



ONTARIO POWER AUTHORITY



A Progress Report on Electricity Supply

August 2007

Introduction

This progress report on electricity supply contracts is prepared semi-annually to provide an update on the OPA's electricity supply contracts, along with a collection of construction photographs.

As of August 2007, the OPA had under contract 10,444 megawatts (MW) of electricity supply capacity, 595 MW of which was contracted through the Renewable Energy Standard Offer Program (RESOP). This report does not include the status of the RESOP. The RESOP Progress Report can be found on the OPA website at: www.powerauthority.on.ca/SOP/.

Apart from the RESOP, the OPA is managing 39 contracts or 9,849 MW of electricity supply capacity. Of the 9,849 MW, 1,673 MW of capacity is already in service, including 502 MW of newly built capacity, 1,146 MW of early movers' capacity, and 25 MW of demand reduction. Of the remaining 8,176 MW, 4,851 MW is under construction and 3,325 MW is in various stage of planning or permitting. These 39 contracts are estimated to bring a total of \$11.9 billion in new investment to the Ontario electricity industry starting from 2005.

Additional information and the details of each contract are provided on the contract specific web pages under "Electricity Contracts" on the OPA website at: www.powerauthority.on.ca/.

The table below shows a breakdown of the contract capacity, either in commercial operation or under development, presently being managed by the OPA:

Technology	In Served			Planned						
	2005	2006	2007	2007	2008	2009	2010	2011	2012	2013
Wind ¹		395.1		76.0	789.4					
Hydroelectric	8.0				23.0	20.0				
Biomass, Landfill & By- Product Gas	2.5	1.6	5.0			63.0				
Natural Gas		1,236.0			2,425.8	942.0	836.4			
Nuclear Refurbishment						750.0	750.0		750.0	750.0
Demand Response		13.0	12.5							
Total (MW)	11	1,646	18	76	3,238	1,775	1,586	-	750	750
Cumulative Total (MW)	11	1,656	1,674	1,750	4,988	6,763	8,349	8,349	9,099	9,849

1 - Includes capacity from the Kingsbridge II wind farm. The commercial operation date of this facility is currently under review.

Renewable Energy

The OPA has entered into 18 renewable energy supply contracts representing 1,320 MW of renewable energy generated by wind, hydro, biomass and landfill gas. As of August 2007, nine contracts or 412 MW of renewable energy capacity, including all of the biomass and landfill gas generation, achieved commercial operation. The remaining capacity is scheduled for commercial operation between the end of 2007 and 2009.

Wind

The 18 renewable energy supply contracts consist of 12 contracts for wind farms with combined capacity of 1,260 MW. As of August 2007, 395 MW of capacity had already been placed in commercial operation, 276 MW was under construction, and the balance was in various stage of permitting.



One of the 38 German-made ENERCON E82 wind turbines being installed at the **Ripley Wind Power Project** in the Township of Huron-Kinloss near the Village of Ripley. The project is scheduled for commercial operation by the end of 2007. When completed, this wind farm will provide an additional 76 MW of renewable energy to the Ontario power grid system



Blade Tip - New ENERCON rotor blade concept sets new standards with regard to yield, noise emission and stress minimization



Foundations for ENERCON wind turbines are always circular. As claimed by ENERCON, round foundation has proven to reduce the amount of reinforcement, concrete and formwork



One of the ENERCON E82 wind turbines ready for installation



One of the installed ENERCON E82 wind turbines; the turbine has a rated capacity of 2 MW



Construction of the "south" substation of the **Ripley** project is in progress; the "south" substation will step up the energy to 69 kiloVolts (kV) for transmission to the "north" substation for injection into the Ontario power grid



The "north" substation, which is approximately 26 kilometres (km) north of the "south" substation and is located adjacent to Hydro One's 230kV circuits



Delivery of ENERCON E82 tower sections to the **Ripley** site



Packing materials for the delivery of wind turbines will be re-packed and returned to ENERCON in Germany for future shipments to another project site



