

## Deep Lake Water Cooling Supply Expansion

The City of Toronto (City) and Enwave Energy Corporation (Enwave), as co-proponents, are carrying out an assessment to examine expanding the existing Deep Lake Water Cooling (DLWC) supply. This assessment is being done in accordance with Schedule “B” of the Municipal Class Environmental Assessment (Class EA), which is an approved planning process under the Environmental Assessment Act.

The City and Enwave operate under an existing Energy Transfer Agreement (ETA) that facilitates the transfer of cooling energy from the City’s drinking water infrastructure to Enwave’s District Energy System through heat exchangers.

Since 2004, the existing DLWC supply has used a renewable cold water resource as the primary source of cooling for Enwave’s District Energy System, which provides cooling to over 80 buildings within the City’s downtown core, including critical care facilities, government buildings, data centers, universities and commercial and residential towers. Under the ETA, Enwave contributed to the construction of City infrastructure, including three new deep lake intake pipes which improved raw water quality, and Enwave continues to contribute to the City’s operation and maintenance costs.

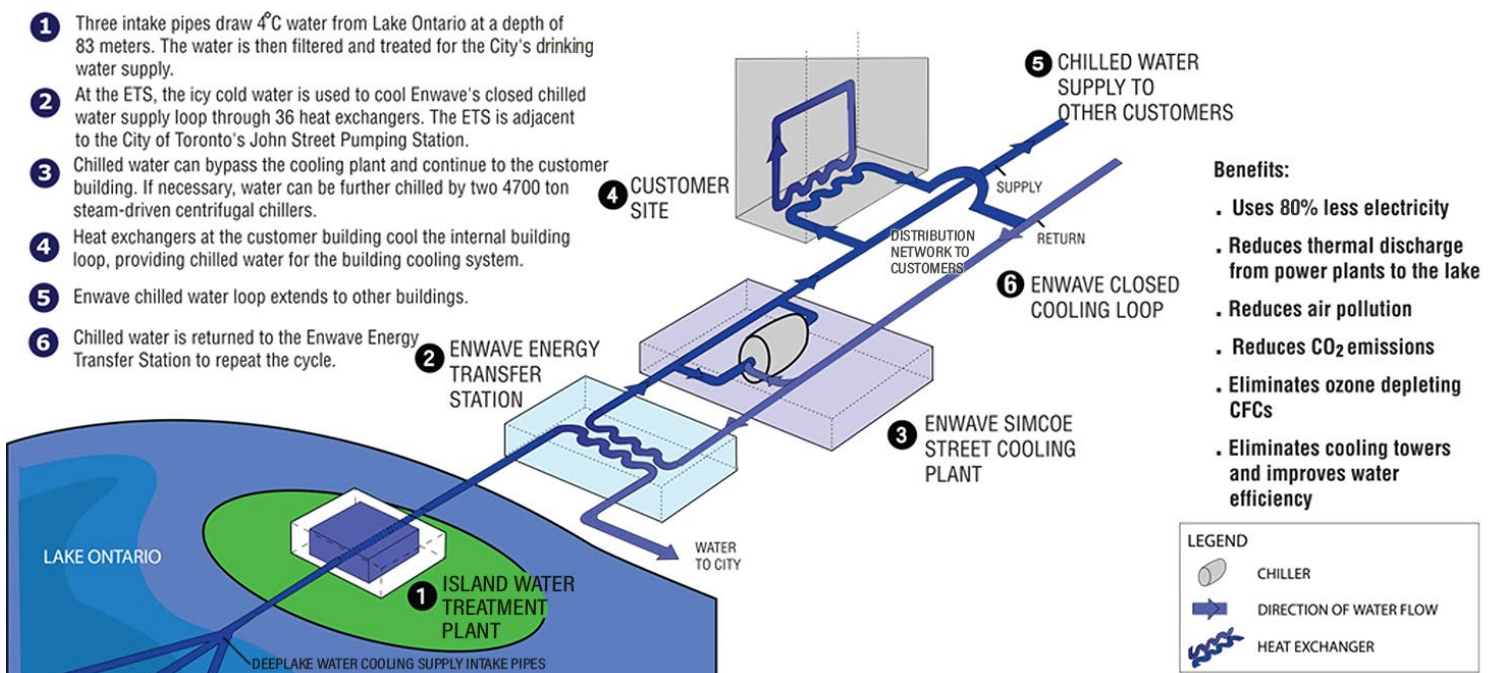
The current DLWC supply has capacity to meet Enwave’s current cooling demands. However, there is continued growth in demand for cooling in Toronto’s downtown core and Enwave anticipates about a 35% increase in its’ customers’ cooling demand over the next few years. In order to meet that demand, the target in-service date for the expanded facilities is the 2023 cooling season.

