

# POWER NEWS

SPRING 2016

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## DARLINGTON REFURBISHMENT

Official countdown to project execution  
page 3

## DES JOACHIMS GENERATING STATION

The story behind the "Da Swisha" nickname  
page 7

## OPG EMPLOYEES IN THE COMMUNITY

Meet Alim Baytekin  
page 10



## IN THIS ISSUE

### GREEN LIGHT FOR DARLINGTON REFURBISHMENT

*page 3*

### PARTNERSHIP CREATES EMPLOYMENT AND TRAINING OPPORTUNITIES

*page 6*

### DA SWISHA: THE STORY BEHIND THE NAME

*page 7*

### FROGS HELP PROTECT OPG'S MARSHES IN THE NORTHWEST

*page 8*

### DEFENDING THE WOLVERINE

*page 9*

### OUR PEOPLE: ALIM BAYTEKIN

*page 10*

### 2015 FINANCIAL AND OPERATING RESULTS

*page 11*

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# GREEN LIGHT FOR DARLINGTON REFURBISHMENT



With the Ontario Government's announcement to invest in refurbishing the Darlington Nuclear Generating Station (GS), OPG has started its official countdown to "breaker open" when Darlington's Unit 2 is removed from commercial service this October.

According to the final schedule, refurbishing all four units will take close to 10 years. Unit 2 will be completed before starting work on Unit 3. This allows lessons learned to be adopted.

OPG also intends to successfully complete refurbishing the first Darlington unit before Bruce Power begins their effort. In so doing, we will set the standard for mega-project execution.

"We are ready to go and we will deliver the job safely, on schedule, on budget, and at the highest level of quality," said Jeff Lyash, CEO and President.

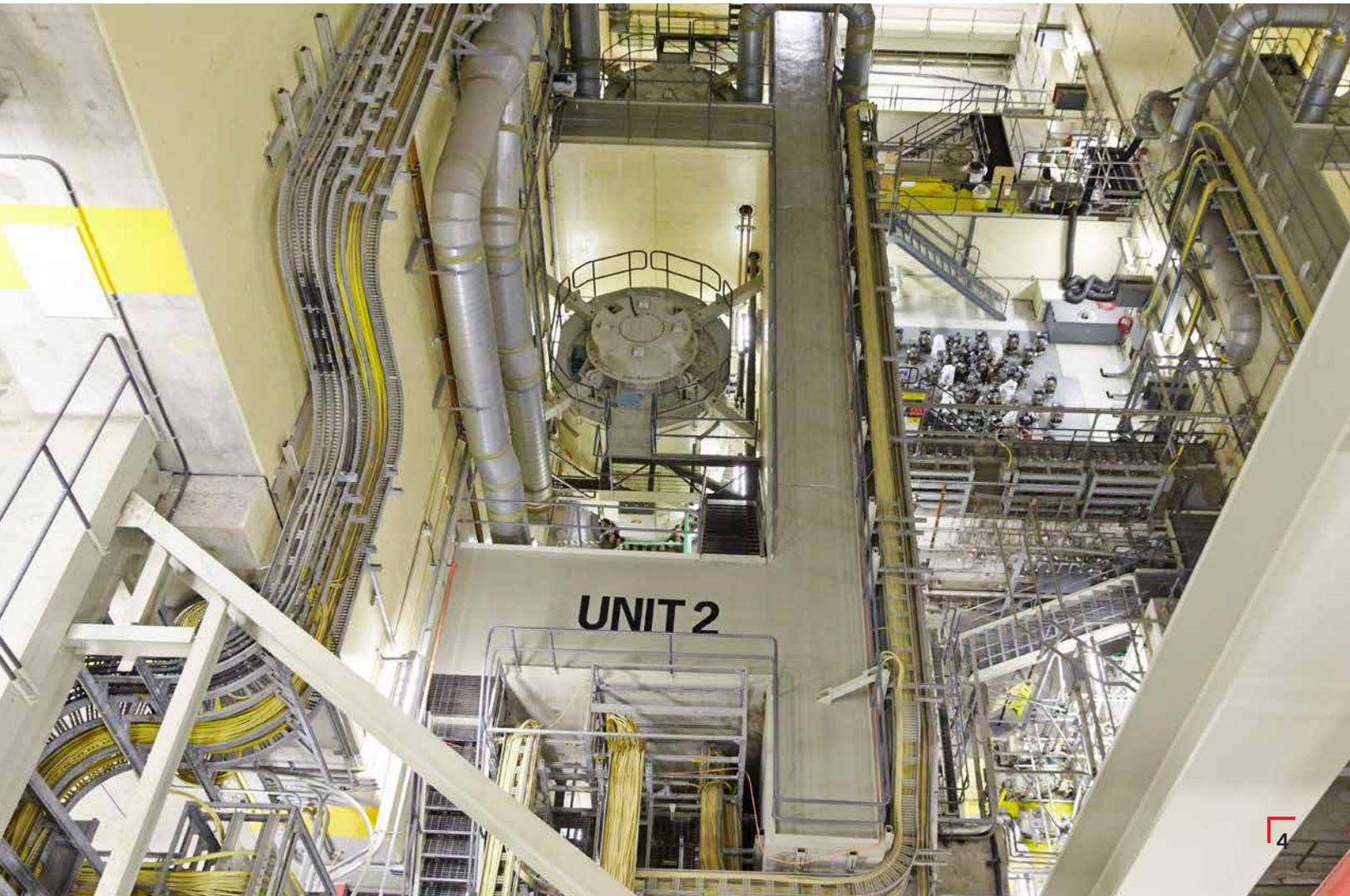
“We have a leadership team relentlessly focused on delivering results, a workforce committed to excellence in project execution and home-grown suppliers and partners who understand the importance of this effort. We all understand refurbishing Darlington is about the future of this province,” Lyash added.

