POWER NEWS

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THE TURBINE FLOOR AT DARLINGTON NUCLEAR GS

EXPERIENCE CREATES EFFICIENCY FOR THE DARLINGTON REFURBISHMENT

As the province confirmed its commitment to refurbish the second of Darlington Nuclear Generating Station's four reactors, planning was already well underway to ensure this next phase of the project is a success.

The Ontario government gave the green light to proceed on Unit 3's refurbishment at an event in February, which also marked the mid-point of the Unit 2 refurbishment. The current project is tracking on time and on budget, and this played a big role in the approval, said Jeff Lyash, OPG President and CEO.

"The go-ahead on the next unit is a testament to the hard work and dedication of the Darlington Refurbishment team," said Lyash.

Planning has already begun for Unit 3, with a robust process in place to capture, assess and incorporate lessons learned from Unit 2 to create efficiencies with subsequent reactor refurbishments.

"This is a great opportunity," said Bill Owens, Vice President, Unit 3 Refurbishment Execution. "We expect and plan to get better for the next unit. We're continuously improving."

Regular workshops, bringing together a cross-section of those involved in the project, are held to "brainstorm on what went well, and how we can do better," Owens said.

Already, a number of areas for improvement – and related cost-savings – have been identified, based on innovations, tooling reliability and performance improvement, or simplifying processes.

As an example, on Unit 2, 113 days was scheduled for defuelling the reactor. But better-than-anticipated tooling reliability and performance meant the work series was completed ahead of schedule. For Unit 3, a similar plan is in place to ensure the same high level of reliability that should result in a savings of approximately three weeks.

"At OPG, we are continuous learners," said Owens. "That means constantly striving to find better ways to do what we do. And in turn, that means better value for the province as we move forward on Canada's largest clean energy project."


STEPHANIE MENDES

OUR PEOPLE: STEPHANIE MENDES

For Stephanie Mendes, it was a trip to Nicaragua that put everything into perspective.

In 2013, the Maintenance Front Line Manager at Pickering Nuclear Generating Station flew to the country to help build homes for the needy with Habitat for Humanity.

She wanted to set a good example for her then four-year-old daughter by giving back, but it was also a life-changing experience for her personally.

"You get so used to your immediate surroundings, but there's a whole world out there," Mendes said. "The people we helped were ecstatic to see random strangers coming to build them a house. I saw the value of doing a small thing that can have a huge impact."

At Pickering Nuclear, Mendes has taken a similar approach. Her small actions are helping the station, which produces 14 per cent of the province's electricity, continue to run safely and reliably until 2024.

Over the last few years, Mendes and her maintenance team have focused on reducing the station's backlog of work orders one item at a time. Her main task is prioritizing the repair or replacement of equipment and components at the plant and ranking the work orders.

This effort has resulted in a major improvement in Pickering Nuclear's performance.

"The condition of the station is the best it has been since I've been here," said Mendes, who has spent her entire 15-year career with OPG at Pickering Nuclear. "We keep finding ways to safely and reliably maintain and improve the station's performance. That will be our legacy."

Outside of work, Mendes continues to prioritize community improvement as well. The long-time Pickering resident tutors high school students and volunteers with Operation Clean Sweep, where OPG staffers perform yard work for seniors in Durham Region. She hopes to help build homes abroad once again someday.

EMPLOYEE SPOTLIGHT STEPHANIE MENDES

POSITION: Maintenance Front Line Manager

WORK LOCATION: Pickering Nuclear GS

YEARS OF SERVICE: 15 years

FAVOURITE PLACE TO VISIT IN ONTARIO: Sibbald Point

FAVOURITE HOBBY: Playing soccer

FAVOURITE WEEKEND ACTIVITY: Hanging out with her daughter

FAVOURITE QUOTE:
"I've never scored a goal without receiving a pass from somebody else." - *Abby Wambach*

HISTORIC SIR ADAM BECK POWER CANAL TO UNDERGO MAJOR REFURBISHMENT

A century after it was built, the historic Sir Adam Beck Power Canal that channels water to OPG's nearby hydroelectric generating stations will soon be undergoing a major refurbishment that will add another 50 years of operating life.