Benefits from the expansion of the DLWC supply include:

- Reducing energy use, in alignment with the City’s TransformTO Plan to reduce greenhouse gas emissions. The expansion of the DLWC supply could reduce demand on the electricity grid by about 18 to 74 million kWh, and reduce water demand by about 0.3 to 1.2 billion liters annually through the increased use of this renewable energy for cooling.
- Improving reliability, redundancy, and operational flexibility through the construction of new and repurposed unused City infrastructure.
- Increased revenues to the City under the ETA and reduced operation and maintenance costs.

## How does the existing DLWC Supply work?

The City's Island Water Treatment Plant (Island WTP) draws cold water from three intake pipes that extend deep into Lake Ontario. Before entering the City's distribution system, the treated water passes through Enwave's Energy Transfer Station (ETS). There, heat exchangers transfer thermal energy from the district cooling water loop to the cold drinking water thereby chilling the water in the district cooling loop. The rechilled cooling water is circulated through a closed loop running throughout downtown to provide cooling to buildings, and then Enwave recycles the heat, returning the warm water to the ETS to repeat the process.



## What is the purpose of this Class EA?

This Class EA study will assess the proposed expansion of the DLWC supply to meet the near and long term cooling needs of Enwave's current and future customers in Toronto. The recommended solution identified by the study will need to meet the following:

### Problem & Opportunity Statement:

The City and Enwave operate under an existing Energy Transfer Agreement (ETA) that enables Enwave to use the City's drinking water supply infrastructure to facilitate energy transfer with Enwave's District Energy System. With the growing cooling demands in downtown Toronto, there is an opportunity for the City and Enwave to amend the ETA and expand the DLWC supply to meet that demand in a mutually beneficial way. Specifically, the expansion must:

1. Continue to use renewable cold-water resource for cooling via the expansion of the existing Deep Lake Water Cooling (DLWC) supply;
2. Be in alignment with the City's TransformTO Implementation Plan and Climate Change initiatives;
3. Sustainably meet future service demands in a financially and technically feasible manner;
4. Improve reliability, redundancy, and operational flexibility in the City and Enwave's existing infrastructure;
5. Preserve the security, quality and purity of Toronto's drinking water while improving the City's financial position and reducing its operating costs; and
6. Meet Enwave's required in-service date of the 2023 cooling season.

## **What are the alternatives for expanding the DLWC supply?**

As part of the study, the City and Enwave will evaluate two alternatives for expansion of the existing DLWC supply.

### **1. Expand the Existing DLWC Supply**

- This alternative would consider expanding the existing DLWC supply. Up to two existing inactive shallow intake pipes at the Island WTP could be slip lined and extended deep into Lake Ontario to a depth with constant cold water supply. The new intake pipe(s) would be inter-connected with the three existing intake pipes at the Island WTP.
- Raw water would be conveyed from the raw water intake pipes to the existing District Energy System through a new tunnel from the Island WTP to the ETS, separate from the City's drinking water supply. The cold water would pass through new heat exchangers at the ETS. The warmer water would then be transferred to the Simcoe Street Cooling Plant (SSCP) via an existing tunnel. At the SSCP, the water would provide supplemental cooling before being discharged back into Lake Ontario via an existing connection to the City's stormwater system.

### **2. Do Nothing (No Expansion of the Existing DLWC Supply)**

- Under this alternative the existing DLWC supply would not be expanded.
- Other means of meeting the cooling demand would still be available to be implemented, such as individual buildings generating their own cooling supply, or Enwave expanding its District Energy System by adding additional mechanical chillers.
- The City would not receive additional infrastructure or increased revenue from the expanded DLWC supply.

## Class EA Process

As the DLWC supply is interconnected with the City’s infrastructure, the expansion must follow the requirements set out in the Municipal Engineer’s Association Municipal Class EA process. This includes identifying potential environmental impacts, minimizing or avoiding the impacts, incorporating environmental factors into the decision making and consulting with the public. The study will be carried out according to requirements for “Schedule B” projects.



A public event is planned for the spring of 2020 to bring forward the evaluation of the alternatives for public review and comment. For more information on the Class EA study, please visit the project website at [www.toronto.ca/dlwcexpansion](http://www.toronto.ca/dlwcexpansion).

## We would like to hear from you:

Public participation is an important part of this study. We welcome your feedback via in-person participation at public events, or by phone, mail and email.

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*Questions about the collection of personal information may be addressed to the contact person noted above in this newsletter.*