engagement sessions are included in Appendix B.

<sup>2</sup> Modified from QUEST Strategic Plan

**Resources are available to support Community Energy Planning** - A number of resources are available to municipalities seeking funding to undertake a CEP.

*The Ministry of Energy* has recently announced a program to fund Municipal Energy Plan (also known as Community Energy Plan) development for small and medium-sized, single and lower tier municipalities (population under 150,000)<sup>3</sup>. Funding will be provided to a municipality for up to a 2-year term to complete a Municipal Energy Plan and will cover up to 50% of eligible costs up to a maximum of \$90,000.

*The FCM's Green Municipal Fund* offers to cover half of a municipality's costs of developing a Local Action Plan for energy and emissions, up to a maximum of \$175,000.<sup>4</sup>

*Canada's Gas Tax Fund* can be used by municipalities towards their CEPs through the Capacity Building category of the Fund. This eligible category allows municipalities to invest in long-term planning projects that advance asset management and/or sustainability. Municipalities can also use the Fund to implement municipally owned energy projects, such as retrofits, or generation (solar, DE, etc.). The Fund has now been made permanent, and further details on eligible projects and categories are expected in early 2014.

**Community Energy Planning is gaining momentum** - the Ministry's MEP funding program and public messaging from the Ministry and its agencies promoting municipal integration signal a move to incorporate bottom up decision making and local priorities into provincial energy planning. Municipalities are building capacity, meeting requirements in the recently passed regulation requiring mandatory reporting on annual energy use and greenhouse gas (GHG) emissions by public agencies<sup>5</sup>.

## COMMUNITY ENERGY PLANNING IN ONTARIO

Community Energy Plans are gaining momentum in Ontario as a way for municipalities to build prosperous and livable communities. The Cities of Guelph and East Gwillimbury have completed CEPs which they are using to promote and implement integrated community energy systems (including conservation, efficiency, district energy and renewables). The City of London and the Town of Halton Hills are currently developing Community Energy Plans, both of which are expected to be released in winter 2013/2014. The City of Burlington has also prepared a draft Community Energy Plan which is expected to be reviewed by Council in early 2014. See Appendix C for links to these and other Community Energy Plans in Ontario.

These communities and others across Ontario are identifying that municipalities can play a central role in developing local solutions to generating electricity, producing heat, providing transportation services and optimizing fuel sources to meet needs. An integrated approach to land use, energy and transportation planning can create a more complete understanding of community energy needs and lead to more efficient and effective energy systems. Community Energy Plans provide opportunities to integrate local priorities into energy solutions and create a sustainable energy future from the ground up.

<sup>3</sup> Ontario Ministry of Energy. "Ontario Supporting Local Energy Planning in Municipalities and Aboriginal Communities." Ontario News Release. Queen's Printer for Ontario, 21 August, 2013. Web. 25, August, 2013. <http://news.ontario.ca/mei/en/2013/08/ontario-supporting-local-energy-planning-in-municipalities-and-aboriginal-communities.html>.

Larger municipality's applications will also be considered although they are not the target recipients.

Ontario Ministry of Energy. "Frequently Asked Questions – Municipal Energy Plan." Government of Ontario. Queen's Printer for Ontario, 21, Aug. 2013. Web. 25, August, 2013. Link: <http://www.energy.gov.on.ca/en/municipal-energy/faq/>

<sup>4</sup> "Plans." Green Municipal Fund. Federation of Canadian Municipalities, 1 May 2013. Web. 12, June, 2013. Link: <http://www.fcm.ca/home/programs/green-municipal-fund/what-we-fund/plans.htm>

<sup>5</sup> Ontario. Ministry of Energy. Conservation for Public Agencies. [Toronto, ON] Ministry of Energy, 2013. Ministry of Energy. Web. 12, June, 2013. Link: <http://www.energy.gov.on.ca/en/green-energy-act/conservation-for-public-agencies/>

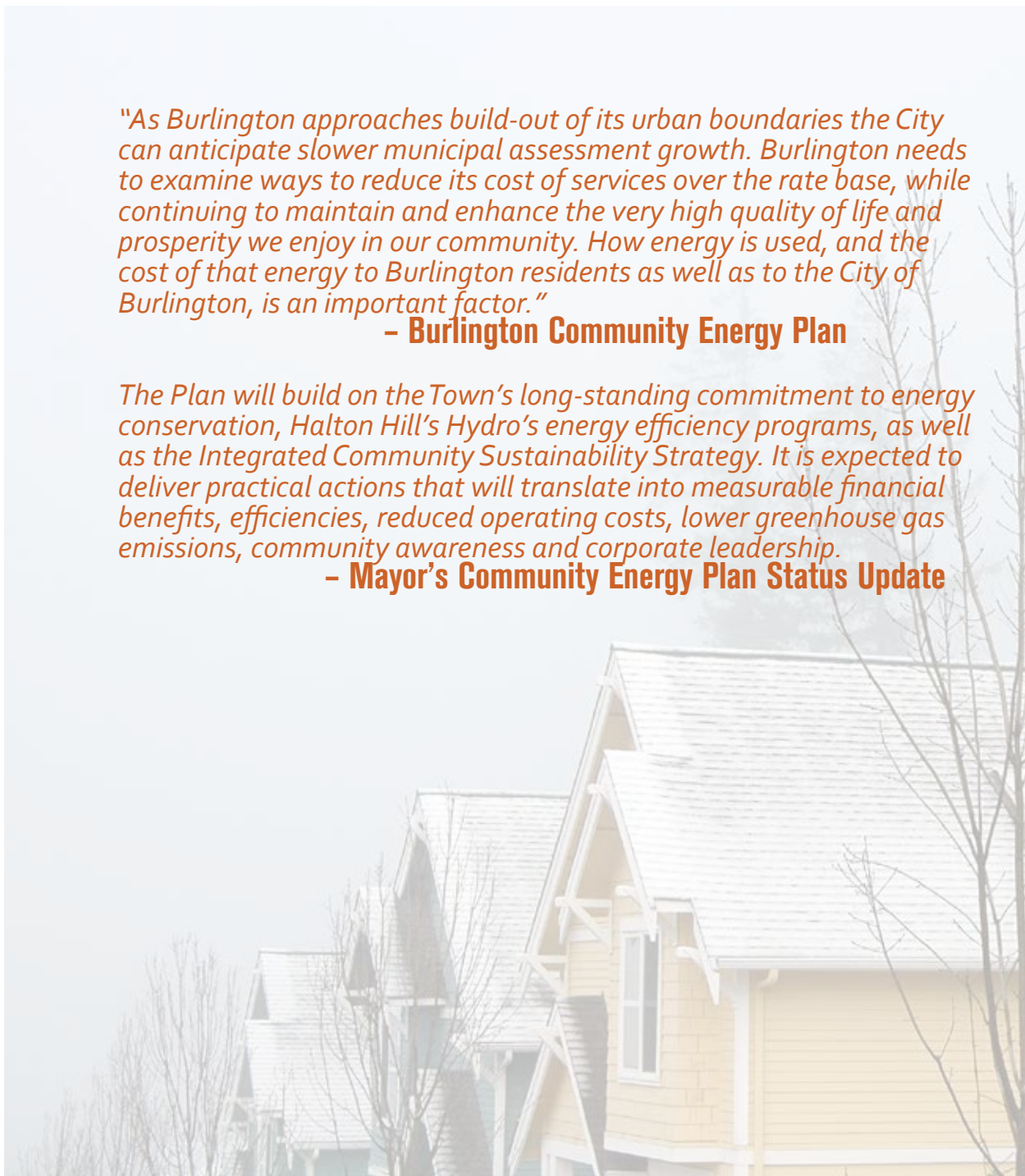


*"As Burlington approaches build-out of its urban boundaries the City can anticipate slower municipal assessment growth. Burlington needs to examine ways to reduce its cost of services over the rate base, while continuing to maintain and enhance the very high quality of life and prosperity we enjoy in our community. How energy is used, and the cost of that energy to Burlington residents as well as to the City of Burlington, is an important factor."*

**- Burlington Community Energy Plan**

*The Plan will build on the Town's long-standing commitment to energy conservation, Halton Hill's Hydro's energy efficiency programs, as well as the Integrated Community Sustainability Strategy. It is expected to deliver practical actions that will translate into measurable financial benefits, efficiencies, reduced operating costs, lower greenhouse gas emissions, community awareness and corporate leadership.*

**- Mayor's Community Energy Plan Status Update**



## SECTION B: WHAT TO CONSIDER WHEN DEVELOPING A CEP

There are a number of steps and frameworks that communities have used to inform Community Energy Plan development. The Partners for Climate Protection (PCP) program<sup>6</sup>, The Natural Step<sup>7</sup> and Natural Resources Canada's Community Energy Planning Guide for Canadian municipalities<sup>8</sup> are some examples.

The Ministry of Energy has also recently announced a funding program to support the development of Community Energy Plans which takes a similar multi-step approach, condensing the process into three main phases. This Primer has adopted these phases as a framework for understanding and guiding Community Energy Plan development:

1. Stakeholder engagement
2. Baseline energy study and energy mapping
3. Community Energy Plan development

The following sections outline tools, techniques and considerations that can help municipalities develop an integrated and implementable CEP.

### BEFORE GETTING STARTED: SOME THINGS TO CONSIDER

When engaging staff, stakeholders and working with Council to begin developing a CEP, questions about the contents and logistics may be raised. Here are some things to consider before getting started:

#### General Outcomes/Deliverables (Goals & Vision)

Identify what the CEP aims to achieve, for example: integrates energy into municipal planning processes, (land use, transportation, economic development); supports environmental goals as part of a GHG reduction strategy; enhances energy efficiency in the municipal corporation or in the wider community; develops specific actions that support a broader sustainability strategy in your municipality (e.g., Integrated Community Sustainability Plan or energy elements of a strategic plan).

#### Time frame

Is this a ten or twenty year plan? Will it be reviewed every 5 years like an Official Plan or does it correspond to the time frame in other key City documents like the strategic plan or the business plan?

#### Scope

Decide which sectors will be included in the CEP - consider residential, commercial, institutional, industrial, agricultural and transportation sectors. Will the CEP be based on high level city-wide energy use totals or a more detailed area based mapping exercise? Existing energy and GHG inventories may be useful to draw from and reference.

#### Stakeholders

Identify key energy-related stakeholders that can provide information, resources, strategy direction and technical support to the project. Identify energy-related projects and initiatives already underway or planned that should be considered during CEP development.

<sup>6</sup> The Partners for Climate Change Protection (PCP) program is a partnership between the Federation of Canadian Municipalities (FCM) and International Council for Local Environmental Initiatives (ICLEI) Canada endorses a five step Milestone process which has been very successful at engaging municipalities across Canada and internationally to develop local action plans that address energy and emissions: <http://www.fcm.ca/home/programs/partners-for-climate-protection/milestone-framework.htm>

<sup>7</sup> The Natural Step, an international non-profit organization started in Swede, endorses a four step planning method which helps organizations worldwide to move systematically toward long-term goals by making investments that will provide benefits in the short-term, while also retaining a long-term perspective: <http://www.naturalstepcanada.org/en/abcd-process>

<sup>8</sup> Natural Resources Canada's Community Energy Planning Guide for Canadian municipalities outlines five steps municipalities can use to become factor-2 communities, which are communities that are 50% less dependent on fossil fuels: [http://canmetenergy.nrcan.gc.ca/sites/canmetenergy.nrcan.gc.ca/files/files/pubs/CommunityEnergyPlanningGuide\\_en.pdf](http://canmetenergy.nrcan.gc.ca/sites/canmetenergy.nrcan.gc.ca/files/files/pubs/CommunityEnergyPlanningGuide_en.pdf)

### **Available Funding**

Identify the funding sources that are available to support the development of your community's CEP. Some to consider are the Ontario Ministry of Energy, Federal Gas Tax Funds, your local LDC may have some funds available to support its conservation demand management targets, and the Federation of Canadian Municipalities' Green Municipal Fund may also be a source of funding.

### **Other Resources**

Information resources (such as transportation, utility and structure data) may be available from City departments or utility stakeholders but may come at a cost – see Appendix D for more information. Local experts including academics, utility staff and energy managers at local industries and institutions may be able to provide in-kind support to the project.

### **Work Team**

Identify what skill sets your municipality will actually need to do the work. Consider that the Ministry of Energy's funding program consists of three phases – engagement, base line analysis and the development of a plan (described in more detail below). In addition to the expertise your municipality may have on staff, you may want to consider whether to hire external experts and/or whether you can leverage the expertise of local utility staff, academia and other knowledgeable stakeholders.

### **Project Leadership within the Municipality**

Identifies which department or departments within the municipal corporation are responsible for leading the development of the CEP, reporting to and being accountable to Council. While often this is one department, project leadership is sometimes provided by an Interdepartmental Steering Team. In this case the departments to be represented on the Steering Team can be identified in this section.

### **Framing the Narrative**

By discussing and documenting these key considerations your team will have framed a narrative and developed a vocabulary for talking about energy in your community. This narrative can become the basis for the key messages that will frame the communications strategy for the CEP. Even if you are not called upon to develop a formal communications plan, you will have the basics for talking to the people and organizations that you want to engage and ask to participate in the CEP process.

## **1. ENGAGEMENT**

Engagement is the process through which your municipality involves its elected officials, staff from a range of departments, the LDCs, the gas utility, government and its agencies (e.g. ministries and the OPA) as well as nongovernmental groups (NGOs), environmental and community organizations and the public. Engagement is an interactive process that provides an opportunity for the community to ask questions and provide feedback to the planning team throughout the CEP development. It is more than just a process of sharing information but should also be used to collect information from the community about local priorities, opportunities and considerations.

Municipalities have broad constituencies of residents, business and community organizations and are required to regularly engage with these groups in order to develop plans and deliver services. Municipalities can leverage these networks to communicate energy plans and projects to constituents and gather their input to ensure successful energy planning and infrastructure siting.

### PREPARE AN INTRODUCTORY REPORT TO COUNCIL

The first step in developing a CEP is to work with your local elected officials and municipal staff leadership. An efficient way to do this is to prepare a staff report to Council describing a Community Energy Plan. Before municipal staff time can be allocated to a project, Council will have to give some kind of approval to the undertaking. This initial report could contain the following information:

**Rationale** | Identify what issues the CEP will address and how it will help Council get the information it needs to make effective decisions. Some issues that may be of interest to Council include energy security to promote economic competitiveness, the cost of energy use to the local economy, job creation from increasing the demand for energy-saving products & services, the suitability of and/or opportunities for district energy, solar or wind generation or geothermal in your city, small scale or neighbourhood based generation, the contribution that conservation of gas or electricity use can make to future energy needs. Consider including references to other successful CEPs and describe how they benefited the community (see Appendix C for a list of some CEPs in Ontario).

