

2012 ONTARIO POWER GENERATION **SUSTAINABLE** DEVELOPMENT REPORT



ONTARIO**POWER**
GENERATION

Ontario Power Generation Inc.

Sustainability Company of the Year

OPG was recognized by the Canadian Electricity Association (CEA) as the 2012 Sustainability Company of the Year for its “excellence and commitment to sustainable development practices and cutting-edge innovation within the electricity sector”.



Accepting the award on behalf of President and Chief Executive Officer (CEO) Tom Mitchell, is Barbara Reuber, Vice President (VP) Environment.

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COMPANY PROFILE



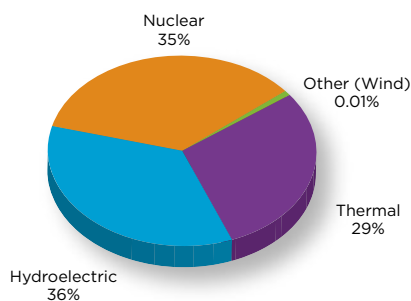
Manitou Falls Generating Station

MISSION: To be Ontario's low-cost generator.

We will achieve our mission by reliably and cost-effectively producing electricity from our diversified generating assets, while operating in a safe, transparent and environmentally responsible manner. We will also leverage the skills and experience of OPG staff by pursuing new business opportunities and additional sources of revenue without jeopardizing our core business.

As of December 31, 2012, OPG's electricity generating portfolio had an in-service capacity of 19,051 megawatts (MW). OPG operates:

**OPG's In-Service
Generating Capacity 2012**



3
Nuclear
generating stations



5
Thermal
generating stations



65
Hydroelectric
generating stations



2
Wind Power
turbines

In addition, OPG and TransCanada Energy Ltd. co-own the Portlands Energy Centre gas-fired combined cycle generating station. OPG and ATCO Power Canada Ltd. co-own the Brighton Beach gas-fired combined cycle generating station. OPG also owns two other nuclear generating stations, which are leased on a long-term basis to Bruce Power L.P. These co-owned and leased stations are incorporated into OPG's financial results but are not included in the generation portfolio statistics set out in this report. OPG is wholly owned by the Province of Ontario.

2012 MESSAGE

From the President and VP Environment

“OPG’s environmental performance for 2012 was very strong across all business units. Of special note has been our movement toward a generation portfolio virtually free of greenhouse gas emissions. By the end of 2013, we will have stopped burning coal at all of our stations, except at Thunder Bay, as directed by the Ontario government. This is one year earlier than planned, and will make OPG’s generation portfolio the cleanest in its 13-year history.”

Tom Mitchell
OPG President and CEO

Safety, social responsibility and a commitment to environmental protection are fundamental to Ontario Power Generation’s fabric. For 2012, OPG is proud to report excellent performance against our sustainability goals.

We’re also proud to have been awarded the Canadian Electricity Association’s 2012 Sustainability Company of the Year award. The award recognizes companies with exceptional performance in the areas of environment, society, and the economy. OPG’s performance was achieved through innovation and initiatives ranging from partnerships with First Nation and Métis communities, to demonstration of biomass as a viable renewable fuel, to innovative financing for projects.

Our momentum continues despite our challenging operating environment. Although 2012 was a year of declining generation, increased competition and rising costs, we earned a net income of \$367 million and achieved strong results in the areas of reliability, generation development, safety, and environmental stewardship. Again this year, our environmental performance either met or was better than target in all performance measures. While our safety performance in 2012 did not match that of 2011, many of our sites achieved significant safety milestones. We remain committed to zero injuries.

These accomplishments were achieved while we are transforming critical elements of our business to become more efficient, enabling us to pursue opportunities for growth and deliver on our mission of being Ontario’s low-cost electricity generator.

Our generation facilities’ performance was recognized as outstanding by our industry peers and shareholder. Generation development projects are boosting local economies and hydroelectric asset improvement projects are enhancing Ontario’s renewable energy supply.

While our achievements in 2012 are gratifying, we remain committed to creating value for Ontarians through performance excellence and the safe production of low-cost electricity.

We hope that you find the report informative, and welcome your feedback.



Tom Mitchell
TOM MITCHELL
President & CEO



Barbara Reuber
BARBARA REUBER
VP Environment

OPG GOVERNANCE AND ACCOUNTABILITY

OPG's corporate governance approach is to continually improve the policies and procedures used to direct and manage the corporation, to enhance Shareholder value and ensure financial viability. OPG continues to implement initiatives to enhance corporate governance practices in line with existing Ontario Securities Commission regulatory requirements, with the objective of strengthening the organization.

The OPG Board of Directors explicitly assumes responsibility for the stewardship of OPG and its business.

This stewardship function includes responsibility for the matters set out in the Board's Charter, which form part of the Board's statutory responsibility to manage or supervise the management of OPG's business and affairs (subject to any unanimous shareholder declaration or agreement).

The Board is made up of individuals with substantial expertise in managing and restructuring large businesses, managing and operating nuclear stations, managing capital intensive companies, and overseeing regulatory, government and public relations. The

Board has established a number of committees to focus on areas critical to the success of the Company. Committees include:

- Audit and Finance Committee.
- Governance and Nominating Committee.
- Nuclear Oversight Committee.
- Risk Oversight Committee.
- Compensation and Human Resources Committee.

OPG's Officers are accountable for the effective execution of programs within the areas of their accountability.

OPG OFFICERS



JAKE EPP
Chairman of the Board of Directors



TOM MITCHELL
President and Chief Executive Officer



BRUCE BOLAND
Senior Vice President, Commercial Operations and Environment



FRANK CHIAROTTO
Senior Vice President, Hydro – Thermal Operations



CARLO CROZZOLI
Senior Vice President, Corporate Business Development and Chief Risk Officer



CHRIS GINTHER
Senior Vice President, Law and General Counsel



DONN HANBIDGE
Senior Vice President, Chief Financial Officer



BARB KEENAN
Senior Vice President, People & Culture and Chief Ethics Officer



CATRIONA KING
Vice President, Corporate Secretary and Executive Operations



JOHN LEE
Vice President, Treasurer



SCOTT MARTIN
Senior Vice President, Business and Administrative Services



JOHN MURPHY
Executive Vice President, Strategic Initiatives



WAYNE ROBBINS
Chief Nuclear Officer



COLLEEN SIDFORD
Vice President, Chief Investment Officer



PIERRE TREMBLAY
Deputy Chief Nuclear Officer

ABOUT THIS REPORT

This report will provide insights into OPG's sustainability performance during 2012. This report marks the 14th year of annual reporting on sustainability at OPG. Our 2012 Annual Report provides further detail on economic and operating information.

www.opg.com

Scope

This report presents OPG's environmental, social, and economic performance related to all operations and sites for the period of 2012. Copies of previous years' reports can be found at www.opg.com.

Objectives

OPG's objectives in publishing this report are to convey our commitment to sustainable development and to communicate our sustainable development performance in an open and transparent fashion.

Audience

OPG values our relationships with, and recognizes our obligations to our stakeholders, partners and communities. Establishing and maintaining relationships is important to us. We recognize that this is key to maintaining our license to operate.

The audience for this report is our stakeholders and partners. Our stakeholders and partners include: the communities in which we operate, First Nations and Métis communities, customers, educational institutions, the public, non-government organizations (NGOs), suppliers, unions, the media, peer industry groups, employees, and government and agencies at federal, provincial and municipal levels.

Among industry groups, we work closely with the Canadian Electricity Association. OPG actively participates on a number of committees and working groups including Sustainable Electricity, Health and Safety, and Generation.

Continual Improvement

OPG is committed to continual improvement and, to support our efforts to engage the public and our stakeholders, we welcome feedback (contact information is available on our website and on the back cover of this report). The report format and content continues to evolve based on stakeholder feedback.

OPG's 2011 Sustainable Development Report was reviewed by the EXCEL Secretariat (part of the Delphi group - a strategic consultancy firm specializing in corporate sustainability). OPG was benchmarked against other companies that report on sustainable development metrics and our report was ranked as "high achievement." Recommendations incorporated in this year's report include increased emphasis on visual presentation of information and high-level conclusions related to performance.

For comparative purposes, a table mapping Global Reporting Initiative criteria to report content can be found in Appendix C.

Data Integrity

Assurance of the accuracy of data documented in this report is achieved by a variety of means. Ernst and Young's audit of the financial statements concluded that in all material respects the statements fairly presented the financial position of OPG. OPG's audited consolidated financial statements and management discussion and analysis can be accessed on OPG's website at www.opg.com, the Canadian Securities Administrators' website at www.sedar.com or can be requested from OPG.

Prescribed operational and performance data is subject to audit as part of OPG's overall assurance program and the Canadian Electricity Association's data verification program. Reported data is validated by both line management and organizationally independent staff.

Legend for Graphs

LEGEND	
Performance Target	Performance Trend
 Better than target by 5 per cent or more	 Performance trend is improving
 Within 5 per cent of target	 Performance trend neither improving nor declining
 Worse than target by more than 5 per cent but less than or equal to 10 per cent	 Performance trend is declining
 Worse than target by more than 10 per cent	

Targets

Consistent with industry norms, the term "target" often refers to threshold performance. Desired performance may be greater or less than the threshold value depending on the specific parameter. For example, desired performance for waste generation is less than threshold and trending downward. Conversely, desired performance for waste diversion from landfill is above threshold and trending upward. Graphs for performance measures have been colour-coded to indicate performance, and are accompanied by arrows indicating whether performance is improving, remaining static or declining.



Tom Mitchell, OPG President and CEO (L) and Jake Epp, Chairman of the Board (R) announce the Darlington Refurbishment to stakeholders.

OVERVIEW

In 2012, OPG achieved strong results in the areas of reliability, generation development, safety, and environmental stewardship. Refer to key sustainable development performance found on page 8.

Despite a number of sites accomplishing significant milestones, OPG's 2012 safety performance did not match that of 2011. During 2013, there will be continued focus on continuous improvement, reviewing lessons learned from previous incidents, and situational awareness.

OPG has proactively established a waste minimization team to drive improvements in low and intermediate level radioactive waste production.

Managing Performance

The Corporate Balanced Scorecard provides an overview of our performance relative to the targets set for our safety, environment, reliability, financial, operating and project performance. These performance areas reflect our business plan commitments that are designed to make the company more efficient and effective. In 2012, the overall weighted score was slightly better than target.

OPG considers regulatory compliance to be a minimum, non-negotiable standard for progress towards sustainable development. Each year, OPG sets targets in key areas for improving performance beyond compliance. These targets are aligned with business objectives and reinforced for Management Group (non-unionized employees) through the Annual Incentive Plan performance-based compensation program.



OPG's Jeff Huang (pictured at left) with project colleagues from other utilities and EPRI receiving the 2012 Thermal Technology Transfer Award. Huang and OPG's Curtis Henderson won the award for OPG Thermal's research contributions to the project.

OPG's Business Model defines the business controls, organization, programs, planning processes, and management system design principles used to operate OPG's business. This model provides assurance that OPG's commitments and obligations are resourced and managed.

OPG Code of Business Conduct

OPG believes ethical business conduct by employees, consultants, contractors and business partners is a critical component of our operations. OPG's Code of Business Conduct establishes our values and sets the standard for our business behaviour. Our values are Safety, Integrity, Excellence, and People and Citizenship, which clarify what is important to our organization and guide our behaviour and decision-making. Our behaviours - Say It, Do It; Simplify It; Think Top and Bottom Line; Integrate and Collaborate; and Tell It as It Is - strengthen and support our values and are essential to delivery on our mission.

Through our values and behaviours, OPG accepts responsibility for the impacts of our decisions and activities on safety and the environment and takes into account the expectations of stakeholders.

Over the years, OPG has instilled the importance of sustainable development in employees through training and a variety of programs.

Awards and Recognition

1. OPG won Canadian Electricity Association's 2012 **Sustainability Electricity Company of the Year Award**.
2. OPG won Canadian Electricity Association's **President's Safety Award (2011)** in recognition of outstanding workplace safety performance in 2011.
3. Darlington Nuclear received an **International Award of Excellence** in recognition of its distinction as a top performing nuclear power station with industry leading innovation in safety, operations, and management.
4. OPG shared the Electric Power Research Institute's (EPRI) **Thermal Technology Transfer Award** for its collaboration on a project to identify and address sources of boiler air in-leakage in power plants. Reducing in-leakage of air results in improved combustion, reduced heat rate, reduced emissions, fewer unit de-rates, improved component reliability, and substantial financial and emissions savings.
5. OPG was recognized with the EPRI **Nuclear Technology Transfer Award** for the successful implementation of the new seismic modeling software "Advanced Cutset Upper Bound Estimator" (ACUBE). This software was used during Darlington Nuclear's probabilistic risk assessment



Darlington Nuclear received an International Award of Excellence in recognition of being one of the safest and best performing nuclear plants in the world.

- to improve the accuracy of the probability calculation related to seismic events. Darlington Nuclear was the first utility in North America to use the methodology for regulator licensing requirements.
6. Northwest Hydro-Thermal Operations was awarded the **Quality of Life Award** by the Thunder Bay Chamber of Commerce in recognition of the charitable work performed by OPG and its employees, dedication to environmental stewardship, and volunteer work in the community.
 7. Pickering Nuclear became the first Canadian organization to receive the **Pollinator Advocate Award** from the Wildlife Habitat Council in recognition of its efforts to improve pollinator habitat on OPG lands and in other community locations, as well as for public educational programs.
 8. Lambton GS received the **Regional Corporate Habitat of the Year Award** from the Wildlife Habitat Council which recognized its comprehensive Biodiversity Management Plan.
 9. Darlington Nuclear received the 2012 **Environmental Achievement Award** from the Environmental Earth Angels. The award recognizes Darlington Nuclear's leadership and commitment to "many years of outstanding biodiversity improvements and environmental education programs."
 10. OPG's Senior Vice President, People and Culture and Chief Ethics Officer (Barb Keenan) was recognized as a 2012 **Canadian Diversity Champion** by the Women of Influence organization, recognizing consistent dedication and commitment to leading and developing diversity initiatives and programs in the workplace.
 11. In the 2011 year-end performance numbers released by the CANDU Owners Group, OPG received top honours with one Pickering Nuclear unit scoring in the top 10 and three Darlington Nuclear units scoring in the top five.



OPG's Paul Lawrence (right) accepts the Nuclear Technology Transfer Award from EPRI's Vice President and Chief Nuclear Officer Neil M. Wilmschurst at the 2012 Nuclear Power Council Advisory Conference in San Diego, California. Lawrence and OPG's Miguel Salaices won the award for using new seismic modelling software at Darlington Nuclear.



Northwest Hydro-Thermal Operations was awarded the Quality of Life Award by the Thunder Bay Chamber of Commerce.