Carved through the City of Niagara Falls, the 13.7-kilometre Power Canal was built in 1921 and is part of a network of waterways that currently feed the Sir Adam Beck complex. The canal and three underground tunnels convey water from the Welland and Niagara rivers to the Sir Adam Beck I and II generating stations (GS) and the Sir Adam Beck Pump GS. All of these waterways intersect at a crossover point, approximately one kilometre west of the Beck complex.

The power canal, originally called the Queenston-Chippawa Power Canal, was designed to serve all 10 units at Sir Adam Beck I GS, which went into service between 1922 and 1930.

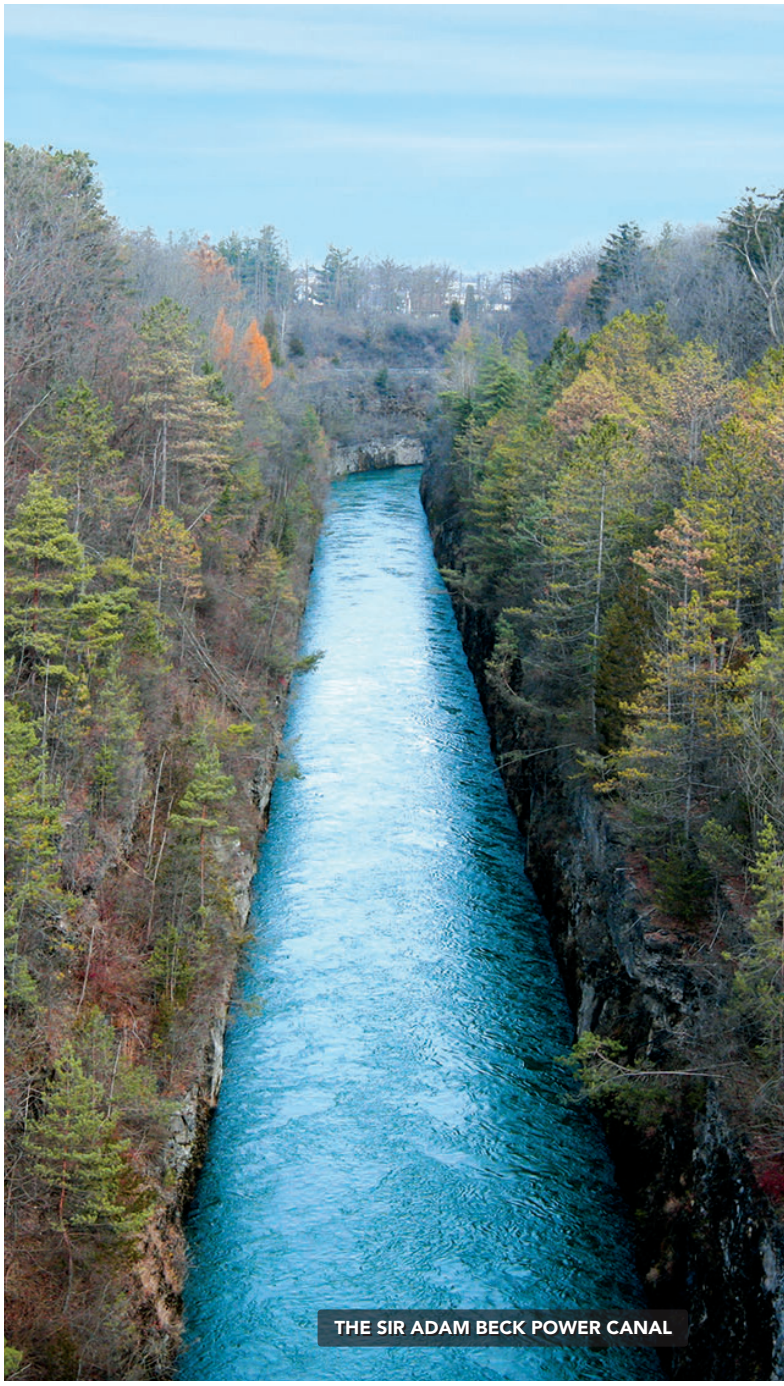
The refurbishment will repair the canal and improve its performance. This will ensure the nearly century-old asset delivers water more efficiently for decades to come, thus helping produce low-cost, clean hydroelectric power for Ontario. The project is expected to be completed over the next five years.

