GLOBE 2006
Vancouver

Techtalk Presentation

Deep Lake Water Cooling
How it works

March 30, 2006

enwave SMART ENERGY ENERGY CORPORATION

Agenda

- What is Deep Lake Water Cooling
- Design Concepts
- Construction Progress

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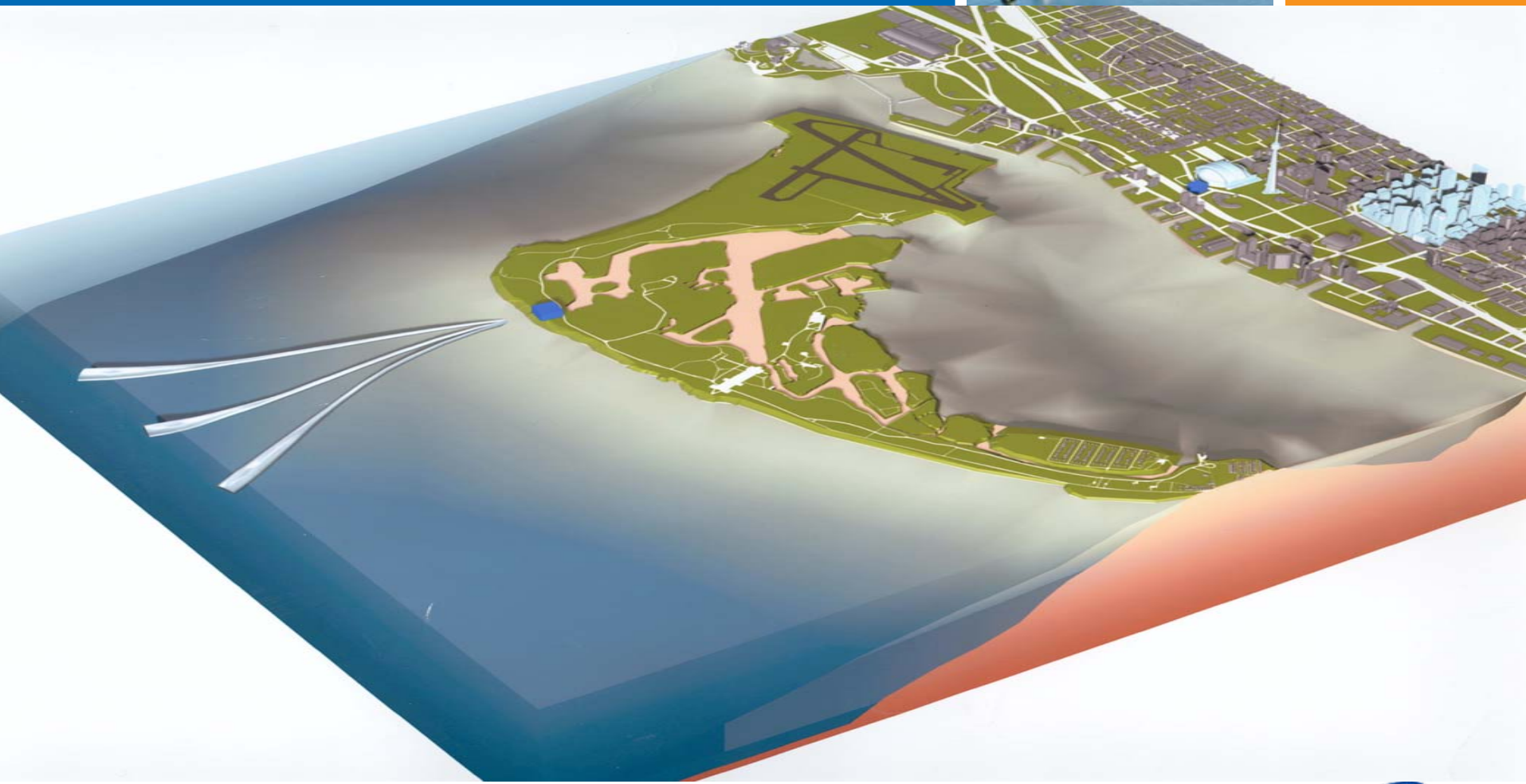