The \$12.8 billion investment will generate \$14.9 billion in economic benefits to Ontario, which include thousands of construction jobs at Darlington and at some 60 Ontario companies supplying components for the job. This investment will also preserve about 3,000 jobs as it provides 30-plus years of clean, reliable, baseload power, at a cost lower than other alternatives.

Ontario’s electricity sector represents less than seven per cent of total greenhouse gas emissions. The transportation sector is 35 per cent; industry is 28 per cent; and building heat is about 19 per cent. As these sectors work to reduce their carbon intensity, there will be more dependence on clean electricity and OPG will be positioned to support this transition.

“That means a decarbonized electricity system is not just an environmental achievement, clean power is the foundation for competitiveness – particularly on the cusp of carbon pricing. And home made clean power drives home made innovation and supports industries beyond the energy sector in communities across the province,” said Lyash.

*“The long-term value to Ontario of a carbon-free generation portfolio is enormous.”*





## DARLINGTON GRANTED 10-YEAR LICENCE

The Canadian Nuclear Safety Commission (CNSC) granted Darlington Nuclear GS a 10-year licence, valid until 2025. Further backing Darlington's legacy of world-class performance, this is the longest licence ever granted to a Canadian nuclear power plant. OPG requested a long licence term to cover the refurbishment time period.

## PICKERING CONTINUED OPERATIONS

OPG will also work with the Ministry of Energy, the Independent Electricity System Operator and the Ontario Energy Board to pursue continued operation of the Pickering Nuclear GS to 2024. All six units would operate until 2022; two units would then shut down and four units would operate to 2024.

Continuing Pickering's operation will ensure a reliable, clean source of baseload electricity during the Darlington and initial Bruce refurbishments. OPG's technical work shows Pickering can safely operate to 2024 and doing so will save Ontario electricity customers up to \$600 million, avoid eight million tonnes of greenhouse gas emissions and protect 4,500 jobs across Durham Region.

OPG will work closely with our community partners as we move through this process. Any plan to extend Pickering's life will require approval from the CNSC.





NATHANIEL SUTHERLAND



PETER SUTHERLAND SR GS CONSTRUCTION

# PARTNERSHIP CREATES EMPLOYMENT AND TRAINING OPPORTUNITIES

Recent high school graduate Nathaniel Sutherland has spent three months observing and learning from engineers involved in the construction of OPG's newest hydroelectric project.

