

## **Strengthening Municipalities Through Energy Choices**

**By:** Tiana Strome and Nakita Whyatt

*At the Economic Developers Council of Ontario 2021 annual conference “EvolveOn”, Tiana Strome and Nakita Whyatt, students in the post-graduate Public Administration Program at Seneca College, summarized the workshop entitled “Strengthening Municipalities Through Energy Choices”. Speakers present were IESO Director of Corporate Affairs, Candace Tricky, IESO Senior Manager, Pat Lo (moderator), City of Thunder Bay’s Acting Sustainability Coordinator, Summer Stevenson, President of Great Northern Hydroponics, Guido van het Hof, and EnergyHub’s Vice President of Customer Solutions, Erika Diamond.*

### **Abstract**

In early 2021 post-graduate students of Seneca College’s Public Administration program were invited to attend the EDCO EvolveON conference. The presenters attended and summarized the session titled “Strengthening Municipalities Through Energy Choices”, which was sponsored by the Independent Electricity System Operator (IESO). Pat Lo, IESO Senior Manager, highlighted three innovative approaches to Ontario’s predicted increase in energy usage. (1) Thunder Bay’s Community Energy and Emissions Plan (CEEP); (2) Great Northern Hydroponics (GNH) Combined Heating & Power System (CHP) with Soave Cogeneration; and (3) EnergyHub’s Bring Your Own Thermostat Program.

**Keywords:** *Sustainability, Agriculture, Bring Your Own Thermostat Program, Thunder Bay Community Energy and Emissions Plan (CEEP), EDCO EvolveON, IESO, EnergyHub, Soave Cogeneration, Great Northern Hydroponics (GNH), Combined Heating & Power System (CHP), Ecobee*

### **Introduction**

Ontario’s evolving electricity system is creating new ways for businesses and communities to get involved. The IESO is focused on planning for the future electricity needs of the province. There is a new focus on regional planning, which bridges the gap between what is happening at the provincial level and what is happening in communities. Regional planning ensures that the provincial plans align with local community goals.

The IESO has forecasted new trends emerging at the provincial level. After many years of experiencing an energy surplus, the province is moving toward a period where the surplus is diminishing and there will be a need for more energy resources. This increase in demand for energy is largely due to increased agriculture growth, electrification of transit, and growth in the residential sector. In addition, the landscape of Ontario is changing in the coming decades with the retiring of the Pickering Power Plant this decade and many other nuclear plants undergoing refurbishments. These changes will require new provincial supplies to ensure the reliability of the grid.

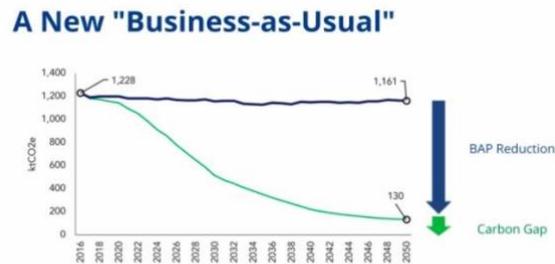
Although these changes are happening at the provincial level, there are opportunities for communities to develop their own alternatives that reduce demand during peak periods but continue to allow businesses to create revenue. Communities across the province are increasingly interested in local electricity resources that help them to achieve their own priorities.

## 1) Thunder Bay's Community Energy and Emission Plan

Thunder Bay's acting sustainability coordinator Summer Stevenson is facilitating the development of the city's first Community Energy and Emission Plan (CEEP). On January 13, 2020, Thunder Bay city council declared a climate emergency and recommendations were put forth by the intergovernmental panel on climate change. Thunder Bay is using CEEP to achieve the recommended net zero emissions by 2050.

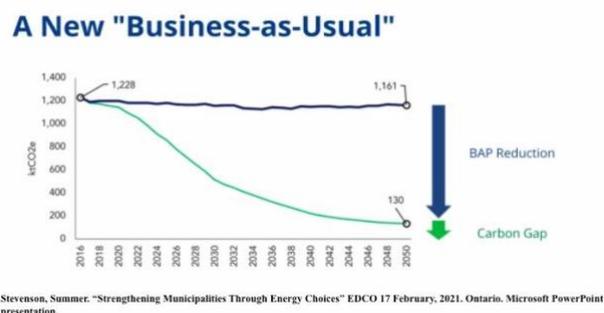
CEEP is a comprehensive, long-term plan to improve energy efficiency and reduce energy consumption, foster green energy solutions, and support economic development. It is tailor-made for the community and an evidence-based plan that provides an analysis of energy use across the entire geographic municipality and identifies opportunities for all sectors. Thunder Bay has been using the Ontario Ministry of Energy planning framework which breaks the CEEP process into three steps.

