



OAKVILLE

REPORT

COUNCIL MEETING ADDENDUM

MEETING DATE: JANUARY 25, 2020

FROM: Economic Development and Corporate Strategy Department

DATE: January 19, 2021

SUBJECT: District Energy Studies Collaboration

LOCATION: All

WARD: Town wide

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RECOMMENDATION:

1. That a Memorandum of Understanding (Appendix A) with the Consulate General of Denmark in Toronto regarding a collaboration to develop district energy studies in Oakville be endorsed;
2. That the Town Solicitor be authorized to make any reasonable minor modifications to the Memorandum of Understanding; and
3. That the CAO and Clerk be authorized to execute the Memorandum of Understanding, subject to the satisfaction of the Town Solicitor.

KEY FACTS:

The following are key points for consideration with respect to this report:

- On February 25, 2020 Council unanimously endorsed the Oakville Energy Task Force's Community Energy Strategy that established 2041 goals for energy efficiency, emissions reduction and economic stimulus for the community of Oakville.
- The Consulate General of Denmark in Toronto has received DKK 570,500 (approx. \$119,000 CAD; 200,000 DKK in 2020 and 370,500 DKK 2021) via the Danish Energy Agency to support district energy studies in Oakville from the Denmark Government.
- The town will contribute up to \$50,000 dollars to support district energy studies in 2021.
- To facilitate this collaboration with the Consulate General in Denmark a Memorandum of Understanding (MOU) is attached as Appendix A.

- The district energy studies will support the implementation of two of the Community Energy Strategy’s Priority Projects.

BACKGROUND:

On February 25, 2020 Council unanimously endorsed the Oakville Energy Task Force’s Community Energy Strategy (hereby referred to as the Strategy). The Strategy established twelve Priority Projects to be completed within the next five years that put the community of Oakville on the best path to achieving the Strategy’s 2041 goals to:

1. Increase energy efficiency by at least 40% by 2041;
2. Enable transition to a goal of carbon neutrality by reducing greenhouse gas (GHG) emissions by at least 50% by 2041;
3. Return at least \$7 billion in cumulative energy cost savings to the community by 2041.

The Strategy also outlines a number of Strategic Objectives to achieve by 2041. One of these is to:

Implement district energy in high growth districts (as identified in the Strategy) with a mix of combined heat and power and other low carbon heating and cooling sources.

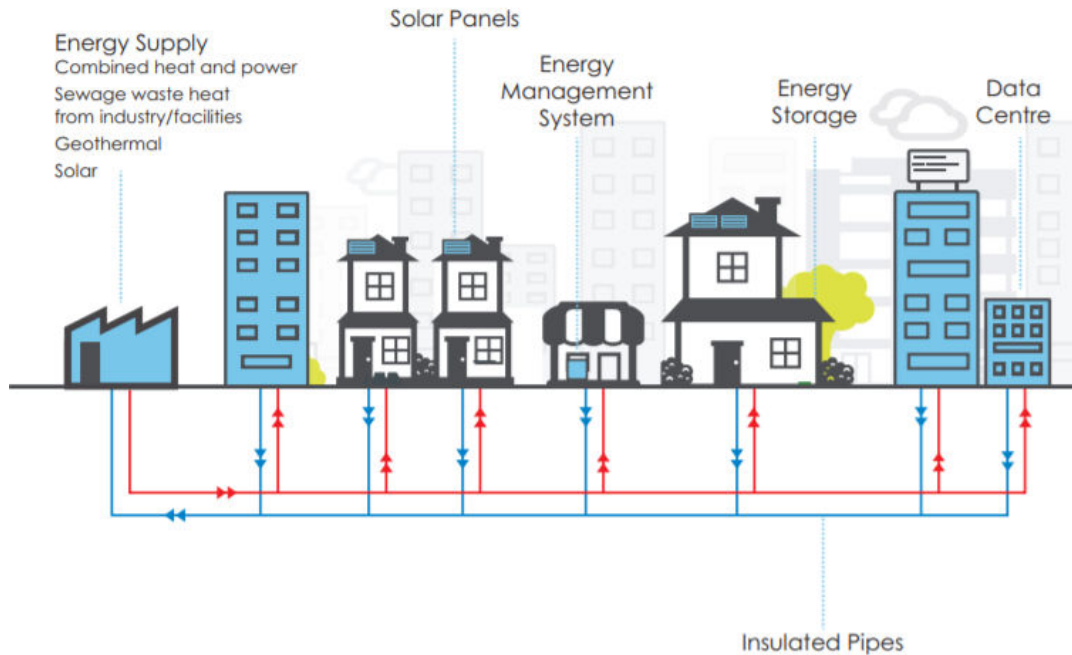
Achieving this objective will require significant coordination between the town, developers, utilities and other stakeholders. The following Priority Projects are recommended in the Strategy to facilitate success:

Priority Project 6.1	Complete a business case for establishing a company to distribute thermal energy to homes and buildings
Priority Project 9	Continue to integrate Local Energy Supply and Distribution (District Energy) targets into municipal policy, regulations and processes, and ensure municipal measures are identified to achieve this strategy including: <ul style="list-style-type: none"> • promote an enabling municipal policy environment for near net zero neighbourhoods • promote an enabling municipal policy environment for district energy

More information about the Oakville Energy Task Force, the process for establishing the Community Energy Strategy and the Strategy’s goals, targets and Priority Projects can be found in a report to Council from February 25, 2020.

What is District Energy?

District Energy systems are a network of hot and cold-water pipes, typically buried underground that are used to efficiently heat and cool buildings using less energy than if the individual buildings were to each have their own boilers and chillers. A modern district energy system concept is illustrated below.



Scaled implementation of district energy in Oakville offers many benefits to community and homeowners. Two key benefits include: 1) lowering the carbon impact of meeting the heating, cooling and hot water needs of homes and buildings through the distribution of heat and cooling; and 2) reducing energy losses from generation, transmission and distribution associated with the current centralized energy system.

Consulate General of Denmark in Toronto

On February 25, 2020 the Consulate General of Denmark in Toronto (hereby referred to as 'Consulate') delegated to Council their support for the Community Energy Strategy and the Oakville Energy Task Force's direction to implement scaled district energy infrastructure in high growth areas of Oakville.

The Consulate sits within the Ministry of Foreign Affairs of Denmark's Trade Council. In the context of their work as the Danish District Advisory, the Consulate has two key drivers:

1. To educate and share the knowledge on both sides of the Atlantic of best practices of designing and implementing low carbon district energy (heating and cooling) production and distribution in North America.
2. To bridge the gap in the North American district energy market with Denmark's decades of experience in energy distribution efficiency, sustainability, services, technologies and products.

The Consulate can provide critical support in implementing the Community Energy Strategy by sharing their knowledge of district energy through Denmark's decades of experience as a global leader, as well as help build the town's and community's network of experts. For example in November 2020, the town collaborated with the Consulate, Minto Communities, Vancouver Economic Commission and others to host a three-day virtual hackathon. Twenty Canadian and Nordic sustainability solution seekers teamed up to develop innovative circular economy proposals for the upcoming Oakvillage Phase 4 development in North Oakville.

The Consulate has also applied and successfully received funds to support Oakville's district energy efforts from the Denmark Government through the Danish Energy Agency. The Danish Energy Agency has a focus on driving international projects that promote the Danish green energy transition and helping Danish companies to boost their exports.

COMMENT/OPTIONS:

The Consulate General of Denmark in Toronto (Consulate) has received DKK 200,000 (~ \$41,000 CAD at December 2020's rate) to develop a pre-feasibility study and DKK 370,500 (~\$78,000 CAD at December 2020's rate) to develop a feasibility study for district energy in Oakville.

Scope of the Consulate and Town Collaboration

A Memorandum of Understanding (Appendix A) outlines a non-binding collaboration between the Town of Oakville and the Consulate to work together to promote district energy and energy efficiency in buildings, with a view to sharing knowledge, experience, data, and best practices relevant to the development of district energy and more energy efficient buildings. As part of this Memorandum of Understanding, the Consulate has identified consultants from Ontario and Denmark to lead development of these studies.

