



Report: PDL-CPL-15-35

Region of Waterloo
Planning, Development, and Legislative Services
Community Planning

To: Chair Tom Galloway and Members of the Planning and Works Committee

Date: June 16, 2015 **File Code:** D06-80

Subject: **Development of a Community Energy Investment Strategy**

Recommendation:

That the Regional Municipality of Waterloo take the following actions with respect to the development of a Community Energy Investment Strategy as described in report PDL-CPL-15-35, dated June 16th, 2015:

- a) Initiate participation by the Region of Waterloo in the development of a Community Energy Investment Strategy for Waterloo Region in collaboration with local partners;
- b) Authorize the Commissioner of Planning, Development and Legislative Services to enter into required agreements with the Ontario Ministry of Energy, Area Municipalities and regional electricity and natural gas utility companies, and any other related documents, with such agreements to be to the satisfaction of the Regional Solicitor;
- c) Approve an increase in the 2015 Community Planning Ten Year Capital Forecast of \$180,000 gross, with no net impact to be funded, as described in this report; and
- d) Authorize staff to develop the Strategy, as described in this report.

Summary:

The Regional Municipality of Waterloo, along with several local stakeholders, has been awarded a grant under a provincial program promoting community-scale energy planning.

There are several reasons why communities would engage in this type of planning:

- Advancing local economic development by attracting green tech/energy businesses, stimulating private and public investment in new innovative energy projects, job creation and reducing local business and residents' expenditures on energy;
- Responding to direction from the Ontario Ministry of Energy to engage stakeholders among different sectors within growing urban areas to coordinate regional energy planning efforts to become more energy self-sufficient;
- Collaborating with local energy distributors to optimize their incentive programs that fulfill provincially-mandated Conservation and Demand Management (CDM) targets; and,
- Achieving policies identified in the Growth Plan for the Greater Golden Horseshoe and updated Provincial Policy Statement related to land-use, energy and climate change.

This initiative proposes to build on the successful local collaboration established for climate action (i.e. greenhouse gas emission reduction targets), and would significantly leverage local resources to develop a Community Energy Investment Strategy. The strategy would help achieve other priorities such as economic development and community building in designated growth areas and will complement infrastructure master plans. This report provides an overview of the proposed scope and strategy development process. Several Ontario towns and cities are developing such strategies, but notably the Region of Waterloo would be the first regional municipality to be funded by Ontario's community energy planning program.

Report:

Background – Needs Served by the Proposed Strategy

In 2011-2013, the Regional Municipality of Waterloo, along with Area Municipalities and utility stakeholders, completed a community scale greenhouse gas emissions inventory and Climate Action Plan for Waterloo Region (see CR-FM-13-022, dated December 3, 2013). A number of actions within this plan pertain to the generation, transmission, distribution and efficient end use of energy resources consumed at a community scale within Waterloo Region.

The Climate Action Plan is currently being administered within a collaborative framework and progress is publicly reported on annual basis. There is a clear need identified within this plan to better integrate community energy management with strategic economic development opportunities. This integrative approach to implementation would require additional technical assessments, financial support and stakeholder engagement to inform the requisite decision-making processes.

In May 2013, the Ontario Minister of Energy asked the Ontario Power Authority and the Independent Electricity System Operator to recommend a new integrated regional energy planning process. The Ontario Regional Energy Planning Review was tasked with a focus

on improving the way large energy projects are sited with regard to strengthening processes for early and sustained engagement with communities and the public. In August 2013, a report based on input from 1,250 Ontarians advised the Ministry how to enhance regional electricity planning.

As a result of the review, the Independent Electricity System Operator (now officially merged with Ontario Power Authority) and the local electricity distribution companies recently produced a plan to serve the projected electricity demands for the Kitchener-Waterloo-Cambridge-Guelph planning area out to the year 2023 based on provincial population and economic forecasts. In a broader context of serving the inter-related energy and economic needs of the region, the near-to-mid-term plan leaves several outstanding issues which require further attention including items such as:

- local concerns with the plan's assumption that the electrical utility companies will meet aggressive energy conservation targets established for the year 2020;
- initiating a more robust exploration of the most cost-effective options to serve the region's energy needs other than electricity;
- need for ongoing involvement of local stakeholders in energy planning decisions particularly in the context of their effect on rate payers;
- establishing a clear framework to identify, assess and capitalize on opportunities for innovative, locally developed energy solutions; and,
- development of plans to fulfill the region's long-term energy needs beyond the year 2023.