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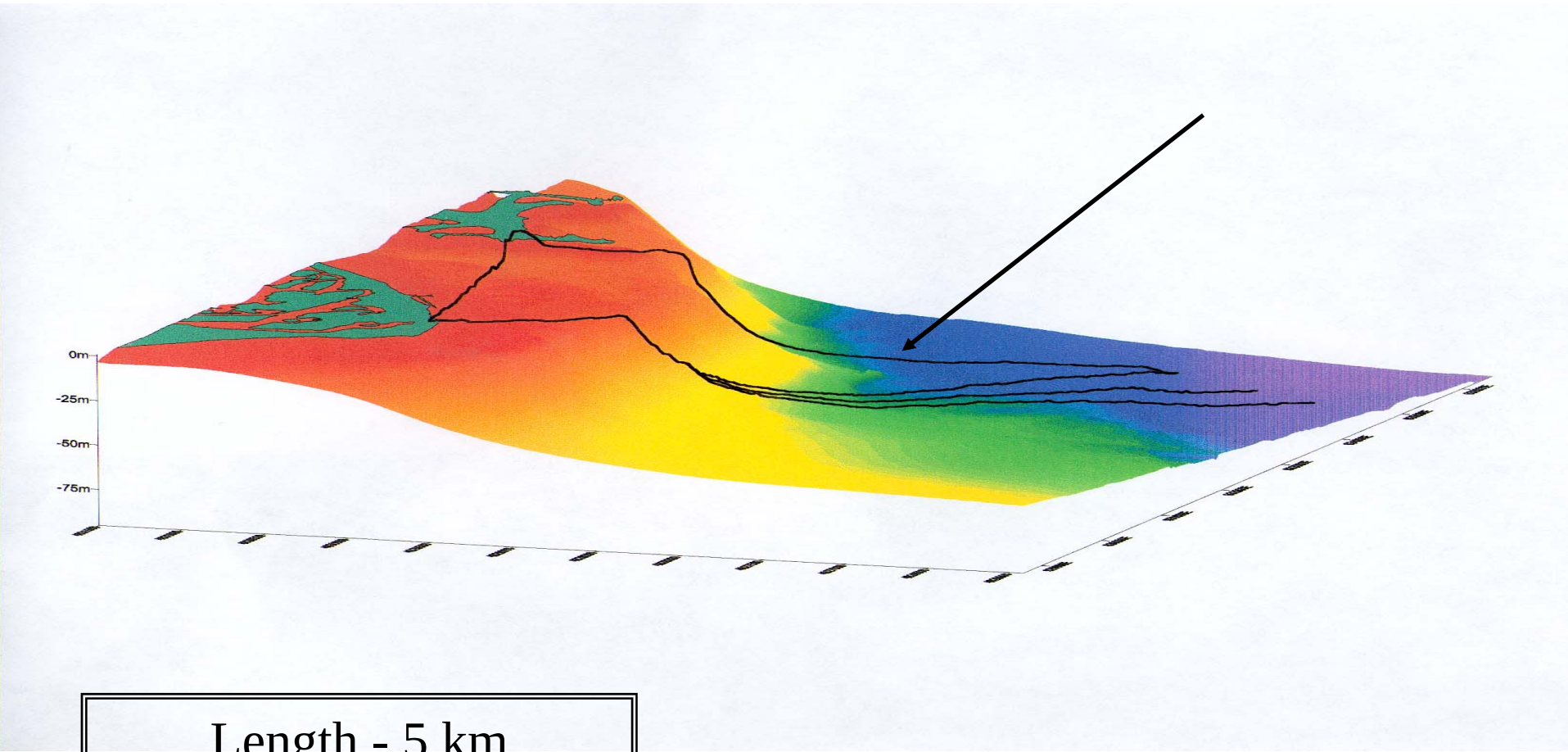