"This work will preserve the structural integrity of the canal and clear debris to restore and improve water flow," said Mark Armstrong, Project Manager with OPG. "Assessment work has already started in preparation for the refurbishment."

Early expectations are that the canal may need to be drained in the summers of 2021 and 2022. The refurbishment work will involve concrete rehabilitation, grouting, stabilizing rock slopes, and removing debris collected over the years at the bottom of the canal.

The channel last saw a major overhaul in the 1960s, when it was taken out of service to be widened and deepened to increase flow capacity. Then in 1981, work was conducted to dredge and remove 1,834 cubic meters of concrete rock and other debris. That effort helped increase the water flow to the Sir Adam Beck I station by five per cent.

Since then, the flow rate of water in the canal has gradually slowed from 617 cubic metres per second to 549 cubic metres per second. "In addition to restoring the structural integrity of the canal, the goal is to convey water more efficiently," said Armstrong. "Once the canal is restored to its design capacity, it will be available for optimal use at the Beck complex."



THE SIR ADAM BECK POWER CANAL

REFLECTING ON NANTICOKE GENERATING STATION'S LEGACY

The demolition of the towering 200-metre-tall smoke stacks at the decommissioned Nanticoke Generating Station (GS) marks a visible close to an important chapter in OPG and Ontario's history.

In its heyday, Nanticoke GS was the largest coal-fired plant in North America, providing 15 per cent of the province's electricity, and employed close to 650 people from the surrounding Haldimand-Norfolk community in southwestern Ontario.

From the time it went into service in 1972 up until it burned its last piece of coal in 2013, the eight-unit, 4,000-megawatt station stood as a landmark for the community on the north shore of Lake Erie.

"It was a tremendous place to work every day. Just the size and magnitude of the place made it one of a kind," recalled Larry Jankovic, who spent 27 years at the thermal plant as a mechanical technician with Ontario Hydro/OPG. The 55-year-old began his 32-year career in the industry as an apprentice at the station and worked there right up to its closure.

Now a mechanical maintenance supervisor with OPG operating out of Gravenhurst, Jankovic looks back fondly at his time at Nanticoke GS. It was the station's family atmosphere that has stuck with him after all these years.

"You really, truly cared about the people you worked with there. They were all fantastic people," he said. "We all had a get-it-done attitude, and we certainly got a lot of work done and safely produced a lot of power over that period of time, which was Ontario's biggest industrial period."

It was indeed a unique time and place. When all eight units were running at full tilt on a hot

summer day, temperatures near the boilers and turbine hall could rise to 40 or 50 degrees Celsius. It made for some sweltering working conditions for employees who operated and maintained the plant.

"Because of the great teamwork and camaraderie you kind of gritted it out," Jankovic said.

In 2010, two units at the station were shut down, and another two ceased operations in 2011. Nanticoke's run ended on Dec. 31, 2013, when the final four units at the plant were retired.

At the time of its closure, Nanticoke GS was one of the last coal-fired generating plants still in operation in the province, and one of the biggest emitters of greenhouse gases in the country. To date, eliminating coal generation in Ontario was the single largest action to fight climate change in North America.