The studies that include, but are not limited to, the following:

- Developing an understanding of district energy opportunities in Oakville building on, rather than duplicating, the findings of the Community Energy Strategy;
- Establishing key success criteria for district energy systems in Oakville (i.e. minimum rate of return, greenhouse gas emissions, etc.);

- Deepening the town's understanding of the thermal demand and supply opportunities as well as the benefits of district energy in Oakville;
- Identifying any local constraints;
- Completing a pre-feasibility and feasibility level lifecycle cost-benefit assessment of a district energy system for two sites to compare with a reference case; and
- Outlining project next steps and available business models for realizing the benefits of the proposed district energy opportunities.

Studies will support the Strategy's Priority Projects

The studies scoped in this collaboration will not replace Priority Project 6.1 to develop a business case for establishing a district energy company. Rather, the intention of these studies is to heighten the town's understanding of district energy in the context of Oakville, explore how the town can build on a strong foundation of enabling policies and act as a tool to attract external investment into developing a comprehensive business case (estimated at \$250,000 in the Community Energy Strategy) and/or district energy projects.

While these studies explore the technical opportunity for district energy in Oakville, development of a business case will be essential in establishing a thermal utility to own and operate district energy. As stated in the Community Energy Strategy, a barrier to growing district energy networks in Canada is the lack of appropriate governance structures. Scaled district energy networks are typically run as a thermal utility by a company that operates all the plants and networks, ensures service quality and manages the metering and billing of the heating and cooling services.

Town's Contribution to Studies

Town staff will contribute to these studies by providing project management, supporting data sharing as well as providing in-house knowledge and expertise.

The Town of Oakville will also contribute up to \$50,000 CAD to supplement the funds provided by the Consulate as needed to complete of the studies. These funds will be taken out of existing budget.

Summary

A collaboration between the Town of Oakville and the Consulate General of Denmark in Toronto (Consulate) to develop the studies for district energy in Oakville will provide key foundational pieces to two of the Community Energy Strategy's Priority Projects: 6.1) Establish a business case for a thermal utility and 9) promote an enabling policy environment for district energy and near-net zero neighbourhoods.

The collaboration will also provide an example of community-driven Strategy implementation, as was recommended by the Oakville Energy Task Force. This

collective approach leverages the networks, resources and expertise of both the town and the Consulate to mobilize a transformation in Oakville's local energy supply and distribution systems and supports the town's commitment to addressing the climate emergency recognized by Council on June 24, 2019.

CONSIDERATIONS:

(A) PUBLIC

The studies provide a foundational piece to understanding the opportunities for district energy in Oakville and supporting the work identified as a priority under the community led Community Energy Strategy.

(B) FINANCIAL

The Consulate General of Denmark in Toronto is contributing DKK 570,500 (~\$119,000 CAD) on the Town's behalf for completion of the studies. The Town will provide up to \$50,000 as outlined in the Agreement (see Appendix A). These funds will be drawn from existing budget.

(C) IMPACT ON OTHER DEPARTMENTS & USERS

The district energy studies will need inputs and engagement from Economic Development and Corporate Strategy, Planning, Facilities and Construction Management, Engineering and Construction and other municipal departments. External stakeholders will be identified as part of the project and include the Oakville Energy Task Force, local utilities and developers.

(D) CORPORATE AND/OR DEPARTMENT STRATEGIC GOALS

This report addresses the corporate strategic goal to:

- enhance our natural environment
- enhance our economic environment
- have environmentally sustainable programs/services
- continuously improve our programs and services
- be innovative in everything we do
- be the most livable town in Canada

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(E) COMMUNITY SUSTAINABILITY

The district energy studies strongly support the economic and environmental pillars of sustainability for the community. The study moves Oakville closer to mitigating the impact of building energy use, reducing GHG production and supporting the Community Energy Strategy (CES) goals to increase energy efficiency by at least 40% by 2014 and reducing greenhouse gas emissions by at least 50% by 2041. Through seeking ways to reduce our residential energy load, costs can be reduced, supporting the CES goal of returning at least \$7 billion in cumulative energy costs savings to the community by 2041.

APPENDICES:

Appendix A – Memorandum of Understanding

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