Length - 5 km
Depth at Intake - 83 m

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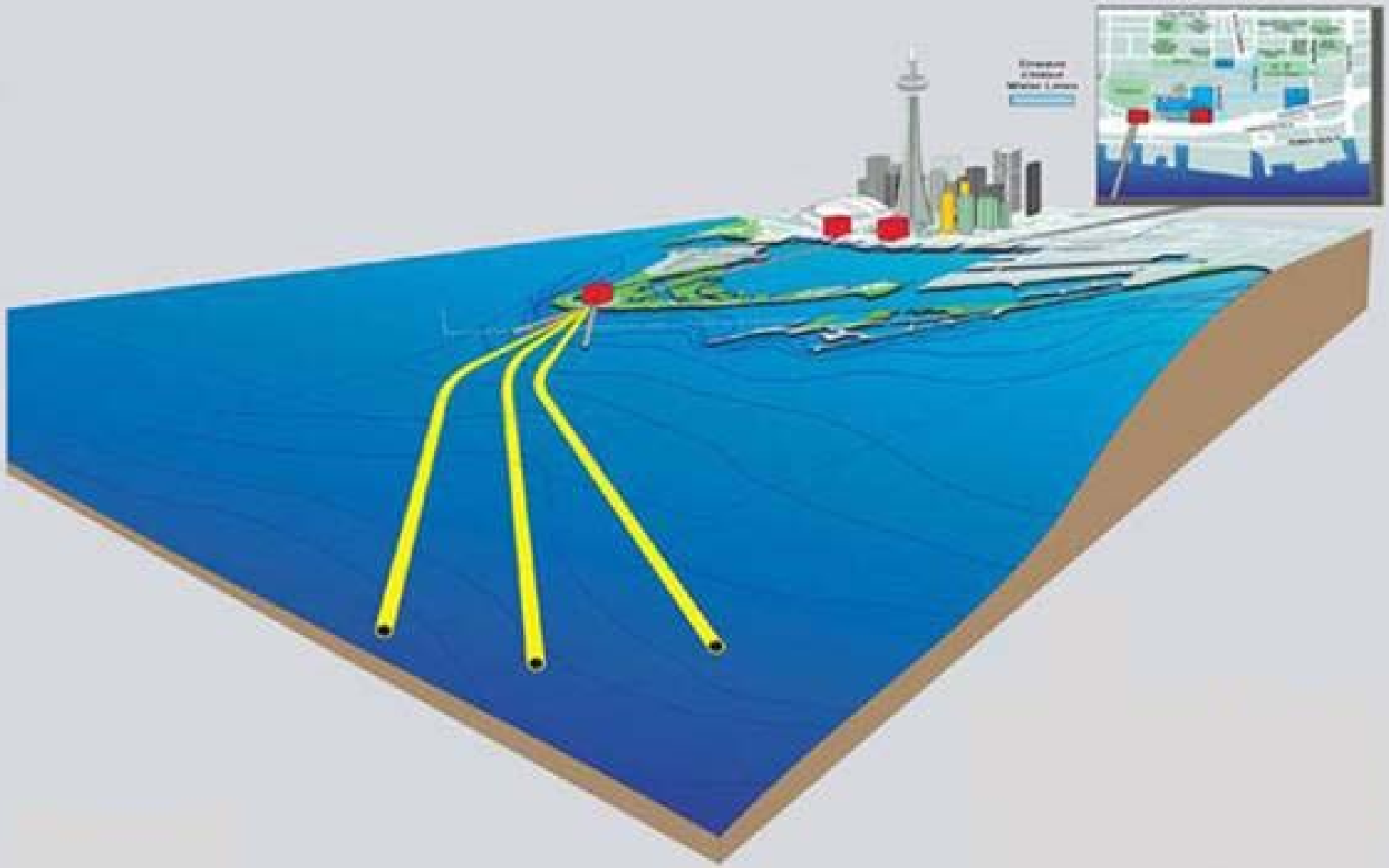
Deep Lake Water Cooling