Today, the site of the old station is in the midst of a major transformation that reflects the province's move away from coal to renewable, clean power generation. With Nanticoke's demolition underway, work is progressing to build a new 44 MW solar facility on the site and adjacent lands.

For Jankovic and his colleagues, seeing the plant's doors close after nearly 42 years in operation was a bittersweet moment. There was sadness, but also deep pride in our hard work, he said.

"I look at Nanticoke as a faithful old friend," he said. "We all worked together with pride to make sure we did the job well and kept the plant running. I consider it a privilege to have worked there.

FAST FACTS

- For the Feb. 28 demolition, each smoke stack was fitted with 400 pounds of dynamite
- Demolition commenced at 11 a.m. and took about 20 seconds to drop both stacks
- A 44-megawatt solar project with 200,000 solar panels will now be built at the site

WENDY CUDMORE, SENIOR ENVIRONMENTAL ADVISOR WITH OPG, HOLDS A LAKE STURGEON

LAKE STURGEON THRIVING AGAIN IN THE UPPER MATTAGAMI RIVER

In the Upper Mattagami River in northern Ontario, the long-absent lake sturgeon continues to mount an astounding comeback.

For many years, lake sturgeon were believed to be extirpated from the section of river between OPG's Wawaitin Generating Station (GS) and Sandy Falls GS in the Timmins area. A combination of factors likely contributed to their downfall, including historic log drives, poor water quality, overfishing and fragmentation due to dam construction.

In 2002, OPG, the Ministry of Natural Resources and Forestry (MNRF) and a number of local advocacy groups introduced 51 adult lake sturgeon from the Lower Mattagami River in an effort to repopulate the Upper Mattagami. Now, 16 years later, a new research study concludes this relocation effort is proving successful in bringing back the freshwater fish, which can live more than 100 years, reach over two metres in length and weigh more than 150 kilograms.

"It appears from the evidence that lake sturgeon are rebounding quite nicely in the Upper Mattagami River," said Dan Gibson, Senior Environment Specialist with OPG. "There has been steady annual recruitment of fish in over the past decade attributed to the original 51 released fish. Current estimates suggest between 400 and 500 lake sturgeon now inhabit this section of the river."

Over the years, OPG's Northeast Operations and Environment staff have worked with various agencies to survey and monitor sturgeon in this reach of the river through tagging and radio telemetry studies. As part of the sturgeon recovery program, OPG also partnered with the MNRF and Trent University to sponsor a graduate student's Master's study investigating the effectiveness of the sturgeon relocation project.

Maggie Boothroyd's paper, titled Translocation as a mitigation tool: Demographic and genetic analysis of a reintroduced lake sturgeon population, found successful reproduction and recruitment by relocated adult lake sturgeon was confirmed through genetic analysis, which linked juveniles to parents that had retained tags from the original relocation.

These promising results reflect the benefits of improving water quality, a strict catch and release policy for recreational fishing, and the closure of commercial fishing since 2009 that has drastically reduced overharvesting of sturgeon.

BEAUTIFUL FLORAL CLOCK IN NIAGARA FALLS READY TO BLOOM

Ticking away next to OPG's flagship Sir Adam Beck I Generating Station, one of the province's most famous clocks continues to keep time in stunning fashion.

The 12.2-metre-wide Floral Clock in Niagara Falls, beautifully adorned with up to 19,000 colourful plants and flowers, has dutifully kept time and attracted thousands of tourists since it was designed and built in 1950 by OPG's predecessor, Ontario Hydro. Next to Niagara Falls, the Floral Clock is the second-most photographed attraction in the area.

The idea for the clock came from Dr. Richard Lankaster Hearn, who was Hydro's general manager and chief engineer at the time. During a trip to Scotland, Hearn was impressed by the floral clock in Edinburgh and thought a similar timepiece would be a perfect addition for the grounds next to the hydroelectric station.

Decades later, OPG still maintains the mechanism for the clock, which is located along the Niagara Parkway north of the famous Botanical Gardens. A tower at the back of the clock houses speakers that play the well-known Westminster chimes every quarter hour.