The Peter Sutherland Sr. Generating Station, a 28 MW station on the Abitibi River, is being constructed by OPG and Coral Rapids L.P., a subsidiary of the Taykwa Tagamou Nation (TTN).

Nathaniel shadowed different departments involved in the project such as quality, structures and piping and tried his hand at 3D drafting software. The hands-on experience taught him about possible career options and led to his decision to apply to college for civil engineering.

As the site begins to take shape in Ontario's northeastern landscape, training and employing TTN members and Indigenous people from the region is an important goal for the partnership.

"We are working together to provide employment opportunities and enhance qualifications for interested TTN members in all areas of the project," said Paul Burroughs, Director Project Management, Renewable Generation & Power Marketing.

From heavy equipment training to construction development skills to engineering internships, approximately 18 individual training plans for TTN members have been completed or are in progress. There are 36 Indigenous people currently employed on the project including 21 TTN members.

OPG and its contractors will continue to draw from past experience to maximize employment opportunities for TTN members. In 2015, OPG and the Moose Cree First Nation completed the Lower Mattagami Hydroelectric Project. At its peak, 1,800 people worked on the project including over 250 Indigenous people.

## CONSTRUCTION UPDATE

- The concrete has been poured for the intake structure where the water will be taken from the river.
- Intake canal construction is ahead of schedule.
- Excavation and concrete placement at the powerhouse continued through the winter.

# DA SWISHA: THE STORY BEHIND THE NAME

Deep in the Ottawa Valley sits Des Joachims Generating Station (GS). It's packed tightly between Quebec and Ontario, where it has harnessed the power of the Ottawa River since 1950. If you're in the know, you call it Da Swisha.

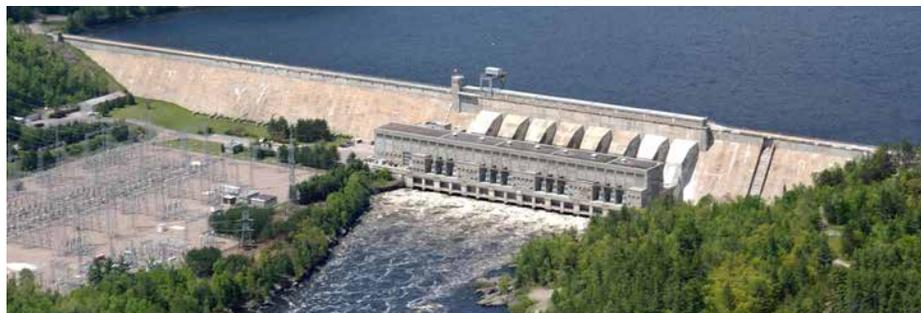
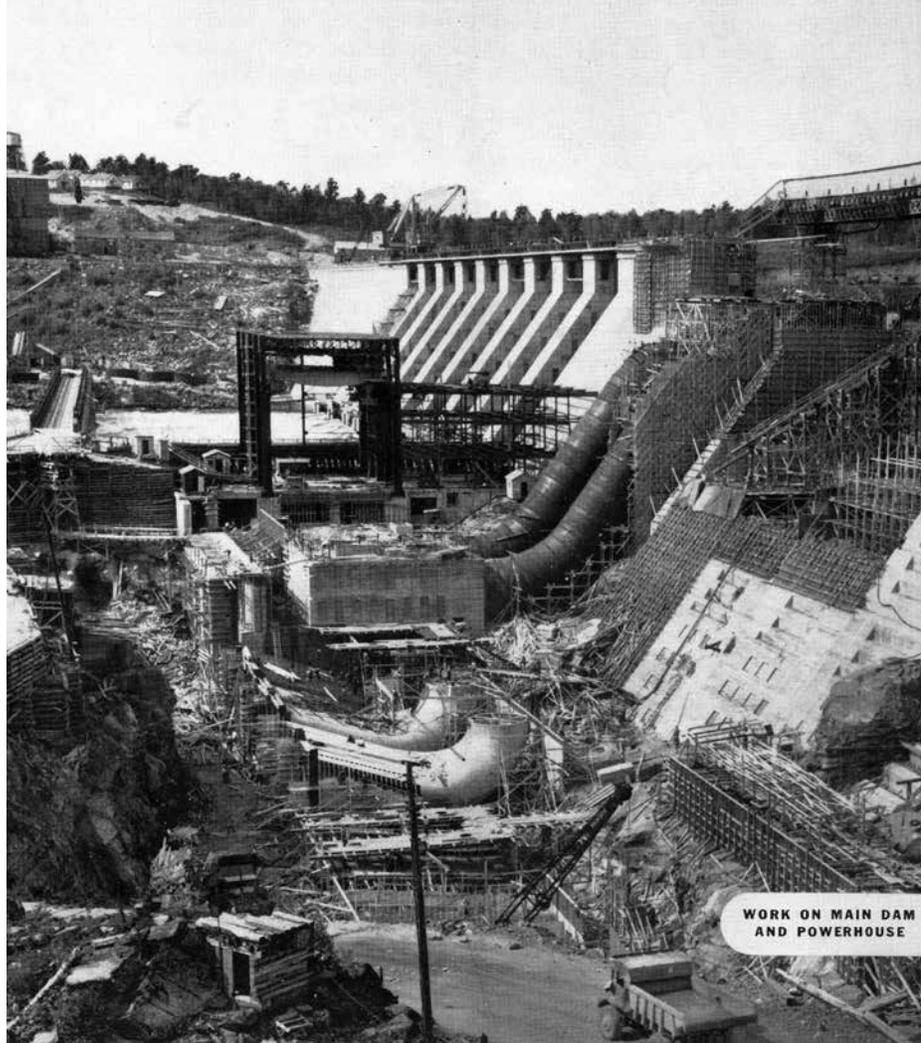
Like most unique nicknames, there's a story behind it.