**Context** | The report should also identify that there is a wider context within which the CEP will operate –the province’s long term energy plan (LTEP), provincial and regional electricity plans, the LDC’s distribution and sustainability plans<sup>9</sup> and natural gas planning (see Section C for more information about these plans and processes). A CEP can also be integrated into the context of a City’s Official Plan, strategic plan, business plan, master plans, city wide sustainability plans and other municipal planning and policy documents (see Section D for more information).

**Opportunities** | The report can discuss new funding opportunities for CEP development, the increasing number of municipalities doing community energy planning in Ontario and the growing interest from the province and utilities in better integrating and connecting energy and land use planning.

**Scope and Organization** | The report can describe the scope and organization of the proposed CEP including important information discussed above such as general outcomes, timeframe, scope, resources, work team, project leadership, framing, etc.

### ESTABLISH AN ADVISORY GROUP

One of the main purposes of engagement is to identify all key stakeholders and interested parties and bring them into the energy conversation. These groups will not only provide valuable information needed to develop a CEP but will also be important supporters when seeking Council approval and will help provide capacity for CEP implementation. Another purpose of engagement is to ensure collaboration (getting the right people around the table) and integration (making sure that the CEP team can use each other’s data and information).

Once Council has given the go ahead for the CEP, a key engagement tool is the establishment of an Advisory Group. For membership, some representatives to consider are large energy users from your municipality’s industrial, commercial or information technology sectors, large residential property developers, the LDC and gas utility, a representative from the OPA, representatives of the business community through the Board of Trade or the Chamber of Commerce, economic development staff, planning staff, local energy developers, environmental NGOs, community organizations, educational institutions. It is important to draft a terms of reference for the Advisory Group (e.g., how often the group will meet, standard agenda, minute keeping, etc.).

<sup>9</sup> LDC sustainability plans, where available, often address long-term planning issues that directly affect energy access and security in the community, for example relating to climate change adaptation.

In some cases, establishment of an effective advisory group can be difficult due to concerns around time commitments and the effectiveness of running meetings with a large number of participants. Often a municipality will already have one-on-one relationships with these stakeholders and advisory group meetings can be supplemented with individually calls and check-ins to make sure these important perspectives and considerations are understood.

### **HOLD ROUND TABLE ENERGY WORKSHOPS**

It is important to remember that engagement is a key element throughout the CEP process. The CEP is both a process to raise awareness about energy in the community and to develop a local energy plan. Engagement is key to both these outcomes.

As the CEP process gets underway a useful engagement technique can be to convene round table energy workshops that bring together various municipal departments and external organizations including the local gas utility, the LDC, the OPA, the business community, community organizations and other important stakeholders. These groups can present important information about existing energy initiatives as well as energy planning processes and projects in the pipeline to provide helpful context for discussion. Round Tables are an effective format for engagement because they enable participants to discuss ideas and solutions for the community in small groups and then share their thoughts with the room.

As part of the initial CEP engagement process consider contacting the LDC and gas utilities to schedule a series of round table energy workshops to understand the local utility and energy planning context. These meetings could bring together conservation and supply planners with municipal economic development department and land use, energy and environmental planners to discuss a wide range of topics. Some suggestions are:

- 1| The utilities can explain the regulatory environment. This helps the City understand what the utilities can and cannot do;
- 2| Discuss system performance, reliability in different areas of the City and opportunities and constraints for incorporating renewable and distributed generation;
- 3| Share information about how utilities forecast gross load, conservation potential, distributed generation, weather normalization, identify areas of future focus of infrastructure improvement (heat maps)
- 4| Discuss opportunities for information and data sharing (discussed further in Section C)

At this point in the process it may also be useful to introduce and explain energy mapping and what it can be used for in the CEP process as well as its ability to reduce costs for the utilities in meeting their conservation targets. It is important to discuss the need for data and the need to identify data sources. Baseline energy studies and energy mapping techniques will be addressed in the next section.

Roundtable energy workshops can also be useful to connect municipal land use planners, economic development staff and other stakeholders to understand how an energy lens can be applied to municipal planning and financing. Participants can identify opportunities to integrate energy into municipal plans and processes such as Official Plan reviews and economic development strategies. In this respect, the role and impact of urban planning, financing and development has a big influence on energy outcomes. Buy-in from municipal staff

### **ICES**

*Integrated Community Energy Solutions (ICES) are all about creating smart energy communities by linking energy with land use, buildings, transportation, water, waste, and related community infrastructure.*  
*more at: [questcanada.org](http://questcanada.org)*

is needed to ensure that the energy conversation gets embedded into every facet of the municipal planning process to encourage integrated community energy systems and solutions (ICES). Opportunities for bringing an energy lens to various municipal planning processes will be addressed later in this primer (see Section B).

## 2. BASELINE ENERGY STUDY (BLS) AND ENERGY MAPPING

Once an Advisory Committee of stakeholders has been created, you can leverage the expertise of these groups to undertake baseline energy studies and/or energy mapping. Depending on the available resources, and capacity you may engage external experts to support this work.

Baseline energy studies measure how much and where energy is used in the community and identify opportunities for energy reduction. Baseline studies help municipalities to:

*Understand* where and how much energy is supplied to the community including renewable and distributed generation

*Quantify* energy used and resulting emissions by sector (e.g., residential, commercial, industrial, agricultural, transportation) and identify trends over time

*Identify* and quantify opportunities for energy and emissions reductions

Energy mapping integrates detailed baseline data and connects it to a map which helps municipalities to:

*Identify* spatial trends in the data

*Target* specific neighbourhoods, sectors and business types for conservation, efficiency, renewables and distributed generation

*Communicate* visually with the public and decision makers about where and how much energy is used in the community and in individual neighbourhoods

The following section describes how to get started in developing a baseline study and energy maps and highlights some important considerations. Appendix D summarizes useful data including potential applications and limitations.

### SURVEY AVAILABLE DATA AND EVALUATE USEFULNESS

Engaging data providers such as gas and electricity utilities, transportation and land use planners early on in the CEP process to understand their data sharing policies and processes is key to successful CEP development. It is likely that you will have some of these data providers represented on your Advisory Group. Having their buy-in on the scope of analysis will make the data collection process easier.

In many cases the way in which a CEP reports data depends on how it was received from the local utility. Often hydro and gas utilities are limited by privacy and regulatory constraints and available staff and IT resources to providing data that is aggregated citywide and broken down by major sectors (e.g., residential, commercial and industrial customers). Transportation energy use and emissions are often extrapolated from municipal transportation models and local retail fuel sales data. Some data that may be useful to CEP development are included in Appendix D. Before developing a baseline or map set up meetings with data managers to discuss what information they collect and how CEP inventory and analyses can also support these groups' priorities and programs.

### A FEW NOTES ABOUT PRIVACY

Privacy concerns can be a big barrier to data sharing for utilities. Utility policies on data sharing are continuously evolving. Make sure to contact your local utility to understand their current policies. Some ways to ensure useful and accurate analyses while protecting customer privacy include:

- Develop a non-disclosure agreement to enable sharing of sensitive information – consider engaging an impartial 3rd party from outside the municipality with experience handling sensitive information to provide knowledge and expertise about data sharing and analysis
- Aggregated utility data that is provided without any standardization or clarification of building classifications or geographic areas will introduce inaccuracies in analysis that will be difficult to measure, limiting the utility of the data provided
- If the utility privacy policy does not allow customer data to be shared outside the organization, work with the utility to standardize classifications and boundaries for aggregating data; creating the match between municipal and utility datasets using customer addresses can be done before including sensitive energy or structure data which can then be provided in an aggregated format once the connection is made
- The Privacy Commissioner of Ontario's Privacy by Design framework ([www.privacybydesign.ca](http://www.privacybydesign.ca)) can be used to engage data providers in a discussion about privacy and to ensure appropriate privacy considerations are built into the methodology and work plan from the very beginning.

### ESTABLISH ENERGY AND EMISSIONS BASELINE

The baseline study should establish benchmarks against which targets for energy and emissions reductions can be set and progress can be measured. Depending on the scope of the CEP, the baseline study may include a breakdown of energy use and emissions by sector (e.g., residential, commercial, industrial, agricultural, transportation, waste, water) as well as a breakdown of energy use and emissions sources by fuel type.

The CEP development team will need to confirm a baseline year against which progress will be measured. This may be chosen to align with provincial and federal targets or may be chosen based on the historical year for which the best data is available. ICLEI Canada has developed a Partners for Climate Protection (PCP) Milestone Tool as a resource to support PCP members in their GHG emissions reduction activities<sup>10</sup>.

Appendix E summarizes the process developed by the City of Guelph to produce the city's Community Energy Plan and outlines components of the plan's technical baseline.

### DEVELOP SCENARIOS

Developing scenarios allows a municipality to understand the potential impact of different priority actions and allows for "backcasting"<sup>11</sup> from future energy and emissions targets. By developing scenarios municipalities can understand how much energy the community might use if no action is taken, if moderate or incremental action is taken or if more substantive efforts are made. Depending on the priorities established by the Advisory Committee for the CEP, different datasets and analyses may be useful to quantify future scenarios. The following bullets outline some common CEP priorities and how the data may help establish scenarios and targets for each (see Appendix D for more information about individual datasets):

- **Target and promote conservation and efficiency programs** – Tax assessment data (including size and age of structures), gas and electricity consumption data can be used to quantify opportunities to reduce existing building energy use through conservation. Putting the data on a map can identify neighbourhoods where conservation and efficiency will have the largest effect.
- **Implement distributed & renewable energy projects** – Tax roll, land use, gas and electricity utility data can be used to quantify opportunities to use district energy to supply areas with appropriate land use mixes and sufficient energy density to support these systems. Building energy models may be needed to supplement utility energy data.
- **Managing growth** – Municipal permits and development applications (including building type and gross floor area) combined with future projections for energy use based on archetypal benchmarks and building energy models can help identify how much energy can be saved through conservation in new developments compared with business as usual development.
- **Promoting local prosperity** – Statistics Canada input-output tables and rules of thumb can be used to calculate the energy spending that can be retained within the community as a result of building retrofits, renewable and distributed generation projects.

<sup>10</sup> PCP Milestone Tool. ICLEI Canada. Web, 12, June, 2013. Link: <http://www.icleicanada.org/pcptool>

<sup>11</sup> Backcasting is central to a strategic approach to planning for sustainable development. A successful outcome is imagined in the future, then the question is asked: "what do we need to do today to reach that vision of success?" For more information visit: <http://www.naturalstepcanada.com/backcasting>

**ENERGY MAPPING**

As municipalities are putting more resources toward implementing conservation and efficiency programs and promoting renewable and distributed generation, more information is often required to understand energy trends using more detailed and disaggregated sector classes and by geographically referencing or mapping energy use by neighbourhood or block.

Putting energy and emissions on a map can support the Baseline Study analyses by identifying spatial trends in energy use and opportunities for targeting resources. Energy mapping can also create an effective visualization tool for communicating with decision makers and the public. Mapping energy can identify neighbourhoods that use more energy than others relative to building space, age or people per household, where there are clusters of buildings that could support district energy or where there are households with high transportation demands.

In addition to helping municipalities identify opportunities for targeting their resources, energy mapping can support LDCs and gas utilities target marketing and conservation programs, electricity and gas distribution system planners understand infrastructure needs and renewable generation developers and district energy companies identify investment opportunities. The Canadian Urban Institute and Natural Resources Canada have developed resources to support community energy mapping.<sup>12</sup>

**3. COMMUNITY ENERGY PLAN DEVELOPMENT**

Developing the Community Energy Plan will articulate the principles, priorities and actions that have been identified through stakeholder meetings and roundtable workshops. Technical insights and baseline energy and emissions use, future projections and quantitative targets developed through the baseline studies and energy mapping (where available) should also be incorporated. The Community Energy Plan will articulate the local priorities which can then be communicated and integrated within other municipal planning processes and the broader energy planning framework to residents and business.

**DOCUMENT PRINCIPLES AND GOALS**

Based on meetings with the Advisory Committee and round table sessions held with staff, stakeholders, decision makers and the public, the CEP should document the high level principles and goals identified for the plan. The following technical and policy principles for developing Integrated Community Energy Solutions (ICES) were developed by QUEST, a collaborative network of researchers and advocates for ICES in Canada. These policy and technical principles serve as useful guidelines for developing a CEP. The report from QUEST's *ICES Literacy Series* entitled *Fuels and Technology for Integrated Community Energy Solutions* provides an overview of the technical principles in greater detail and how they can be applied.<sup>13</sup>

**ICES TECHNICAL PRINCIPLES**

1. *Improve efficiency – first, reduce the energy input required for a given level of service;*
2. *Optimize exergy – avoid using high-quality energy in low-quality applications;*
3. *Manage heat – capture all feasible thermal energy and use it, rather than exhaust it;*
4. *Reduce waste – use all available resources, such as landfill gas and municipal, agricultural, industrial, and forestry wastes;*
5. *Use renewable energy resources – tap into local opportunities for geexchange systems, small scale hydro, biomass, biogas, solar, wind energy, and opportunities for inter-seasonal storage; and,*
6. *Use energy delivery systems strategically – optimize use of energy delivery systems and use them as a resource to ensure reliability and for energy storage to meet varying demands.*

<sup>12</sup> On mapping resources, see:  
 - Miller, Glenn, et al. *Integrated Energy Mapping for Ontario Communities: Lessons Learned Report*. Toronto: Canadian Urban Institute, 2011. Print. Online access: [http://www.canurb.org/doc\\_download/81-integrated-energy-mapping-for-ontario-communities-lessons-learned-2011](http://www.canurb.org/doc_download/81-integrated-energy-mapping-for-ontario-communities-lessons-learned-2011).  
 - Natural Resources Canada. *Communities: Community Energy and Greenhouse Gas Mapping* Natural Resources Canada, 9 Feb, 2011. Web. 12, June 2013. Link: <http://canmetenergy.nrcan.gc.ca/buildings-communities/communities/1477>

<sup>13</sup> Laszlo, Richard and Cleland, Mike. "ICES Literacy Series: Fuels & Technology for Integrated Community Energy Solutions." Ottawa: QUEST – Quality Urban Energy Systems of Tomorrow, 2012. Print. Online access: <http://questcanada.org/sites/default/files/publications/Fuels%20and%20Technologies%20for%20Integrated%20Community%20Energy%20Solutions.pdf>



### ICES POLICY PRINCIPLES

1. *Match land use needs and mobility options – understand the energy implication of land use, infrastructure for water and wastewater, waste management, personal mobility, goods movement, and building design decisions;*
2. *Match energy options to local context – local climate, building on land use choices, industrial structure, availability of local sources of waste and renewables;*
3. *Send clear and accurate price signals – consumers should see and pay full real costs, including external costs;*
4. *Manage risks and be flexible – maintain technological and fuel diversity; pursue cost-effective opportunities first and incorporate learning; assume the need to adapt quickly to market and technological surprises;*
5. *Emphasize performance and outcomes in policy and regulations – avoid prescribing fuels and technologies; and,*
6. *Pursue policy and program stability – maintain a consistent and predictable decision making environment to sustain investor confidence.*

In addition to establishing guiding principles, the CEP engagement process may also develop goals for the community to direct the selection of priority actions. These goals can identify technologies or energy delivery models the community wants to promote (e.g., district energy, renewables, conservation, integrated utility delivery) and how far it wants to push beyond business as usual.