KEY SUSTAINABLE DEVELOPMENT PERFORMANCE - 2012

Category	Performance Measure	ACTUAL 2011	ACTUAL 2012	TARGET 2012	TARGET 2013
Significant Environment Event*	Annual Incentive Plan Event	0	0	0	0
Spills	Category A	0	0	0	0
	Category B	0	0	0	0
	Category C ⁽¹⁾	18	9	24	22
Regulatory Compliance	Major Infractions ⁽²⁾	0	0	0	0
	Other Infractions ^{(1), (3)}	14	14	39	34
	Environmental Penalty (for tracking and trending purposes)	0	3	N/A	N/A
Radiation Emissions	Tritium Emissions (Ci) ⁽¹⁾ - air	18,837	17,976	19,000	18,100
	- water	11,479	11,211	15,000	14,000
	Carbon 14 Emissions (Ci) ⁽¹⁾ - air	76	76	130	130
Radioactive Waste Management	Low & Intermediate Level Radioactive Waste Produced ⁽¹⁾ (LILRW) (m ³)	2,943	2,772	2,950	3,193
Air Emissions (Thermal)	Carbon Dioxide (CO ₂) emissions - gross Tg ⁽¹⁾	4.4	4.5	11.5	11.5
	Acid Gas emissions - total gross - Gg ^{(1), (4)}	17	16.2	236	236
Nuclear Waste: Incinerator Emissions	Dioxins / Furans Emissions (ng TEQ/Rm ³)	0.00179	0.003	0.08	N/A
Critical Group Dose	Pickering Nuclear - microsieverts (µSv)	0.9	1.1	ALARA ⁽⁵⁾	ALARA ⁽⁵⁾
	Darlington Nuclear - microsieverts (µSv)	0.6	0.6	ALARA ⁽⁵⁾	ALARA ⁽⁵⁾
Accident Severity Rate	Days lost per 200,000 hours	1.10	2.4	N/A	N/A
All Injury Rate	Injuries per 200,000 hours ⁽⁶⁾	0.56	0.63	0.92	0.89
Generation Performance	Electricity Production (TWh)	83.7	84.7	86.2	82.6
	Nuclear Unit Capability Factor (per cent)	85.06	86.06	86.63	87.6
	Hydroelectric Availability (per cent)	90.9	91.2	91.2	91.6
	Thermal Start Guarantee (per cent)	94.7	97.5	94	94

+ As determined by CEO. Significant Environment Event target is included in the Corporate Annual Incentive Plan.

⁽¹⁾ Business Units have established internal objectives for continual improvement of environmental performance.

⁽²⁾ Major Infractions – Director's Orders, Charges and Convictions.

⁽³⁾ Other Infractions – including but not limited to any incident resulting in a Notice of Violation, an order or compliance action.

⁽⁴⁾ Regulatory Acid Gas Limits – O.Reg. 153/99 limits OPG's total gross SO₂ emissions to 175 Gg and the total gross acid gas emissions to 236 Gg.

⁽⁵⁾ As Low As Reasonably Achievable.

⁽⁶⁾ Upper quartile of Electrical sector compared to prior year performance.

ENVIRONMENT



A juvenile lake sturgeon that was captured and released as part of OPG's continuing fisheries monitoring study.

Tree planting at Pickering Nuclear.

OPG met or bettered all environmental performance targets during 2012 and we remain committed to continual improvement.

All 2013 environmental performance targets at a corporate level either remain unchanged from 2012 or have been changed to drive improved performance. These targets have been established to support continual improvement, and are based on trending and analysis, and benchmarking.

OPG's Environmental Management System ensures that all impacts to the environment are managed within defined performance parameters, including regulatory and business objectives. A selection of key issues is presented in the following pages. For additional information please refer to www.opg.com/safety.

Environmental Management

OPG has processes in place to manage our environmental impacts. These processes are designed to eliminate (where possible), control, minimize, mitigate, or compensate for negative impacts, and to enhance positive impacts.

OPG's Environmental Policy (www.opg.com/safety/sustainable) was revised in 2012 and consolidated the existing environment policy and supplemental policies related to biodiversity, land assessment and remediation, and spill management. The policy commits OPG to meet all regulatory requirements as well as any environmental commitments that it makes, with the objective of exceeding legal requirements where it makes business sense. Through the policy, OPG also commits to establishing and maintaining ISO 14001 registered environmental management system(s); preventing or mitigating adverse effects on the environment with a long-term objective of continual improvement; supporting biodiversity; and to communicating our environmental performance to our stakeholders.

The policy also establishes accountability for environmental management. Leadership is accountable for the effective implementation of the environmental management system within their respective organizations. Within the scope of their accountabilities, all employees are accountable for environmental performance and compliance.

In addition to the internal commitment to sound environmental management, both the Canadian Electricity Association and Canadian Nuclear Safety Commission require Environmental Management Systems (EMSs).

Environmental assessments and other project approval processes are conducted for projects that have the potential to impact the environment.

ISO 14001 registered environmental management systems have been in place for over a decade at OPG Corporate, as well for all of its generating facilities, and Nuclear Waste Management Division.

In 2012, OPG began an initiative to unify the registrations under a single OPG registration, and consolidate the existing 15 EMSs, into a single OPG EMS. The transition will improve alignment and consistency across the organization, and improve the efficiency of providing oversight and assurance to the Board. Operational controls over environmental aspects remain with the line organizations. The creation of a single OPG EMS will reduce work and costs for OPG by reducing document management, reducing the number of Significant Environmental Aspects to those significant at the corporate level; and reducing audit time and costs by moving to a single Internal Auditor and Registrar, with a defined three-year audit cycle.

Current environmental aspects evaluated as Significant Environmental Aspects are:

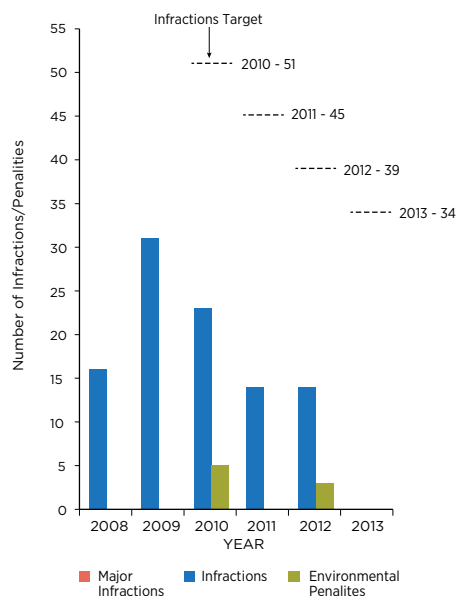
1. Carbon 14 emissions to air.
2. Chemical emissions to water.
3. Emissions from the combustion of fossil fuels.
4. Equipment leakages from oil filled equipment.
5. Fish impingement/entrainment/barriers.
6. Habitat alteration (loss or creation) - including biodiversity programs.
7. Spills arising from materials and waste handling.
8. Tritium emissions to air, water, groundwater.
9. Thermal emissions to water.
10. Water flows and levels.
11. Low and Intermediate Level Radioactive Waste.

Regulatory Compliance

During 2012, OPG was issued three environmental monetary penalties by the Ontario Ministry of the Environment (MOE) related to failed effluent toxicity samples. All three penalties were classified by the MOE as “less serious” - the lowest seriousness category for penalties based on the low potential consequences. The total of the penalties was \$22,750. The MOE reduced the amount of the penalties by the maximum allowed, primarily as a result of the preventive and mitigative measures taken by OPG. In accordance with OPG’s managed processes, immediate and long-term corrective and preventative actions have been put in place. Since corrective actions were implemented there have been no further toxicity failures.

Trending and analysis of regulatory infraction performance over the period 2009 to 2012 was conducted to identify strengths and areas for improvement. Environmental Infraction performance across OPG has demonstrated a trend of continual improvement since 2009. Infractions have declined from 31 in 2009 to 14 in 2012.

Environmental Regulatory Infractions



Better than target



Trend improving

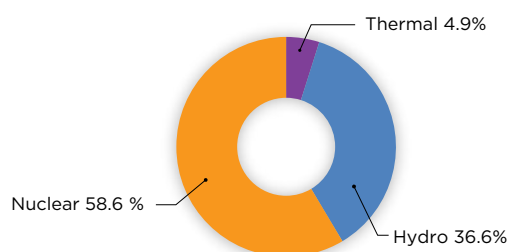
AIR

Generation Mix

In 2012, over 95 per cent of OPG's generation came from hydroelectric or nuclear sources that were virtually free of air emissions that cause smog, acid rain, and global warming.

The majority of the remaining generation came from OPG's thermal stations, which supply electricity for demand that is not first met by sources such as hydro or nuclear. An advantage of thermal generation is the capability to respond quickly to changes in demand. This flexibility enables them to effectively backup intermittent sources like wind or solar generation. As a result, production from thermal stations is variable as are the associated air emissions.

OPG 2012 Generation Mix 83,757 GWh



Thermal Generation in Transition

In January 2013, the Ministry of Energy announced the shutdown of the remaining coal-fired units at the Lambton and Nanticoke GSs by December 31, 2013, in advance of the previous December 31, 2014 deadline. OPG plans to place the units in a safe shutdown state to preserve the assets for possible future conversion to natural gas and/or biomass, should they be required.

AIR EMISSIONS Fast Facts



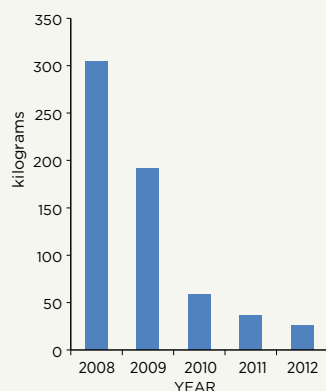
- ▶ **Mercury emissions** were the lowest level on record in 2012.
- ▶ **Sulphur Hexafluoride (SF₆)** emissions increased from 11.96 kg in 2011 (285.5 tonnes CO₂ eq.) to 39.87 kg (951.75 tonnes CO₂ eq.) in 2012 due to circuit breaker maintenance. SF₆ is a greenhouse gas.
- ▶ **Vehicle emissions** in 2012: 17,310,357 km driven = approx. 4,814 tonnes of CO₂ (down from 2011 21,160,957 km = approx. 5,885 tonnes CO₂).
- ▶ **Combustion of fuels** in 2012: 4,528,023 tonnes of CO₂ emitted (up slightly from 2011 emissions of 4,366,785 tonnes, due to increased coal-fired generation).

During 2012, OPG continued to operate and maintain its coal fuelled generating assets in an environmentally acceptable and economic manner. Air emissions in 2012 continue to be lower than historical levels due to low levels of required generation. Two units at Lambton GS and four units at Nanticoke GS remain in a safe shutdown state.

Mercury

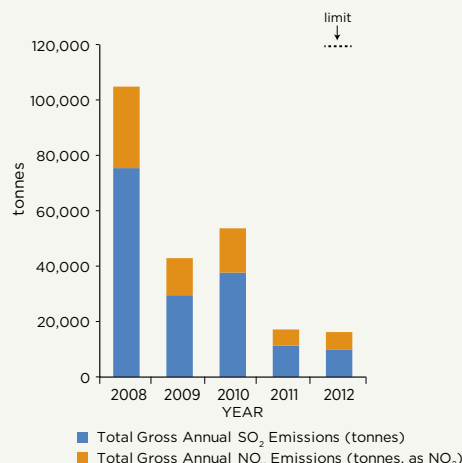
Since 2008 there has been an order of magnitude reduction in mercury emissions to air, with 2012 mercury emissions being the lowest level on record. Mercury emissions from OPG's fossil fuel facilities declined significantly due largely to government policy resulting in reduced operation of thermal generation.

Mercury Emissions



↑ Trend Improving

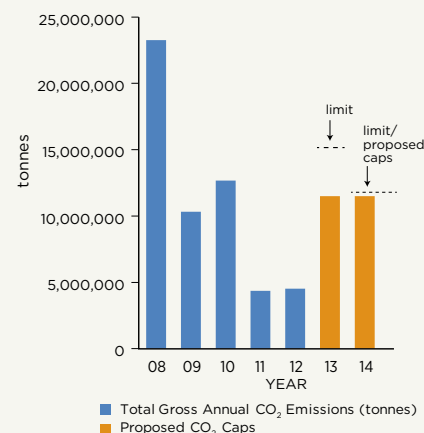
Acid Gas Emissions



● Better than target

↔ Trend Variable

CO₂ Emissions



● Better than target

↔ Trend Variable

Mercury emissions decreased from 43 kg in 2011, to 25 kg (40%) in 2012. The reduction in emissions, despite the slight increase in thermal generation, may be the result of:

- the change in estimation methodology for Lambton GS, which changed from a mass balance methodology to using stack test data, and
- coal pile drawdown at Nanticoke GS. As the coal pile is drawn down, more bituminous coals that are relatively high in halides and less Powder River Basin (PRB) are likely being used. This would increase the amount of mercury that goes to fly ash instead of to air.

Progress on Converting Coal Units to Cleaner Fuels

OPG has been exploring options to convert some of its coal-fuelled electricity generating stations to natural gas and/or biomass. Conversion of these stations will:

- allow for the continued use of existing facilities owned by the people of Ontario.
- cost less than building new stations.
- reduce Greenhouse Gas (GHG) emissions considerably.
- provide flexible backup for intermittent renewable electricity sources such as wind or solar, and
- maintain employment and economic benefits in the local communities.

In 2013, the Government of Ontario announced plans to convert Thunder Bay GS from coal to advanced biomass. Biomass is a sustainable fuel recognized as beneficial to climate change mitigation. Advanced biomass is a new fuel. It is a solid biomass fuel that is higher energy density and is hydrophobic (repels water) which allows it to be stored outside in a pile and withstand the elements. Advanced biomass can be used safely at coal-fueled plants with minimal plant modifications. This will be the first advanced biomass station in the world that was formerly a coal plant. It is targeted to be operational in 2015. There are no immediate plans for the conversion of units at Lambton GS or Nanticoke GS and the units at those sites will be placed in a safe shutdown state in 2013 to preserve the asset for possible future conversion to natural gas and/or biomass should they be required. Atikokan GS is being converted to a biomass-fuelled station.

Biomass

In 2012, the Ontario MOE issued the required environmental compliance approvals for the Atikokan Biomass Conversion project. With over 200 MW generating capacity, the

BIOMASS GENERATION Fast Facts



- ▶ \$170-million Atikokan GS biomass conversion project (2012 \$54M, life to date \$59M).
- ▶ Expected electrical output capability of 211 MW.
- ▶ Capable of annual production up to 150 GWh/year.
- ▶ Capacity factor = 8 per cent.
- ▶ Project completion 2014.
- ▶ Creates about 200 construction jobs and helps to protect existing jobs at the plant.
- ▶ Significant social and economic benefits in forest-dependent communities.
- ▶ 90,000 tonnes of biomass wood pellet fuel is required annually - creating 150 jobs.
- ▶ Wood pellets must meet United Nations Framework Convention on Climate Change (UNFCCC) definition of renewable.
- ▶ Significant GHG benefits over Natural Gas Combined Cycle (80 per cent lower GHG emissions).

converted Atikokan GS will provide renewable electricity generation sourced from sustainably managed forests. Atikokan GS will be one of the largest 100 per cent biomass-fuelled plants in North America and will generate renewable, dispatchable, peak capacity power. Construction activities will ramp up over the summer of 2013, with expected completion in 2014.

A *Biomass Sustainability Analysis* conducted by the Pembina Institute found that a biomass program using wood pellets at a rate of 2 million oven-dried tonnes per year can be done sustainably with no systemic decline in forest carbon stocks over time.

Climate Change

Historically the focus on climate change has been on mitigation. While still important, climate scientists have concluded that climate will change and extremes of weather will occur as a result of natural and human activity and there is now an increased focus on adaptation to the impacts. OPG programs address both the proactive (mitigation) and reactive (adaptation) aspects of climate change.



Biomass wood pellets.



Operator checking fire during biomass test burn.



Atikokan GS biomass conveyor and storage silos

Mitigation

In 2012, OPG's CO₂ emissions were over 80 per cent lower than five years ago. This gross emission is somewhat variable, given the variability in demand for thermal stations, but the upper threshold until 2014 will be limited to 11.5 Tg.

Vegetation naturally sequesters CO₂ thereby helping to mitigate global warming. Since 2000, OPG has planted over five million native trees and shrubs on over 2,500 hectares. The ability of vegetation to sequester CO₂ varies with age and species, therefore OPG does not attempt to quantify the offset.

OPG uses electric vehicles as part of our fleet and has installed over a dozen charging stations, providing reliable transportation and contributing to reducing Ontario's emissions and mitigating climate change. OPG has also partnered with several organizations including Plug'nDrive Ontario to advance the introduction of electric vehicles within Ontario.