Funding Opportunity

The Ontario Ministry of Energy launched a funding program in 2013 and broadened eligibility criteria in 2014 to support municipal community energy planning. Community energy planning integrates land use planning, policy, and region/city-scale energy management within the physical and jurisdictional boundaries of a municipality. This type of planning in Canada has demonstrated a real value in involving various different stakeholders who traditionally have had limited to no influence on community-scale energy planning processes in the past even though they are affected by related decisions and outcomes.

Community energy planning is a collaborative endeavour focused on addressing challenges and identifying opportunities related to reliably and cost-effectively meeting local energy needs, enhancing economic prosperity and promoting sustainable development. There are several reasons why communities would engage in this type of energy planning:

- Advancing local economic development by attracting green tech/energy businesses, stimulating private and public investment in new innovative energy projects, job creation and reducing local business and residents' expenditures on energy;

- Responding to direction from the Ontario Ministry of Energy to engage stakeholders among different sectors within growing urban areas to coordinate regional energy planning efforts to become more energy self-sufficient;
- Collaborating with local energy distributors to optimize local programs that fulfill provincially-mandated Conservation and Demand Management (CDM) targets; and,
- Achieving policies identified in the Growth Plan for the Greater Golden Horseshoe and updated Provincial Policy Statement related to land-use, energy and climate change.

Across Canada, 170 Community Energy Plans have been developed. In Ontario, this includes communities such as Barrie, Guelph, London, Markham, Oakville and Toronto, with several more in progress. The majority of Community Energy Plans have been developed in the past five years with many driven by concerns about rising energy costs, external influences on prices, greenhouse gas (GHG) emissions and climate change, and extreme weather impacts on energy infrastructure. Another important driver for community-scale energy planning is the recognition that it is a versatile tool to help capitalize on significant opportunities for local economic development.

Successful Funding Application

Regional staff met with a number of local stakeholders including area municipalities and local electric and natural gas utilities in October 2014 to explore interest in pursuing the provincial funding available to develop an integrated Community Energy Investment Strategy. Stakeholders discussed how development of the strategy could be tailored to help guide Waterloo Region to:

- optimize its use of energy resources;
- improve energy security and stability;
- achieve several economic development objectives,
- meet locally established GHG emission targets; and
- complement long-term municipal land use and infrastructure master plans.

In March 2015, a funding application was submitted to the Ministry of Energy by the Region with letters of support from the three Cities and the five utility companies serving the geographic area of Waterloo Region (collaborative organizations). Late in May 2015, the Region was notified that the application for maximum funding has been approved. The total project cost of \$180,000 will be funded by the Province (\$90,000), Collaborative Organizations (\$80,000) and the redeployment of \$10,000 from the Planning operating budget. Significantly, the Region of Waterloo is the first regional municipality within the Province to be funded by Ontario's community energy planning program. The Region, as the applicant, will administer all financial aspects for the development of the strategy on behalf of the collaborative organizations.

The Sustainability Planner within the Planning, Development and Legislative Services department would be the Region's staff lead for this initiative. The project is expected to take approximately two years to complete and is planned to commence this summer. Upon completion of the strategy, recommendations will be presented to regional and Area Municipal councils for their consideration along with the boards of local utilities and provincial authorities as required. An outline of the project's objectives, timelines, roles of funding partners and resourcing is included in Attachment A.