### DEVELOP SECTOR BASED TARGETS

Based on the outcomes from the baseline study and energy mapping exercises the CEP team may want to go back to the Advisory Committee and the community to review the established scenarios and develop quantitative targets for buildings, industry, transportation, renewables, distributed generation,

etc. These targets should follow the guiding principles and support the community's goals. Specific metrics used for measuring targets may vary depending on the goals and principles and could include, for example:

- % reduction in total annual electricity, natural gas or transportation fuel consumption compared to base year by a projected future year
- % reduction in total annual emissions compared to base year by a projected future year
- % reduction in peak demand for electricity compared to base year for future year(s)
- % increase in average building efficiency (energy use per m<sup>2</sup> gross floor area) by sector, building type, building vintage, etc.
- % reduction in average annual energy use or emissions per capita or per household
- % reduction in average annual energy use or emissions per employee for businesses
- % increase in energy supplied from renewable sources or distributed generation
- % shift in modal split from personal vehicles to transit and active transportation
- % increase in average personal vehicle occupancy

CEP performance should be assessed against established targets, with updates and reports based on a frequency established in the plan. This information could be shared in an annual report to the public or via an interactive portal.

### IDENTIFY PRIORITY ACTIONS

Priority actions can include short term 'quick-wins', larger neighbourhood scale projects as well as on-going policy initiatives that are identified as supporting the CEP goals, following identified principles and leading to the achievement of targets. Appendix E includes CEP development steps developed by Garforth International in partnership with the City of Guelph identifies some possible types of priority actions.

While shorter-term (incremental) projects can leverage existing projects and programs identified through engagement, longer-term, larger scale (transformative) projects may require the establishment of new programs and partnerships and may need to adapt to changes in municipal or provincial policies.

Section C identifies opportunities for municipalities to improve collaboration and integration within the current regional and provincial energy planning frameworks and Section D identifies opportunities to introduce and energy lens into municipal planning policy.

## SECTION C: ROUTES IN: INTEGRATING MUNICIPAL PRIORITIES INTO A BROADER ENERGY PLANNING FRAMEWORK

The province of Ontario has a history of centralized electricity generation and planning. Because of this history, ministries, public agencies and private companies have been established to support this kind of centralized system. As the province moves to integrate more distributed, “bottom-up” planning, municipalities can play a role in bridging the gap between supply and demand, promoting conservation and local generation and identifying energy needs at the source. To be effective in this role, municipalities will need to understand the broader provincial context for energy planning and their plans will need to have regard for these processes (and vice-versa as described further in Section D).

This section describes the current energy planning framework in Ontario and identifies ‘routes in’ or ways municipalities can integrate local priorities into provincial and regional energy planning.

### THE CURRENT ENERGY PLANNING FRAMEWORK IN ONTARIO

The vision for energy policy in Ontario is established by the Ministry of Energy through the **Long Term Energy Plan**. The Plan is a policy document that primarily considers all aspects of Ontario’s electricity system – conservation, generation, transmission, distribution and emerging technologies – and is the basis for more detailed planning by the ministry, its agencies, local distribution companies (LDCs), municipalities and others.<sup>14</sup>

The Ontario Power Authority (OPA) is responsible for coordinating province-wide electricity conservation efforts, planning the electricity system, and contracting for electricity generation resources. Guided by the policy set out in the Long Term Energy Plan, OPA leads provincial and regional electricity planning in order to develop integrated solutions that will meet changing electricity needs over the longer-term and provide the greatest value to customers.

**Provincial planning** takes a long-term, province-wide perspective, examining possibilities for future electricity demand and how it can be met through conservation, generation and transmission options. The aim is to enable the electricity system to meet technical standards and public policy objectives in ways that are acceptable to the community.<sup>15</sup>

The OPA also initiates and participates in **regional planning** which responds to the reality that different areas of the province face unique circumstances that require local analysis and engagement. Regional plans are developed in cooperation with local distribution companies (LDCs), the transmitter and Independent Electricity System Operator (IESO) and involve collaboration with the local community and stakeholders to develop solutions for maintaining reliable supply of electricity in the area. The objective is to develop integrated electricity plans for a given area that consider all options, including conservation, distributed generation, large-scale generation, and transmission and distribution. These regional plans have a near-, medium-, and long-term focus.

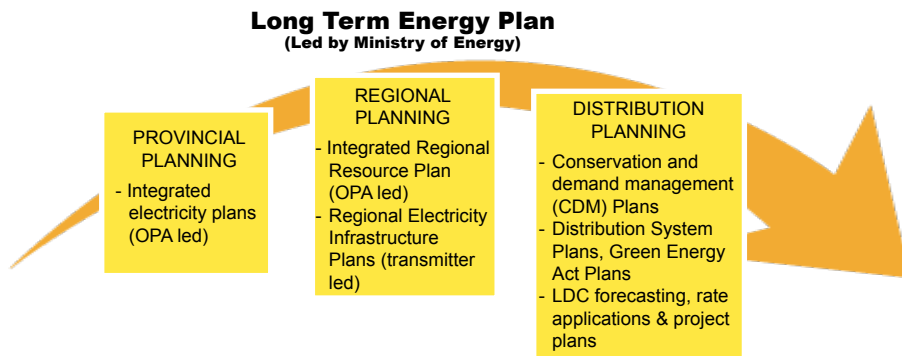
**Electricity distribution planning** considers the electricity distribution system that distributes power from regional supply points on the transmission system to customers, as well as the integration of local, distribution-connected resources such as wind, solar and combined heat and power. The planning horizon is in the near- to medium-term (0-10 years). This planning is typically completed by the LDC, many of which are wholly owned by municipalities. LDCs are also responsible for delivering conservation programs including those programs developed by the OPA.

<sup>14</sup> Ontario. Ministry of Energy. *Municipal Information Webinar: Renewable Energy Updates and Regional Energy Planning*. [Toronto, ON]: Ministry of Energy, 2013. Web. 25, Aug. 2013. Link: <http://www.energy.gov.on.ca/docs/en/municipal-information-webinar.pdf>

<sup>15</sup> “Power System Planning at OPA” Ontario Power Authority. 2013. Web. 12, June 2013. Link: <http://www.powerauthority.on.ca/power-planning>.

**Natural gas distribution planning** is led by natural gas distribution companies and involves forecasting future natural gas demand, planning for and implementing natural gas conservation and demand side management and siting new natural gas distribution infrastructure.

FIG. 2 CURRENT ELECTRICITY PLANNING FRAMEWORK IN ONTARIO



The **Independent Electricity System Operator (IESO)** is responsible for the day to day operation of the wholesale electricity market and near term reliability planning.

The **Ontario Energy Board (OEB)** is responsible for regulating the province's electricity and natural gas sectors in the public interest. Distributors must file an application before the OEB to request changes in the costs they recover from consumers. Stakeholders have an opportunity to intervene in this process. Recently, the OEB led the development of a renewed framework for regional electricity planning.

The following sections of this Primer will outline how municipalities can take advantage of current opportunities to contribute to energy planning initiatives that are led by the Province, the OPA, electricity transmitters and distributors and natural gas companies. This includes a number of initiatives being undertaken by the Ministry and its agencies to review how municipal input can be better incorporated in these processes.

### ROUTES IN FOR COMMUNITY ENERGY PLANNERS

#### Ontario's Long Term Energy Plan & Energy Policies

In 2010, Ontario released its first Long-Term Energy Plan (LTEP) that set out a direction for the province's energy future. It considered aspects of Ontario's electricity system, including conservation, generation, transmission, distribution and emerging technologies such as energy storage, as well as First Nations and Métis community participation in the energy sector.

In July 10, 2013 the Ministry released a review of the Plan entitled *Making Choices: Reviewing Ontario's Long-Term Energy Plan*. The document provides information on the current status of the electricity system, identifies commitments made that are shaping the sector, and provides characteristics of the different energy sources.

In July, 2013 the Ministry also released a discussion paper entitled *Conservation First: A Renewed Vision for Conservation in Ontario*, which discusses the government's vision for conservation, explores potential new innovative initiatives and outlines objectives for a new conservation framework.<sup>16</sup> This document sets out a plan for conservation beyond the current Conservation and Demand Management Framework which winds down

<sup>16</sup> Ontario. Government of Ontario Environmental Registry. Policy Proposal Notice. *Conservation First: A Renewed Vision for Conservation in Ontario*. [Toronto, ON]: Government of Ontario, 2013. Government of Ontario. Web. 13, June 2013. Link: <http://www.ebr.gov.on.ca/ERS-WEB-External/displaynoticecontent.do?noticeId=MTIwMTA3&statusId=MTc5NzI3&language=en>

at the end of 2014 and was initiated in 2010 when the government directed the Ontario Power Authority to work with Local Distribution Companies (LDCs) to develop and implement provincial conservation programs. At this time the government also directed the Ontario Energy Board to establish conservation targets for LDCs as a condition of their license.

### CURRENT OPPORTUNITIES FOR MUNICIPAL INPUT

- *Provincial energy plans and policies are typically posted on the Environmental Registry for public review and comment.*
- *Online comments are usually supplemented with public consultation and engagement processes which are announced on the Ministry's website.*
- *More targeted stakeholder consultation sessions may also be held to engage a broad range of stakeholders including municipalities. Check with senior management at your municipality to confirm times and locations for invitation only sessions.*

### Provincial & Regional Planning

The Ontario Power Authority is responsible for planning the electricity system, coordinating conservation initiatives and contracting for new generation in accordance with the province's Long Term Energy Plan. Since its establishment in 2005, the OPA has developed province wide and regional electricity plans to address changing electricity needs across the province.

In 2005, the OPA developed its Supply Mix Advice which was submitted to the Minister of Energy. This led to the development of the first province-wide Integrated Power System Plan in 18 years (IPSP I) which was submitted by the OPA to the OEB in 2007. The IPSP was intended to be a living document that looked 20 years ahead and that was updated every three years to respond to changing conditions such as consumer demand and new technologies. In 2011 the OPA was directed by the Minister of Energy to complete and submit to the OEB an updated IPSP; however, this plan is not proceeding at present. Although there is currently no formal IPSP process, the OPA continues to conduct integrated planning to advise government and inform the electricity sector.

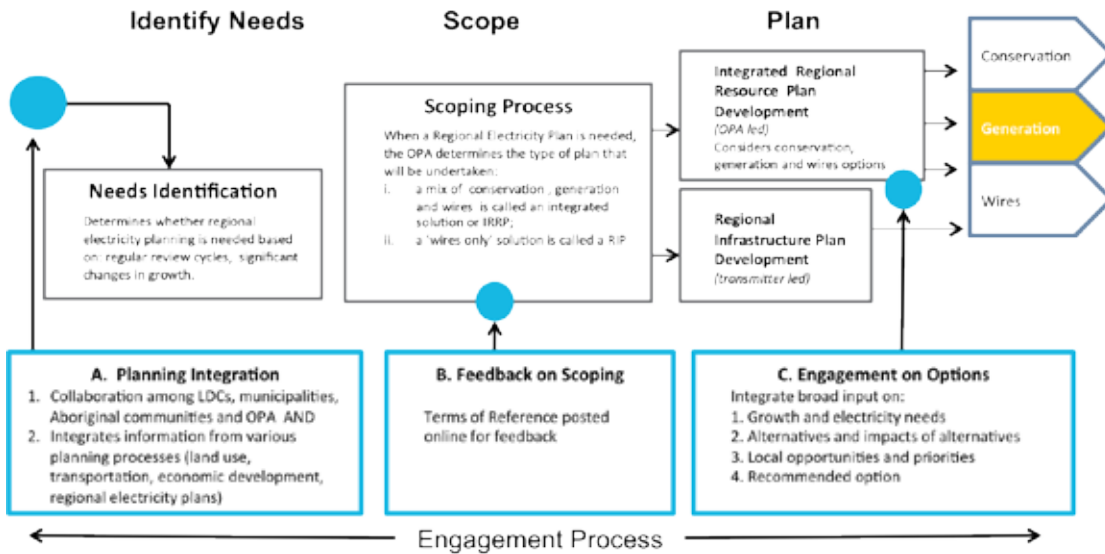
Since 2005, the OPA has led regional electricity planning across the province to address local electricity supply constraints. In 2011, the Ontario Energy Board (OEB) undertook to develop a more formalized regional planning process that builds upon the current practice. In May 2013, the OEB endorsed a renewed regional planning process, outlined in Figure 2 below. Within this process the OPA, in cooperation with transmitters, LDCs and the IESO develops regional electricity plans that complement province-wide planning to develop more localized solutions for each of the province's 21 electricity planning regions (see Appendix F).

Where a regional need is identified these groups form a Regional Electricity Planning Working Group and initiate the regional electricity planning process. The Regional Electricity Planning process includes 3 main parts: 1) **needs identification** - assessing the electricity needs of a region, 2) **scoping** - deciding on the type of plan that is required and 3) **plan development** – developing either an Integrated Regional Resource Plan or a Regional Infrastructure Plan.

During the **needs identification** phase, also known as the Needs Screening phase, the transmitter collects information from the working group such as gross load forecasts from the LDC(s), forecasts from transmission-connected customers (e.g., large industry), conservation program information and forecasts from the OPA, system reliability and performance information from the IESO and relevant community energy and conservation plans from the LDC(s). The transmitter then analyzes the information received and determines whether regional planning is needed.

The Needs Screening process is informed by on-going information sharing between working group members (OPA, LDCs, IESO, and the transmitter). In the current process, the LDC is the body responsible for communicating

FIG. 3 REGIONAL ELECTRICITY PLANNING PROCESS<sup>17</sup>



with municipalities and keeping abreast of local planning initiatives. They are responsible for identifying Community Energy Plans and bringing them forward to the regional electricity planning working group. One recommendation from the report prepared by the OPA and IESO for the Minister of Energy is to include a municipal representative in the working group to give communities a direct voice in regional planning exercises that affect their community.