Joachims was the name of a family who owned great tracts of land in the district. It first appeared on a 1688 map as "Portage de Joachim de l'Estan," indicating the rapids in that portion of the Ottawa River (then called "La Grande Rivière"). In 1853, a small community on the Quebec side named Rapides des Joachims opened its first post office.

The 429 MW hydroelectric station opened in 1950, with a remarkable 120-foot high concrete dam spanning the river where the rapids once thundered. The original French name remained – pronounced "day-swa-shem."

Over time, Des Joachims evolved to "Da Swisha."

"The local English speaking population pronounced the French name as best as they could, based on the local French pronunciation, and this yielded several variants, such as Swishaw, Sweshaw and Dah-swisha," said Dr. André Lapierre, at the University of Ottawa's Department of Linguistics.



Lapierre spent several years researching geographical names of Ontario, especially French names and collaborated on a project called the *Dialect Topography of the Ottawa Valley*. His work on geographical names continues, and he is currently the Chair of the Ontario Geographic Names Board.

"Ontarians owe a significant debt to Ontario Hydro for perpetuating the original names of rapids in the Ottawa River," Lapierre said. "The Chenaux station is another name which goes back to when Ontario was part of New France."

Des Joachims GS celebrated an anniversary last year, marking its 65th year generating clean, renewable power. In a 2015 benchmarking review against hydroelectric facilities across North America and other parts of the world, Da Swisha was named one of the best performers for medium, high use stations.



MARSHLANDS SURROUNDING THUNDER BAY GS  
PHOTOS COURTESY OF DAN GREGORY

## FROGS HELP PROTECT OPG'S MARSHES IN THE NORTHWEST

In a sprawling marshland covered with tall grasses, cattails and water-loving shrubs, the tiny boreal chorus frog offers big clues about its habitat. Changes in the chirpy frog's behaviour can signal potential threats to the lush home the wee amphibian shares with other wildlife and plants.

That's why OPG has been closely watching the frog, along with other amphibians and reptiles living in the marshes of our Northwest Operations. With the diligent work of an external ecologist, Dan Gregory, the area now has 10 years of data from its marshes – 450 acres at Atikokan Generating Station (GS) and 68 acres at Thunder Bay GS.

Referred to as the Marsh Monitoring Program, the study tracked trends and changes in those marshes.



BOREAL CHORUS FROG

After 10 years, the results are positive.