OPG does not measure or calculate GHG emissions from hydroelectric reservoirs. The area of OPG's reservoirs has remained relatively constant for many years. Just as in natural lakes and rivers, reservoirs experience a constant influx of organic matter which decays and produces methane (CH₄) and CO₂. Work in the 1990s suggested that GHG production from decomposition of old standing timber left in uncleared reservoirs is down to background levels after 10 years. OPG's reservoirs are greater than 10 years old.

Adaptation

During 2012, OPG continued its participation and leadership role in climate change adaptation initiatives with municipal and regional governments, the Ministries of Environment and Energy at the provincial level, and with Natural Resources (NRCan) at the federal level. OPG was the chair of the Canadian Electricity Association Climate Change working group. During 2012, efforts have continued to align the objectives of the various groups, and to ensure adequate climate science exists in terms of degree of detail, parameters of concern and consideration of extremes. An equipment vulnerability approach is being undertaken to address uncertainties related to resilience of the electricity sector in the face of future extremes. OPG continues to work with Canadian Electricity Association member companies, non-government organizations, and government in a concerted effort to analyze and understand the impacts on watersheds and implications to supply and demand relative to energy production.

Radiation

Very low levels of radioactivity are released as a result of the operation of OPG's nuclear reactors.

OPG conducts Radiological Environmental Monitoring Programs in the vicinity of Darlington Nuclear and Pickering Nuclear stations to determine the actual radiological impact on members of the public who live in close proximity to the stations. Radiation exposure is measured in accordance with the Canadian Standards Association's "Critical Group Dose" protocol. The 'critical group' is the group of members of

the public that, as a result of proximity to the station, diet, age, and other factors is expected to receive the highest estimated dose compared to others in the population.

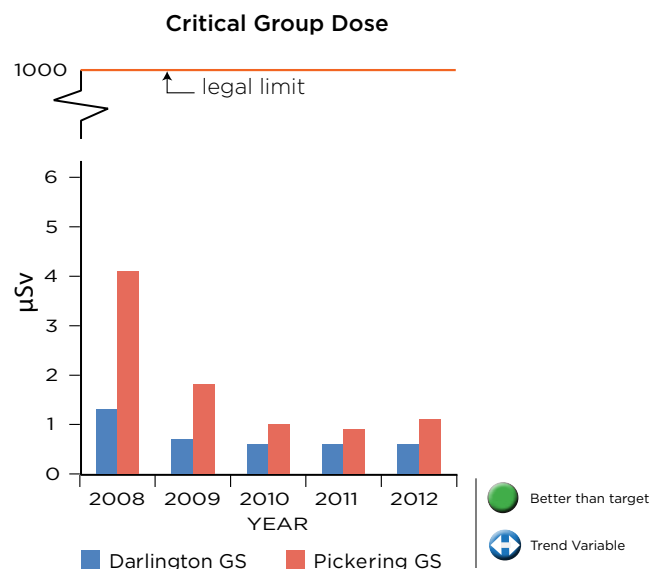
Dose calculations take into account the public's actual eating, drinking, and living habits. This information is obtained through surveys and sampling. Critical group dose is expressed in microsieverts (µSv), an international unit of radiation measurement.

In 2012, the critical dose calculated for Darlington Nuclear and Pickering Nuclear were 0.6 and 1.1 µSv respectively. The 2012 radiation dose assessments demonstrate that the critical group dose resulting from the operation of OPG's nuclear facilities continues to be a very small fraction (0.1 per cent) of the annual legal limit of 1,000 microsieverts µSv. By comparison, depending on where they live, Canadians receive about 1,800 µSv from naturally occurring radiation. (source Radiation and Health in Durham Region 2007).

OPG's nuclear power plants have been designed and built with multiple barriers to safeguard against releases of radioactive materials. These barriers include systems such as air dryers to remove tritium vapour, and filters to remove particulate and radioiodine from the air. In addition to these engineered barriers, emissions are minimized by careful plant operation, maintenance, and regular testing and inspection by highly qualified staff. To view the complete 2012 Radiological Environmental Monitoring Program Report visit www.opg.com/news/reports.

Looking Ahead

OPG is in the process of expanding the scope of its Environmental Monitoring Programs for Pickering Nuclear and Darlington Nuclear to encompass the protection of humans and the environment from nuclear substances, hazardous substances, and physical stressors. The revised programs have been developed and are being implemented. In 2012, several changes were made to the monitoring programs to meet the new requirements and to optimize sampling. The first annual report for the expanded programs will be published in 2014 and will provide the 2013 monitoring results.



WATER

Managing Impacts to Fish

Generating facilities can impact fish in a variety of ways. The intake of cooling water at nuclear and thermal stations and water flowing through hydroelectric stations may result in fish impingement and entrainment and physical barriers such as dams may prevent migration.

Operational controls such as fish ladders, nets, deterrent structures, and stocking programs are in place to manage these impacts. The following are two examples of where mitigation measures have been successfully put in place:

At Pickering Nuclear, a barrier net has been installed at the water intake to mitigate fish impingement. This net has proven to be an effective fish deterrent system reducing fish impingement by 92 per cent in 2012 compared to 2010, bettering the 2012 impingement reduction target of 80 per cent. Improving the spawning habitat for Northern Pike in Duffins Creek Marsh and partnering with the Ontario Federation of Anglers and Hunters in the Bring Back the Salmon Project also offsets impacts of fish impingement and entrainment at Pickering Nuclear.

At Saunders Generating Station, OPG and our partners continue to explore ways of offsetting turbine mortality to American eels which is an endangered species under the Ontario Endangered Species Act. An eel ladder allows for the upstream migration of young eels and trap and transport programs also aid the downstream migration around the dam. OPG is also working with the scientific community and partner utilities to develop behavioral guidance techniques to divert eels and possibly augment trap and transport programs.

OPG is committed to working cooperatively with the regulators on matters related to fish and fish habitat in the operation of its facilities while fulfilling its mandate to generate electricity for Ontario.

Development of Stewardship Agreements for Species at Risk in Ontario

During 2012, Hydroelectric Environment staff continued to work with the Ministry of Natural Resources towards the development of agreements for facilities that may affect species listed under the Endangered Species Act. The agreements focused on American Eel and Lake Sturgeon at several hydroelectric facilities across the province and cover a suite of measures and controls including habitat creation and protection, operational flow alterations, stocking programs and/or facilitating passage around dams and generating stations, as appropriate, as well as monitoring components to ensure effectiveness. Effective July 2013, the Ministry introduced regulatory changes that replaced the former agreement structure with new requirements. OPG continues to support the recovery of affected species in Ontario through the implementation of the newly amended requirements.

WATER Fast Facts



- ▶ Water flows and levels are regulated by treaty, licenses, agreements and legislation.
- ▶ Most watersheds where OPG has hydro facilities are subject to water management plans.
- ▶ OPG generating stations use water in principally two ways:
 - Flow through hydroelectric turbines – 404,229 million m³/year (2012).
 - Non-consumptive cooling and service water – 10,722 million m³/year (2012).

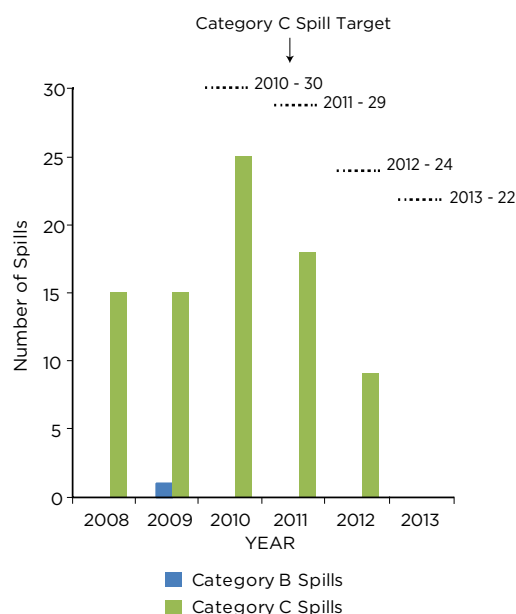
Spills Management

OPG has extensive programs to ensure that the risk of spills is effectively managed to acceptably low levels. Each site conducts assessments to assess the risk of spills, to establish processes, and to take actions to reduce the risk.

The focus is on spill prevention, for example preventing releases through effective material management practices and minimizing the consequences by selecting less hazardous materials where possible. Our environmental management system demonstrates this focus by ranking spills management as a significant environmental aspect, by setting stringent targets, by ensuring effective engineered and operational controls, and by effective emergency response.

OPG's performance over the past several years demonstrates the robustness of its spill prevention programs. For the past three years OPG has not had spills

Spills Performance



that are categorized as either 'very serious' (Category A) or 'serious' (Category B). Targets remain at zero for these two categories. Performance in the area of 'less serious' but reportable spills (Category C) continually improves, with increasingly stringent year over year targets. OPG's spill categories mirror Ministry of Environment (MOE) spill classification per Ontario Regulation 675/98.

OPG has conducted trending and analysis of spills performance over the period 2009 to 2012 to identify strengths and areas for improvement. Since 2010, OPG's Category C spill performance has demonstrated a general trend of continual improvement. The number of spills decreased from 25 spills in 2009 to nine spills in 2012.

Benchmarking, completed in 2012, identified that OPG's spill performance rated second among 10 (five comparable nuclear and five comparable hydroelectric) generation companies. Spill prevention and management are considered to be well-managed given the wide range of operational equipment across the corporation, the low severity of the spill events, OPG's performance relative to recent benchmarking, and the improved spill performance since 2010.

LAND

Land Assessment & Remediation

OPG has a program to assess and remediate historic contamination on our properties. The estimated present value of the assessment and remediation plan is approximately \$10 million over the next several years. This amount is fully reserved under OPG environmental provisions.

The required assessments have been completed. Forty two sites have been remediated. Assessment of medium and low priority sites continues under OPG's voluntary site assessment program. Completion of this program is targeted for the end of 2017.

Polychlorinated Biphenyls (PCB) Management

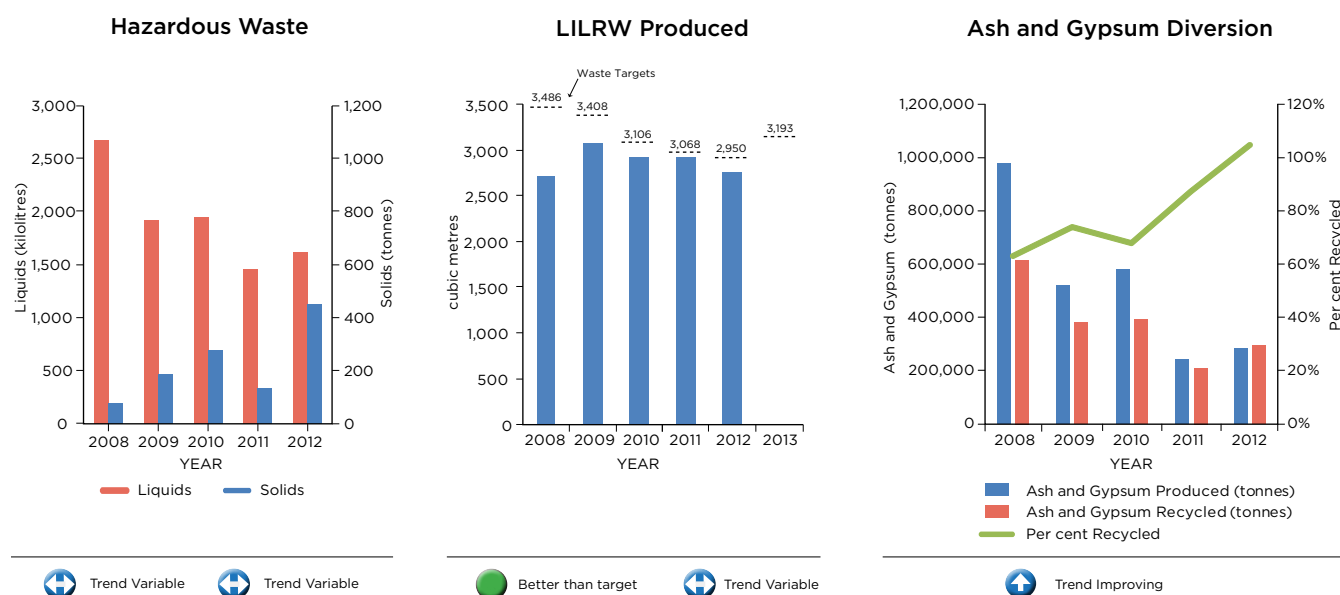
In 2010, OPG identified several thousand fluorescent light fixtures with PCB ballasts that had been abandoned in place during lighting retrofits in the mid-1990s. The plan to remove and dispose of these PCB ballasts is well underway, with completion expected by the end of 2013. OPG estimates the cost of this work at approximately \$2 million. Funding is fully reserved under the OPG environmental and decommissioning provisions. Pickering, Lennox and Lambton GSs have sent all out of service ballasts for disposal. Upon completion of the removal program at Nanticoke GS, the abandoned-in-place PCB ballast issue will be complete. At the end of 2012, 9.8 tonnes of ballasts (estimated weight) remained in situ.

Low and Intermediate Radioactive Waste

Low and intermediate level radioactive waste (LILRW) is produced during routine operations at nuclear facilities. Low-level radioactive waste generally has limited amounts of long-lived radioactivity, and does not require significant shielding during handling and interim storage. Intermediate-level radioactive waste generally requires shielding during handling and interim storage.

OPG's objective is to maintain the environmental impacts as low as reasonably achievable consistent with social and economic drivers. Reducing the volume of waste produced reduces the costs of transportation, storage and disposal.

Generally, year over year performance targets are set consistently lower to drive improved performance. Due to an increase in number and scope of planned maintenance outages at Darlington and Pickering as well as additional project work within Nuclear Waste Management Division, and in recognition that waste volumes increase during maintenance outages, the 2013 target of 3,193 m³ has been slightly increased from the target of 2012. OPG has established a peer team to maintain focus on waste minimization.



In 2012, OPG produced 2,772 m³ of LILRW. This was better than the target of 2,950 m³ by six per cent. Reductions in waste over the years have resulted in annual savings in the millions of dollars.

Hazardous Waste Management

OPG has programs in place to manage non hazardous and hazardous wastes including radiological waste. To the extent practical, OPG attempts to minimize waste

generated. When generation of waste cannot be avoided, reuse and recycling programs are employed. In fact, sales of scrap and byproduct is a substantial revenue stream (see Waste Management chart). All hazardous waste is tightly controlled by provincial and federal regulations. The increase in hazardous waste production during 2012 is primarily attributed to transformer replacements at Niagara and Northwest Plant Groups and bi-annual maintenance of water treatment plant sumps at Darlington Nuclear.