Since 1977, Niagara Parks Commission horticulture staff have been responsible for the intricate design of the clock face and planting of flowers. Planting is done twice a year, with vibrant annuals like viola featured in the spring, and alternanthera and santolina sage in the summer.

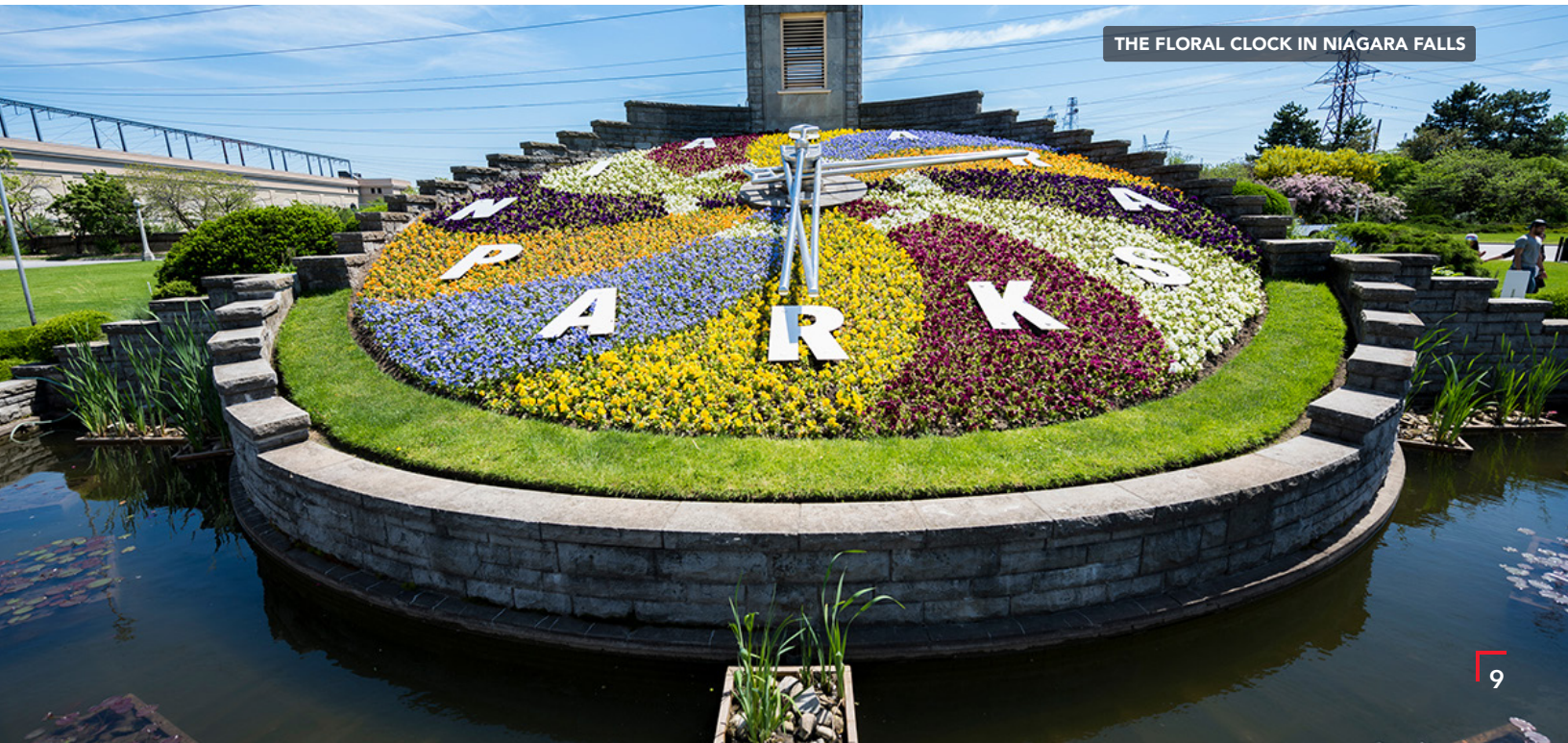
"The partnership with OPG is key to keeping the clock running and functioning properly," said Jessica Bond, Manager of Design for Niagara Parks. "Anytime we have had issues with the mechanism, OPG has helped us out."