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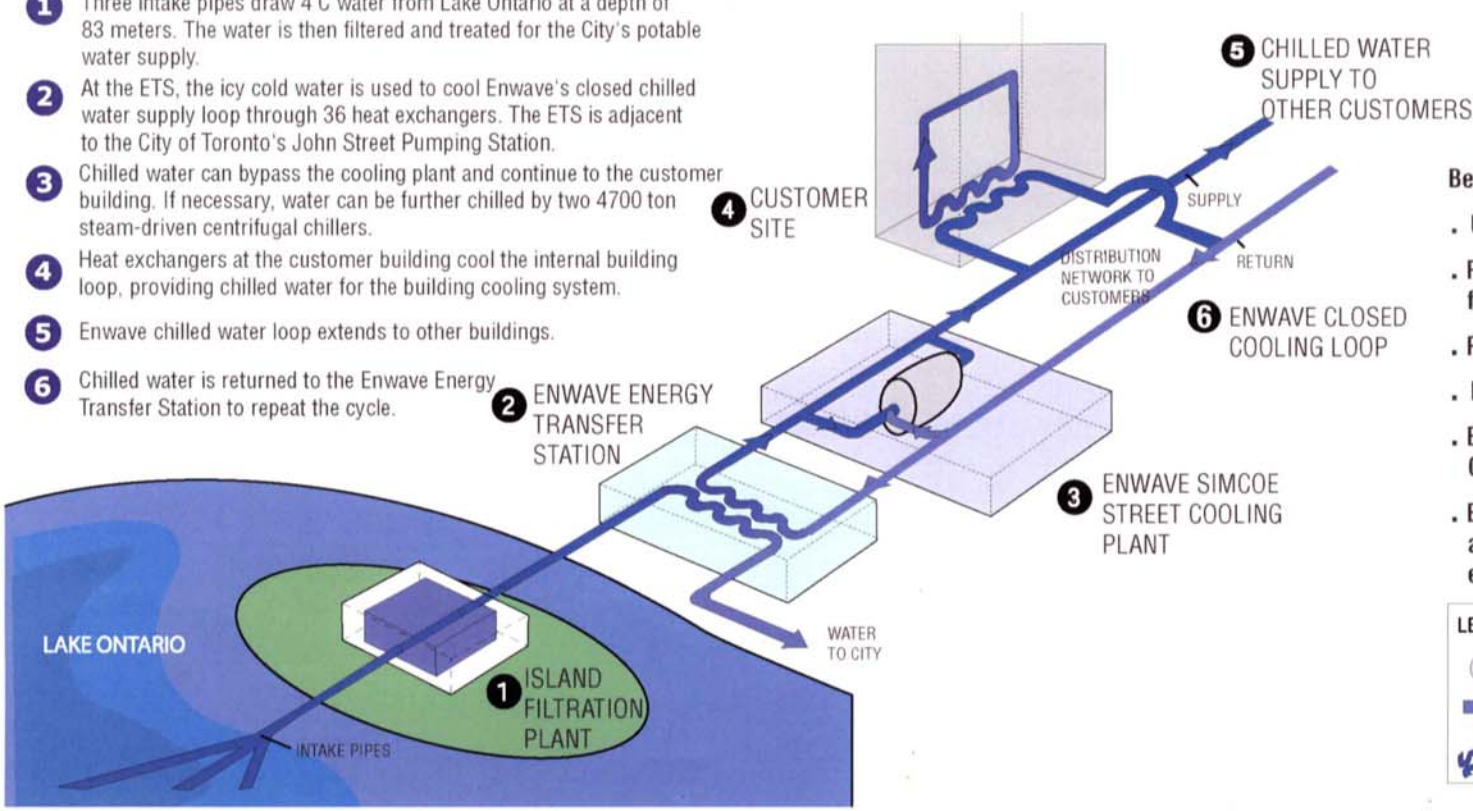
Deep Lake Water Cooling System

1. Three intake pipes draw 4°C water from Lake Ontario at a depth of 83 meters. The water is then filtered and treated for the City's potable water supply.
2. At the ETS, the icy cold water is used to cool Enwave's closed chilled water supply loop through 36 heat exchangers. The ETS is adjacent to the City of Toronto's John Street Pumping Station.
3. Chilled water can bypass the cooling plant and continue to the customer building. If necessary, water can be further chilled by two 4700 ton steam-driven centrifugal chillers.
4. Heat exchangers at the customer building cool the internal building loop, providing chilled water for the building cooling system.
5. Enwave chilled water loop extends to other buildings.
6. Chilled water is returned to the Enwave Energy Transfer Station to repeat the cycle.