If it is determined that a regional plan is required the OPA, in collaboration with the transmitter and LDC(s) will

**CURRENT OPPORTUNITIES FOR MUNICIPAL INPUT**

Within the current electricity planning framework, on-going planning integration between municipalities and LDCs is done on an ad hoc or as needed basis; some ways that municipalities are currently collaborating with electricity planners include:

- Sharing Official, Secondary and Community Energy Plan documents to LDC and OPA staff for review and comment prior to approval
- Inviting OPA and LDC staff to participate in public meetings about land use and community energy plan developments as a way of contributing expertise and keeping abreast of local initiatives and priorities
- Contacting LDC to engage in a series of information meetings to understand the local utility context. These meetings could bring together LDC CDM and supply planners with municipal economic development department and land use, energy and environmental planners to discuss a wide range of topics:
  - o regulatory environment helps City understand what the LDC can and cannot do;
  - o discuss system performance, reliability in different areas of the City and LDC's focus;
  - o share information about how they forecast gross load, CDM, distributed generation, weather normalization, identify areas of future focus of infrastructure improvement
- Contact LDCs for information about existing CDM programs and what programs are in development. Discuss how the municipality can support program development and implementation
- Many municipalities and LDCs routinely meet to discuss emergency management and planning issues surrounding major storm or other catastrophic events. This is usually done through a municipality's formal emergency management committee

On August 1st the OPA and IESO sent a report to the Ministry of Energy containing recommendations to better engage local communities in Ontario's electricity planning continuum. The Summary of Siting and Planning Recommendations are included in Appendix B. The OPA and the IESO will be moving forward with implementing those recommendations that fall within each organization's mandate.

<sup>17</sup> Ontario Power Authority and Independent Electrical System Operator. "Stakeholder Engagement: Regional Planning and Siting in Ontario: An Introduction." Ontario Power Authority, 24, Jun 2013. Web. 25, Aug. 2013. Link: [http://www.onregional-planning-and-siting-dialogue.ca/pdf/Regional\\_Sessions-Presentation.pdf](http://www.onregional-planning-and-siting-dialogue.ca/pdf/Regional_Sessions-Presentation.pdf)

initiate a **scoping process**. The deliverable of this stage is a Scoping Process Outcome Report. This report includes the results of the Needs Screening process, a recommended study approach and a preliminary Terms of Reference for all sub-regions identified in the Needs Screening phase.

The Scoping Process Outcome Report will identify whether an Integrated Regional Resource Plan (IRRP) or a Regional Infrastructure Plan (RIP) is needed. An IRRP consider all options for meeting the identified need, including conservation, distributed generation, large-scale generation, and transmission and distribution. An RIP considers only wires options (i.e, transmission and distribution upgrades).

**CURRENT OPPORTUNITIES** FOR MUNICIPAL INPUT

- *The draft Scoping Process Outcome Report, which includes the preliminary Terms of Reference, will be posted on the OPA website (and linked through the OEB website) for stakeholder comment.*

The **IRRP process** is led by the OPA and brings together local stakeholders to develop near-, mid- and long-term solutions for maintaining a reliable and cost-effective supply of electricity to Ontario communities. The IRRP process is initiated in areas where regional needs are identified and a number of potential regional solutions are required to address the identified needs.

At this stage communities can discuss potential grid constraints or opportunities that may impact achievement of renewable energy goals identified in their CEPs. Communities can also use the IRRP process as an opportunity to communicate and promote conservation and renewables goals and strategies identified in a CEP.

Based on the detailed forecasts and needs screening analysis, the IRRP process involves:

- **Development of solutions** – potential options to meet needs are identified including conservation, generation (large and small scale) and transmission and distribution options.
- **Option screening** – high level screening of options based on factors such as feasibility and cost comparisons
- **Alternative development and screening** – remaining options are combined to create packages of integrated solutions
- **Stakeholder engagement** – stakeholder feedback is sought on various integrated solution options
- **Alternative evaluation** – alternatives are evaluated based on cost, flexibility, reliability, technical performance, environmental performance and public acceptance
- **Recommendation and implementation** – selection is made, implementation and monitoring, plan is developed

**CURRENT OPPORTUNITIES** FOR MUNICIPAL INPUT

*Within the current electricity planning framework, municipal input is collected as part of the stakeholder engagement process. Municipalities, other stakeholders and the public can comment on:*

- *Growth and electricity needs*
- *Alternatives and impacts of alternatives*
- *Local opportunities and priorities*
- *Recommended options*

*On August 1st the OPA and IESO sent a report to the Ministry of Energy containing recommendations to better engage local communities in Ontario's electricity planning continuum. The Summary of Siting and Planning Recommendations are included in Appendix B.*

The **Regional Infrastructure Planning** process addresses ‘wires only’ (i.e., transmission and distribution) solutions and can be initiated as a result of the regional electricity planning scoping process, or once a need for wires approach has been identified through the IRRP process to meet some or all of the need. The RIP development is led by the transmitters in collaboration with LDCs and the OPA and other stakeholders the transmitter identifies may need to participate in the study. The final RIP outlines the scope of the study, describes key assumptions, confirms need, evaluates alternatives and explains the rationale for the proposed solution. The final document is submitted to the OEB for review.

While the RIP process does not require any formal municipal or public engagement or consultation outside of the groups identified by the transmitter, once specific projects identified in the RIP proceed towards implementation there is opportunity for municipalities and the public to provide input as part of the rate application filing with the OEB, Leave to Construct Applications, and other approval processes (e.g., EA process).

Local distribution companies (LDCs) are responsible for **electricity distribution planning**. They own, expand, maintain and repair local electricity distribution systems. These are the systems that deliver power from the bulk transmission system to homes, businesses, institutions and industry.<sup>18</sup> LDCs work with the OPA, IESO, Ministry of Energy and transmitters like Hydro One to provide electricity to Ontario consumers. Of all the players involved in electricity planning in Ontario, LDCs have the most local knowledge and the most direct contact with municipalities and local consumers. Most LDCs are owned by the municipalities that they serve.

Distribution planning is an iterative process which allows distributors to develop their networks in anticipation of future energy trends. In areas where adequate upstream capacity is available, electricity distribution planning is led by the LDC and is mainly limited to the boundaries of their service areas. If an LDC wishes to make changes to their infrastructure that will affect rates, they must establish a rationale for the investment and seek approval from the OEB, which typically occurs during a defined Cost of Service period (every 3 to 4 years as requested by an LDC). For large distribution infrastructure project they may be required to undertake an Environmental Assessment or file a Leave to Construct with the OEB.

### CURRENT OPPORTUNITIES FOR MUNICIPAL INPUT

*In addition to the on-going coordination and collaboration between municipalities and LDCs in advance of regional electricity planning needs assessment, discussed above, municipalities can also provide input to distribution planning through:*

- **Public utility coordination committees** – currently exist in many municipalities across Ontario and are a forum for gas utilities, LDCs and municipalities to meet to discuss infrastructure planning and how to coordinate installations in municipal rights of way. The structures of these groups vary from municipality to municipality but they may have a rotating chair and will meet on a time schedule established by the group.
- **Environmental Assessments & Leaves to Construct** – when electricity or gas utilities initiate a large infrastructure project, depending on the size of the project they may be required to file a leave to Construct with the OEB or undertake an environmental Assessment as overseen by the Ministry of Environment. Both processes require public consultation and can provide an avenue for municipal staff and decision makers to flag potential opportunities and challenges to project implementation.
- **OEB Intervener Status** – any individual or group, including municipalities, can participate as an intervener in an electricity hearing on rates or any issues at the OEB. Becoming an intervener can be an effective way for interest groups and others to get their opinions heard on regulatory matters. More information can be found on the OEB’s website here: <http://www.ontarioenergyboard.ca/OEB/Industry/Regulatory+Proceedings/Hearings/Participating+in+a+Hearing>.

<sup>18</sup> “What is a distributor?” Electricity Distributors Association, 2013. Web. 12, June 2013. Link: [https://secure2.eda-on.ca/imis15/EDA/About/What\\_is\\_a\\_Distributor/EDA/About\\_Us/What\\_is\\_a\\_distributor.aspx?hkey=caa59c1e-717b-4320-a35d-dd7c3bd639f7](https://secure2.eda-on.ca/imis15/EDA/About/What_is_a_Distributor/EDA/About_Us/What_is_a_distributor.aspx?hkey=caa59c1e-717b-4320-a35d-dd7c3bd639f7)

**Natural gas planning** and distribution in Ontario is undertaken by two major utilities: Enbridge Gas Distribution and Union Gas Limited. These companies are responsible for ensuring safe, sufficient and reliable supply of natural gas to consumers. Gas utilities earn profit on the operation and maintenance of natural gas infrastructure and the delivery of gas to consumers at a rate that is approved by the OEB.<sup>19</sup> Natural gas commodity prices are determined by the North American market.

To ensure sufficient, reliable supply, gas companies undertake long term and short term distribution planning. Long term plans for distribution assets look 10-15 years into the future and are primarily informed by municipal planning documents such as plans of subdivision and land severance plans, zoning by-laws and to some extent by provincial Growth Plan projections. Gas utilities work closely with developers to verify these plans and projections and understand where natural gas supply will likely be needed in the future.

Gas companies are required to file their future demand projections with the Ontario Energy Board as part of their rate applications. These filings provide evidence for proposed natural gas rates which are regulated by the Board. Projections are based on factors such as weather, furnace stock efficiency, persons per household, monthly bills, fuel prices and demand side management projections.

When new infrastructure is required, gas utilities must evaluate and ensure a minimum project profitability and net present value. For large projects exceeding a minimum pipe diameter, pressure class, distance or cost, companies will be required to file a Leave to Construct with the OEB. This filing establishes the need for the project and the rationale for the proposed solution.

### CURRENT OPPORTUNITIES FOR MUNICIPAL INPUT

- **Municipal planning and policy documents** – These documents including subdivision plans, zoning, to a lesser extent, Official Plans, are the main sources of information that natural gas utilities use to understand municipal projections for growth. Municipalities can share these documents in their final versions or as working drafts with gas utilities to keep them informed on new developments and get their input on implications for gas supply.
- **Meetings with gas company staff** – in the current gas planning framework, the extent to which gas utilities coordinate with municipalities is limited due to the large distribution area of gas utilities and the limits to the resources that can be allocated to municipal and CEP support under the current regulatory structure. However, municipalities do have the opportunity to engage with gas utilities directly to invite them to participate in CEP Advisory Committees, to get updates on DSM program development and implementation and discuss municipal planning and growth initiatives

*Municipalities can also work with gas utilities through the public utility coordination committees and provide input through EA and Leave to Construct processes.*

<sup>19</sup> "Buying Natural Gas from Enbridge." Enbridge Gas. 2013. Web. 13, June 2013. Link: <https://www.enbridgegas.com/homes/gas-choices/buying-natural-gas-from-enbridge.aspx>



**SECTION D: APPLYING AN ENERGY LENS TO MUNICIPAL PLANNING PROCESSES**

*THE CURRENT GROWTH PLANNING FRAMEWORK IN ONTARIO*

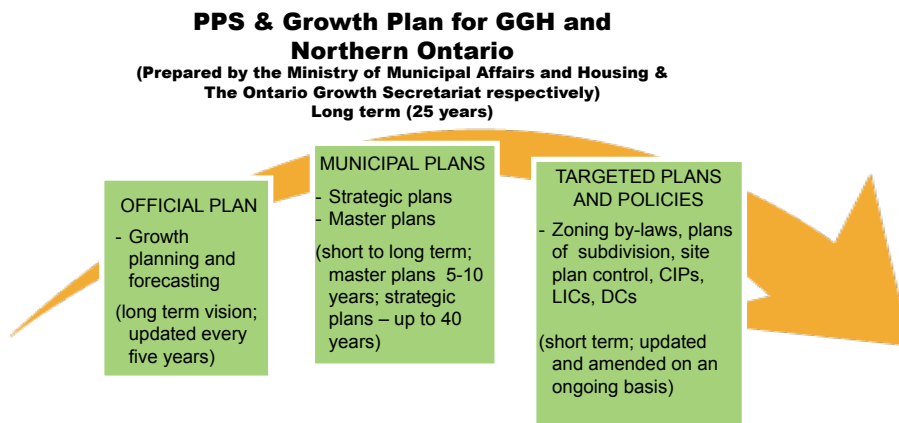
To guide planning in Ontario, the **Provincial Policy Statement (PPS)** is issued by the Minister of Municipal Affairs and Housing and it includes matters related to land use planning that are of provincial interest and must be considered in municipal planning decisions. All decisions affecting land use planning matters “shall be consistent with” the Provincial Policy Statement.

**The Growth Plan for the Greater Golden Horseshoe** is a 25 year plan prepared by the Ontario Growth Secretariat that sets growth and density targets for municipalities and links planning for growth with the need to plan for infrastructure, so that the roads, sewers, schools and other services are in place to meet the needs of growing communities. While the Growth Plan makes no reference to energy infrastructure, it is the main policy document that dictates where and how Ontario will grow in the future. **The Growth Plan for Northern Ontario** directs growth in the North and aims to stimulate investment and diversify industry.

Municipalities are required to prepare an **Official Plan** review every five years under the Planning Act; and to conform to the growth forecasts and targets set out in The Growth Plan. Municipalities may also prepare Strategic Plans which are not overseen by the province but are used to set strategic directions and actions to guide investment.

Municipalities can also develop **targeted plans and policies** to study areas of interest as identified in Strategic or Official Plans such as transportation, transit, housing, energy and the environment and have authority, under the Planning Act to develop and approve zoning by-laws, plans of subdivision, site plans and Community Improvement Plans. Local Improvement Charges and Development Charges are also useful tools available to municipalities under the Municipal Act and Development Charges Act, respectively.

FIG. 4 CURRENT GROWTH PLANNING FRAMEWORK IN ONTARIO



Many municipalities and regional municipalities have begun to consider energy by developing energy and/or sustainability plans, incorporating energy targets into Official and Strategic Plans, and undertaking energy efficiency retrofits. As broader public sector organizations, municipalities are required as of July 1, 2013 to report their annual energy use and greenhouse gas emissions to the Ministry of Energy and make the report publicly available. As of July 1, 2014 municipalities will also need to develop a five year conservation and demand management plan. This report outlines opportunities for municipalities to leverage planning processes, plans and policies to establish a local vision for energy.

### ROUTES IN FOR COMMUNITY ENERGY PLANNERS

#### THE PROVINCIAL POLICY STATEMENT AND GROWTH PLAN FOR THE GREATER GOLDEN HORSESHOE AND NORTHERN ONTARIO

In addition to being guided by municipal objectives such as economic development and local investment, energy reliability and resiliency, reduction of greenhouse gas emissions and setting a local vision for energy, municipalities are also influenced by the provincial policy context when planning for energy. The **Provincial Policy Statement** (PPS), issued by the Minister of Municipal Affairs and Housing includes matters related to land use planning that are of provincial interest and must be considered in municipal planning decisions. All decisions affecting land use planning matters “shall be consistent with” the Provincial Policy Statement. Section 1.8 of the PPS, Energy and Air Quality, indicates that “Planning authorities shall support energy efficiency and improved air quality through land use and development patterns; increased energy supply should be promoted by providing opportunities for energy generation facilities to accommodate current and projected needs, and the use of renewable energy systems and alternative energy systems, where feasible; and alternative energy systems and renewable energy systems shall be permitted in settlement areas, rural areas and prime agricultural areas in accordance with provincial and federal requirements. In rural areas and prime agricultural areas, these systems should be designed and constructed to minimize impacts on agricultural operations.”<sup>20</sup>

In the province of Ontario, a significant driver for municipalities to undertake energy planning has been the **Growth Plan for the Greater Golden Horseshoe**.<sup>21</sup> Released in June, 2006, it is a 25 year plan that aims to revitalize downtowns, create complete communities, provide diverse housing options, curb sprawl, protect farmland and green spaces, and reduce traffic gridlock. The Plan links planning for growth with the need to plan for infrastructure, so that the roads, sewers, schools and other services are in place to meet the needs of growing communities.