Proposed Next Steps

An agreement with Ontario Ministry of Energy, which outlines the terms of reference for the provision of grant funding for this project, must be signed by the Region to initiate the strategy development process. Additional agreements will be prepared as needed to formally commit the local funding partners to assist in developing the strategy. An RFP will need to be issued, in accordance with Regional Purchasing by-laws, for the purpose of retaining an experienced consultant to assist with the technical aspects of this project. Establishment of project teams and final work plans will be completed over the summer.

Area Municipal Consultation/Coordination

On October 10th, 2014, the Regional Municipality of Waterloo hosted a preliminary meeting to discuss community energy planning within the Region. The meeting included representatives from:

City of Cambridge	REEP Green Solutions
City of Kitchener	Sustainable Waterloo Region
City of Waterloo	University of Waterloo
Cambridge and North Dumfries Hydro*	Union Gas Limited*
Kitchener Utilities*	Waterloo North Hydro Inc.*
Kitchener-Wilmot Hydro Inc.*	

* Utility companies serving the geographic area of Waterloo Region

The objective of the meeting was to discuss the level of interest among stakeholders to advance a CEP, and to identify next steps. Quality Urban Energy Systems of Tomorrow (QUEST), a national non-profit specializing in integrated community energy solutions, facilitated the discussion and provided insightful commentary that helped lead local partners to developing a funding proposal to the Ministry of Energy.

Over the 2014-15 winter, support for the initiative was obtained from senior management in each municipality and the local electric and natural gas utilities. An outline of the strategy proposal was sent to Township Planning staff. Further, staff gave a presentation to Area Municipal and Township Economic Development Officers regarding the opportunity to develop a Community Energy Investment Strategy.

The draft of this report was reviewed by Area Municipal staff.

Corporate Strategic Plan:

Development of a Community Energy Investment Strategy primarily addresses the following Strategic Focus Areas and Objectives:

Environmental Sustainability: Protect and Enhance the Environment

- Integrate environmental considerations into the Region's decision making.
- Reduce greenhouse gas emissions and work to improve air quality.

Growth Management and Prosperity: Manage growth to foster thriving and productive urban and rural communities

- Develop, optimize and maintain infrastructure to meet current and projected needs.
- Support a diverse, innovative and globally competitive economy.

Service Excellence: Deliver excellent and responsive services that inspire public trust

- Strengthen and enhance partnerships with area municipalities, academia, community stakeholders and other orders of government.

Financial Implications:

An increase in the 2015 Community Planning Ten Year Capital Forecast of \$180,000 gross, \$0 net is required, to be funded \$10,000 by the Regional Municipality of Waterloo from the existing 2015 operating budget and \$170,000 by the Province, three cities and five local utility companies. The Region will administer all financial aspects for the development of the strategy.

Other Department Consultations/Concurrence:

The Region's Transportation and Environmental Services department has been consulted in the preparation of the funding application. The Region's Legal Services division is being consulted to develop the appropriate collaborative agreements with local funding contributors as well as to finalize required documentation with the Province of Ontario.

Attachments:

Attachment A - Community Energy Planning and Investment Strategy - Project Outline

Prepared By: David Roewade, Sustainability Planner

Approved By: Rob Horne, Commissioner, Planning, Development and Legislative Services

Attachment A - Community Energy Planning and Investment Strategy - Project Outline

Overall Purpose/Goal

Development of an integrated Community Energy Investment Strategy will guide Waterloo Region to optimize its use of energy resources, improve energy security, achieve several economic development objectives, reduce environmental impact (e.g. GHG emissions) and complement long-term municipal land use and infrastructure master plans.

Objectives

- A. Identify and advance local opportunities to develop alternative and renewable energy generation, cogeneration, district energy as well as smart energy networks factoring in local land use, transportation, waste and water master plans.
- B. Attract investment in local energy systems such as those mentioned above as well as use of bio-energy from agricultural residues and micro grids which can improve resiliency against external economic influences and weather-related impacts.
- C. Provide advanced analytics and market intelligence to optimize the impact of local conservation and demand-side management programs with regard to their incentives such as those for new construction, equipment retrofits and process/systems efficiency upgrades. This also includes greater cross-promotion of these programs amongst the Region and Area Municipalities, for example, through delivery of parallel water and wastewater services, within the process of issuing building permits and planning policy.
- D. Follow the Integrated Community Energy Solutions guiding technical and policy principles established by the national non-profit Quality Urban Energy Systems for Tomorrow in order to aid in optimizing energy efficiency and lowering GHG emissions from activities originating within Waterloo Region.