Benefits:

- Uses 90% less electricity
- Reduces thermal discharge from power plants to the lake
- Reduces air pollution
- Reduces CO_2 emissions
- Eliminates ozone depleting CFCs
- Eliminates cooling towers and improves water efficiency

LEGEND

- CHILLER
- DIRECTION OF WATER FLOW
- HEAT EXCHANGER

Reliability

- N+1 Redundancy in systems design
- 24/7 staff monitoring with complete visibility between SSCP and JSPS in computerized process control system
- Either SSCP and JSPS can run independently through Junction Valve Chamber
- Main Distribution Pipes placed deep beneath surface in bedrock
- Back up power generation
- Three separate intake lines

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DLWC Key Facts

- $215 million
- combined water supply and water cooling
- Largest single renewable energy project in Canada
- Longest water intakes in Canada
- Energy efficiency project
- Energy retrofit project
- Water efficiency project
- Base supply project constructed over two years from June 2002 to July 2004
- Distribution system construction proceeding through 2007
- 75,000 tons of cooling capacity
- 61 MW of electricity demand and approximately 80 million kwh of electricity consumption avoided

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DLWC Benefits

Environmental

- Electricity use for cooling is reduced by up to 90% compared with conventional electric chillers
- Demand for electricity is reduced by 61MW
- Eliminates use of ozone depleting refrigerants
- Lake Ontario's deep cold water is an endlessly renewable resource, providing stable cooling supply
- CO_2, NOx and SOx emissions are reduced
- Eliminates cooling towers and associated noise, water consumption and impact on downtown outside humidity

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DLWC Benefits

Emission Reductions

Carbon Dioxide	79,000 tonnes
Nitrogen Oxide	145 tonnes
Sulphur Dioxide	318 tonnes

= 15,800 cars

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DLWC Benefits

City of Toronto

- Cleaner source of drinking water for Toronto residents
- Reduced load on our electricity infrastructure including Toronto Hydro
- Cleaner air for everyone from lower emissions from power generation
- Improved health
- Reduced burden on social services and medical facilities
- Enhancing Toronto's world-class reputation as place to live

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Co-operation for Mutual Benefit

- City/Enwave Energy Transfer Agreement guides relationship – some key provisions:
- City receives deep, cold, clean, taste and odour-free water through new intake lines paid for by Enwave
- City loops cold water to Enwave for energy transfer
- Enwave pays the City a Transfer Fee of 0.75 cents per ton-hour to yield approximately $750,000 per year on build out
- City pays base water system operating costs to meet water customer demand
- Enwave pays incremental additional costs associated with cooling such as electricity to run Enwave pumps in transfer station

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DLWC Benefits

Business

- Eliminates the risk of volatile energy markets
- Eliminates the risk of increasingly restrictive CFC regulation
- Reduces potential risk of future Kyoto regulations
- Innovative
- Enhances corporate citizenship
- Allows one to focus on core business
- Reliable and competitive, low cost cooling