WASTE MANAGEMENT

WASTE TYPE	2012	2011	2010	2009	2008	
Ash and Gypsum						
Ash & Gypsum Produced (tonnes)	283,366	241,140	575,140	517,371	975,213	
Ash & Gypsum Recycled (tonnes)	296,208	209,744	388,885	381,205	615,918	
Diversion Rate	105% ⁽¹⁾	87%	68%	74%	63%	
Investment Recovery (IR) ⁽²⁾						
Scrap metal excluding Information Technology (IT)	- tonnes - revenue	3,120 \$1,932,000	2,401 \$1,322,000	3,386 \$2,143,700	3,902 \$1,095,000	2,752 \$1,476,000
IT (scrap computers, etc.) ⁽³⁾	- tonnes - revenue	60.8 \$39,900	126.1 \$31,700	72 \$19,000	96 \$18,000	64 \$10,000
Total 2012 scrap via IR contracts	- tonnes - revenue	3,181 \$1,971,900	2527.1 \$1,353,700	3,458 \$2,162,700	3,998 \$1,113,000	2,816 \$1,486,000
Hazardous Waste Generation						
Solids (tonnes)	1,125	339	690	464	190	
Liquids (kilolitres)	1,615	1,458	1,943	1,904	2,668	
Radioactive Waste Management						
Used fuel - annual production (tonnes of uranium)	1,439	1,610	1,357	1,345	1,354	
Used fuel in storage (tonnes of uranium)	40,647	39,319	37,910	36,521	35,154	
Low & Intermediate Radioactive Waste produced (m³)	2,772	2,942	2,710	3,078	2,708	
Low & Intermediate Radioactive Waste stored (m³) (includes L&ILRW stored by OPG on behalf of Bruce Power)	2,639	3,913	2,615	3,300	3,568	
PCB						
High-Level PCB material in storage (tonnes)	0.1	7	1	2	7	
High-Level PCB materials sent for destruction (tonnes)	61	21	215	72	9	
Estimated inventory of High-Level PCB material in service (tonnes)	0	0	0	0	41	
Low-Level PCB materials in storage (tonnes)	0.4	0	1	2	9	
Low-Level PCB material sent for destruction (tonnes)	185	140	42	7	11	
Total PCB material sent for destruction (tonnes)	245	161	256	78	20	

⁽¹⁾ 283,366 tonnes ash and gypsum produced and 296,208 tonnes diverted (105%) – solid combustion by-products that are not used in a given year are sent to a recoverable landfill, and subsequently recovered to meet market demand.

⁽²⁾ Data does not include scrap recovery from contracts where OPG does not have responsibility for the waste.

⁽³⁾ The above IT weight is based on the assumption the scrap monitors sold had an average weight of 11.4 kg; monitors are actually sold by the number of monitors, not by weight.

Deep Geologic Repository

Throughout 2012, OPG, with the support of the Nuclear Waste Management Organization (NWMO), continued to engage communities and interested public in the proposed Deep Geologic Repository (DGR) at the Bruce Nuclear site in Kincardine. The proposed DGR would safely isolate and store low and intermediate-level nuclear waste. For almost a decade, OPG has been progressing with the engineering, planning and approval of a DGR for the permanent isolation and storage of low and intermediate waste from OPG's owned and operated stations as part of our commitment to the proactive and long-term safe management of nuclear waste.

In 2012, OPG provided a number of opportunities for the public and First Nations and Métis communities to become informed, ask questions and offer comments. The focus was to ensure everyone was aware of the opportunity to participate in the Joint Review Panel (JRP) public review process. In 2013, the JRP will conduct four weeks of public hearings into OPG's DGR proposal. For more information see www.opgdgr.com.

DEEP GEOLOGIC REPOSITORY COMMUNITY ENGAGEMENT



Fast Facts

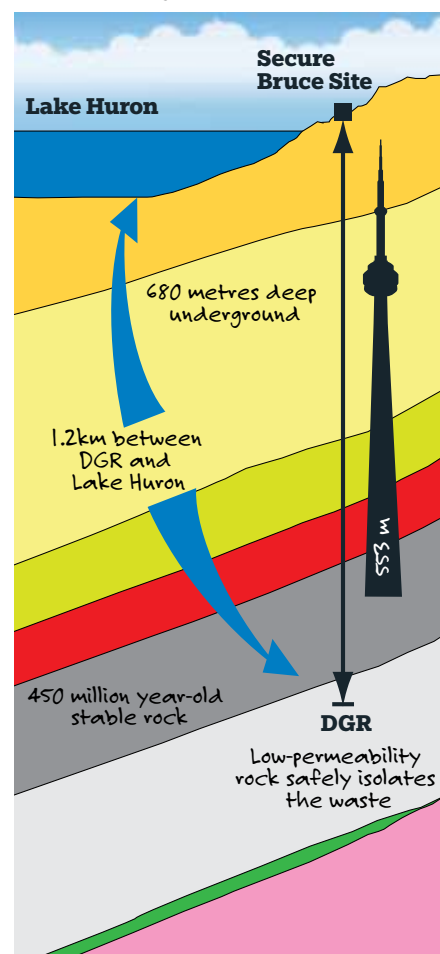
In 2012:

- ▶ DGR mobile exhibit attended 31 community events – talking with thousands of people.
- ▶ 42 presentations to community groups and organizations.
- ▶ 20 key stakeholder briefings to three levels of government.
- ▶ 3 project newsletters to 35,000 households.
- ▶ 2 peer reviews successfully completed.
- ▶ 14 meetings and/or community engagement activities with First Nations and Métis.
- ▶ 29 community initiatives supported through the Community Partnership Program.

Geophysicist Jim McLay discusses 450-million-year old rock samples from a drilling and coring program for the DGR Project with Canadian Nuclear Society conference participants.



Schematic illustrating the relative location of the DGR, safely isolating the waste from the surrounding environment.



BIODIVERSITY AND HABITAT STEWARDSHIP

Biodiversity is at risk globally, nationally and locally. Emerging international, national and provincial biodiversity initiatives emphasize the need to address biodiversity challenges and provide direction.

Every business and industry has effects on biodiversity either directly through habitat loss and fragmentation or indirectly through emissions to land, water and air. Biodiversity and habitat stewardship is a significant environmental aspect for OPG. OPG recognizes that our effects on nature do not stop at the boundaries of our plants, nor do our efforts to protect and restore nature. Our biodiversity programs demonstrate that industry can and does have a clear role to play in conserving Ontario's biodiversity. OPG strives to maintain or enhance, where it makes business sense, significant natural areas and associated species of concern.

OPG's biodiversity initiatives are designed to implement the "4 Rs" of biodiversity:

- **Retain** what is ecologically significant.
- **Restore** habitats that have been degraded.
- **Replace** habitats that have been destroyed, where ecologically and economically feasible.
- **Recover** the habitats and populations of species that are at risk.

OPG continues to work extensively with numerous conservation partners within Ontario and continues to demonstrate leadership and innovation in advancing biodiversity conservation in Ontario across Canada and within North America.

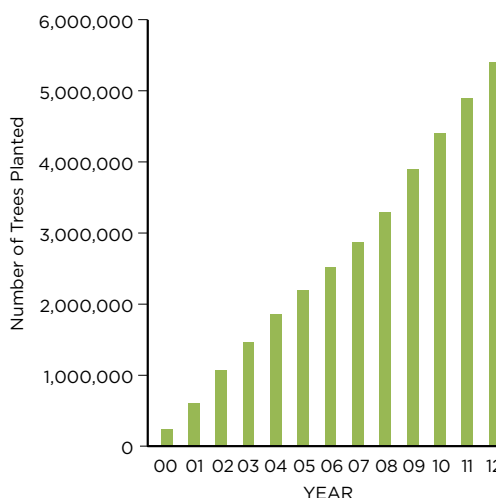
OPG is the lead partner in the Bring Back the Salmon program. This program is designed to help restore the Atlantic salmon in Lake Ontario by 2020.

One of OPG's regional programs is tree planting, focusing on strategic locations across southern Ontario including the Carolinian forest, one of the most biologically imperiled regions in Canada. Plantings are targeted to expand key core forested areas and connect woodland patches to help promote the recovery of wildlife that are at risk in the heavily fragmented landscapes of southern Ontario. Sites are identified using regional scale natural heritage systems such as the Carolinian Canada's Coalition's "Big Picture". The use of such systems helps to achieve the greatest ecological and social value for the investment dollar.

In 2012, OPG through our conservation partners planted nearly 500,000 native trees and shrubs. This brings the total plantings since 2000 to over 5 million native trees and shrubs on over 2,500 hectares of ecologically significant lands.

This cumulative effort addresses both climate change adaptation and mitigation by enhancing the resiliency of woodland ecosystems to withstand the effects of climate change, while naturally sequestering CO₂ thereby helping to mitigate global warming.

OPG Cumulative Tree Planting



"Biodiversity is the variety of life on Earth. It includes all living things and the ways in which they interact with one another and their environment. Conserving Ontario's biodiversity is very important because healthy ecosystems sustain healthy people and a healthy economy."

Ontario Biodiversity Council

OPG's Commitment to Biodiversity At It's Operating Sites

OPG's biodiversity program includes a program for habitat management and enhancement at its operating sites. OPG once again received recognition from the Wildlife Habitat Council for ongoing biodiversity programs at our sites. The Wildlife Habitat Council's certification process helps to ensure OPG's biodiversity programs remain dynamic and demonstrate continual improvement.

- Fourteen OPG sites are Wildlife at Work certified.
- Six OPG sites are Corporate Lands for Learning certified.
- In 2012, Pickering Nuclear became the first Canadian organization to receive the Pollinator Advocate award in recognition of its efforts to improve habitat for pollinating insects on OPG lands and in other community locations, and for public education.
- In 2012, Lambton GS received the Regional Corporate Habitat of the Year Award which recognizes its Biodiversity Management Plan.

"OPG's leadership has empowered our watershed community to be better stewards of the land, educate our youth and begin to take ownership over our own environmental legacy."

Elizabeth VanHooren
General Manager, Secretary Treasurer
Kettle Creek Conservation Authority

"Programs like OPG's biodiversity management program are all important. Today I have a viable wildlife corridor on my property which provides habitat for countless wildlife. I know that OPG's commitment to carbon sequestration and local biodiversity has made a difference in the Kettle Creek watershed because I see evidence of it every day in my backyard."

Elizabeth Thompson
Land Owner

OPG'S BIODIVERSITY PROGRAM Fast Facts



- ▶ Over 5 million native trees and shrubs planted on over 2,500 hectares since 2000.
- ▶ Program has been expanded to include wetland restoration.
- ▶ OPG is the lead sponsor of the Bring Back the Salmon project, a program to restore Atlantic salmon to Lake Ontario.
- ▶ OPG partnerships include CBBC (Canadian Business and Biodiversity Council), BEAN (Biodiversity Education and Awareness Network), LEAF (Local Enhancement and Appreciation of Forests), Earth Rangers, Trees Ontario, Ontario Nature, Rouge Park.



Tree planting in Alex Robertson Park hosted by Pickering Nuclear.

BIODIVERSITY AT OPG



Pickering Nuclear became the first Canadian organization to be recognized with the Wildlife Habitat Council Pollinator Advocate Award. There are more than 275 species of flora and 300 species of fauna on OPG's Pickering Nuclear site.

OPG helps to protect Lake Sturgeon in the Kaministiquia River. New signage has been installed at the Mountdale Boat Launch, aimed at promoting awareness and education on the protection of the lake sturgeon population in the Kaministiquia River. The effort is part of a joint initiative between OPG, the Thunder Bay District Stewardship Council and the Ministry of Natural Resources. OPG has been working with the Ministry for nearly a decade, to maintain and enhance the lake sturgeon population in the Kaministiquia River.



Pickering Nuclear partnered with Toronto and Region Conservation Authority and students from Holy Redeemer Catholic School to raise awareness about pollution entering local water bodies through storm drains by painting yellow fish next to storm drains. The Yellow Fish Road program is provided by Trout Unlimited.

OPG biologist Wayne Weller talks about biodiversity to attendees at Frog Fest 2012. Frog Fest is an interactive family event held at Heartland Forest, a fully accessible outdoor education experience in Niagara.



BIODIVERSITY AT OPG

OPG takes part in the Environmental Earth Angels Program at Kakabeka Falls Provincial Park. OPG's Andrea Sears and Kakabeka Falls Provincial Park's Dan Katajamaki assist students studying lake sturgeon in the Kaministiquia River ecosystem. The Endangered Species/Lake Sturgeon session was part of the Environmental Earth Angels Biodiversity and Education Program for students in grades three to five.



OPG's Northeast Plant Group and the Dividing Lake Ontario Junior Rangers partnered to help reclaim portions of the Wawaitin site following redevelopment. This activity was part of the plant group's community stewardship and biodiversity program. Planting native trees will help with long term slope and soil stabilization, visual aesthetics, and improve the biodiversity of the site. Trees were grown by Millson Forestry using seed from the local area and were selected based on their ecological suitability for the site.

OPG with the assistance of Ministry of Natural Resources' Stewardship Rangers constructed a turtle nesting habitat adjacent to the new wetland at Nanticoke GS. The project was timely as six of the eight turtle species found in Ontario are now classified as "at risk" on the Species At Risk in Ontario list.



Nanticoke GS celebrated 40 years of providing power for Ontario with an Open House highlighting environment initiatives, community partnerships and operational excellence.

RESOURCE USE

OPG is conscious of resource conservation in both existing and new construction. Electricity accounts for about 80 per cent of total utility costs at OPG's head office. Energy efficient lighting, and sensors have helped reduced electricity consumption.

OPG's head office uses an internal-source heat pump system that captures heat from lights, occupants, and equipment in the core area for perimeter heating in winter. The system reduces energy costs by storing and redistributing thermal energy when required. Underground thermal storage tanks containing 1.5 million gallons of water store heated and chilled water for use as required. The heating and air conditioning system uses chilled and warm water produced and stored at night and in other off-peak periods.

OPG's recently completed St. Lawrence Power Development Visitor Centre was the first project in Cornwall and one of a select few buildings in Canada to achieve a Leadership in Energy and Environmental Design (LEED) Gold rating. The Visitor Centre is testament to a high standard of sustainability, environmental stewardship, excellence in design and healthy city development.

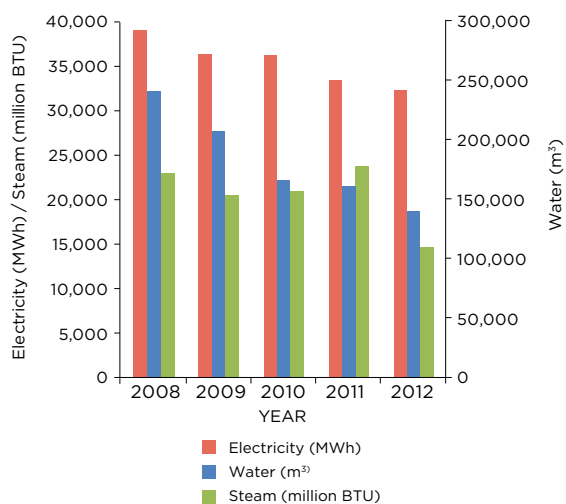
The Darlington Energy Centre is being built to LEED Silver standards.

Ongoing equipment efficiency upgrades accounted for an incremental saving of 12.2 GWh/year (2012). OPG has had an energy efficiency program in place since 1994. The annualized energy savings over this period have been 2,493 GWh, saving both money (\$132 million in 2012) and GHG emissions (2,758,944 tonnes).



St. Lawrence Power Development Visitor Centre.

Electricity Water and Steam Consumption

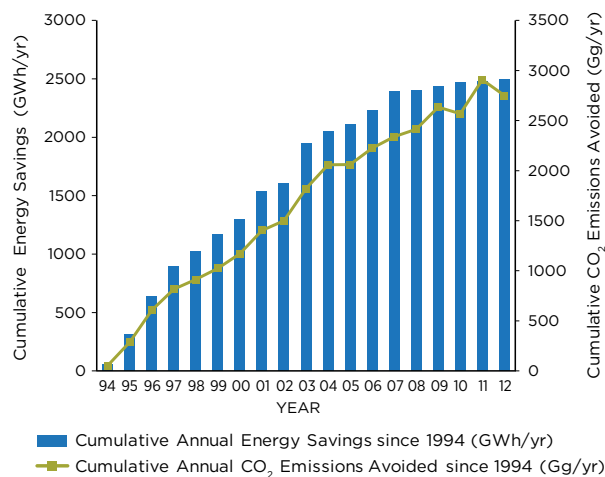


Trend improving for Electricity and Water



Trend Variable for Steam

Cumulative Energy and CO₂ Emissions Savings



Trend improving for Energy Savings



Trend improving for CO₂ Emissions Savings

SOCIAL



Darlington Nuclear's Tuesdays on the Trail Program - an education program for the public. Students at Darlington Nuclear's Envirothon.