An aerial view of the Vestas V82 wind turbines components in storage for the 200 MW **Enbridge Ontario Wind Farm** in the Huron County; the project has recently obtained all of the required approvals and permits to start construction; full commissioning is targeted for late 2008



Foundation work in progress for the first wind turbine tower at the **Enbridge Ontario Wind Farm**

Hydro

Three of the 18 renewable energy supply contracts are hydroelectric generating facility contracts. Glen Miller hydroelectric facility near Trenton, with a contract capacity of eight MW, has already been placed in commercial operation. Umbata Falls generating facility near Marathon in northern Ontario, with a contract capacity of 23 MW, is under construction. The 20 MW Island Falls facility near Timmins is in the permitting stage.



Intake of ***Umbata Falls Hydroelectric Project*** under construction; this two-unit 23 MW "run-of-the-river" facility is scheduled for commercial operation in the summer of 2008; the combined rated flow of the two horizontal axis "SAM" Kaplan turbine units is 80 cubic metres per second; the rated net head of the facility is 32.8 metres; water will pass through a 460-metre power tunnel, a 45-metre steel penstock to a "Y" bifurcation to the two turbines



Umbata Falls Hydroelectric Station intake



A view of the *Umbata Falls* sluice structure



Intake and sluice structure under construction



Fabrication of the "Y" bifurcation and welding of steel penstock in progress

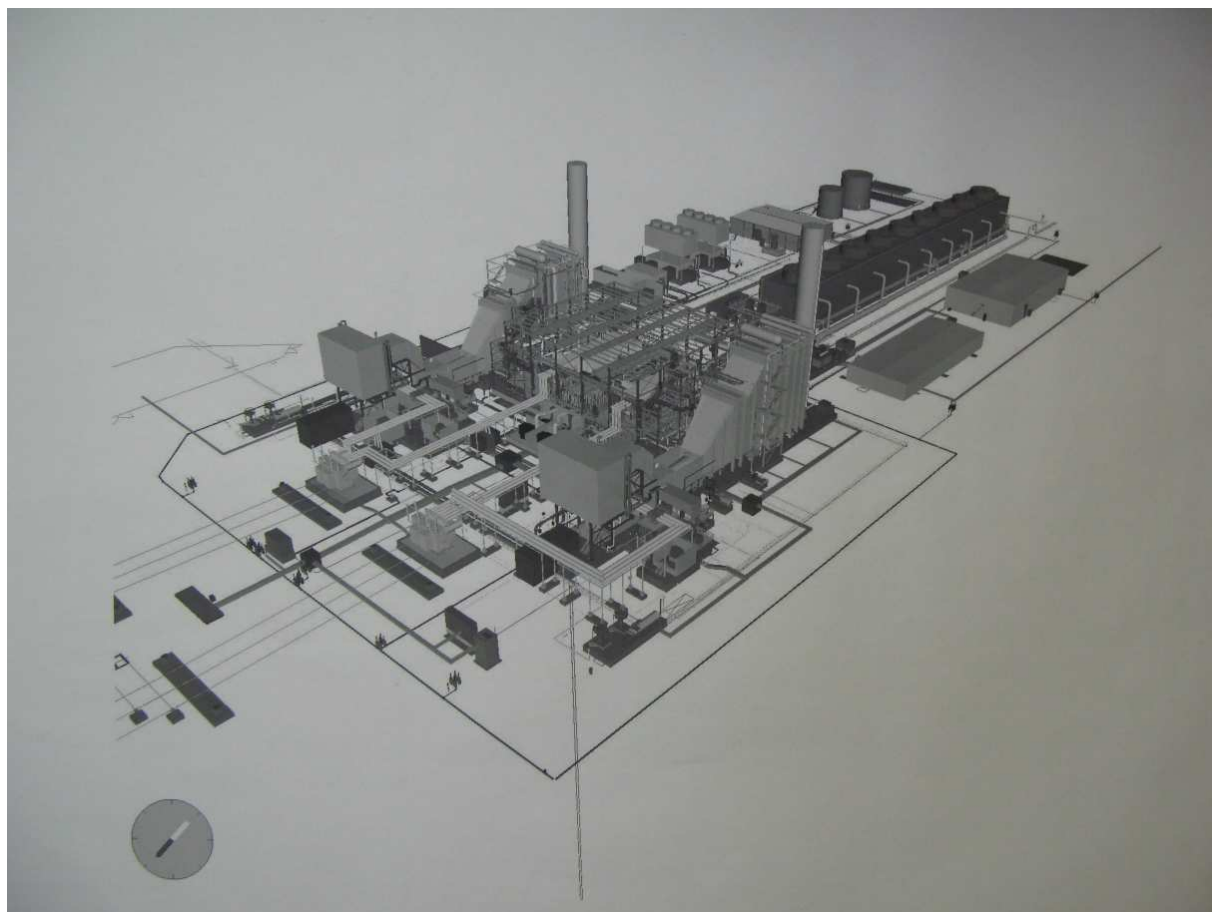


“Y” bifurcation and the ***Umbata Falls*** powerhouse under construction

Clean Energy

Natural Gas Combined Cycle

The OPA is managing a total of seven natural gas fuelled clean energy supply and accelerated clean energy supply contracts with a combined capacity of 3,943 MW. The 90 MW Greater Toronto Airports Authority (GTAA) facility at the Toronto International Airport has already been placed in commercial operation. The 600 MW Halton Hills plant and the 280 MW Greenfield South plant are in various stages of permitting. The balance 2,973 MW is under construction and is scheduled for commercial operation in 2008 and 2009.