This year's spring planting should be completed by early April, and will continue the pinwheel theme that began three years ago, Bond said. The summer layout will feature throwbacks to older, ornate designs.

The floral clock is open every day from 6 a.m. to 6 p.m. For more information visit www.niagaraparks.com.

FAST FACTS

- It takes up to six gardeners to plant the clock face
- A large pond around the clock serves as an aquarium and water garden
- The clock mechanism runs in a bath of oil and is driven by a two-horsepower motor



THE FLORAL CLOCK IN NIAGARA FALLS

WORLD-RENOWNED BLACKFOOT ARCHITECT AND ACTIVIST DOUGLAS CARDINAL

NEW FIRST NATIONS PEACE MONUMENT A SYMBOL OF RECONCILIATION

On a June day during the War of 1812, a contingent of Mohawk warriors under Chief John Norton encamped in DeCew's Field met Canadian heroine Laura Secord late in her walk. Together, they helped change the course of Canadian history.

Secord's 32-kilometre journey from her home in Queenston to DeCew House in present-day Thorold to warn colonial British forces of an impending American invasion is well known. But the resident First Nations allies played an important role and helped Secord relay the message to the British. Following her warning, a contingent of warriors from Kahnawake, the Grand River and other First Nations, bravely secured the victory at the Battle of Beaver Dams, arguably changing the course of the War that defined Canada.

More than 200 years later, this historic encounter and the heroic actions of the First Nations warriors are being remembered in a new monument at DeCew House Heritage Park.

Spearheaded by the Friends of Laura Secord community group, the First Nations Peace Monument was unveiled last Oct. 7, the 254th anniversary of the Royal Proclamation of 1763, which formed the basis of land claims of Indigenous peoples in Canada. The new monument stands as a symbol of reconciliation and recognition of the important role First Nations played, and continue to play, in Canada's history.

Designed by Blackfoot architect and human rights activist Douglas Cardinal, the circular structure consists of two curved walls symbolizing Iroquois longhouses, with a hearth and fire in the centre. Embedded within the walls are two wampum peace belts.

"The circle is a powerful symbol of welcoming, inclusion and protection," Cardinal said. "It's important for First Nations people and the rest of Canadians to come together."

OPG, which operates the nearby DeCew 1 and 2 Generating Stations, was the most recent steward of the DeCew House Heritage Park property where the monument resides before the company donated the site to the City of Thorold in 2011. OPG supported the monument, which was also funded by the Canadian government and other organizations and groups.

"History was made at this site," said Caroline McCormick, President of Friends of Laura Secord. "The monument serves as a permanent reminder of how early settlers and the resident First Nations galvanized their forces to defend a country still in its infancy."

OPG REPORTS STRONG FINANCIAL RESULTS IN 2017

OPG reported solid financial and operating results in 2017, positioning the company to make advancements on the major generation projects currently underway.

The company's 2017 net income attributable to the Shareholder was $860 million, compared to $436 million in 2016. This increase was driven by strong generating performance from our nuclear and hydro fleets, especially Pickering Nuclear, and continued cost management augmented by the sale of our head office. OPG recorded an after-tax gain of $283 million on the sale of its head office building and parking facility in the second quarter of 2017.

Overall, 74.1 terawatt hours (TWh) of electricity was generated in 2017, compared to 78.2 TWh in 2016. This decrease was mainly due to lower generation of 4.9 TWh from the regulated nuclear generation segment as Darlington's Unit 2 was removed from service.