OPG's values of safety, integrity, excellence, and people and citizenship are critical to success, and guide our behaviour and decision making.

OPG embraces its responsibility to its stakeholders. Discussed in this section are some of the programs and performance that contribute to fulfillment of this sustainable development pillar. Examples include health and safety, recruitment, diversity and equality, citizenship, aboriginal relations and engaging with stakeholders.

Employee Safety

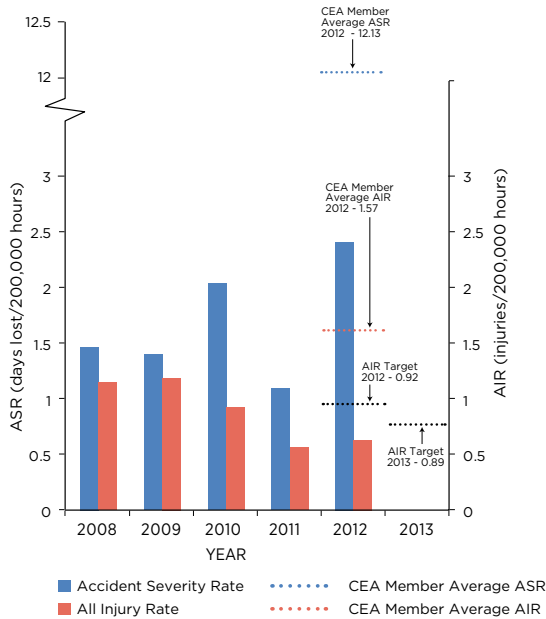
OPG remains steadfast in its commitment to safety excellence, sustaining a strong safety culture and continual improvement in safety management systems. Safety is one of OPG's key values. All employees and workplaces are covered by Joint Health and Safety Committees. Our safety management system is designed to support this value and the achievement of our safety goals including the prevention of workplace illness and injury and continual improvement in employee safety performance. Two of the indicators used to measure safety performance are: Accident Severity Rate (ASR), and All Injury Rate (AIR).

OPG's 2012 AIR of 0.63 injuries per 200,000 hours worked (vs target of 0.92) was second only to OPG's best-ever performance in 2011 of 0.56 injuries per 200,000 hours. OPG's 2012 ASR of 2.4 days lost per 200,000 hours is an increase over the 2011 ASR of 1.10 days lost per 200,000 hours. Twenty-five sites accomplished significant milestones with approximately half exceeding 10 years without a lost time injury. OPG continues to benchmark its performance against other Canadian electrical utilities.

OPG receives CEA President's Safety Award



OPG Safety Performance



AIR Better than target
 AIR Trend Improving
 ASR Trend Variable

OPG staff demonstrate situational awareness by familiarizing themselves with their surroundings before starting a job.



In October 2012, OPG's safety performance was recognized by the Canadian Electricity Association with the President's Award for its 2011 ranking within the top quartile of comparable Canadian electrical utilities. Additionally, OPG's safety performance during 2012 qualified for a Canadian Electricity Association Vice President's Award based on top quartile performance within generation companies of greater than 500 employees. We anticipate that safety performance will continue to place OPG as one of the best amongst Canadian electrical utilities.

The purpose of OPG's health and safety initiatives is to support our uncompromising goal of zero injuries.

When an injury happens, OPG's robust Disability Management program focuses on safe and timely return to work with the goal of reducing the length of absences and providing support to employees during both their absence, and their re-integration to the workplace.

In 2012, OPG focused special attention on two safety improvement areas: situational awareness and Work Protection (lockout/tagout). Situational awareness is having an accurate mental model of workplace conditions - where you are, what is happening, what is changing and what could happen. In 2012, workers were challenged to improve their use of situational awareness tools in assessing and controlling hazards associated with changing or unexpected conditions in the workplace to prevent injuries. OPG uses its Work Protection Code to ensure that hazardous energy is controlled when workers are working on equipment. A number of improvement initiatives were undertaken in 2012 to evaluate and improve the Code and its application.

In 2013, there will be a continued focus and corporate wide campaign to heighten and improve situational awareness across the company.

Employee Health

A key aspect of our initiatives in all areas of health is providing education, tools and support to staff, so they can take action to improve their overall well-being. OPG believes that employees who are healthy and engaged at work are:

- More productive,
- Have less absenteeism, and
- Have fewer workplace accidents.

The top 5 health conditions affecting our employees are: Mental Health & Behavioural Disorders, Cancers, Cardiovascular Diseases, Diseases of the Musculoskeletal System and Diabetes/Metabolic Syndrome.

Mental Health & Behavioural issues were of particular focus in 2012. OPG's strategy in combating mental health disorders is to build an integrated, sustainable program by addressing three key areas:

- Education - building general awareness and understanding of mental health issues.



- Stigma – reducing the fear of discrimination associated with mental health.
- Access to care – building early access to psychiatric service.

OPG makes available to all regular OPG staff and their immediate families an Employee and Family Assistance program. The program provides a wide range of confidential services to those taking steps to improve their health and for those in need.

Public Safety on Waterways

To help ensure public safety around OPG hydro sites, OPG staff work closely with partners in site communities. In partnership with the Ontario Provincial Police, OPG continues its water safety outreach program to inform the public about the potential for rapid and dangerous changes in water levels and flows. Fast moving water can create dangerous turbulence and strong undercurrents.

Safety messages are broadly communicated to the public on television and radio, online, and in newspaper and magazine advertisements, as well as through brochures and DVDs. OPG's message remains Stay Clear Stay Safe. To order a free copy of OPG's water safety DVD, e-mail your mailing address to watersafety@opg.com.

Educational Outreach and Recruitment

Despite a decline in the number of full-time job opportunities available in 2012, OPG continues to engage in outreach activities to promote student opportunities and a general awareness of careers in the electricity industry. In addressing each of our audiences, key messaging encourages students to stay in school and pursue studies in maths and sciences which are essential to many of OPG's career paths.

OPG engages in the following activities to support our recruitment, diversity, employment equity, and corporate citizenship objectives:

- **Classroom visits and information sessions** to enhance the students' understanding of our career opportunities and the associated academic requirements and qualifications.
- **Awards and scholarships** at the secondary and post secondary levels.
- **Participation in Career Fairs.**
- **Partnering with various colleges and universities** through participation in curriculum advisory committees and provision of financial contributions to support program and curriculum development.
- **Participation in various conferences, speakers' panels, networking events** targeting post-secondary students, experienced professionals, and members of employment equity designated groups.

OPG offers Ontario teachers free resource kits to help teach electrical energy and electricity generation to students in grades one, six and nine. OPG has developed the resources in consultation with science educators across the province. OPG resources meet current Ontario curriculum requirements.

Refer to The Learning Zone www.opg.com/education, www.mypowercareer.com.

Diversity and Employment Equity

OPG embraces diversity in its broadest sense, valuing all human differences that make individuals unique. We strive to create a workforce that reflects the diverse populations of the communities in which we operate, in an environment that is respectful and inclusive of all employees. In 2012, OPG has reviewed governance associated with diversity, human rights, harassment and violence free workplaces. Governance has been consolidated to better address these issues and is built into our Code of Business Conduct to better communicate our expectations in these areas. In addition, a three year employment equity plan has been approved to remove barriers that have been highlighted through a survey to employees representing the designated groups.

OPG continues to support its employee resource groups to broaden our commitment to inclusion. These groups include:

- The OPG Native Circle for First Nation and Métis employees.
- The OPG Pride Network for Gay, Lesbian, Bisexual and Transgendered employees and their allies.
- On Line Disabilities Network for employees with disabilities and their allies.
- The EmPowered Women's Forum which is a leadership training program for women.

Looking Ahead

2013 will be a year of transition as we move towards a centre-led staffing model and consolidate services related to internal and external staffing to realize more efficiencies. In addition, we will continue efforts to manage our workforce through attrition. OPG will further implement new employee behaviours and embed them into recruitment, selection, and succession planning efforts. Our site diversity committees will see some improvements in communication tools through the use of a website to foster a better community of practice.

In 2012, OPG developed and delivered a pilot High Potential Skills Development program to 47 employees in the Nuclear business unit. These employees have up to 10 years experience, and have been recognized by their management as emerging talent. The program goal is to accelerate the development of emerging and high potential leaders to maximize their individual and organizational potential while networking among other participants and mentors in OPG. The program is a four-part workshop facilitated by trained volunteers accompanied by a leader who is a mentor for the session. The pilot program was a success, and the program is continuing with the next group of emerging leaders.

Representation of Designated Groups by Employment Equity Occupational Groups

Employment Equity Occupational Group	Designated Groups	Representation as of Dec 31, 2011		Representation as of Dec 31, 2012	
		Numbers	Percentage	Numbers	Percentage
Senior Managers e.g. Chairman, President and CEO, Executive VPs and Senior VPs	Women	1	5.0%	1	5.6%
	Visible Minorities	1	5.0%	1	5.6%
	Aboriginal Peoples	0	0%	0	0%
	Persons with Disabilities	0	0%	0	0%
Middle and other Managers e.g. VP, Directors, Section/Project/Shift Managers, Managers, project leaders etc.	Women	225	18.4%	219	19.4%
	Visible Minorities	210	17.1%	200	17.7%
	Aboriginal Peoples	8	0.7%	8	0.7%
	Persons with Disabilities	23	1.9%	23	2.0%

Representation of Designated Groups by Employment Equity Occupational Groups as of Dec. 31, 2012

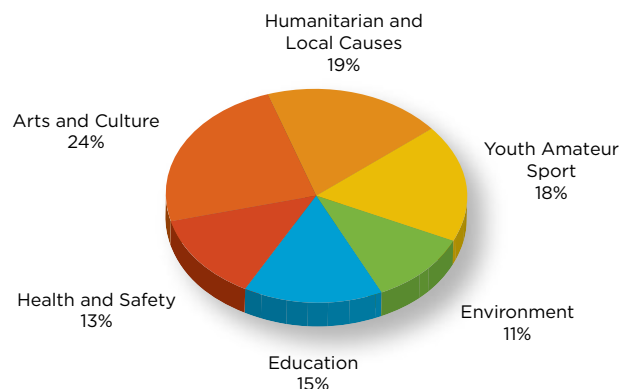
Corporate Citizenship

The Corporate Citizenship Program (CCP) is OPG's way of demonstrating our commitment to the well-being of the communities in which we operate. We believe this is essential to being a good corporate citizen and neighbour. At the same time, we are always mindful of the need to ensure each dollar invested leverages good value for the community.

In 2012, through CCP, OPG provided community investment support (charitable, non-profit, and in-kind support) to over 1,100 grass roots, host community initiatives in the program focus areas of; education, environment and community (health and safety, arts and culture, humanitarian and local causes, and youth amateur sport), as well as support for First Nations and Métis initiatives.

Featured here is the important work of a small sample of our community partners. It is the effort of these organizations that helps make our communities great places to live and work.

2012 Corporate Citizenship Program Community Investment By Focus Area



Education

OPG invests in the energy sector leaders of tomorrow by supporting educational enrichment programs, student awards, and extra-curricular programs for students with an emphasis on STEM (science, technology & trades, engineering, and maths).



Guinness World Record Set

In 2012, OPG's Pickering Nuclear partnered with Scientists in School (SiS), a leading Canadian science education charity, and Bolton C. Falby Public School, to help break the Guinness World Record for the largest practical science lesson at multiple venues. Grade six students at the Pickering Nuclear site were among the 13,000 participants at 88 venues across Canada. Since 2003, OPG has proudly supported SiS to help inspire over 600,000 students annually with hands-on science, technology, engineering and environmental workshops. For more info visit: www.scientistsinschool.ca

Environment

OPG believes innovative environmental partnerships help support healthier communities and environments for future generations. Our efforts through the CCP include support for wildlife and habitat restoration, biodiversity, recycling and environmental education initiatives.



Environmental Earth Angels Biodiversity Program

The natural environments of Lakehead Region Conservation Authority (LRCA), and Kakabeka Falls Provincial Park (KFPP) became outdoor classrooms for 250 elementary students from Thunder Bay and area. With support from LRCA, KFPP and OPG's Thunder Bay and Kakabeka Generating Stations, students were able to participate in Environmental Earth Angels (EEA) Biodiversity Education program. Through this hands-on program young people learn about the importance of sustainability and biodiversity in their communities, and are empowered to become environmental guardians. Teachers and students can study these ecosystems on-line in the classroom and via the EEA's website www.earthangels.ca.

"The Biodiversity Field Trip program demonstrates the valuable hands-on learning opportunities that can be developed for students when community partners work together."

Wendy Lee, Executive Director, Environmental Earth Angels

Community

OPG believes in helping to improve the quality of life for area residents through support for local health and safety, arts and culture, humanitarian and local causes, and youth amateur sports initiatives.

Niagara Falls History Museum

Through support from OPG and other community partners, the Niagara Falls History Museum completed its new addition and building renovations as part of the Lundy's Lane Battlefield Legacy Project to commemorate the Bicentennial of the War of 1812. The new museum opened July 21, 2012 and the Franklin Institute's Electricity exhibit was the first to be featured in the OPG Gallery. Support of this important community heritage initiative was a natural fit for OPG given the company's historical ties to the City of Niagara Falls and to hydroelectric generation along the Niagara River.

To learn more visit: niagarafallshistorymuseum.ca



First Nations and Métis Communities

OPG is committed to building and growing mutually beneficial working relationships with First Nations and Métis communities near OPG's current and future operations. OPG's relationships with First Nations and Métis communities are developed on a foundation of respect for their languages, customs, cultural institutions and rights.



A Proud Heritage

River Evans, a grade six graduate from North Bay's J.W. Trusler Public School, qualified for the 2012 Ontario Heritage Fair, in Toronto, by being named top exhibitor at the North Bay Regional Heritage Fair, and winning the OPG Merit Award proudly supported by OPG's Central Hydro Plant Group. River, who has family roots in the Algonquins of Pikwakanagan First Nation, created a "History of the Pow Wow" exhibit. The grass dancer's keen interest in his culture and willingness to share it with fellow students earned him recognition as the Principal's Choice.

In 2012, OPG supported 82 First Nations & Métis initiatives in the CCP focus areas of: education, environment and community. Partner organizations included: First Nations, Métis Nation of Ontario, Nishnawbe Aski Development Fund, Frontier College, Indspire, and the Little Native Hockey League.

Grassroots partnerships help make our communities stronger and more sustainable. These were just a few partnership examples that demonstrate the "Power of Community". To learn more visit www.opg.com/community.

Aboriginal Relations/Capacity Building

Relationships with First Nations and Métis Communities

OPG's First Nations and Métis Relations Policy reflects the company's respect for Aboriginal rights and interests. It sets out objectives for developing and maintaining mutually beneficial relationships with First Nations and Métis communities located near our current and future operations. The policy describes OPG's commitment to engage in community relations and outreach, and to provide capacity building support, including employment and business contracting opportunities. In addition, OPG strives to achieve mutually satisfactory resolution of grievances with respect to past development and mutually beneficial economic partnerships for future developments.

To build a solid platform within OPG to support partnerships and capacity development initiatives with Aboriginal communities, OPG invests in Aboriginal awareness training for its staff and management.