A three-dimensional view of the proposed **St Clair Energy Centre** at Sarnia; construction of this 570 MW facility commenced in February 2007 and is scheduled for commercial operation in early 2009; the facility adopted a "two power train" configuration with two GE 7FA combustion turbine generators, two heat recovery steam generators and two GE steam turbine generators



Erection of two heat recovery steam generators has begun at the ***St Clair Energy Centre***



Warehouse at ***St Clair Energy Centre*** under construction



One of the two GE 7FA combustion turbine generators set on pedestals at the ***St Clair Energy Centre***



Concreting foundation for the ***St Clair Energy Centre*** substation, which is located at the back of the site and adjacent to the Hydro One transmission line



Bird's-eye view of the 1,005 MW **Greenfield Energy Centre** at Sarnia; the project adopted a "3-on-1" configuration with three Siemens Westinghouse 501FD2 combustion turbine generators, three heat recovery steam generators and one 500 MW Toshiba steam turbine generator; construction started in November 2005 and is targeted to be in service in the fall of 2008



A view of the **Greenfield Energy Centre** at ground level



Heat Recovery Steam Generators and stacks at **Greenfield Energy Centre**



Approximately 90 percent of mechanical installation at **Greenfield Energy Centre** completed; scheduled commercial operation is the fall of 2008



Cooling Towers at ***Greenfield Energy Centre***



Two of three combustion turbine generator sets at ***Greenfield Energy Centre***



The water storage tank at **Greenfield Energy Centre** is close to completion



The main components of the **Greenfield Energy Centre** control room have been installed



The substation of the **Greenfield Energy Centre** is close to completion



A view of the electrical installation at **Greenfield Energy Centre**



Close-up of IP turbine casing at ***Greenfield Energy Centre***



Another view of steam turbine casing at ***Greenfield Energy Centre***



West view of the 860 MW **Goreway Station** at Brampton; the station adopted a "3-on-1" configuration with three GE 7FB combustion turbine generators, three heat recovery steam generators and one steam turbine generator