The first stage is stakeholder engagement. In order to help guide the development of CEEP, a stakeholder advisory committee was formed in September 2019 and has met six times in order to provide comments and review progress. The second and third steps can be seen in figure one and involve conducting a baseline energy study and developing Thunder Bay's low carbon pathway, which is the path to the net-zero target if thirty-one specified actions are completed. The baseline energy study was completed in 2016 and models out a projection to the year 2050 if Thunder Bay continues on a "business as usual" trajectory (Figure 1):



Stevenson, Summer. "Strengthening Municipalities Through Energy Choices" EDCO 17 February, 2021. Ontario. Microsoft PowerPoint presentation.

This is visualized by the blue line. Thunder Bay's carbon pathway is the city's path to its net-zero target if thirty-one specified actions are completed. This is visualized by the green line (Figure 2):



During the panel, six actions were highlighted that will help Thunder Bay reduce emissions by 75%. These actions are:

- Retrofit buildings (reduce energy use by improving efficiency in homes);
- Fuel switching water and space heating away from fossil fuels;
- Electrifying personal vehicles;
- Increasing efficiency of the industrial sector;
- Fuel switching combined power systems to lower carbon sources;
- Generating local renewable energy; and
- Diverting waste to an anaerobic digester for methane capture.

Currently Thunder Bay is developing a five-year implementation framework that will allow immediate action when the plan is approved. Thunder Bay anticipates that this plan will be complete by Summer 2021.

## 2) Great Northern Hydroponics (GNH): Year-Round Fresh Tomatoes

Guido van den Hof, with GNH, discussed how their co-generation 70-acre facility uses energy-efficient technology to produce 20 million pounds of fresh tomatoes year-round. In combination with their sister company Soave Cogeneration, they signed a 20-year contract with the IESO in 2006 to develop more flexibility in the grid's supply and demand.

Running on a CHP, generates enough power to supply 12,000 homes. For GNH, the interest was in reducing the flume gas, which added considerable operating costs due to the gas blocking the photosynthetic process plants require to survive. By maintaining the greenhouse's ideal temperature, they collect CO<sub>2</sub> for fertilization; an alternator spins while the engines are used to direct the electricity to Ontario's power grid.

In 2011, GNH was the first commercial greenhouse to implement supplemental lighting from October to April, allowing them to mimic natural light levels during these darker months. In October 2020, GNH connected with the IESO, with the *Save On Energy*

program's help, to switch to high-pressure sodium lights. The new advancement in LED technology means they could reduce our power load by 1.2 to 6 megawatts.

GNH is in continuous discussions with other parties and governments to be a part of the solution. They are currently in talks to expand the facility, research light technologies to continue conservation efforts, participate in provincial climate objectives, and switch to use fully biodegradable packaging to lower their carbon footprint.

### **3) EnergyHub: Data Collection and Controlling the Grid**

Erika Diamond, with EnergyHub, discussed how small changes could have significant impact and get the community to engage in a part of the process decrease energy use. They emphasize the use of devices that people already have and what municipalities can do to leverage usage, basing it on the grid's needs. They do this by collecting and sharing data from the devices with local energy companies to control the devices when the grids require them to manage the programs from start to finish.

One of those local partners, Ecobee, supports residents once they have the devices through an app. When customers use the app, it increases the potential for them to purchase additional Ecobee products; therefore, EnergyHub indirectly promotes local businesses' growth.

EnergyHub will be working with York Region by implementing a Bring Your Own Thermostat (BYOT) program. Customers will purchase their thermostats from local stores and install them in their homes. Once registered, the thermostat is instantly enrolled into the program, then EnergyHub or the utility partners can control them as the grid requires. Through winning the contract with IESO, they can deliver the demand response Summer 2021. Placing plans like this in areas that are typically very expensive keeps rates lower. The BYOT program also encourages community residents to support local businesses and to make it easier for them to do their part in supporting clean, carbon-free energy.

### **Conclusion**

The presentation by EDCO, sponsored by the IESO, highlighted three innovative ways that local communities are responding to the forecasted provincial energy crisis. Thunder Bay, Great Northern Hydroponics and EnergyHub are three examples of how local communities are able to reduce energy costs. The presenters hoped that these examples serve as encouragement for local municipalities and companies to collaborate with the province and create their own innovative solutions.

## **Works Cited**

Diamond, E, G. v. h. Hof and S. Stevenson. "Strengthening Municipalities Through Energy Choices," *Economic Developers Council of Ontario conference*, 17 February 2021, Ontario, Canada.