Community consultations associated with potential construction opportunities provide OPG plants and stations with a positive forum for relationship-building with local First Nation and Métis communities. As an example, relationships with the Fort William First Nation, Seine River First Nation, Lac la Croix First Nation, Nigigoonsiminikaaning First Nation and Lac des Mille Lacs and the Métis communities have been strengthened through ongoing consultation meetings regarding the Northwest Thermal plant conversions. Similarly, OPG's nuclear division has benefited from information sharing with the Williams Treaty First Nations as a part of the consultation strategy for the Darlington Refurbishment project.

OPG Completes Best Practice Aboriginal Training Program

Construction projects allow OPG to reach out to local communities, provide opportunities for capacity development, and work collaboratively to identify and address barriers to employment and contracting for Aboriginal people. Projects that have, or will result in Aboriginal people being better reflected in the workforce and in a greater share of contracts include: Lac Seul, Lower Mattagami, Mattagami Lake Dam, New Post Creek, Little Jackfish, and Darlington Refurbishment.

Specifically for the Lower Mattagami Re-Development (LMD) project, OPG entered into a funding partnership with Human Resources and Skills Development Canada through the Aboriginal Skills and Employment Partnership (ASEP) program. The funding was managed through a not-for-profit company (Sibi Employment and Training), which administers

a comprehensive Aboriginal training to employment program in association with the LMD Project. The Sibi Board consists of representatives from OPG, Moose Cree First Nation, Taykwa Tagamou Nation, Métis Nation of Ontario, and OPG's contractor, Kiewit-Alarie.

The ASEP program was successfully completed in March, 2012. Over the two-and-a-half-year program, Sibi developed a database of more than 1400 First Nation and Métis clients and exceeded all of its training and employment targets, with over 200 clients employed on a preferential basis on the LMD project. The short-term goal is to boost Aboriginal education levels and work experience for immediate employability on OPG's construction projects (where job opportunities are currently more readily available). In the long-term, this will see more qualified candidates available to internal OPG positions. Sibi has continued to operate post-ASEP with continued funding from OPG and its partners and plans are underway to recreate the Sibi model in other areas of Ontario, potentially in association with the Darlington projects.

To further build on its Aboriginal training and employment program, in 2012 OPG continued its support of the Aboriginal Apprenticeship Board of Ontario (AABO). AABO also helps OPG identify best practices in Aboriginal employment and training, and opportunities to provide funding or in-kind supports to community programs and events.

Throughout 2012, OPG continued to target Aboriginal youth with "stay in school" messaging, providing education kits targeted to students in grades one, six and nine. Other education related materials such as backpacks, computers, and software programs were also provided. OPG again supported "Reading is Cool" literacy initiatives and career fairs and employed a number of summer and co-op students. OPG also supported the production of a DVD called "Pathways to a Positive Future" which is used to attract Aboriginal people to the Trades.

Working with Stakeholders and Partners at Hydro Operating Facilities

Responsible, effective and efficient use of water requires co-operation, co-ordination and consultation among OPG, other utilities, many different levels of government, and with local communities.

Water levels and flows on international and interprovincial waterways, such as the Niagara River system, the St. Lawrence and Ottawa Rivers, and Lake of the Woods, are regulated by international treaty, or federal, provincial and inter-utility licences, agreements and legislation. OPG participates in annual public meetings aimed at sharing information and identifying issues. Most Ontario watersheds where OPG has hydro facilities are subject to Water Management Plans. Development of these plans

FIRST NATIONS AND MÉTIS Fast Facts



In 2012:

- ▶ Final Settlement Agreement was signed with Wahnapiatae First Nation.
- ▶ Long Lake #58 Shoreline Erosion Agreement was funded through OPG and executed by the First Nation.
- ▶ Information was shared with Nipissing First Nation on OPG operations within their traditional territory.
- ▶ Continued environmental consultation for the New Post Creek Hydroelectric Development project with the potential community partner, Taykwa Tagamou Nation.
- ▶ Lennox GS worked with the Tyendinaga Mohawk community on Waterfront Parkland issues.
- ▶ OPG worked with Saugeen Ojibway First Nations on the Deep Geologic Repository project.
- ▶ Information was shared with Williams Treaty First Nations on the Darlington Refurbishment Project.
- ▶ Eighty-two Aboriginal initiatives were supported through the OPG Corporate Citizenship Program.

is led by Ontario's Ministry of Natural Resources with active participation by OPG, First Nation communities, conservation authorities, environmental groups, cottager associations and recreational users. Advisory committees meet regularly. Annual public meetings are held and working groups are established to address specific issues. Many of the plants have established community liaison groups with the objective of exchanging ideas with a cross-section of community representatives. Information on water systems and flows is provided on OPG's website at www.opg.com/safety/water.



OPG and Whitesand First Nation unveil a monument dedicated to the Whitesands First Nations people.

THIS IS OUR HOME TOO.

That's why safety is our first priority.

OPG's nuclear stations have multiple safety systems in place, and we're trained, practised and prepared for any emergency.

Visit opg.com for more information on our nuclear safety measures.

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ONTARIO POWER
 GENERATION
opg.com

OPG's programs are designed to instill stakeholder confidence, including employees and their families who live in the communities adjacent to our sites.

Working with Stakeholders at Darlington

In December 2011, OPG submitted the Environmental Impact Statement (EIS) for the Darlington Nuclear Generating Station Refurbishment and Continued Operation Project to the Canadian Nuclear Safety Commission (CNSC). As part of the EIS, a team of over 15 technical experts undertook years of extensive Environmental Assessment studies, and throughout the Environmental Assessment (EA) process, OPG sought and incorporated input from the community.

Following a detailed review, a four-day public hearing was held in December 2012. The public hearing addressed a range of considerations including potential effects on all aspects of the environment. During the review of the EIS and public hearing, the CNSC received submissions and heard presentations from OPG, First Nations, provincial and local governments, environmental groups, and individuals and organizations interested in the potential effects of the project. In March 2013, the CNSC issued its decision that the Darlington Refurbishment and Continued Operation will not result in any significant adverse environmental effects, given mitigation.

Safe and Secure at OPG Facilities

OPG is committed to the safe operation of our facilities. OPG believes that the most enduring way to earn the public trust and confidence, and the right to continue to generate power, is through safe, reliable and responsible plant operations.

Emergency Preparedness

OPG has a well developed emergency preparedness program to ensure that the corporation can effectively and efficiently manage emergencies. The OPG Emergency Preparedness and Response Plan details the actions that will be taken in an emergency to protect the health and safety of employees, the public, and to limit the impacts of the crisis on security, production, the environment, and the public.

Generating facilities are governed and operated according to licensing requirements. OPG's program addresses all relevant and credible natural and man made risks that could have severe consequences. All OPG facilities have emergency response plans specific to their relative risks.

Lessons Learned from Fukushima

In 2011, an earthquake and tsunami caused fuel damage at the Fukushima Daiichi Nuclear Power Plant in Japan. This event prompted the nuclear power industry and its regulators to review the adequacy of plants and regulatory programs. Lessons learned from the event are being incorporated into OPG's operations. Although the primary focus is to review seismic and flooding hazards, a thorough review of all events with the potential to lead to severe reactor core damage is both warranted and prudent, and is being addressed by OPG.

The Canadian Nuclear Safety Commission has directed all Canadian nuclear power plants and major nuclear facilities to address safety issues identified from the Fukushima event. OPG is completing these actions with high priority.

The World Association of Nuclear Operators (WANO) has issued Operating Experience reports and recommendations on the Fukushima event. These recommendations are to further enhance the safety margin of nuclear power plants by considering events that are beyond the safety design basis. OPG is committed to carrying out these recommendations with special commitments and obligations.

OPG has made significant progress in evaluating the lessons learned from the events at Fukushima, and is conducting a rigorous review of: the preparedness of our nuclear plants to deal with external hazards and events, events that are beyond the plants' design basis, severe accident management, and emergency preparedness and response. To date, the review confirms the robustness of the current "defence-in-depth" safety strategy, and the design basis and operation of the plants.

OPG has evaluated and is implementing measures to prevent and mitigate low-probability events with high consequences such as reactor core damage, spent fuel damage, and radioactive releases to the environment. The completion of the implementation phase is expected by 2015.

“And we are -- and will be -- a better and safer industry after Fukushima, than before. That’s because when it comes to safety, we know that we have to be:

- constantly learning,
- constantly improving,
- constantly raising the bar, and
- constantly earning the confidence of the communities and people we serve.

Because the pursuit of safety and performance excellence defines who we are.... and must always define who we are.”

Tom Mitchell
OPG President and CEO, and
Chair of the WANO Fukushima Response Commission

Security at Nuclear Sites

Working with regional, provincial, national and international law enforcement agencies, OPG stations utilize sophisticated security technology and intelligence to keep our stations and communities safe.

Some examples of OPG’s robust security program include:

- A security clearance process for all employees and a three-step security search each time employees enter the protected area of the site. Visitors to OPG’s nuclear stations must be approved to enter the station, via a similar security clearance, and must undergo the same search process. Further, they must also be accompanied at all times by an authorized staff member.
- Physical barriers and additional anti-intrusion measures to protect the site. In addition, there is round-the-clock monitoring and patrol by nuclear security officers.
- Extensive training for all nuclear security response teams.
- Comprehensive and robust nuclear security program compliant to the Canadian Nuclear Safety Commission regulatory requirements.

Safety and security are engrained in OPG’s culture. OPG is absolutely committed to keeping our employees, the station and our communities safe and secure.

In 2012, members of OPG’s Security and Emergency Services (SES) attended the Ontario Provincial Police Firearm Training Facility in Orillia to participate in the annual Ontario Tactical Advisory Body – SWAT Round-up. This competition pits Police Tactical Units and Nuclear Response Teams from across Ontario and Quebec against each other in various shooting and endurance events, wounded-person recovery exercises and marksmanship contests. A total of 170 competitors from 21 registered teams took part. OPG’s SES placed first overall, and finished first in the Armed Security category.



OPG’s Security and Emergency Services Team placed first overall in the Ontario Tactical Advisory Body - SWAT Round Up competition.

ECONOMIC



As a publically owned company, OPG not only moderates the rate paid by consumers but also stimulates the economy through employment, the purchase of goods and services and the many projects underway to ensure future reliability.

“OPG made particularly impressive headway in its business transformation initiative to reduce costs, enhance efficiency and seize new revenue opportunities”

Jake Epp
OPG Chairman of the Board

“Our 2012 results have been achieved while simultaneously pursuing organizational change and fiscal restraint.”

Tom Mitchell
OPG President and CEO

Financial Sustainability

OPG’s financial priority, as a commercial enterprise, is to consistently achieve a level of financial performance that will ensure its long-term sustainability and increase the value of its assets for its Shareholder – the Province of Ontario. Inherent in this priority are three objectives:

- Enhancing profitability by increasing revenue.
- Improving efficiency and reducing costs.
- Ensuring a strong financial position that enhances OPG’s ability to finance its operations and projects.

OPG is aggressively pursuing opportunities to implement efficiency and productivity improvements while reducing costs. To accomplish this objective, OPG launched a multi-year business transformation initiative to create a streamlined company with a sustainable cost structure. The business transformation includes changes to organizational structure and includes over 120 major change initiatives.

Generation and Reliability

OPG continues to implement specific initiatives to improve reliability and productive capacity of its generating stations. Initiatives include implementing technology advancements, enhancing maintenance practices and capital investment to replace aging equipment.

OPG's generation in 2012 was 83.7 TWh. This slight decrease from the 84.7 TWh generated in 2011 was primarily due to reduced hydroelectric generation resulting from lower water levels in the Great Lakes and watersheds in north-eastern and eastern Ontario. For all generation technologies, nuclear, thermal and hydroelectric, the measure of reliability improved over 2011 performance.

Pickering Nuclear experienced one of its best performance years in OPG history. This bodes well as Pickering's strong performance into 2020 will be essential for providing base load power during Darlington Nuclear's refurbishment.

Darlington Nuclear is one of the top performing nuclear stations in the world. In 2012, Darlington Nuclear was recognized by its global peers as an industry leader for unwavering dedication to safety and continued improvement in nuclear operational excellence, including:

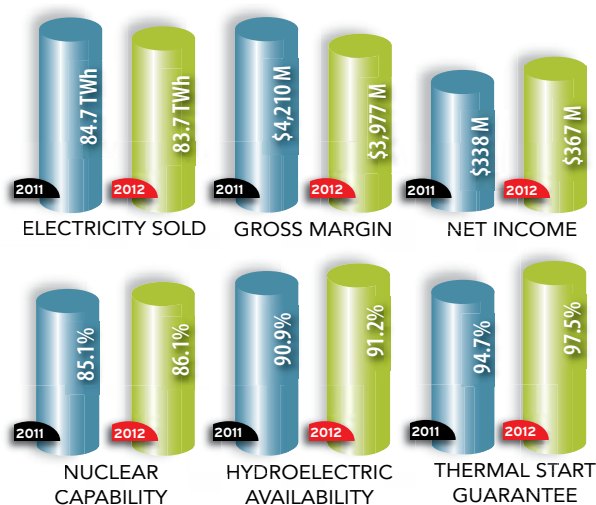
- Fukushima response.
- Leadership and managerial strength.
- Operator knowledge and skills.
- Equipment performance and condition.

As a nuclear operator, OPG is entrusted by the public to operate its nuclear facilities safely, reliably, and with the utmost care and responsibility. These achievements reinforce that OPG and its employees never take this responsibility for granted and continue to seek continuous improvement.

RELIABILITY Fast Facts



- ▶ In 2012, overall nuclear production increased over 2011 to 49.0 TWh.
- ▶ In 2012, performance at both our nuclear stations remained high – with Darlington Nuclear achieving a capability factor of 93.2 per cent and Pickering Nuclear 77.8 per cent.
- ▶ Availability of hydro-electric stations remained at high levels, achieving 91.2 per cent in 2012 compared to 90.9 per cent in 2011.
- ▶ Start Guarantee rate of our thermal fleet continued to be strong achieving a rate of 97.5 per cent in 2012 compared to 94.7 per cent in 2011.



Nuclear Capability Factor 2012 Target - 86.63 per cent
 Hydro Availability 2012 Target - 91.2 per cent
 Thermal Start Guarantee 2012 Target - 94 per cent



Business Transformation

OPG's 2012 accomplishments were achieved while implementing critical elements of our business transformation, which has resulted in efficiency improvements, headcount reductions, a new organization structure, and simplified governance. The cost reductions were a major contributor to our financial results for 2012.

As part of OPG's business transformation, in 2012 OPG began its transition to a centre-led structure which establishes one point of accountability for an entire function across all of the business units. Through the centre-led model, functions such as Health and Safety and Environment are accountable for developing and maintaining functional excellence, setting consistent and integrated standards, and providing cross-company services. This new centre-led structure will allow OPG to continue to operate safely and reliably, deliver project excellence, and provide strong functional value and service while using resources more efficiently and effectively across the company. OPG is continuing to implement the full centre-led structure through its redeployment processes and change initiatives.

Becoming a leaner, more efficient organization will help ensure OPG's financial sustainability, allow us to pursue opportunities to strengthen and grow the company and deliver on our mission to be Ontario's low-cost electricity generator.

Contributing to Ontario's Success

OPG as a low-cost generator moderates electricity prices for consumers. In 2012, OPG received an average revenue of 5.1 cents per kilowatt hour (down from 5.3 cents in 2011) compared to 8.6 cents per kilowatt hours received by other Ontario generators (up from 8.4 cents in 2011).

Projects

OPG is undertaking a number of generation infrastructure projects to support Ontario's long-term electricity supply requirements while also making substantial contributions to

BUSINESS TRANSFORMATION Fast Facts



- ▶ Reducing staff levels over the 2011-2015 period by 2,000 (primarily through attrition).
- ▶ Eliminating or re-engineering many work processes to improve efficiency.
- ▶ Achieving cost savings of \$200 million by 2014.
- ▶ Identifying and developing new revenue and growth opportunities which utilize OPG's extensive energy technical and project management expertise.

employment and economic growth. Two notable projects are the refurbishment of Darlington Nuclear and the Lower Mattagami River project.