Air cooled condenser area fan assembly



Installation of Heat Recovery Steam Generator module at **Goreway Station**



Another view of Heat Recovery Steam Generator module installation



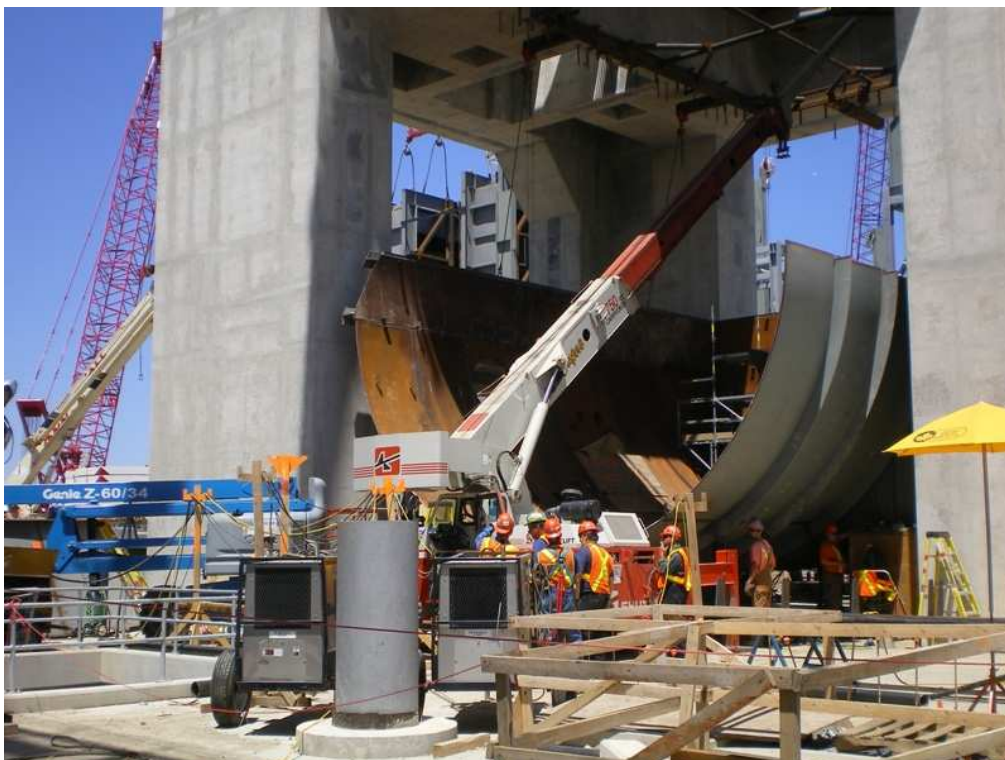
Fuel gas filter building at **Goreway Station**



Fuel gas heat exchange at **Goreway Station**



Deluge testing one of the generator step-up transformers at **Goreway Station**



Steam turbine exhaust duct erection at **Goreway Station**



Steam turbine being delivered to the **Goreway** site



A view of the combustion turbine generator air intakes and by-pass stacks at **Goreway Station**



Fin fan area at **Goreway Station**



Substation at **Goreway Station** close to completion



Bird's-eye view of **Portlands Energy Centre** in downtown Toronto; this 538 MW "2-on-1" facility is targeted to achieve simple cycle operation with 250 MW of output in the summer of 2008 and full commercial operation by summer 2009; the facility uses two GE 7FA combustion turbine generators



By-pass stacks for simple-cycle operation have been installed and installation of stacks for combined cycle operation is in progress



One of the two GE 7FA combustion turbine generators being delivered to the **Portlands** site via the track that cuts through the site



Setting of combustion turbine generator at **Portlands Energy Centre**



One of the two **Portlands** combustion turbine generators set on foundations.