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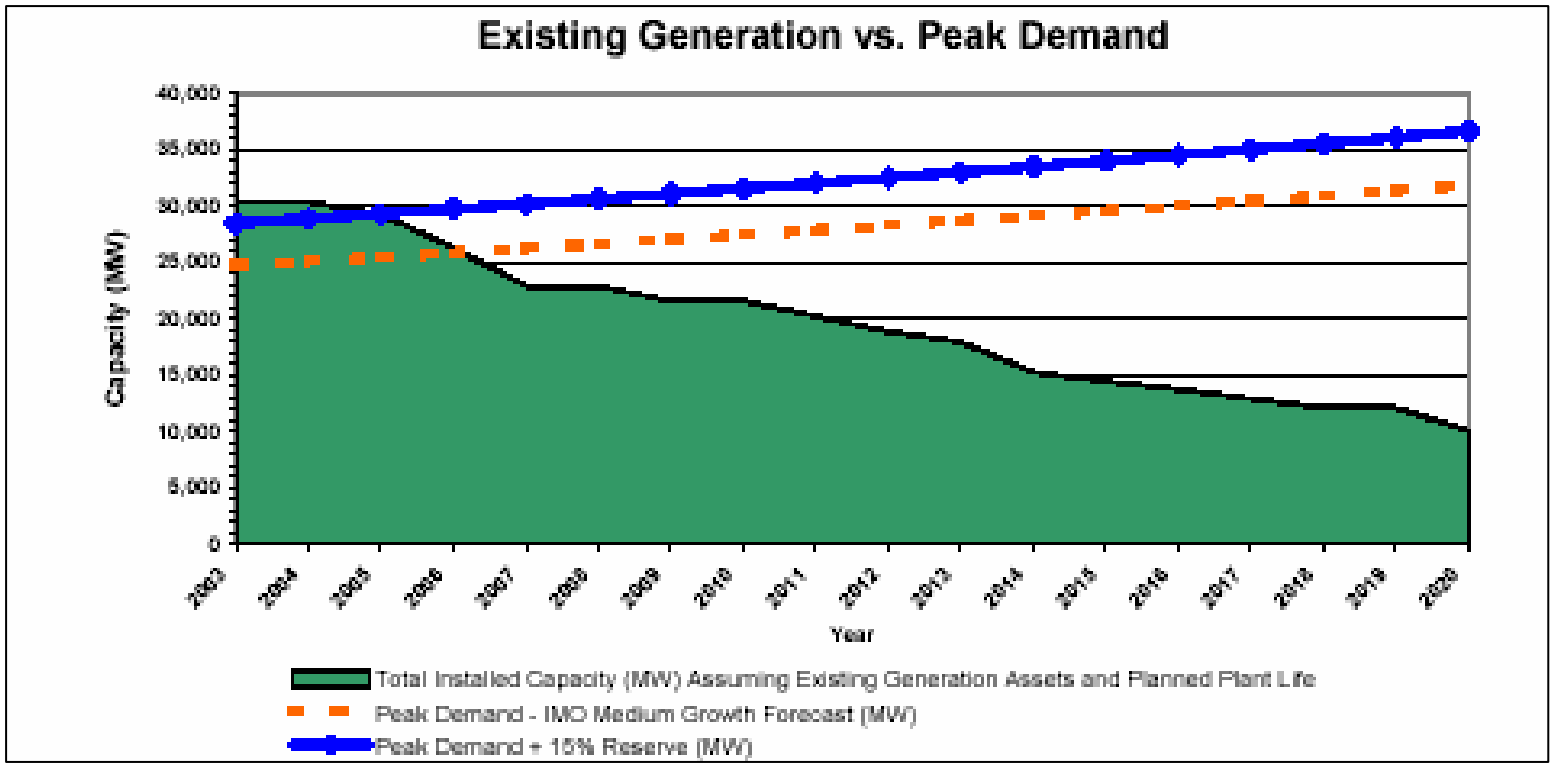
DLWC helps solve Ontario Supply Challenge

Resource Adequacy



Source: Electricity Supply & Conservation Task Force

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DLWC Technology

- 2,839 concrete anchor blocks
- 1,260 stiffener rings
- 850 heat fused joints

- Total length of 3 intakes is over 15000 meters and weight is over 25,000 tons

INTAKE

- Uses naturally cold water that is just above freezing (39.2ºF) as an energy source
- A reservoir of very cold water lies about 3 miles south of Toronto Island
- Natural cycle of replenishment means the water in Lake Ontario, at a depth of 272 feet, is cold year-round.
- 3 HDPE pipes, each 63-in-diameter-laid on bottom of lake bed

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DLWC Technology

ENERGY TRANSFER

- 18 pairs of Plate & Frame Heat Exchangers facilitate energy transfer
- 70,000 USGPM Flow

HX Stats:

Weight: 13,915 lbs (DRY)
19,319 lbs (WET)