The Growth Plan for the Greater Golden Horseshoe identifies density and intensification targets, urban growth centres, strategic employment areas and settlement area restrictions designed to mitigate negative environmental, economic and human health impacts associated with sprawling, uncoordinated growth in the region. The Plan includes population and employment forecasts for all upper- and single-tier municipalities that are to be used for planning and managing growth. The forecasts are not intended to be planning decisions themselves, rather they should inform planning decisions such as growth allocations and official plan targets. These decisions will be determined through subsequent decision-making processes like standard municipal official plan processes. While the Growth Plan makes no reference to energy infrastructure, many municipalities in a growth scenario are interested in undertaking community energy planning in order to provide energy to accommodate the population and employment growth targets set out in the Growth Plan.

<sup>20</sup> Ontario. Ministry of Municipal Affairs and Housing. *Provincial Policy Statement*. [Toronto, ON] Ministry of Municipal Affairs and Housing, 2005. Print. p. 14.

<sup>21</sup> Ontario. Ministry of Infrastructure. *Growth Plan for the Greater Golden Horseshoe, 2006*. [Toronto, ON] Ministry of Infrastructure, 2013. Ministry of Infrastructure. Web. 12, June, 2013. Link: [https://www.placestogrow.ca/index.php?option=com\\_content&task=view&id=9&Itemid=14](https://www.placestogrow.ca/index.php?option=com_content&task=view&id=9&Itemid=14)

The Plan describes the importance of energy conservation as both the Greater Golden Horseshoe and energy demand increase and “recognizes and supports the role of municipal policy in providing leadership and innovation in developing a culture of conservation.”<sup>22</sup> It also indicates that municipalities will develop and implement official plan policies and other strategies to support energy conservation, including energy conservation for municipally owned facilities, opportunities for alternative energy generation and distribution, energy demand management to reduce energy consumption and land use patterns and urban design standards that encourage and support energy-efficient buildings and opportunities for cogeneration.<sup>23</sup>

CURRENT OPPORTUNITIES FOR MUNICIPAL INPUT

While the Provincial Policy Statement and the Growth Plan make some references to energy, municipalities and other stakeholders have been working to encourage policy modifications with stronger language that will require municipalities to consider energy as well as with the other planning issues they consider now – like water and wastewater. The OPA and IESO have put forth recommendations to the Minister of Energy to modify the PPS to ensure that municipalities consider electricity needs in relevant municipal plans, these recommendations are summarized in Appendix B.

Currently, there are few opportunities for municipalities to influence the PPS and Growth Plan. The Planning Act requires that the PPS be reviewed every five years from the date that the PPS came into effect, to determine whether revisions are needed. In 2012, Ontario held workshops to review the PPS in communities across the province and consulted with municipalities, stakeholders, Aboriginal communities and organizations, and members of the public.

The Growth Plan for the Greater Golden Horseshoe has been amended twice since its release in 2006. The first amendment was released in January 2012 and contains new policies, schedules and definitions that apply in the Simcoe Sub-area. The second amendment was released in June 2013 to update and extend the Growth Plan’s population and employment forecasts. The amendments were developed through extensive consultation with partners from across the Greater Golden Horseshoe. (Ontario Ministry of Infrastructure. Growth Plan for the Greater Golden Horseshoe. Web. 12, June 2013. Link: [www.placestogrow.ca/index.php?option=com\\_content&task=view&id=9&Itemid=14](http://www.placestogrow.ca/index.php?option=com_content&task=view&id=9&Itemid=14)

**The Growth Plan for Northern Ontario**, 2011 was released March 4, 2011.<sup>24</sup> It is a 25-year plan that guides provincial decision-making and investment and aims to diversify the region’s traditional resources, stimulate new investment and nurture new and emerging sectors with high-growth potential. Unlike the Growth Plan for the Greater Golden Horseshoe, it does not set targets for growth.

**MUNICIPAL PLANS**

Municipal plans and municipal planning tools allowed under the Planning Act provide municipalities with opportunities to apply an energy lens across the municipality. After developing a Community Energy Plan’s principles, goals, targets and actions, municipalities can integrate them into other planning documents at the municipality, thereby strengthening support for energy planning and entrenching energy considerations into all aspects of municipal planning.

London’s upcoming Community Energy Action Plan, expected in Winter 2013, emphasizes the importance of linking the CEP to London’s Official Plan. It proposes five actions for the City to undertake to create policy support for community energy planning. They are as follows:

<sup>22</sup> Ontario Ministry of Infrastructure. Growth Plan for the Greater Golden Horseshoe. [Toronto, ON]: Ministry of Infrastructure, 2006 Print. p.30.

<sup>23</sup> Ontario Ministry of Infrastructure. Growth Plan for the Greater Golden Horseshoe. [Toronto, ON]: Ministry of Infrastructure, 2006 Print. p.32.

<sup>24</sup> Ontario. Ministry of Infrastructure. Growth Plan for Northern Ontario, 2011 – 5.6 Energy. [Toronto, ON]: Ministry of Infrastructure, 2011. Ministry of Infrastructure. Web. 12 June, 2013. Link: [https://www.placestogrow.ca/index.php?option=com\\_content&task=view&id=368&Itemid=65#5.6](https://www.placestogrow.ca/index.php?option=com_content&task=view&id=368&Itemid=65#5.6)

- 1] Incorporate the defining principles of London's Community Energy Plan in to the Official Plan Review.
- 2] Incorporate in to the Official Plan Review means to encourage new development to be "future-ready" through design principles that can accommodate the future installation of electric vehicle charging systems (i.e., "EV-ready") and solar energy systems (i.e., "solar-ready").
- 3] Incorporate in to the Official Plan Review means to encourage in-fill development in areas served by existing and future district energy systems to connect to the system.
- 4] Incorporate in to the Official Plan Review requirements for greenfield industrial, commercial, and high-density residential land development to reserve "utility right-of-ways" to accommodate the future use of district energy systems.
- 5] Advocate for increased support from federal and provincial governments for undertaking community energy planning at the municipal level of government.

### Strategic Plans

Strategic Plans are high-level municipal documents that determine a City's direction over the next few years, with a vision of where it wants to be in 20-40 years, how it will get there and how it will know if it was successful. Typically, a Strategic Plan includes a review of the City's vision and a set of priority directions and actions. The document helps to guide decision-making at the City and informs the development of other municipal plans, including master plans.

### OPPORTUNITIES TO APPLY AN ENERGY LENS

*Strategic Plans can be used to embed or apply an energy lens on decision-making at a municipality. Making the environment or energy security a priority at the municipality allows Council to make strategic investments in studies and plans like community energy plans, environmental master plans or targeted plans and policies related to energy. It also allows funds to be allocated to these types of studies.*

*Burlington's strategic plan, Burlington, Our Future, includes an action to promote and encourage lower community energy consumption, which involves using partnerships to develop and implement a community energy plan, expanding renewable energy initiatives and strengthening the partnership with Burlington Hydro Grid Smart City Initiative. Embedding these energy-related actions into a strategic plan, securing political and financial support for them is easier going forward.*

For more information, visit <http://cms.burlington.ca/AssetFactory.aspx?did=19272>

### MUNICIPAL PLANNING TOOLS

The Planning Act provides the basis for municipalities to consider provincial interests and to have local autonomy and decision-making in local planning decisions that will determine the future of communities by preparing planning documents such as:

- **official plans** and planning policies that will guide future development;
- **zoning by-laws** and **minor variances** to regulate and control land uses;
- **plans of subdivision** or **land severances** to divide land into separate lots for sale or development;
- **site plan control** to provide detailed control of how a particular piece of land is developed; and
- **community improvement policies** to encourage redevelopment or revitalization of communities.

Local Improvement Charges and Development Charges are also useful tools available to municipalities under the Municipal Act and Development Charges Act, respectively.

These documents and policies provide opportunities for municipalities to facilitate the implementation of energy planning solutions.

### Official Plans

An official plan sets out the municipality's general planning goals and policies that will guide future land use. Under the *Planning Act*, an official plan must be reviewed every 5 years. As part of this process, background reports such as population forecasts, employment forecasts and land budgets are prepared to inform policy changes in the new or updated official plan. These municipal growth projections require approval by the local Council (and Regional/County Council depending on the location) and Province through the Ministry of Municipal Affairs and Housing. The approved forecasts are subsequently used by other organizations such as LDC's, gas utilities, school boards and hospitals who undertake their own planning activities.

In addition, the *Planning Act* requires that certain matters be included in a review of the Official Plan. The municipality is required to ensure that the official plan conforms with Provincial Plans, has regard for matters of Provincial interest, and is consistent with the Provincial Policy Statement. As of 2006, municipalities must meet the growth targets included in the Growth Plan and use the population and employment forecasts in the Growth Plan to inform their local planning. The need to achieve these targets represents one of the most important changes in policy directions the Province has established through the development and approval of the Growth Plan.<sup>25</sup>

After the local council adopts an official plan, it is submitted to the appropriate approval authority to review. Many upper-tier municipalities are the approval authority for lower-tier official plans and amendments. In all other cases, the Minister of Municipal Affairs and Housing is the approval authority.<sup>26</sup>

### OPPORTUNITIES TO APPLY AN ENERGY LENS

*Energy related policies such as plans for GHG reductions, energy efficiency and demand management measures, integrated community energy solutions (renewable generation, combined heat and power, district energy) and requirements for community energy planning can be included in an official plan to incorporate energy planning considerations into a community's future growth. Municipalities can also identify future sites for energy infrastructure to meet anticipated growth in official plans by allocating corridors for future transmission lines or zoning land for future electricity generation.*

*Regional official plans may also require that area municipalities prepare Community Energy Plans for urban expansion areas. The Regional Municipality of York's Official Plan, Section 5.6.10 states that "the local municipality shall develop a Community Energy Plan for each new community area to reduce community energy demands, optimize passive solar gains through design, maximize active transportation and transit, and make use of renewable, on-site generation and district energy options including but not limited to solar, wind, water, biomass, and geothermal energy". (For more information, visit <http://www.york.ca/Departments/Planning+and+Development/Long+Range+Planning/ROP.htm>)*

### Zoning by-laws

Zoning by-laws set the rules and regulations that control the use of land and development as it occurs, including specific requirements for building use, density, height, size and location. They put the official plan into effect and provide for its day-to-day administration and contain specific requirements that are legally enforceable.

<sup>25</sup> "Region of Waterloo Land Budget." Waterloo: Region of Waterloo, 2009. Print. p. 2. Online access: <http://www.regionofwaterloo.ca/en/aboutTheEnvironment/resources/2009RegionofWaterlooLandBudget.pdf> (12, June 2013)

<sup>26</sup> Ontario. Ministry of Municipal Affairs and Housing. *Citizens' Guide to Land-use Planning: Official Plans*. [Toronto, ON]: Ministry of Municipal Affairs and Housing, 2008. Ministry of Municipal Affairs. Web. 12, June 2013. <http://www.mah.gov.on.ca/Page1759.aspx>

Local council decides whether to pass or refuse an amendment to its zoning by-law. When a municipality undertakes site-specific rezoning, it will identify and protect provincial interests in its review and decision. There is no requirement for review by provincial ministries, allowing for greater local autonomy in zoning review and approval. However, when a municipality undertakes a comprehensive zoning review (e.g. zoning by-law that covers everything within its jurisdiction), the Ministry of Municipal Affairs and Housing will act as the one window input and review body regarding provincial interests.<sup>27</sup>

**OPPORTUNITIES TO APPLY AN ENERGY LENS**

*Zoning by-laws can be used to promote intensification, mixed-use communities, walkability and renewable energy infrastructure.*

*The City of Toronto's Renewable Energy By-law is one example. Prior to March 2008, City of Toronto zoning bylaws did not allow for the generation or selling of energy using renewable energy sources or co-generation devices. The new bylaw provides an as-of-right zoning permission to produce and distribute energy from renewable energy and co-generation devices.*

For more information, visit [http://www.toronto.ca/building/pdf/renewable\\_energy\\_flyer.pdf](http://www.toronto.ca/building/pdf/renewable_energy_flyer.pdf)

**Plans of Subdivision**

Plans of subdivision are used to divide a piece of land into two or more parcels intended for separate ownership. A land severance may be used in a case where only a lot or two are created. Subdivision approval ensures that the land is suitable for its proposed new use; the proposal conforms to the official plan and zoning in the community, as well as to provincial legislation and policies; and the community is protected from developments which are inappropriate or may put an undue strain on community facilities, services or finances.<sup>28</sup>

The approval authority for a plan of subdivision could be a municipality or the Minister of Municipal Affairs and Housing. The authority to approve plans of subdivision can also be delegated to planning boards, municipal

**OPPORTUNITIES TO APPLY AN ENERGY LENS**

*Municipalities can integrate transportation demand management and energy planning considerations into their plans of subdivision by including conditions related to walkability, the preservation of natural spaces for storm water drainage, and the construction of energy efficient homes.*

*They can also promote the supply, efficient use and conservation of energy through the design and orientation of streets and lots. Orienting streets within 30 degrees of an east/west axis maximizes the benefits of passive solar gain and optimizes conditions for the use of photovoltaics.*

For more information, visit [http://www.communityenergy.bc.ca/sites/default/files/CEToolkit.Volume2.EnergyIdeas\\_o.pdf](http://www.communityenergy.bc.ca/sites/default/files/CEToolkit.Volume2.EnergyIdeas_o.pdf) - p. 9

*East Gwillimbury used their subdivision approval process to require that all new residential developments meet Energy Star standards. As part of the Energy Star requirements, upgrades may be made to a home's insulation, ventilation, windows, or heat, hot water, and air conditioning systems. Council linked the policy to the subdivision approval process and its policy for the assignment of water and sewers servicing capacity. It requires a signed commitment from the developer to comply with the standards before they can proceed to plan registration and building permits and prior to an occupancy permit being issued, the home must be Energy Star certified by an Energy Star qualified inspector. Once this process is complete, the inspector will issue an Energy Star label for the builder to attach to the home.*

For more information, visit [www.eastgwillimbury.ca/Assets/Town+Hall/Branches/Development+and+Legal+Services/DLS+Report+2006-24.pdf](http://www.eastgwillimbury.ca/Assets/Town+Hall/Branches/Development+and+Legal+Services/DLS+Report+2006-24.pdf)

<sup>27</sup> Ontario. Ministry of Municipal Affairs and Housing. *Citizens' Guide to Land-use Planning: The Plan Review and Approval Process*. [Toronto, ON]: Ministry of Municipal Affairs and Housing, 2008. Ministry of Municipal Affairs. Web. 12, June 2013. Link: <http://www.mah.gov.on.ca/Page339.aspx>

<sup>28</sup> Ontario. Government of Ontario. *The Municipal Councillor's Guide*, 2010. [Toronto, ON]: Government of Ontario, 2010. Print. p.80.

planning authorities, committees of council or appointed officers. Provincial ministries may provide technical input where needed.