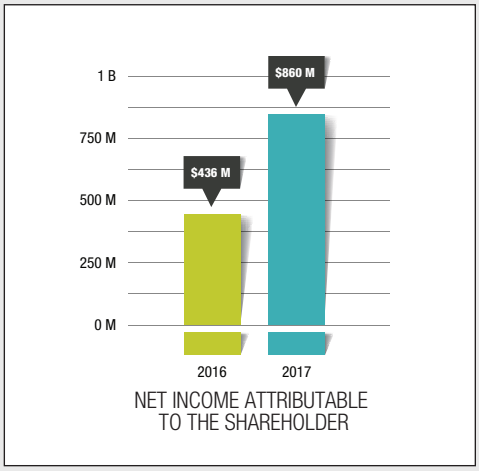
The decrease from Darlington Nuclear was partially offset by a 1.5 TWh increase in output from Pickering Nuclear, which experienced a lower number of outage days due to excellent execution of planned maintenance work, favourable unit conditions, and outage cycle optimization. Pickering significantly improved its operating performance over last year and remains a safe, clean source of reliable power during the refurbishment of Darlington. OPG's regulated hydroelectric segment also experienced higher generation of 1.2 TWh due to higher water flows primarily on the eastern Ontario river systems.

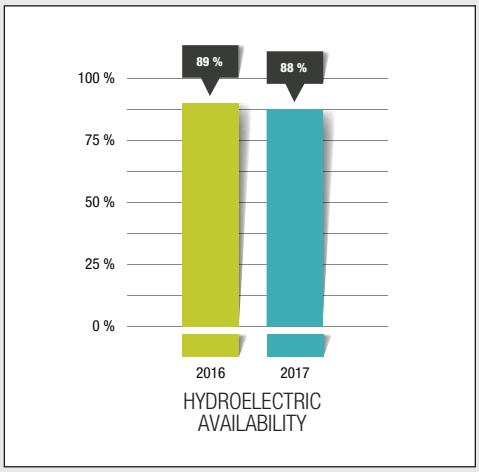
OPG has applied to its regulator, the Canadian Nuclear Safety Commission, for a licence to keep Pickering online until 2024. A decision on this application is expected in 2018.

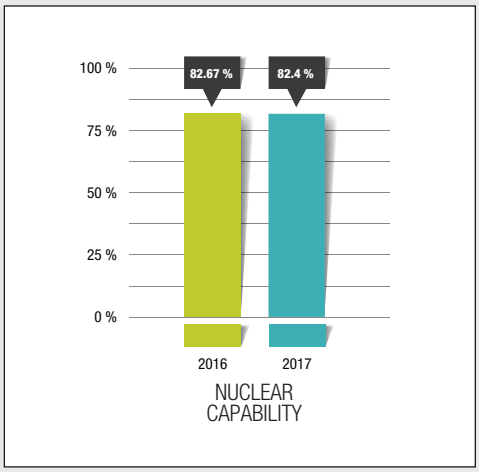
In 2017, OPG completed the Peter Sutherland Sr. hydroelectric station on budget and ahead of schedule in partnership with a subsidiary of the Taykwa Tagamou Nation. The refurbishment of the Sir Adam Beck Pump Generating Station was also completed two months ahead of schedule and below budget.

Meanwhile, construction began on a new powerhouse at Ranney Falls GS and OPG continues to progress on the development of the Nanticoke Solar Project.

2017 FINANCIAL AND OPERATING RESULTS







A Powerful Partnership for Safe Hospitals

Ontario Power Generation, Bruce Power and Nordion are partnering to provide more than half of the world's supply of Cobalt-60, which plays a critical role in keeping hospitals safe. Cobalt-60 fuels gamma-processing operations that sterilize surgical supplies and single-use medical devices. This powerful partnership ensures a steady, long-term supply of Cobalt-60, and safer hospitals at home and around the world.

To learn more visit cleannuclearpowersafehospitals.com

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