DLWC Technology

ENERGY TRANSFER LINES

- 63 inch steel supply & return pipes carry water between Enwave's Simcoe Street Cooling Plant and the City of Toronto's John Street Pumping Station
- The pipes are placed 6 stories below ground in bedrock & are encased in concrete
- A tunnel boring machine was used to drive the link between the 2 facilities

What is Deep Lake Water Cooling

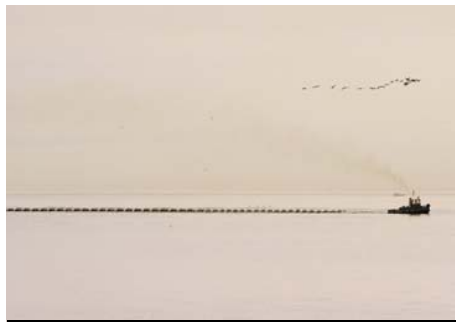
Design Concepts

Construction Progress

DLWC Timeline
Intake

Summer 2002, Fusing of Pipe Belleville, ON on Bay of Quinte

December 2002, Shaft Construction, Toronto Island



Summer 2003 - Towing to Toronto of 1.5 km pipes

Summer 2003 –Deployment
All 3 pipes in place by end of August 2003

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DLWC Timeline
Energy Transfer Loop

October 2002
Tunnel Boring Machine

April 2003
Installation of Supply & Return Pipes

July 2003
Shaft Work

October 2003
Junction Valve Chamber

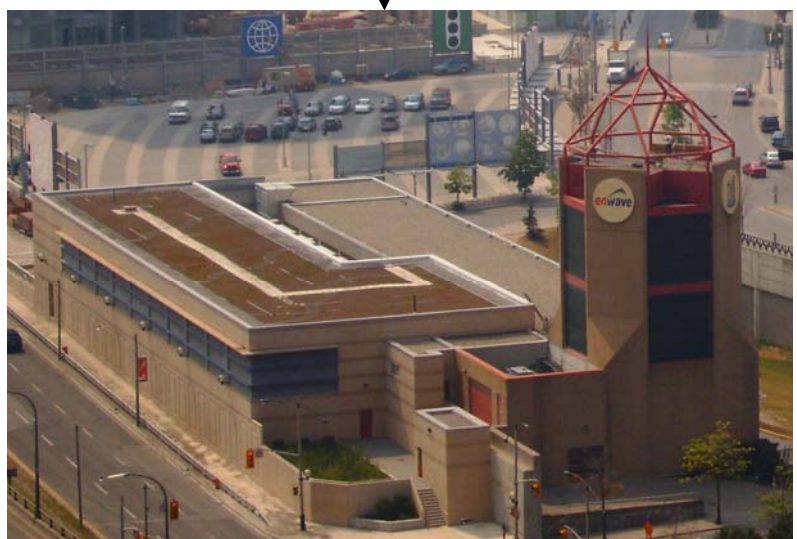
DLWC Timeline
Energy Transfer Station

April 2003 - Excavation

October 2003

February 2004
Installation of HX

July 2003



Summer 2004
Completed Energy Transfer Station

2006 Construction Program

- Wellington, York, Queen Line
- Bay Street Line and Hayter Chilled Water Storage
- Wellington West Line
- Queens Park/College Street Line
- Connections for Commerce Court, TD IV and V, Richmond Adelaide Centre, Adelaide Place, Ryerson University, Metro Hall, Marriott Hotel, Element Condo, 390 Bay, 777 Bay, Queens Park Legislature and Offices

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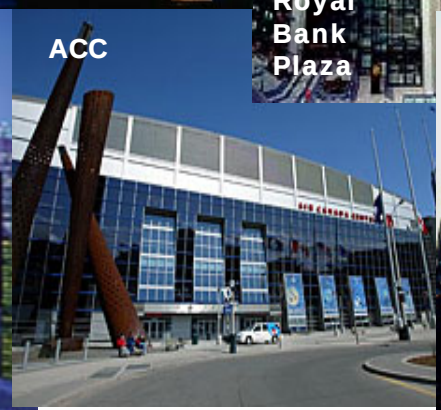
Many of Toronto's most prestigious buildings signed on for DLWC



50% of original capacity is sold out only ten months after commissioning.

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