### Site Plan Control

Site plan control is an optional tool which gives municipalities detailed control of how a particular property is developed. If local council designates areas of site plan control, developers are required to prepare and submit plans and drawings for approval before undertaking development. A site plan agreement may also be required to set out details such as parking areas, elevations and grades, landscaping, building plans and services. The agreements can be registered on title and must be complied with by the owner and all subsequent owners.<sup>29</sup>

To use this tool, a site plan control area must be shown or described in an approved official plan and a site plan control by-law must be passed by the municipality designating all or any part of the area shown in the official plan as a site plan control area.

#### OPPORTUNITIES TO APPLY AN ENERGY LENS

*Municipalities can promote sustainability and energy planning by including design considerations in site plans such as incorporating storm water retention systems, promoting native species planting and permeable paving materials and can include energy efficiency requirements such as those used in outdoor lighting.*

*The Toronto Green Standard (TGS) uses site plan approval to require new private and public development to meet green building requirements. As of January 31, 2010, the City of Toronto uses this two-tiered set of performance measures for new development, organized by three building types. It requires planning applications, including zoning by-law amendments, site plan approval and draft plan of subdivision to meet Tier 1 requirements. Tier 1 requirements are mandatory and Tier 2, a higher level of performance, is voluntary. These performance measures were instituted to address a number of issues, consistent with the Official Plan's broad policies, including air and water quality, greenhouse gas emissions, energy efficiency, solid waste and the natural environment.*

For more information, visit <http://www.toronto.ca/planning/environment/index.htm>

### Community Improvement Plans

The Planning Act allows municipalities to prepare community improvement policies as part of a Community Improvement Plan (CIP). The policies describe plans and programs that encourage redevelopment and/or rehabilitation improvements in a designated area. Such improvements may include industrial area remediation and redevelopment, streetscape and facade improvements, refurbishing of core business areas, heritage conservation of homes or commercial buildings and, more recently, improvements in energy efficiency. They may also include land assembly policies to make projects feasible or to create financial incentives that encourage increased housing choices, mixed densities and compact spatial forms in redevelopment and/or rehabilitation.<sup>30</sup> CIPs can provide incentives or loans to developers in order to affect the desired outcome, or they can include changes to land-use and zoning regulations. Municipalities are required to consult with Ministry of Municipal Affairs and Housing as part of this process.

<sup>29</sup> Ontario. Government of Ontario. *The Municipal Councillor's Guide, 2010.* [Toronto, ON]: Government of Ontario, 2010. Print. p.84.

<sup>30</sup> Ontario. Government of Ontario. *The Municipal Councillor's Guide, 2010.* [Toronto, ON]: Government of Ontario, 2010. Print. p.85.

OPPORTUNITIES TO APPLY AN ENERGY LENS

*CIPs can target brownfield development, densification and intensification, or the development of alternative energy systems.*

*As of January 1, 2007, amendments have been made to change the definition of "community improvement" in the Planning Act to mean "the planning or replanning, design or redesign, resubdivision, clearance, development or redevelopment, construction, reconstruction and rehabilitation, improvement of energy efficiency, or any of them, of a community improvement project area, and the provision of such residential, commercial, industrial, public, recreational, institutional, religious, charitable or other uses, buildings, structures, works, improvements or facilities, or spaces therefore, as may be appropriate or necessary" (Planning Act, Section 28 (1)). Municipalities are now able to utilize CIPs for a range of projects including energy related improvements to structures and for energy programs within new developments.*

**Local Improvement Charges**

Local Improvement Charges (LICs) are used when a municipality arranges and pays for improvements and services to one or more properties. An LIC is then assessed and assigned to each property that benefits from the improvement. A set portion of the cost is paid back in the form of an additional charge on top of the municipal tax over a set number of years by the owner of the property.<sup>31</sup>

Changes to the Municipal Act, 2001 and the City of Toronto Act, 2006 came into force on October 25, 2012. These changes allow municipalities to use LICs to fund energy retrofits (including, but not limited to renewable energy, energy efficiency and water conservation capital works) on private property.

With local Council approval, municipalities could offer an LIC financing program to local property owners to support energy efficiency upgrades and other work as defined by the municipal program. There is currently interest in many municipalities to offer this financing program to owners of single family homes, but LICs could also be used to finance energy upgrades of condominiums and privately owned multi-unit residential buildings.<sup>32</sup>

OPPORTUNITIES TO APPLY AN ENERGY LENS

*LICs can be used to finance energy efficiency improvements to a property. The loan is attached to the property rather than the owner, providing an incentive for investing in more capital-intensive energy efficiency projects.*

*In July, 2013, Toronto's City Council unanimously approved a \$20 million pilot Residential Energy Retrofit Program that utilizes the Local Improvement Charge financing mechanism to support improvements on private property. The program will help property owners reduce energy use and save money on energy bills by improving the energy efficiency of their homes and buildings. Insulation upgrades and replacing inefficient furnaces are examples of cost-effective improvements that can be done under the program. The program is expected to launch in late 2013.  
(For more information, visit <http://www.toronto.ca/teo/residential-energy-retrofit.htm>)*

*The Collaboration on Home Energy Efficiency Retrofits in Ontario (CHEERIO) is an opportunity for municipalities to engage in developing an LIC pilot design. CHEERIO is aiming to collaboratively design a high-quality, multi-municipality pilot that will assess the effectiveness of the LIC financing powers in accelerating deep residential energy retrofits and provide insights and guidance regarding full-scale implementation for both single-family and multi-unit residential dwellings in Ontario. One of CHEERIO's objectives is to convene Ontario municipalities and other key stakeholders to jointly develop a recommended set of LIC pilot design parameters and formulate a pilot framework for local implementation. CHEERIO also provides resources for municipalities related to LICs at <http://www.cleanairpartnership.org/cheerio>.*

<sup>31</sup> Canadian Urban Institute and QUEST. *Integrated Community Energy Solutions Municipal Policy Toolkit*. Toronto: QUEST, 2011. Print p. 14. Online Access: <http://questcanada.org/sites/default/files/publications/Integrated-Community-Energy%20Solutions-Municipal-Policy-Toolkit-January-2011.pdf>

<sup>32</sup> Persram, Sonja. *Using Local Improvement Charges to Finance Residential energy Upgrades*. Toronto: Sustainable Alternatives Consulting, 2013. Print. p.5 Online Access: <http://www.cleanairpartnership.org/files/Primer.pdf>



### Development Charges

The Development Charges Act puts financing infrastructure and services resulting from the development of new communities within the jurisdictional responsibility of local municipalities. The Act enables municipalities to enact a development charge by-law, in order to charge some types of new development, in an attempt to offset increased capital costs associated with servicing a new area.<sup>33</sup>

The Development Charges Act requires that a development charges background study be prepared in which development charges are determined with reference to:

- a forecast of the amount, type and location of housing units, population and non-residential development anticipated in the City;
- the average capital service levels provided in the City over the 10-year period immediately preceding the preparation of the background study;
- a review of future capital projects and growth-related oversized projects already in place, including an analysis of gross expenditures, funding sources, and net expenditures incurred or to be incurred by the City or its local boards to provide for the expected development, including the determination of the growth and non-growth-related components of the capital projects;
- and an examination of the long-term capital and operating costs for the capital infrastructure required for each service to which the development charges by-laws would relate.

A review of these factors leads to the determination of the growth-related net capital costs attributable to development that is forecast to occur in the community. These growth-related net capital costs are then divided among various types of development (residential and non-residential) to arrive at proposed development charges. Upon review of the development charges background study, Council passes new development charges for the City.

### OPPORTUNITIES TO APPLY AN ENERGY LENS

*Development charges may be used to finance some of the following services under Section 5.5 of the Development Charges Act: water supply services, waste water services, storm water drainage, electrical power services. They can also be used to encourage energy efficiency and GHG reductions.*

*The City of Toronto's Development Charges Refund Incentive provides for development charge refunds of 20%, as of May 1, 2009, for Site Plan applications that meet both Tier 1 and 2 of its Toronto Green Standard. Under the Toronto Green Standard, all new public and private development must meet certain environmental standards (see full description under Site Plan Control). Tier 1 of the TGS is mandatory and Tier 2, with stricter guidelines that meet a higher level of environmental performance, is voluntary.*

For more information, visit <http://www.toronto.ca/planning/environment/developerinfo.htm>

<sup>33</sup> Canadian Urban Institute and QUEST. *Integrated Community Energy Solutions Municipal Policy Toolkit*. Toronto: QUEST, 2011. Print p. 153. Online Access: <http://questcanada.org/sites/default/files/publications/Integrated-Community-Energy%20Solutions-Municipal-Policy-Toolkit-January-2011.pdf>

<sup>34</sup> City of Mississauga. *Development Charges Background Study (Revised)*. Mississauga: Henson Consulting Ltd., 2009. Print. p.11. Online Access: <http://www.mississauga.ca/file/COM/DCBackgroundStudyRevised09.pdf>

<sup>35</sup> City of Mississauga. *Development Charges Background Study (Revised)*. Mississauga: Henson Consulting Ltd., 2009. Print. p.11. Online Access: <http://www.mississauga.ca/file/COM/DCBackgroundStudyRevised09.pdf>

## APPENDIX A: ADVANCING COMMUNITY ENERGY PLANNING IN ONTARIO, WORKSHOP REPORT – KEY MESSAGES

On April 23rd, 2013 more than 50 people took part in a workshop organized by QUEST Ontario and the Canadian Urban Institute to involve municipalities, LDCs, gas utilities and representatives from the Province, academic institutions and the development community in a discussion to advance community energy planning in Ontario. With generous support from the Ontario Power Authority and the Ministry of Energy, the QUEST Ontario caucus is working to develop a Primer for Community Energy Planning for Ontario. The Primer will describe current energy planning processes, players and drivers and will suggest ways to improve and integrate energy planning processes in Ontario.

Key messages that emerged from the small table discussions and plenary are described below in no particular order.

### KEY MESSAGES

1. **Many participants felt that a major barrier to the advancement of community energy planning in Ontario is the lack of a common understanding of what it is.** Participants felt that in order for various levels of government and the public to support community energy planning initiatives, a shared vision and value proposition needs to be in place. The shared vision described by participants would include a definition of CEP and an understanding of the benefits and shared outcomes or objectives of community energy planning.

Some participants also expressed a need for the players undertaking community energy planning to better understand the processes that are taking place in other organizations. They wanted to better understand the roles and responsibilities of the various organizations responsible for energy planning in order to work more collaboratively within the existing regulatory system. There were several suggestions for resources that could be useful to inform the group such as a map of stakeholders and planning processes, and a catalogue of best practices for CEP.

2. **A lack of leadership to drive community energy planning initiatives was also seen as a barrier by many.** Some felt that the Province needed to be the player to create a shared vision of community energy planning to drive all energy planning processes across Ontario. Some felt that municipalities were best suited to take a leadership role. However, many agreed that municipal leadership is difficult due to a lack of mandate and resources. This lack of authority and direction to municipalities makes it difficult to convince decision makers to participate in or resource CEP activities at the municipal level.
3. **Many participants agreed that some of the barriers to community energy planning could be overcome by re-examining the current provincial and regulatory context in Ontario.** Some participants encouraged a review of the OEB mandate to allow CEP on the rate base and to permit LDCs, gas utilities and municipalities to integrate their conservation plans. Some wanted to see the Province take more of a leadership role by mandating municipalities to undertake community energy planning. It was also suggested that thermal energy be included in the Provincial Policy Statement.
4. **Conservation was considered a promising starting point for collaboration. Ontario has a history of conservation and there is general consensus that integration of energy planning efforts could start in this area.** Regulatory changes would be required to allow for the integration of the conservation efforts undertaken by gas utilities, LDCs and municipalities through improved coordination of their conservation

activities. There may also be opportunities to target conservation programs at the block and neighbourhood level. Municipal tools such as Community Improvement Plans and Local Improvement Charges may be able to help deliver utilities' conservation targets.

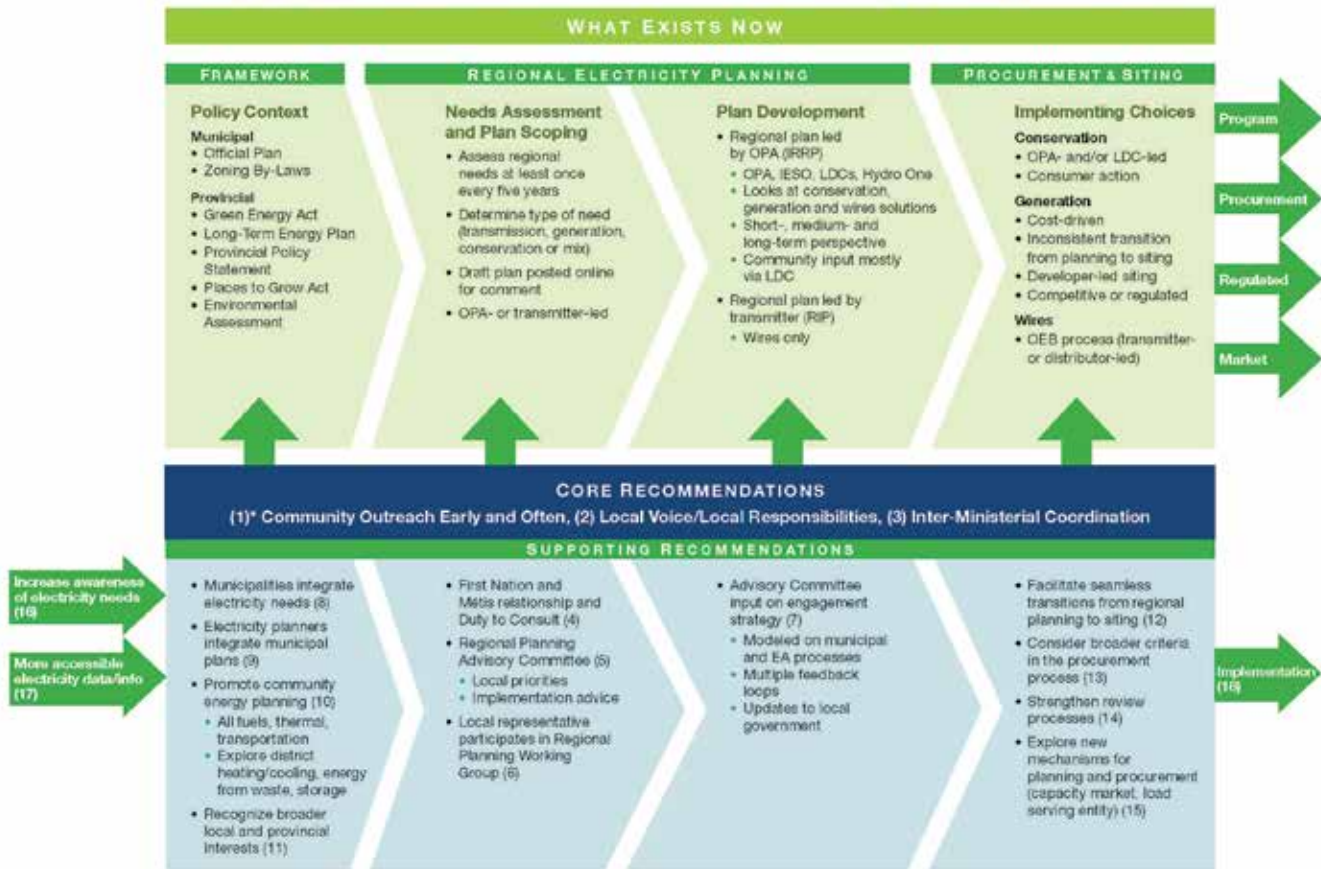
**5. Municipalities require additional resources and capacity to engage in community energy planning.**

Several suggestions for improving energy planning activities at the municipal level were suggested including establishing performance based energy density thresholds for planning approvals, using sustainability checklists to encourage energy efficient design and speed up development application approvals, requiring developers to create embedded energy plans as part of site plan applications, and designating areas in municipalities for energy generation. In order to undertake these types of initiatives, participants felt that municipalities need additional resources to develop baseline inventories, targets, action plans and follow through with implementation.