Darlington Nuclear is one of the top-performing nuclear stations in the world. For 20 years, Darlington has produced safe, reliable, economical power for roughly two million homes. OPG plans to refurbish Darlington Nuclear enabling it to continue safely operating the reactor, producing clean, reliable electricity for another 30 years. Refurbishment involves the replacement of core reactor components and is an aspect of its design and a requirement during its operational service life.

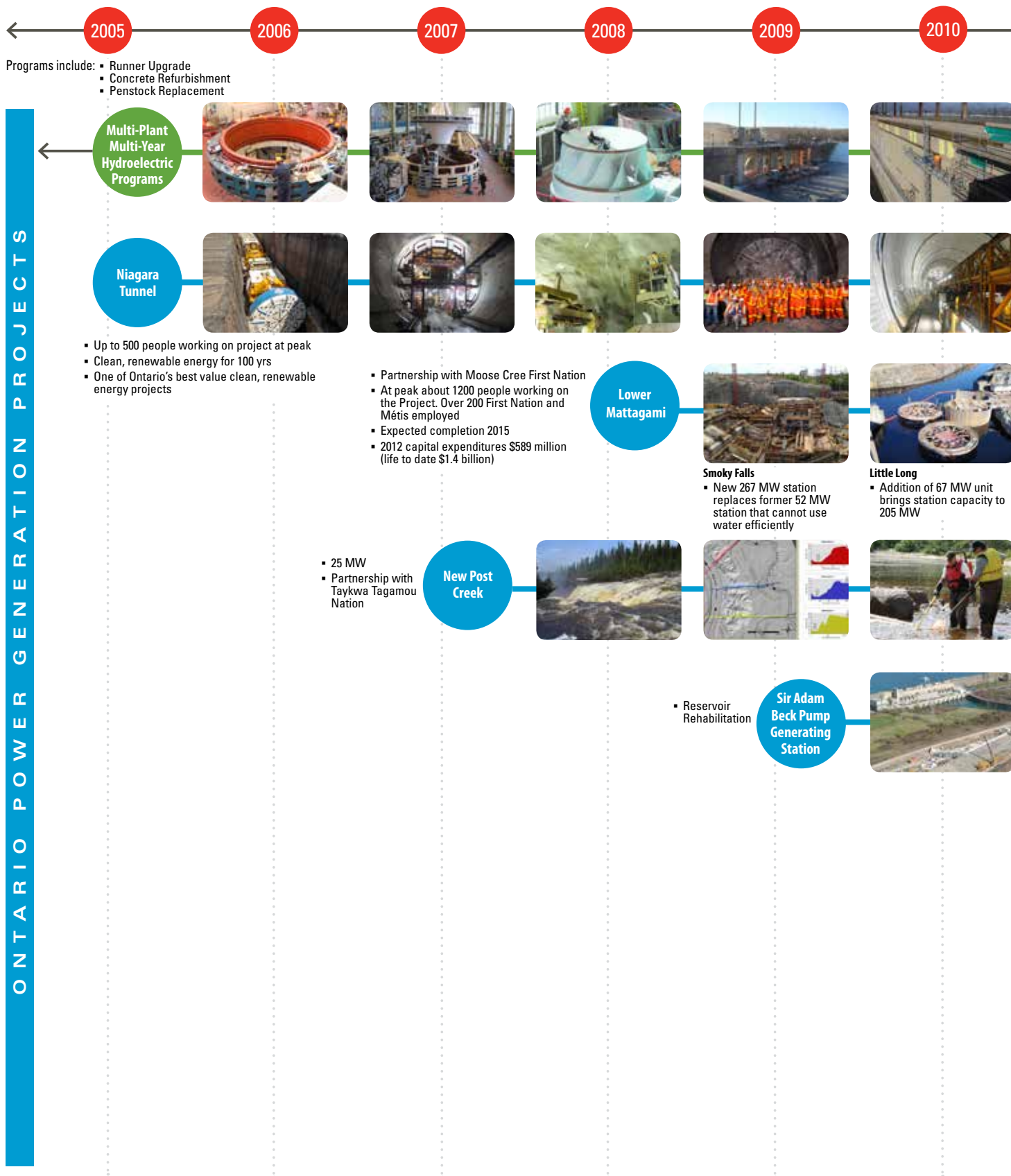
OPG's Lower Mattagami River project will produce approximately 440 megawatts of new hydro power without creating new dams on other rivers by adding generating units at existing stations in Little Long, Harmon and Kipling. The existing Smoky Falls Generating Station will be replaced with a new three-unit, LEED Silver Certified station.

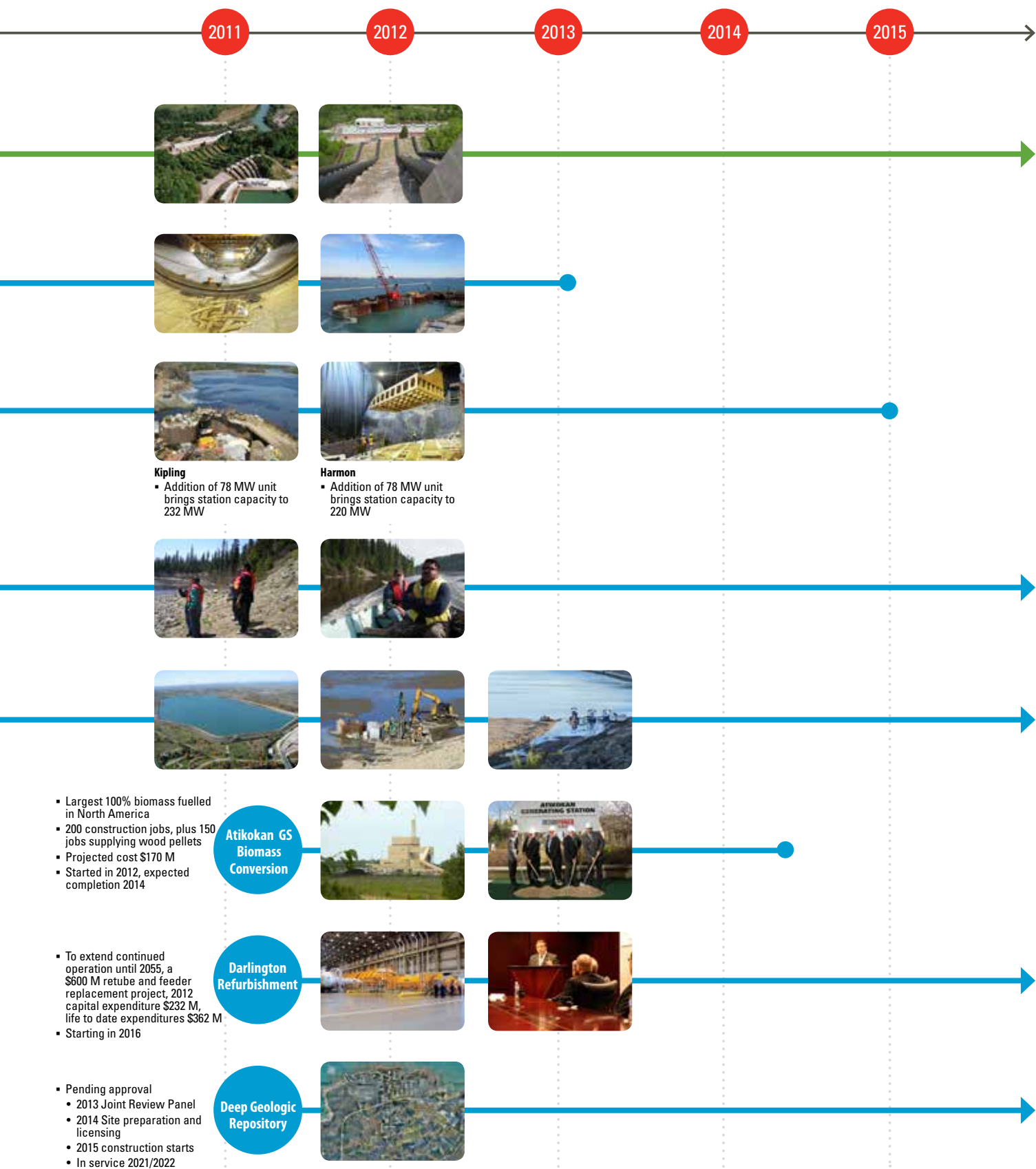
Examples of OPG's capacity expansion or life extension projects are included on page 36.

Smoky Falls new generation construction.



OPG Project Examples





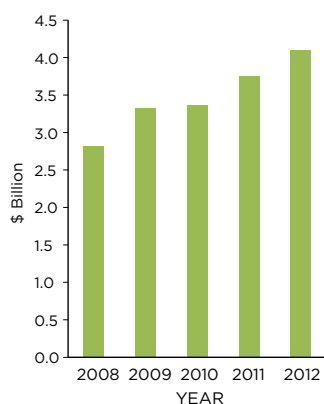
Other Economic Stimulus

OPG provides support to the economy through the purchase of goods and services. During 2012, OPG purchased \$4.27 billion in goods and services.

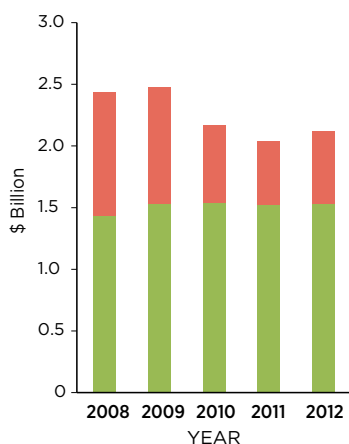
Compensation to employees totaled approximately \$1.51 billion. The majority of employees live in Ontario and purchase their goods and services locally, thereby transferring wealth back to the Province.

OPG payments in lieu of taxes, gross revenue charges (including water rental payments), dividends, interest on long-term debts, Market Power Mitigation Agreement Rebates, Revenue Limit Rebates, and other payments made to the Province benefit the economy. In 2012, these payments totaled nearly \$589 million. OPG's financial and operating results for 2012 can be found at www.opg.com.

Goods and Services Purchased by OPG in Ontario



OPG Salaries and Payment made to the Province of Ontario



- Payments to the Province in lieu of taxes, gross revenue charges (including water rental payments under the Gross Revenue Charge), dividends, interest on long term debt, Market Power Mitigation Agreement Rebates (replaced by Revenue Limit Rebate (ONPA in 2005)), Revenue Limit Rebate (ONPA an OPG asset rebate), Ontario Electricity Financial Corporation (OEFC) capital/income tax payments, and other payments to the Province.
- Total Compensation to OPG employees

EMPLOYMENT Fast Facts

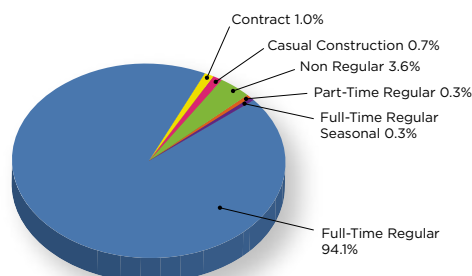


In 2012:

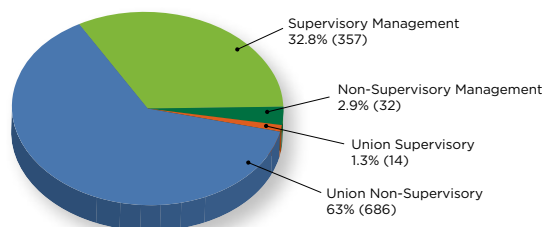
- ▶ Approximately 10,840 regular employees (down 4.8 per cent from 2011).
- ▶ Approximately 650 regular seasonal, casual construction and contract staff (down 7.5 per cent from 2011).
- ▶ 57 external hires (67 per cent reduction from 2011).
- ▶ Annual turnover due to retirement: 4.7 per cent (3.8% in 2011).
- ▶ Annual turnover due to attrition: 5.7 per cent (4.8% in 2011).
- ▶ Approximately 20 per cent of the workforce is eligible to retire.
- ▶ 89.4 per cent of the full-time employees are represented by the Power Workers Union (6,300) or the Society of Energy Professionals (3,400).

The following charts illustrate a breakdown of employees by category, and new hires by sub-category.

Employees by Category



New Hires by Sub-category



New hires include both external and internal hires. External hires include both new hires and rehires. Internal hires include all the employees who have a job change during the year 2012 based on the month-to-month comparisons of employee information data including those whose employment status changes from temporary to regular. Based on the above definitions, there are 57 external hires and 1,032 internal hires in the year 2012. The Union staff includes both the Power Workers Union and the Society of Energy Professionals. Management staff includes both Executive and Management staff.

Appendix A

GENERATION CAPACITY

Nuclear

Pickering A & B GS	Generation (net GWh)					Critical Group Dose (µSv)				
Generation Capacity:	2012	2011	2010	2009	2008	2012	2011	2010	2009	2008
Pickering A: 1,030 MW net	6,197	6,029	5,539	5,683	6,384	1.1	0.9	1.0	1.8	4.1
Pickering B: 2,064 MW net	14,538	13,646	13,697	15,078	12,739					
Located on Lake Ontario in the city of Pickering, each generating station has four units. Two of the 515 MW Pickering A units taken out of service during the nuclear recovery program will not be refurbished. Number of used fuel bundles stored on site: 662,437										

Darlington GS	Generation (net GWh)					Critical Group Dose (µSv)				
Generation Capacity: 3,512 MW net	2012	2011	2010	2009	2008	2012	2011	2010	2009	2008
	28,308	28,951	26,549	26,037	28,840	0.6	0.6	0.6	0.7	1.3
Located on Lake Ontario in the town of Newcastle, 70 km east of Toronto. This generating station has four units. Number of used fuel bundles stored on site: 435,266										

Thermal

General Information		Net Generation and Emissions (NO _x is reported as NO ₂)									
Atikokan GS	Generation (net GWh)*					Emissions (tonnes)					
Generation capacity: 211 MW net	2012	2011	2010	2009	2008		2012	2011	2010	2009	2008
	13	39	417	133	313	SO ₂	207	358	2,401	837	1,613
Located west of Thunder Bay, the station has one unit which is being converted to burn biomass.						NO _x	100	148	1,040	436	757
						CO ₂	44,830	75,280	496,220	197,000	415,000
Lambton GS	Generation (net GWh)*					Emissions (tonnes)					
Generation capacity: 950 MW net	2012	2011	2010	2009	2008		2012	2011	2010	2009	2008
	2,218	1,129	3,317	3,596	6,544	SO ₂	2,474	1,340	5,853	6,191	18,115
Located on the St. Clair River, the station has four coal-fired units. Two are equipped with SO ₂ scrubbers and selective catalytic reduction (SCR) equipment to reduce NO _x emissions. Two units retired from service (Oct. 1, 2010) as part of the OPG coal closure program.						NO _x	3,019	1,627*	3,062	3,932	6,444
						CO ₂	2,237,250	1,249,610	3,286,630	3,729,000	6,373,000
Lennox GS	Generation (net GWh)*					Emissions (tonnes)					
Generation capacity: 2,100 MW net	2012	2011	2010	2009	2008		2012	2011	2010	2009	2008
	104	9	60	122	278	SO ₂	39	43	126	571	405
Located on Lake Ontario in the town of Greater Napanee. The station has four units that can burn oil and/or natural gas.						NO _x	144	89	91	213	354
						CO ₂	155,550	77,200	95,000	194,000	264,000