Stages (as required by Ontario Ministry of Energy funding program)

1. Baseline study and mapping - assessment of energy consumption spatially factoring in projected population/employment growth and forecasted energy needs.
2. Stakeholder engagement – identify local opportunities and priorities.
3. Plan development – evaluate actions identified, their cost/benefits and recommend options.

The Ministry of Energy expects stages 1 and 2 to each take six months to complete and stage 3 up to a year, to conclude with approval by local municipal/regional councils, for a total duration of 2 years.

Timelines and Resources

Stage	Timeline	Resources*	Deliverable
Prep	Jan. – Mar. 2015 April – July 2015	Regional, Municipal and Utility staff time	<ul style="list-style-type: none"> Funding application prepared and submitted to Ministry of Energy Provincial review of application, funding approval, agreements signed, RFPs issued
1	Aug. 2015 – Jan. 2016	Time + \$70,000	Baseline and forecasted energy profile (database and maps)
2	Feb. – July 2016	Time + \$50,000	Summary report of stakeholder consultations and identified priorities
3	Aug. 2016 – June 2017	Time + \$60,000	Approved Community Energy Plan

*Funding formula: Province 50%, Local partners 50% (Region/Cities/Utilities)

Primary Stakeholders and Roles

Region of Waterloo	Lead funding application and coordinate all stages
Area Municipalities	Support funding application; co-lead all three stages with Regional staff as key stakeholders, decision-makers, and approval authorities
Local Utilities	Support funding application and participate in all three stages including providing data and technical guidance for stages 1 and 3.
Consultants	Services required for mapping and data modelling in stage 1, facilitation of stage 2 and cost benefit analysis within stage 3.

Additional input will be sought from organizations such as but not limited to the four area Townships, Waterloo Federation of Agriculture, Grand River Conservation Authority, REEP Green Solutions, Sustainable Waterloo Region, University of Waterloo Institute for Sustainable Energy, Wilfred Laurier Centre for Business and Sustainability, local

Chambers of Commerce and the new Waterloo Region Economic Development Corporation.

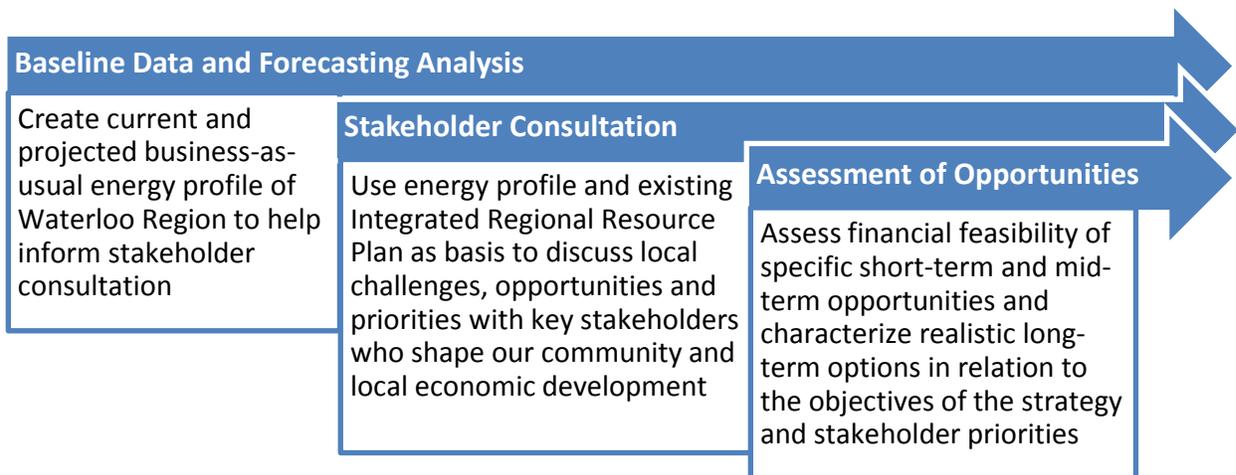
Overview of Process

The overall approach for this strategic undertaking recognizes the following challenges:

- energy-related decisions are made by various public and private sector stakeholders at different geographic scales and affect many others not involved;
- energy systems that serve communities are vulnerable to external economic and weather influences and many communities currently have limited understanding on how to effect change in this regard;
- in terms of energy supply, many cities and towns in Ontario see the vast majority of their expenditures on energy leave the community which may result in lost opportunities for local economic development, and;
- failure to provide reliable and cost-efficient infrastructure can limit economic growth potential and hinder effectively serving the needs of growing communities.

Therefore it is critical to examine the spatial characterization of energy use, distribution and supply as it overlaps with current and future land use as well as infrastructure planning in order to help identify opportune locations and the political and socio-economic context for local energy investments and improvements. Ancillary to this focus is the need to meaningfully engage stakeholders who historically are not involved in the energy planning dialogue from an energy systems perspective (i.e. supply, generation, distribution and recovery, end-use design including conservation and demand-side management as well as emissions).

The diagram below illustrates a high-level summary of the process to develop the Community Energy Investment Strategy.



Energy consumption and land-use planning data will be compiled from utility and area municipal stakeholders to construct a spatial illustration of energy density and intensity for both a base and forecasted year. These energy profiles will help form the analytical platform of which to assess opportunities, challenges and priorities established throughout the strategy development process.

Stakeholder engagement will likely be conducted via facilitated group consultations and forums and may include use of on-line social media tools. Overall engagement is proposed to be organized into the following six themes (includes suggested target stakeholder groups and sample topics to further investigate):

- i) **New construction** (Developers, municipal planners and building officials, utilities, University of Waterloo Institute for Sustainable Energy, Waterloo Region Economic Development Corporation) – green building standards/incentives, potential for district energy, innovative smart grids and micro grids;
- ii) **Medium to large industrial, commercial, institutional energy/water users** (large manufacturers, food/beverage processing and high tech sectors, local post-secondary schools, utilities, municipalities.) – onsite combined-heat and power, biomethane reactors, renewable energy, energy storage, conservation and demand–side management;
- iii) **Residential energy (existing building stock)** - (REEP Green Solutions, utilities, area municipalities) – neighbourhood energy retrofit programs, photovoltaics and solar hot water heating, geothermal heating and cooling systems, conservation and demand–side management;
- iv) **Transportation** (area municipalities, Sustainable Waterloo Region and other non-governmental organizations focussed on mobility, local organizations with large fleets) – Transportation Demand Management, bio-fuels, electric vehicle charging infrastructure;
- v) **Agribusiness and waste management** (farm groups, Region of Waterloo Waste Management, Township representatives, utilities, University of Waterloo Institute for Sustainable Energy) – Bio-energy from sustainably harvested residual crop waste and livestock manure management or from dedicated energy crops on marginal lands, energy from municipal solid waste, bio-gas cogeneration at wastewater treatment plants;
- vi) **Strategic Finance** (Local Community Foundations, Sustainable Waterloo Region, REEP, local credit unions, municipalities, utilities, Wilfred Laurier Centre for Business and Sustainability other investor interest groups) – this theme will explore use of innovative financing mechanisms (e.g. green bonds, crowd funding) to support implementation of priorities arising from the other five themes.

By organizing community engagement into these clustered themes within the strategy development process, stakeholders will be linked to the technical, policy and financial experts and resources to achieve value-added outcomes as illustrated below. The proposed themes and overall consultation work plan will be further refined and developed with the use of consultant services and will involve input from funding partners. Assessment of opportunities and development of the final strategy will follow a similar process and incorporate specific considerations and recommendations as they relate to the growth and development of Waterloo Region.

Community Energy Collaborative Value-Added Wheel