Generator step-up transformer assembly at **Portlands**



Top section of by-pass stack being installed at **Portlands**



Preparing stack sections for installation at **Portlands**



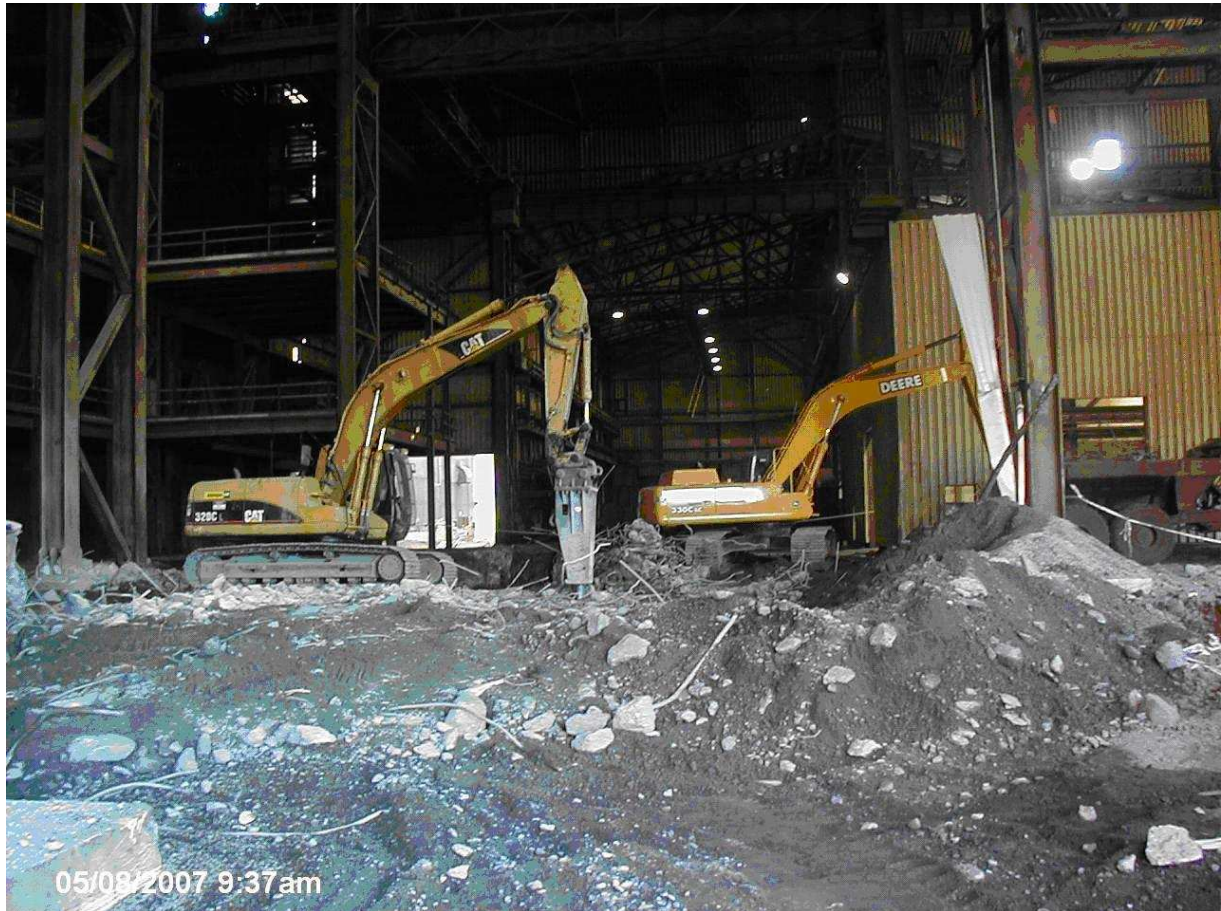
Construction of cooling water intake and pump house at
Portlands Energy Centre in progress