There have been no major concerns to amphibian populations. If there were, OPG was prepared to look at any impact its operations may be having and make changes if required.

OPG's first priority in monitoring the Thunder Bay and Atikokan marshes was to keep them healthy. Above and beyond that protection, the data has contributed to broader environmental initiatives in the province.

For example, Bird Studies Canada incorporates the results into their marsh monitoring throughout the Great Lakes basin of Ontario and the United States. Data and plant specimens were also submitted to the University of Toronto Mississauga Herbarium.

# DEFENDING THE WOLVERINE

Despite its ferocious reputation, the wolverine is under threat in Ontario. Fortunately, Earth Rangers, one of OPG's long-term biodiversity partners, is working to protect it.

With the Wildlife Conservation Society (WCS) Canada, Earth Rangers has launched a project to reduce incidental trapping of wolverines in Ontario's southern boreal forest. It's unknown how many wolverines are left in the wild, but estimates are about 600.

Wolverines have low birth rates compared to most other carnivores, which means populations are slow to recover if their numbers diminish. Like many species, the wolverine's greatest threat is habitat loss and fragmentation. On top of that, the furry creatures may get caught in traps intended for other animals.

"Wolverines face many challenges. Losing one can have a disproportionate impact on the overall population," said Dr. Justina Ray, WCS Canada's President and Senior Scientist. "We need to find out as much information as we can about where they live and what they need, including ways to prevent and monitor threats to their survival."

The Bring Back the Wolverine project is working with local registered trappers to learn more about wolverine distribution within traplines at the southern part of their range and develop new techniques to prevent trapping the elusive animal.

OPG is a proud supporter of Earth Rangers. Since our partnership began in 2010, we have helped raise more than \$470,000 to conserve species such as the spotted and Blandings' turtles, the American badger and the eastern wolf.



## THE WOLVERINE

**Member of:** The weasel family

**Looks like:** A small bear with a bushy tail, short legs and large paws with semi-retractable claws

**Adult size:** 65 to 87 cm long, similar to a medium-sized dog

**Home:** Wolverines usually live alone and roam across large territories (500-1,500 square kilometres or more!)

**Status:** Threatened; unless action is taken, the wolverine will become endangered

**Nickname:** "Skunk-bear," inspired by its fondness for marking territory with urine and a musty-smelling scent



ALIM BAYTEKIN

# OUR PEOPLE: ALIM BAYTEKIN

Alim Baytekin doesn't question if community volunteer work is worth his time.

"It's not about that, I feel we are obligated to do so. Giving back is saying thank you in a different way. It's part of who we are and what we're here for," says the Design Engineer at OPG's Pickering location.

"It makes me proud to work at a company that's actively involved with the community."

One of Baytekin's current volunteer roles is with Operation Clean Sweep, an initiative that assists seniors in the Durham region with their yard work. Another OPG employee, Joseph Amantea, started the project in 2009. Since then, over 600 volunteers, most of them OPG employees, have helped seniors.

The Durham Chapter of the North American Young Generation in Nuclear took over the project in 2015. As president of the chapter, Baytekin was happy to take the lead.

There are two cleanup days per year. To ensure it runs as efficiently as possible, Baytekin manages the work like an OPG project. The volunteers contact the seniors to confirm they need the yard cleaning services, then they visit the seniors' homes to estimate how long each job will take and split into teams to get the work done.

Baytekin continuously strives for improvement in his volunteer pursuits and work at OPG. He said he enjoys a challenge and is enthusiastic about learning on the job. "OPG has impressive training resources and facilities," Baytekin said.

Training is one of OPG's strengths Baytekin addressed when presenting to the Canadian Nuclear Safety Commission in late 2015, during the public hearings for Darlington Nuclear's licence renewal application.

Whether at the office, in training, cleaning yards or at a public hearing, Baytekin says he takes pride in representing OPG.