APPENDIX B: OPA & IESO PLANNING & SITING RECOMMENDATIONS

Engaging Local Communities in Ontario's Electricity Planning Continuum



\*Numbers correspond to report recommendations.



(cont. p. 33)

<sup>36</sup> Ontario Power Authority and the Independent Electricity System Operator. Engaging Local Communities in Ontario's Electricity Planning Continuum. 1, August 2013. Web 10, August 2013. Link: [http://www.onregional-planning-and-siting-dialogue.ca/pdf/Regional\\_Planning-Siting\\_Report.pdf](http://www.onregional-planning-and-siting-dialogue.ca/pdf/Regional_Planning-Siting_Report.pdf)

## OPA-IESO – Planning and Siting Recommendations

### CORE RECOMMENDATIONS

(1)\* Community Outreach Early and Often, (2) Local Voice/Local Responsibilities, (3) Inter-Ministerial Coordination

#### Bringing Communities to the Table

Municipal governments, First Nations and Métis communities and stakeholders want to be engaged early and often. Local communities would like a formal seat at the table.

- (4) Foster ongoing relationships with First Nations and Métis and recognize the Duty to Consult
  - Explore capacity-building mechanisms, such as workshops, in addition to application-based funding
  - The Crown to provide guidance as to when Duty is triggered and initiate and monitor consultation
- (5) Create regional electricity planning Advisory Committees
  - Communities identify members and include elected officials, First Nations and Métis representatives, economic development officers, and other community/business representatives
  - Meet with Committee regularly to share information and seek input throughout planning process
  - Consult Committee regarding local priorities and costs and benefits of alternative solutions
  - Committee should meet between formal planning cycles
- (6) Invite participation of local representatives in regional electricity technical planning working group
  - Advisory Committee identifies a representative with relevant expertise (e.g., planning or economic development) to participate in technical planning
- (7) Develop stakeholder engagement strategies and plans with Advisory Committee input
  - Based on best practices and posted for comment
  - Phased approach with multiple feedback loops
  - Include reports to local governments and First Nations and Métis communities

#### Linking Local and Provincial Planning

Local governments identified need for capability building and resources to better consider energy needs in local plans. As municipalities plan to meet water, waste and growth needs they should likewise be required to plan for electricity needs.

- (8) Integrate electricity needs into relevant municipal plan
  - Modify the Provincial Policy Statement (2005) to more explicitly consider electricity needs per proposed amendments in Appendix A
  - Explore language for municipalities to include in Official Plans and zoning by-laws
  - Work with Ministry of Municipal Affairs and Housing to explore methods of ensuring that current and potential landowners are aware of proximity to either existing, or potential, sites for electricity infrastructure
  - Explore developing siting criteria and minimum distance separation guidelines to sensitive land uses (e.g., Ministry of Environment's D2, D4 and D6 Guidelines) with Environment and other ministries
  - Work with Ministry of Infrastructure to integrate electricity needs into plans developed under Place to Grow Act, Greenbelt Plan and Big Move, for example
- (9) Integrate relevant municipal information into regional electricity plans
  - Regional electricity plans (Integrated Regional Resource Plans and Regional Infrastructure Plans) should include a description of how First Nation and Métis and municipal priorities, including community energy plans, were considered
- (10) Promote community energy planning
  - The Ministry of Energy and the OPA should enhance supports for community energy planning e.g., Municipal Energy Plan, Aboriginal Community Energy Plan funds and energy mapping
- (11) Recognize broader provincial and local interests in electricity system planning
  - The regional electricity planning process should factor in broader considerations such as helping meet social, environmental and economic development goals – beyond its current focus on technical and lowest-cost considerations. Including broader considerations raises cost-allocation questions that are ultimately for the province and OEB to determine.

#### Reinforcing the Planning/Siting Continuum

Many municipalities, First Nations and Métis communities and stakeholders don't have resources to engage in all stages of planning so links between planning outcomes and procurement/siting need to be reinforced at the outset of each procurement.

- (12) Facilitate a seamless transition from planning to siting
  - Ensure affected communities are aware of procurement
  - Reinforce linkages between procurement and planning phases
- (13) Consider broader criteria in the generation procurement process, such as local priorities
  - Give more weight to addressing concerns of local community and to mitigating risk of opposition
  - Consult Advisory Committee regarding the local priorities to be reflected in procurement design
  - Criteria could reflect environmental assessment criteria
- (14) Strengthen review process – have OEB approve generic procurement processes
  - Consider having the OEB approve generic generation procurement processes which would include requirements to appropriate siting consultation
  - Parties not satisfied that procurement resulting from regional plan meets OEB-approved procurement process can request that OEB conduct an independent review
- (15) Review mechanisms for planning and procurement
  - Review current planning and procurement processes (which include an Integrated Power System Plan (PSP)) in light of experience and recommendations to increase local voice and responsibility
  - Review options for planning and procurement which could include role of IPSP, outcomes-based supply mix directive, increased reliance on market-based mechanisms such as a capacity market, LDCs owning larger generation or contracting to meet service territory needs (load-serving entities) and linkages between provincial, regional, local electricity distribution company and municipal plans

#### Enhancing Electricity Awareness and Improving Access to Information

There is a strong desire to better understand electricity planning and siting processes so that municipalities, First Nations and Métis communities, stakeholders and the general public can become involved early on and effectively participate in decision-making.

- (16) Increase awareness of electricity needs and how these needs can be met
  - Develop and implement an electricity awareness strategy to increase understanding about electricity needs, options for addressing needs and how to get involved in planning and siting
- (17) Increase transparency of, and access to, useable data and information
  - The OPA and IESO should publish timely information and data that provides for multiple uses
  - Potential users of the data could include consumers, industry to develop energy-related products, municipalities for planning purposes, and academics for research
  - Establish coordinated and comprehensive web pages for each regional plan
  - Work with Infrastructure Ontario to identify public lands available for siting including co-locating with other public infrastructure, Crown lands and surplus provincial land
- (18) Implementing the recommendations
  - Develop a detailed implementation strategy outlining legislative, regulatory, consultation and resource implications
  - Begin immediately to implement recommendations within mandates
  - Hold more detailed discussions with implementers or those affected by recommendations – ministries, agencies, associations and other stakeholders

APPENDIX C: SOME EXAMPLES OF COMMUNITY ENERGY PLANNING DOCUMENTS

Municipality	Title of Plan	Link to Plan	Date Released
Burlington	Draft Community Energy Plan	<a href="http://cms.burlington.ca/AssetFactory.aspx?did=27418">http://cms.burlington.ca/AssetFactory.aspx?did=27418</a>	July 2013
Durham Region	From Vision to Action: Region of Durham Community Climate Change Local Action Plan	<a href="http://www.fcm.ca/Documents/reports/PCP/Durham_From_Vision_to_Action_Community_Climate_Change_Local_Action_Plan_2012_EN.pdf">http://www.fcm.ca/Documents/reports/PCP/Durham_From_Vision_to_Action_Community_Climate_Change_Local_Action_Plan_2012_EN.pdf</a>	2012
East Gwillimbury	Town of East Gwillimbury Community Energy Plan	<a href="http://www.eastgwillimbury.ca/Assets/CFS+-+Corporate+Communications/Publications/Community+Energy+Plan.pdf?method=1">http://www.eastgwillimbury.ca/Assets/CFS+-+Corporate+Communications/Publications/Community+Energy+Plan.pdf?method=1</a>	November 2009
Guelph	City of Guelph Community Energy Plan	<a href="http://www.fcm.ca/Documents/reports/PCP/Guelph_Action_Plan_EN.pdf">http://www.fcm.ca/Documents/reports/PCP/Guelph_Action_Plan_EN.pdf</a>	April 3, 2007
Halton Hills	Mayor's Community Energy Plan in development	<a href="http://www.haltonhills.ca/initiatives/CommunityEnergyPlan.php">http://www.haltonhills.ca/initiatives/CommunityEnergyPlan.php</a>	In development
London	London's upcoming <i>Community Energy Action Plan</i> , expected in Winter 2013		In development

APPENDIX D: POTENTIAL DATA SOURCES FOR BASELINE STUDIES AND ENERGY MAPPING

Dataset & Relevant Information	Application/Utility	Considerations & Limitations
<b>Municipal Planning Departments</b>		
Tax assessment roll – includes property type, structure code (classification), year built, building space, number of stories, AC & heating type for many buildings in the community	Tax roll data can be very useful to understand important information about buildings that can affect energy use such as size and age. Tax roll data can be used to support community energy modeling and mapping.	Often MPAC data received by municipalities is more complete for residential properties. Industrial, commercial, institutional data is often available from MPAC for a fee. Data agreements between the municipality and MPAC limit the uses of the data to 'planning applications' [1].
Building layer, parcel fabric & street address files	If available in a spatial format, these files can help link the tax roll data and utility data to a map – allowing for spatial analyses and summaries by neighbourhood or block	The links between spatial files and other datasets can require some work to establish – addresses and other unique identifiers that can be used to link files are not always stored in a consistent format. errors and incomplete data entries can limit match rates and completeness of maps.
Population & housing counts	Population and housing counts are available from StatsCan and Canada Post and can be used to normalize energy use for benchmarking and mapping (e.g., creating energy use per household and per capita metrics).	Check with your planning department to find out what information they have downloaded and purchased for other planning applications. This information is aggregated to protect individual privacy. Housing type classifications may not be consistent with MPAC and other datasets.
Employment survey data - employee counts and industry codes (e.g., NAICS)	This information can be used similarly to housing and population data to normalize energy use.	Local employment data is sometimes collected by the municipality to support planning and economic development activities. However, not all municipalities develop employment surveys and where data is available, accuracy and

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			completeness may vary.
Future development		Official Plan projections, permit and development applications can be used to understand where and how much new development might occur in the community.	Municipal planning metrics often focus on people and jobs, not necessarily building space. Assumptions may be required to estimate infrastructure needs to accommodate new growth.
Transportation data		Origin destination tables are generated by many standard municipal transportation forecasting models and display the number of trips going from each origin to each destination according to transportation zones that have been established for the community. This can be useful to analyze and map energy used for transportation in existing and future scenarios.	Transportation models are usual developed for the purpose of understanding traffic flow rather than energy use. As such assumptions may be needed to translate from peak period to annual trips and to assign trips to a residential point of origin.
<b>Utility Data</b>			
Gas, electricity and water consumption/use data – energy use by month by customer, block or neighbourhood		If provided in sufficient detail, this information can show how much energy is used by customers by building type and by neighbourhood over time. Utilities do not typically have access to information about building types or structure characteristics so integrating this data with tax roll data can identify new trends in building energy use	Data considerations and limitations will vary depending on how utility data is provided. Utilities' privacy policies vary and are constantly evolving. In general, more detailed data can mean more effort required to analyze and integrate with other datasets but can also provide greater accuracy of analyses and broader applications. See below for more information about privacy.
<b>Other Sources</b>			
Retail sales of fuel (e.g., Kent		This data is easy to obtain and is a good proxy that captures other aspects of transportation	No data for card-lock freight fuel sales (truck stops); not available at

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Marketing)	energy use besides trip distance – type/size of vehicle, driver behaviour (lead foot, idling), discretionary trips	neighbourhood scale
GHG coefficients	GHG coefficients are prepared by a number of organizations including the International Panel on Climate Change in their Guidelines on National Greenhouse Gas Inventories, local distribution companies for their own sustainability reporting and national data collection efforts (including Canada's National Inventory Report) and the US EPA for their Clearinghouse for Inventory and Emissions Factors. These can be used to translate input data (e.g., structure, travel, etc.) to equivalent GHG emissions.	For electricity emissions factors the National Inventory Report provides averages by province over an entire year. This means the impact of regional variation in transmission and distribution efficiency is not considered as well as the time of use which can significantly impact emissions generated. To develop emissions factors for transportation, some assumptions will be needed about the types of vehicles being driven in the community and their efficiencies. These assumptions can be corroborated with available traffic counts but will still be only estimates.
Cost estimate tools (e.g., Marshall Valuation Service)	Online costing tools can be used to estimate cost premiums for building retrofits and high efficiency new construction which can be useful to calculate financial returns on investments.	Cost estimation tools are useful for high level analyses. Actual costs will depend on local industry and will vary from city to city.
Employment factors	StatsCan employment multipliers are available for specific industries in Ontario and can be used to estimate the number of person-years of employment that will be generated by investing in building retrofits and renewable energy projects.	Actual employment impacts will vary from city to city.

## APPENDIX E: GUELPH COMMUNITY ENERGY INITIATIVE, COMMUNITY ENERGY PLAN PROCESS

**Developed by Garforth International at the request of the City of Guelph during June 2013.**

The process developed by Guelph to produce the original Community Energy Plan (now Initiative) in 2006, has served as a model for a number of communities in the USA and Canada. It has proved to be a robust, replicable approach. It is flexible enough to meet the needs of very different communities while following a pathway that ensures no key steps are missed and that community remains fully engaged throughout the process. The resulting Community Energy Plan will be built on foundations that are credible, will outline strategies that are quantified and achievable, and will have the commitment of the community to take the necessary decisions to start serious implementation.