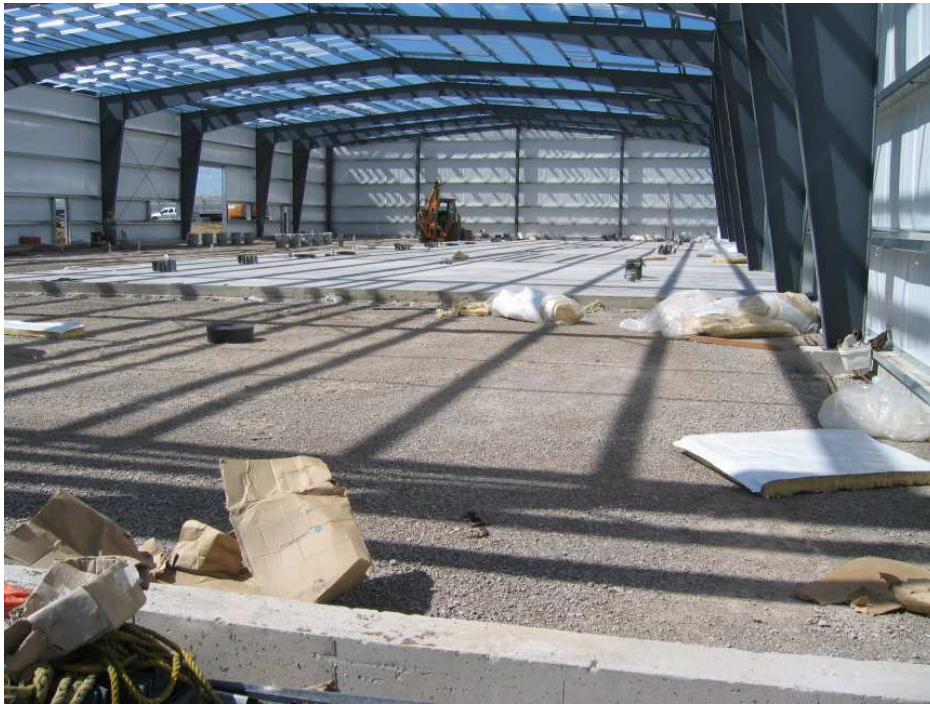
Supporting structure for steam turbine generator in progress

Combined Heat and Power (CHP) Contracts

The OPA is managing a total of seven CHP contracts for a combined capacity of 414 MW. Construction of five projects has already commenced. The remaining two contracts are in various stages of development and permitting.



Demolition inside an existing building to give room for the installation of new generating equipment is underway at the **Algoma Energy Cogeneration Facility** at Sault Ste. Marie; this facility, with a contract capacity of 63 MW, will consume blast furnace and coke oven gas from Algoma Steel Inc. to generate electricity and supply process steam for steel manufacturing operations; the facility consists of two boilers equipped with low NOx burners to reduce emissions; targeted to be in service in the summer of 2009



Enclosure building for the 12 MW **Great Northern Tri-Gen Facility** at Kingsville is underway; the facility will utilize four GE Jenbacher reciprocating gas engine generating units with selective catalytic reducer (SCR) emission controls; hot water and carbon dioxide from the cogeneration facility will be used by Great Northern Hydroponics for heating and fertilizing crops in the existing 50 acre hydroponics greenhouse; scheduled in service date is early 2008



First GE engine for the **Great Northern Tri-Gen Facility** being unloaded at site



Concrete foundation walls and engine footings have been cast for the five MW **Warden Energy Centre** at Markham; the facility, which consists of two natural gas-fired low emission reciprocating engine generator sets, will be placed in commercial operation in the summer of 2008; the thermal energy recovered from the facility will be used to heat and cool the Markham downtown core, consisting of commercial, residential and institutional buildings



Erection of steel frame structure for the **Warden Cogen** facility has begun

Nuclear Energy

Bruce A Units 1 and 2 Restart, and Units 3 and 4 Refurbishment

In October 2005, the OPA entered into a \$4.25 billion Bruce Power Refurbishment Implementation Agreement with Bruce Power to restart Units 1 and 2, refurbish Unit 3 and replace steam generators at Unit 4 of Bruce A. On August 29, 2007, the refurbishment agreement was expanded to include the refurbishment of Unit 4, extending its operational life to 2036. The amendment added a capital investment of \$1 billion to the project and increased the total OPA-contracted capacity of nuclear power to 3,000 MW.