## EMPLOYEE SPOTLIGHT ALIM BAYTEKIN

**POSITION:** Design Engineer

**WORK LOCATION:** Pickering

**YEARS OF SERVICE:** 2

**FAVOURITE SPOT TO VISIT IN ONTARIO:**

Ottawa, during Winterlude

**WHAT'S YOUR AVERAGE COMMUTE TIME:**

8 minutes

**EARLY BIRD OR NIGHT OWL:** Both!

# OPG REPORTS STRONG OPERATING AND FINANCIAL RESULTS IN 2015

OPG's net income attributable to the Shareholder was \$402 million, down from \$561 million, excluding the extraordinary gain, in 2014. The decreased earnings were mainly a result of Darlington's planned four-unit Vacuum Building Outage (VBO), which reduced nuclear generation and increased operations, maintenance and administration expenses.

Asset reliability across the generation portfolio was strong. OPG's regulated hydroelectric stations achieved an availability factor of 91.2 per cent and our contracted hydroelectric stations achieved an availability of 88.6 per cent in 2015. The Thermal fleet also delivered strong reliability results.

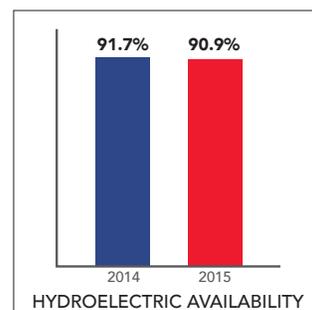
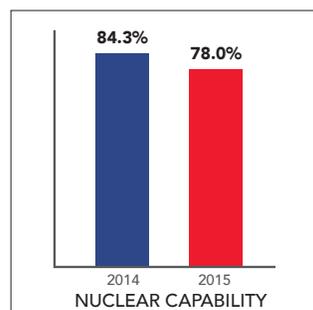
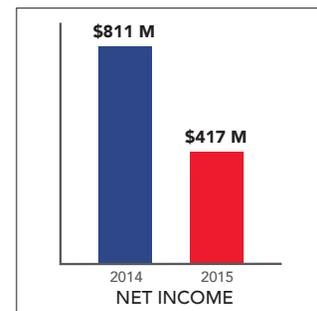
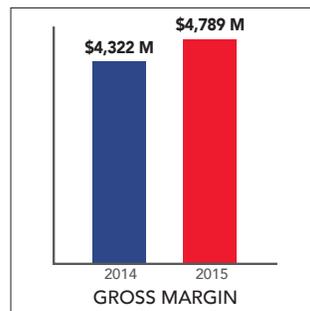
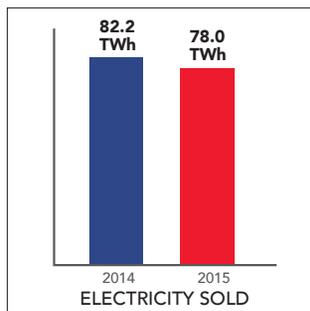
Pickering Nuclear GS saw its capability factor increase to 79.4 per cent in 2015, representing its best-ever reliability performance, which is critical given the decision to pursue continued Pickering operations to 2024.

OPG's generation decreased in 2015 to 78.0 terawatt hours (TWh) from 82.2 TWh in 2014. Nuclear production of 44.5 TWh in 2015 represented a decrease of 3.6 TWh compared to 2014, again largely because of the Darlington VBO. Hydroelectric production also saw a slight decrease in production primarily due to low water flows across much of Ontario.

Employee safety performance continued to make good progress in 2015. OPG's All Injury Rate (AIR) of 0.39 was the second best since OPG's inception in 1999 and our Accident Severity Rate (ASR) of 0.50 was the best in the company's history.

"OPG's strong operating and financial performance over the last few years allows us to proceed with confidence in refurbishing our nuclear plant at Darlington," said Jeff Lyash, OPG President and CEO.

## 2015 FINANCIAL AND OPERATING RESULTS





# The fight against climate change just got a **BIG** boost.

Ontario's clean power workhorse, the Darlington Nuclear Generating Station, is going to be refurbished and that's great news for our environment.

Darlington generates 20 per cent of Ontario's power and is 99.9 per cent free of greenhouse gas emissions.

Refurbishing the station will provide 30 more years of safe, clean, reliable, low-cost power.

OPG is ready to deliver this important clean power project on time and on budget.

Because we know the future is our most powerful resource.