The table that begins on the following page summarizes the process developed by Guelph, and refined in other communities. It is offered as a model for other communities as a sound basis for developing a comprehensive community energy plan.

#	Step	Characteristics	CEP Milestones
1	Build community energy conversation	<ul style="list-style-type: none"> <li>Recognition of importance of energy</li> <li>Often starts with environmental bias</li> <li>Self-selecting leadership</li> <li>Informal committees and groups</li> <li>Community awareness programmes</li> <li>Multiple small-scale projects</li> <li>Recognize need for comprehensive CEP</li> </ul>	<ul style="list-style-type: none"> <li><b>CEP Task Force</b> formed by Mayoral invitation to community leaders and influencers</li> <li><b>CEP Workshop</b> conducted with Task Force</li> <li><b>CEP Budget and timetable</b> agreed</li> <li><b>CEP Project Work Team</b> formed with local and global skill set</li> </ul>
2	CEP Scope Alignment	<ul style="list-style-type: none"> <li>Structured discussion on limits of CEP</li> <li>Time Frame                             <ul style="list-style-type: none"> <li>Baseline year</li> <li>End year</li> </ul> </li> <li>Sectors included and defined:                             <ul style="list-style-type: none"> <li>Residential</li> <li>Non-residential</li> <li>Industry</li> <li>Transportation</li> </ul> </li> <li>Energy value chain included                             <ul style="list-style-type: none"> <li>End-use to meter?</li> <li>End-use to city gates?</li> <li>End-use to fuel?</li> <li>Water included or not</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li><b>CEP Scope</b> confirmed</li> </ul>
3	Establish Framing Goals	<ul style="list-style-type: none"> <li>Structured discussion on desired CEP outcomes by the end year</li> <li>Willingness to embrace transformation or not</li> <li>Balanced discussion of core outcomes – economic; supply security, environment</li> <li>Community specific outcomes</li> </ul>	<ul style="list-style-type: none"> <li><b>CEP Framing goals</b> confirmed</li> </ul>
4	Establish Baseline – Technical	<ul style="list-style-type: none"> <li>Built environment                             <ul style="list-style-type: none"> <li>Categorize buildings – age / type / location<sup>1</sup></li> <li>Develop generalized model of needs                                     <ul style="list-style-type: none"> <li>End uses - heating, cooling, lighting, plug load, industrial process</li> <li>Annual / seasonal / peak</li> </ul> </li> <li>Estimate generalized model of utility needs                                     <ul style="list-style-type: none"> <li>Commodity – gas / oil / electricity/other</li> <li>Annual / seasonal / peak</li> </ul> </li> <li>Match generalized models to available metering<sup>2</sup></li> <li>Create generalized model of primary fuel needs</li> <li>Calculate carbon footprint</li> <li>Estimate generalized model of utility costs</li> <li>Benchmark performance against Canadian and global practices</li> </ul> </li> <li>Transportation                             <ul style="list-style-type: none"> <li>Categorize <math>PM^{10}</math> and <math>VM^{10}</math> – vehicle type / journey type / route /</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li><b>Built-environment energy maps</b> (end-use, utility, fuel, cost) by building type and location</li> <li><b>Seasonal and diurnal energy use</b> (end-use, utility, fuel, cost) use by building type and location</li> <li><b>Building energy performance benchmarks</b> relative to Canadian and Global best practices</li> <li><b>Transportation energy maps</b> (fuel) by route, <math>PM^{10}</math> and <math>VM^{10}</math></li> <li><b>Seasonal transportation fuel use</b></li> <li><b>Transportation energy performance benchmarks</b> relative to Canadian and Global best practices</li> <li><b>City energy Footprint</b> (end-use, utility, fuel,</li> </ul>

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		<ul style="list-style-type: none"> <li>◦ <i>timing</i></li> <li>◦ Create generalized model of fuel<sup>F</sup> needs</li> <li>◦ Match generalized model to available fuel delivery data</li> <li>◦ Calculate carbon footprint</li> <li>◦ Estimate generalized model of fuel costs</li> <li>◦ Benchmark performance against Canadian and global practices</li> <li>• City Total             <ul style="list-style-type: none"> <li>◦ Benchmark performance against Canadian and global best practices</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>cost) by Sector</b></li> <li>• <b>City carbon footprint</b> by sector, utility and fuel</li> <li>• <b>City energy performance benchmarks</b> relative to Canadian and Global best practices</li> </ul>
5	Establish Baseline – Market Structure	<ul style="list-style-type: none"> <li>• Gain clarity over the current market structures, legal and regulatory framework at all jurisdictional levels, and incentives around the use and sale of energy affecting:             <ul style="list-style-type: none"> <li>◦ Energy performance of buildings</li> <li>◦ Industrial energy use</li> <li>◦ Transportation efficiency and choices</li> <li>◦ Energy distribution and sale</li> <li>◦ Energy generation and sale</li> </ul> </li> <li>• Gain clarity over a whole range of resources that are could be available to the community to develop or implement the CEP. Typically these could include:             <ul style="list-style-type: none"> <li>◦ Energy related businesses</li> <li>◦ Existing public awareness &amp; support programmes</li> <li>◦ NGO's</li> <li>◦ Local opinion leaders</li> <li>◦ Examples of energy management excellence</li> <li>◦ Existing community energy initiatives and projects</li> <li>◦ &amp;c &amp;c</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Description of Baseline market structure</b></li> </ul>
6	Establish Baseline – Community Resources	<ul style="list-style-type: none"> <li>• Basically answer the question "What is lower and higher range of energy prices the city can expect over the CEP period"</li> <li>• Gain clarity and alignment on various market dynamics and how they may impact electricity, gas, other fuels, and emissions prices.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Inventory of Baseline community assets</b></li> </ul>
7	Establish Future Price Risks	<ul style="list-style-type: none"> <li>• Basically answer the question "What will the City look like without a CEP?" to establish a reference case against which the CEP will be measured.</li> <li>• Gain clarity and alignment on what assumptions to include over things that will happen anyway without City interventions. Areas will include:             <ul style="list-style-type: none"> <li>◦ Efficiency of existing and new buildings</li> <li>◦ Efficiency of existing and new vehicle fleets</li> <li>◦ Efficiency of industrial processes</li> <li>◦ Energy distribution</li> <li>◦ Electricity generation mix</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Low and High Energy Price Cases</b> - Year-by-year assumptions on lower and higher ranges of energy prices by type and customer sector.</li> <li>• <b>Low and High Carbon Price Cases</b> - Year-by-year assumptions on lower and higher ranges of carbon costs/credits</li> </ul>
8	Establish Base Case	<ul style="list-style-type: none"> <li>• <b>Base Case Assumptions</b> agreed</li> <li>• <b>Base Case Energy Maps</b> – year by year maps assuming no CEP is enacted</li> <li>• <b>Base Case Outlook</b> – year by year costs, energy use (utilities, fuels), emissions assuming no CEP is enacted</li> <li>• <b>Base Case Gap to Framing Goals</b> – assessment of how far the city would miss the framing goals without the CEP</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Base Case Assumptions</b> agreed</li> <li>• <b>Base Case Energy Maps</b> – year by year maps assuming no CEP is enacted</li> <li>• <b>Base Case Outlook</b> – year by year costs, energy use (utilities, fuels), emissions assuming no CEP is enacted</li> <li>• <b>Base Case Gap to Framing Goals</b> – assessment of how far the city would miss the framing goals without the CEP</li> </ul>

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9	Establish CEP Scenarios	<ul style="list-style-type: none"> <li>o <i>Natural gas source mix</i></li> <li>o <i>Market structure, rules and norms</i></li> <li>o <i>Legal and regulatory frameworks &amp;c &amp;c</i></li> </ul> <ul style="list-style-type: none"> <li>• From the combination of the Baseline, Base Case, performance benchmarking, and the framing goal gap analysis, align around a few Scenarios for further analysis.</li> <li>• Typically there would be a minimum of one up to a maximum of four Scenarios, each of which will be combination of:             <ul style="list-style-type: none"> <li>o <i>Sector end-use efficiency cases including urban design</i></li> <li>o <i>Energy distribution including possible thermal (district energy) networks</i></li> <li>o <i>Electricity, heating and cooling generating mixes</i></li> </ul> </li> <li>• Market structure assumptions for each Scenario will be needed</li> <li>• Possible “big options” such as large scale renewables, disruptive costs, regulatory options etc. should be considered for inclusion in the analysis phase</li> </ul>	<ul style="list-style-type: none"> <li>• <b>CEP Scenarios</b> – narrative description of the Scenarios that will be analyzed and assessed, including any “big options” and assumptions</li> </ul>
10	Analyze Scenarios	<ul style="list-style-type: none"> <li>• This answers the question – “What will the energy performance of the City look like under each scenario?”</li> <li>• Complete year-by-year analysis for each scenario and options</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Scenario Cases Energy Maps</b> – year by year maps that result from each Scenario</li> <li>• <b>Scenario Cases Outlook</b> – year by year costs, energy use (utilities, fuels), emissions assuming no CEP is enacted</li> </ul>
11	Assess Scenario Results	<ul style="list-style-type: none"> <li>• The results of each scenarios along with any options are compared with the Framing Goals</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Scenario Cases Gap to Framing Goals</b> – assessment of how far the city would miss the framing goals under each scenario and options</li> </ul>
12	Preliminary CEP Recommendations	<ul style="list-style-type: none"> <li>• Creation of a recommended final CEP Scenario that give results that are the best fit to the Framing Goals, recognizing this may be an adaptation of the previously agreed scenarios and options.</li> <li>• Assessment of the market structure, legal, regulatory and other barriers that could exist and would need to be adapted</li> <li>• The will be specific recommendations at least for each of the following areas:             <ul style="list-style-type: none"> <li>o <i>Efficiency requirements for new construction</i></li> <li>o <i>Efficiency requirements for renovating existing buildings</i></li> <li>o <i>Efficiency of industrial processes</i></li> <li>o <i>Efficiency of existing and new vehicle fleets</i></li> <li>o <i>Energy distribution for electricity, natural gas, heating and cooling, other fuels, and other utilities</i></li> <li>o <i>Energy sources and fuels mix – generating technologies, conventional and non-conventional fuels, energy recovery from waste sources, renewable</i></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>CEP Preliminary Recommendations</b></li> </ul>

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		<ul style="list-style-type: none"> <li>o &amp;c &amp;c</li> <li>• There will also be specific recommendations of enabling strategies that             <ul style="list-style-type: none"> <li>o Recommended market structure, rules and norms</li> <li>o Legal and regulatory frameworks</li> <li>o Community and user education</li> <li>o Workforce education</li> <li>o City planning and zoning guidelines</li> <li>o Neighbourhood association engagements</li> <li>o Municipal Corporation creation and oversight</li> <li>o CEP and broader economic development</li> <li>o &amp;c &amp;c</li> </ul> </li> </ul>	
13	Preliminary CEP "Scale Projects" Recommendations	<ul style="list-style-type: none"> <li>• The CEP Recommendation will be comprehensive, multi-dimensional, challenging, and potentially overwhelming.</li> <li>• The "Scale Projects" answer the basic question "What are the recommended few items that the community should get started on in the first few years?"</li> <li>• "Scale Projects" are large enough to encompass and hone the key CEP strategies, but small enough to have a good chance of being implemented.</li> <li>• Scale Projects may be neighbourhood scale integrated energy solutions typically addressing area like:             <ul style="list-style-type: none"> <li>o Mixed use redevelopment</li> <li>o Academic or military campuses</li> <li>o Industrial or commercial parks</li> <li>o Defined residential neighbourhoods</li> <li>o Major sporting facilities</li> <li>o Major retail centres</li> <li>o &amp;c &amp;c</li> </ul> </li> <li>• "Scale Projects" may also be focused on key institutional or policy elements of the CEP including:             <ul style="list-style-type: none"> <li>o Legal frameworks for municipal energy services</li> <li>o Planning and zoning bye-laws</li> <li>o Economic development initiatives</li> <li>o Green Funds</li> <li>o Energy Performance Labeling</li> <li>o Workforce development</li> <li>o Targeted community education initiatives</li> <li>o &amp;c &amp;c</li> </ul> </li> <li>• Each "Scale Project" recommendation would include summary of fit to overall CEP, assessment of opportunity, outline solution, and summary of essential next steps.</li> </ul>	<ul style="list-style-type: none"> <li>• <b><u>CEP Scale Projects Preliminary Recommendations</u></b></li> </ul>
14	Task Force Adoption of CEP	<ul style="list-style-type: none"> <li>• To ensure acceptance and support by all parts of the community, there needs to be a formal hand-off from the</li> </ul>	<ul style="list-style-type: none"> <li>• <b><u>Task Force Vote to Adopt CEP</u></b></li> </ul>

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15	Community Adoption of CEP	<p>Project Working Team which will be a mix of consultants and selected local experts to the Task Force which is the influential representation of the community at large.</p> <ul style="list-style-type: none"> <li>Following review, discussion and final adaptation by the Project Working Team, the CEP should be adopted by the Task Force as the recommended energy strategy for the entire community for the next decades.</li> <li>To ensure democratic transparency of the City's intent make the CEP the underlying energy strategy of the City for decades to come there needs to be a formal hand-off by the Task Force to the political leadership of the City on a non-partisan basis.</li> <li>Following publication of the CEP as adopted by the Task Force along with reasonable time for public comment and final adaptation, the final CEP should be submitted to the City Council as the recommended energy strategy for the entire community for the next decades.</li> <li>Ideally, this should be accompanied by an enabling resolution that instruct City Staff to move forward some specific next steps, which will obviously be unique to each community.</li> </ul>	<ul style="list-style-type: none"> <li><b><u>City Council Vote to Adopt CEP</u></b></li> <li><b><u>City Council Vote to Adopt CEP Next Steps</u></b></li> </ul>
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<sup>1</sup> Depending on City proclivities and availability of data, location could be as broad as the entire City, could be defined planning areas within the city or as narrow as individual park or even single buildings.  
<sup>2</sup> Ideally the available metering should to the same level of details as used to define "location"  
<sup>3</sup> PMT – Passenger Mile Travelled  
<sup>4</sup> VMT – Vehicle Miles Travelled  
<sup>5</sup> In future transportation fuel definitions will become more complex due to wider use of electricity from grid or local sources. This assumed to be negligible for this summary

APPENDIX F: REGIONAL ELECTRICITY PLANNING BOUNDARIES

**Planning Regions- Northern Ontario**



**Planning Regions- Southern Ontario**



<sup>37</sup> Ontario Energy Board. *Regional Infrastructure Planning: Process Planning Workshop Group Presentation to Distributors*, 7, June, 2013. Web 10, August 2013. Link: [http://www.ontarioenergyboard.ca/OEB/\\_Documents/EB-2011-0043/PPWG\\_presentation\\_to\\_distributors\\_20130607.pdf](http://www.ontarioenergyboard.ca/OEB/_Documents/EB-2011-0043/PPWG_presentation_to_distributors_20130607.pdf)