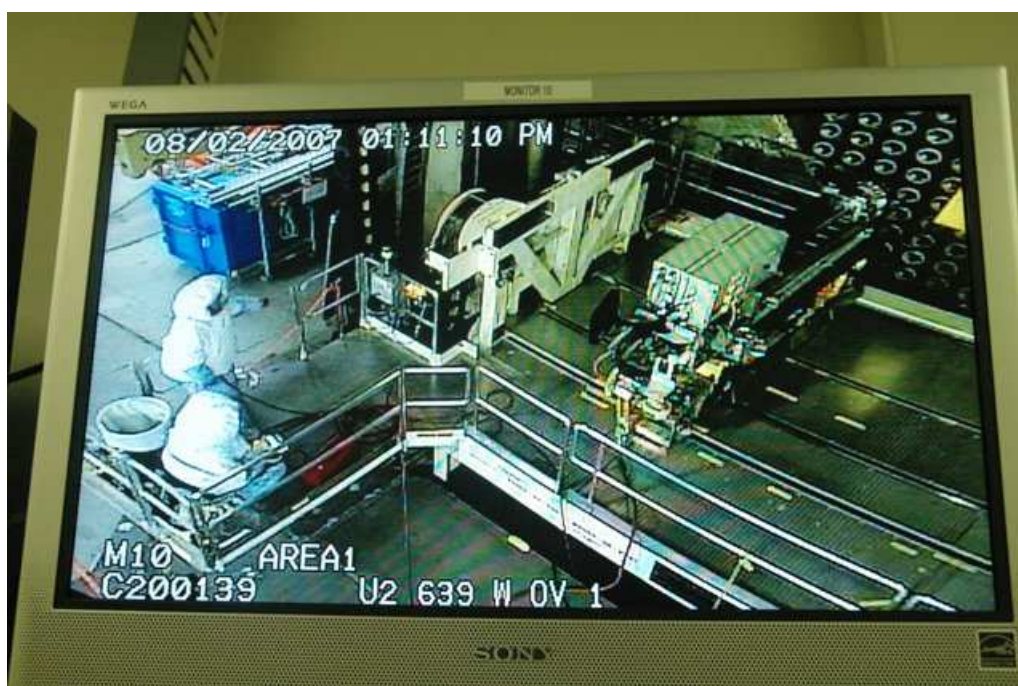
Work in progress on overhauling turbine generators in Units 1 and 2 at Bruce A



One of the eight 100-tonne steam generators at Unit 2 being removed through an opening cut in the roof of the Bruce A powerhouse



The first new steam generator being installed with the assistance of a 1,600-tonne crane



A monitor in Unit 2 shows the bellows and stop collar cutting tools at work inside the reactor vault; AECL cut the first bellows on July 13, 2007; the first stop collar was cut on July 24, 2007; the Units 1 and 2 Restart Project recently surpassed five-million person hours without an acute lost-time incident



With bellows and stop collar cutting complete in Unit 2, AECL's Bruce retube team is on track to begin removing the reactor's old end fittings; the work inside the containment vault will be completed with remote-controlled machines; the retube tool carrier is pictured on the west end of the reactor



An operator works at a tool operator station in the Retube Control Centre. AECL's Bruce Retube Team began severing pressure tubes in the Unit 2 reactor on May 17, 2007; the remote-controlled operation is a significant step in the program to replace the reactor's 480 fuel channels



A member of the Radiation Protection team works to decontaminate the inside the Unit 1 reactor vault; it has to be cleaned up enough to allow work to proceed without the need for air-supplied plastic suits



The east steam drum in Unit 2 was lifted aside on April 2, 2007; the vessel, which measures 29.3 metres long by 2.88 metres in diameter, weighs more than 250 tonnes



Work crews recently inserted a replacement rotor into the Unit 2 generator and are busy restoring turbine spindles; Siemens is overhauling the turbine generators in both Units 1 and 2 for return to service