■ Totals may not add up due to rounding

* 2011 Thermal Generation values restated from 2011 SD Report

Thermal cont'd											
General Information		Net Generation and Emissions (NO _x is reported as NO ₂)									
Nanticoke GS	Generation (net GWh)*					Emissions (tonnes)					
Generation capacity: 1,880 MW net	2012	2011	2010	2009	2008		2012	2011	2010	2009	2008
	1,731	2,465	8,206	5,563	15,329	SO ₂	6,843	9,205	28,568	21,480	52,720
	Located on Lake Erie, the station has eight coal-fired units fitted with low-NO _x burners, two of which are equipped with SCR equipment to reduce NO _x emissions. Four units retired from service (two on Oct. 1, 2010 and two on Dec. 31, 2011) as part of the OPG coal closure program.					NO _x	3,021	3,544	11,161	8,314	20,087
						CO ₂	2,008,720	2,816,530	8,538,000	6,010,00	15,412,000
Thunder Bay GS	Generation (net GWh)*					Emissions (tonnes)					
Generation capacity: 306 MW net	2012	2011	2010	2009	2008		2012	2011	2010	2009	2008
	16	74	191	123	702	SO ₂	142	317	713	421	2,528
	Located on Lake Superior, this station has two coal-fired units.					NO _x	232	386	608	447	1,820
						CO ₂	71,340	138,940	264,760	188,000	800,000
Hydro											
General Information					Net Generation						
Niagara Plant Group					Generation (net GWh)						
Generation Capacity: 2,267 MW Includes five stations, headquarters in Niagara area					2012	2011	2010	2009	2008		
					11,953	12,614	12,415	12,291	11,907		
Ottawa/St. Lawrence Plant Group					Generation (net GWh)						
Generation Capacity: 2,571 MW Includes 10 stations, headquarters in Renfrew					2012	2011	2010	2009	2008		
					11,632	12,535	11,154	13,926	13,873		
Northeast Plant Group					Generation (net GWh)						
Generation Capacity: 1,342 MW Includes 13 stations, headquarters in Timmins					2012	2011	2010	2009	2008		
					2,982	3,128	2,875	4,723	5,112		
Northwest Plant Group					Generation (net GWh)						
Generation Capacity: 687 MW Includes 11 stations, headquarters in Thunder Bay					2012	2011	2010	2009	2008		
					3,528	3,442	3,558	4,630	4,894		
Central Hydro Plant Group EcoLogo™-certified					Generation (net GWh)						
Generation Capacity: 138 MW headquarters in North Bay					2012	2011	2010	2009	2008		
EcoLogo™-certified Green Power generation capacity from 28 OPG stations (26 small hydro stations including one NEPG station, and two wind turbines): 125 MW (at Dec. 31, 2012)					507	592	563	579	693		
EcoLogo™-certified Green Power capacity available from Power Purchase Agreements					0	0	0	0	0		
Total available EcoLogo™-certified Green Power capacity: 125 MW (at Dec. 31, 2012)					507	592	563	579	693		
Other Central Hydro Plant Group capacity					Generation (net GWh)						
Other Central Hydro capacity (non-EcoLogo™: Eugenia Falls hydro station: 6.1 MW; New York Wind Farm: 6.6 MW)					2012	2011	2010	2009	2008		
					36	44	39	45	46		

Appendix B SUSTAINABLE DEVELOPMENT PERFORMANCE

Indicator					
ENERGY GENERATION BY SOURCES (gross GWh)	2012	2011	2010	2009	2008
Thermal	4,737	4,381	13,300	10,570	24,807
Hydro (Renewable - excl. Central Hydro Plant Group)	30,487	32,055	30,376	36,178	36,305
Nuclear	52,169	51,644	48,718	49,744	51,140
Central Hydro Plant Group (includes one NE Plant Group station)	544	636	603	626	726
Total Internal Energy Generated	87,937	88,716	92,997	97,118	112,978
ENERGY GENERATION BY SOURCE (net GWh)	2012	2011	2010	2009	2008
Thermal	4,082	3,717	12,192	9,538	23,165
Hydro (Renewable - excl. Central Hydro Plant Group)	30,088	31,709	29,991	35,536	35,724
Nuclear	49,043	48,626	45,785	46,799	48,182
Central Hydro Plant Group (includes one NE Plant Group station, wind, power purchases)	544	636	602	624	726
Total Internal Energy Output (incl. power purchases)	83,757	84,687	88,570	92,497	107,797
GENERATION PERFORMANCE	2012	2011	2010	2009	2008
Nuclear Unit Capability Factor (per cent)	86.1	85.1	80.2	81.96	Not Available
Hydroelectric Availability (per cent)	91.2	90.9	91.9	92.8	94.3
Thermal Start Guarantee (per cent)	97.5	94.7	87	Not Available	Not Available
ENERGY CONVERSION EFFICIENCY OF THERMAL GENERATING STATIONS	2012	2011	2010	2009	2008
Total Energy Input (GWh equiv.)	14,345	13,490	39,497	31,616	70,940
Net Energy Output (GWh)	4,082	3,678	12,192	9,538	23,165
Fuel Conversion Efficiency (%)	28.5%	27.3%	30.9%	30.2%	32.7%
OPG INTERNAL ENERGY EFFICIENCY	2012	2011	2010	2009	2008
Generation Energy Efficiency (%)	95.25%	95.46%	95.24%	95.24%	95.41%
Internal Energy Saving - Cumulative since 1994 (GWh/yr)	2,493	2,481	2,469	2,434	2,405
Avoided CO ₂ , NO _x (as NO ₂) and SO ₂ (tonnes)	2,768,829	2,919,829	2,578,454	2,644,565	2,425,715
\$ Value of Energy Savings @ average price paid to OPG 2012 = 5.1¢/kwh; 2011 = 5.3¢/kwh; 2010 = 4.7¢/kwh; 2009 = 4.5¢/kwh; 2008 = 4.76¢/kwh;	\$132,130,576	\$131,480,620	\$111,090,092	\$109,537,997	\$114,458,089
Annual Incremental Energy Saving (% of internal energy use)	0.3%	0.3%	0.8%	0.6%	0.3%
Annual Incremental Energy Saving (GWh/yr)	12.3	12.1	34.5	29.6	15.7
ATMOSPHERIC EMISSIONS - THERMAL	2012	2011	2010	2009	2008
Total Gross Annual CO ₂ Emissions (tonnes)	4,517,690	4,357,560	12,680,340	10,320,000	23,264,000
Total Gross Annual SO ₂ Emissions (tonnes)	9,705	11,264	37,661	29,500	75,382
Total Gross Annual NO _x Emissions (tonnes, as NO ₂)	6,515	5,790	15,962	13,340	29,462

Indicator					
EMISSION RATES - THERMAL	2012	2011	2010	2009	2008
CO ₂ Emissions (tonnes/GWh-net)	1,107	1,172	1,040	1,082	1,004
SO ₂ Emissions (tonnes/GWh-net)	2.38	3.03	3.09	3.09	3.25
NO _x Emissions (tonnes/GWh-net, as NO ₂)	1.59	1.56	1.31	1.40	1.27
ATMOSPHERIC EMISSIONS - NUCLEAR	2012	2011	2010	2009	2008
Total Gross Annual CO ₂ Emissions (tonnes)	10,333	9,225	7,688	9,107	6,289
Total Gross Annual SO ₂ Emissions (tonnes)	0.1	0.1	1	0.2	0.6
Total Gross Annual NO _x Emissions (tonnes, as NO ₂)	40	41	33	40	26
Nuclear Waste Emissions (dioxins & furans) ng TEQ/Rm ³	0.003	0.00179	0	0	0
ATMOSPHERIC EMISSIONS - OPG	2012	2011	2010	2009	2008
Total Gross Annual CO ₂ Emissions (tonnes)	4,528,023	4,366,785	12,688,028	10,329,107	23,270,289
Total Gross Annual SO ₂ Emissions (tonnes)	9,705	11,261	37,661	29,500	75,383
Total Gross Annual NO _x Emissions (tonnes, as NO ₂) *	6,521	5,835**	15,996	13,380	29,488
EMISSION RATES - OPG	2012	2011	2010	2009	2008
CO ₂ Emissions (tonnes/GWh-net)	54	52	143	112	216
SO ₂ Emissions (tonnes/GWh-net)	0.12	0.13	0.43	0.32	0.70
NO _x Emissions (tonnes/GWh-net, as NO ₂)	0.08	0.07	0.18	0.14	0.27
RADIOACTIVE EMISSIONS - NUCLEAR	2012	2011	2010	2009	2008
Tritium Emissions to Air (Ci)	17,976	18,837	19,266	23,501	25,114
Tritium Emissions to Water (Ci)	11,211	11,479	10,588	N/A	N/A
Carbon 14 Emissions to Air (Ci)	76.3	76.0	117.5	113.4	228.2
Pickering Critical Group Dose (µSV)	1.1	0.9	1.0	1.8	4.1
Darlington Critical Group Dose (µSV)	0.6	0.6	0.6	0.7	1.3
REGULATORY PERFORMANCE - OPG	2012	2011	2010	2009	2008
Infractions	14	14	23	31	16
NUMBER OF REPORTABLE SPILLS - OPG	2012	2011	2010	2009	2008
Category A Spills	0	0	0	0	0
Category B Spills	0	0	0	1	0
Category C Spills	9	18	25	15	15
HAZARDOUS WASTE GENERATION - OPG	2012	2011	2010	2009	2008
Solids (tonnes)	1,125	339	690	464	190
Liquids (kilolitres)	1,615	1,458	1,943	1,904	2,668

* NO_x as NO₂ - does not include small non-generation sources.

** 2011 total gross annual NO_x emission value restated from the 2011 SD Report.

Indicator

PCB MANAGEMENT (tonnes) - OPG	2012	2011	2010	2009	2008
High-level PCB ⁽¹⁾ material in storage ^(3, 4, 6)	0.1	7	1	2	7
High-level PCB ⁽¹⁾ materials sent for destruction ⁽⁶⁾	61	21	215	72	9
Estimated inventory of high-level PCB ^(1, 5) material in service***	0	0	0	0	41
Low-level PCB ⁽²⁾ materials in storage ^(3, 6)	0.4	0	1	2	9
Low-level PCB ⁽²⁾ material sent for destruction ⁽⁶⁾	185	140	42	7	11
Estimated inventory of low-level PCB ^{(2), (7)} material in service	63	18	23	15	3
Total year-end inventory (waste in storage + in-service equipment)	64	25	25	19	60
Total PCB material sent for destruction	245	161	256	78	20
(1) High-level PCB = ≥ 500 mg/kg PCB (2) Low-level PCB = < 500 mg/kg PCB (3) At year end (4) Does not include PCB fluorescent light ballasts abandoned in place in out-of-service fixtures (5) Does not include PCB fluorescent light ballasts, or other potential PCB containing equipment that is sealed and can't be readily tested until removed from service. (6) Historical data restated to reflect reclassification of PCB ballasts from low-level to high-level PCB. (7) Excludes very low level PCB (< 50 ppm) equipment. *** Excludes in-service high-level PCB equipment at Bruce Power included in previous SD Report inventories					

RADIOACTIVE WASTE MANAGEMENT - NUCLEAR	2012	2011	2010	2009	2008
Used fuel - annual production (tonnes of uranium)	1,439	1,610	1,357	1,345	1,354
Used fuel in storage (tonnes of uranium)	40,647	39,319	37,910	36,521	35,154
Low and intermediate radioactive waste produced (m ³)****	2,772	2,942	2,710	3,078	2,708
Low and intermediate radioactive waste stored (m ³) (includes L&ILRW stored by OPG on behalf of Bruce Power)	2,639	3,913	2,615	3,300	3,568

UTILIZATION OF SOLID COMBUSTION BY PRODUCTS - OPG	2012	2011	2010	2009	2008
Total ash and gypsum produced (tonnes)	283,366	241,140	575,140	517,371	975,213
Total ash and gypsum recycled (tonnes) *****	296,208	209,744	388,885	381,205	615,918
Diversion rate (%)	105%	87%	68%	74%	63%

WATER USE (million m ³) - OPG	2012	2011	2010	2009	2008
Turbine flows - hydro stations (total flow)	404,229	483,200	400,397	505,967	503,533
Cooling and service water use (non-consumptive)	10,722	10,829	12,221	12,372	13,807

SAFETY - OPG	2012	2011	2010	2009	2008
Accident Severity Rate	2.4	1.10	2.04	1.4	1.47
All Injury Rate	0.63	0.56	0.92	1.19	1.15

**** 2010 LILRW produced has been restated from the 2011 SD Report.

***** 2011 Utilization Solid Combustion By Products values restated from 2011 SD Report.

National Pollution Release Inventory (NPRI) ⁽¹⁾					
NPRI Emissions: air, water and land ⁽²⁾ (tonnes unless otherwise specified)	2011	2010	2009	2008	2007
Aluminum	68.1	218.6	250.060	466.854	393.280
Ammonia	35.62	43.42	30.8	40.3	40.2
Arsenic	0.873	3.314	6.284	15.255	19.075
Cadmium	37 kg	215 kg	126 kg	342 kg	269 kg
Chromium	2.928	21.418	18.852	47.553	44.522
Cobalt	NR ⁽³⁾	5.886	NR ⁽²⁾	17.065	21.501
Copper	6.042	25.342	25.442	68.72	77.625
Dioxins & Furans	0.495 g TEQ ⁽⁴⁾	0.661 g TEQ ⁽⁴⁾	0.995 g TEQ ⁽⁴⁾	0.798 g TEQ ⁽⁴⁾	1.603 g TEQ ⁽⁴⁾
Hexachlorobenzene	1.026 grams	5.662 grams	4.929 grams	3.612 grams	0.042 grams
Hydrazine	0.31	0.82	0.746	0.684	1.096
Hydrochloric Acid	NR ⁽²⁾	1,112	1,577	2,720	3,142
Hydrogen Fluoride	50	133.0	126.0	270.0	342.0
Lead	1.64	10.24	7.79	20.70	27.47
Manganese	5.48	33.34	27.08	63.05	76.13
Mercury	63 kg	186 kg	155 kg	419 kg	516 kg
Nickel	NR ⁽³⁾	19.547	16.56	39.091	51.495
Phosphorus	99	489	822	822	912
Pyrene	NR ⁽³⁾	NR ⁽³⁾	NR ⁽³⁾	NR ⁽³⁾	NR ⁽³⁾
Selenium	2	NR ⁽³⁾	NR ⁽³⁾	NR ⁽³⁾	8.9
Sulphuric Acid	188.006	452.319	522.983	575.006	493.131
Vanadium	5.9	38.7	30.5	81.0	102.1
Zinc	4.4	27.3	20.702	54.500	67.000

Criteria Air Contaminants (tonnes)	2011	2010	2009	2008	2007
Carbon Monoxide	955	5,693.00	1,813.00	6,012.00	10,817.00
Oxides of Nitrogen (as NO ₂) ⁽⁵⁾	5,855	16,016.00	13,457.00	29,532.00	35,363.00
PM - Total Particulate Matter	468	1,432.08	2,104.82	4,097.20	7,776.06
PM10 - particulate matter ≤ 10µ ⁽⁶⁾	324	1,555.08	1,424.76	2,679.32	4,179.45
PM2.5 - particulate matter ≤ 2.5µ ⁽⁶⁾	169	530.60	700.06	1,058.89	1,586.56
Sulphur Dioxide	11,264	37,662.03	29,500.05	75,380.03	104,647.65
Volatile Organic Compounds (VOCs)	24	38.00	48.00	74.00	166.00

(1) 2012 data was not available at the time of publishing.

(2) For detailed information on the breakdown of OPG's NPRI data by emissions to air, water, and land, please visit the NPRI web site at http://www.ec.gc.ca/pdb/npri/npri_home_e.cfm

(3) Not reported in given year

(4) g TEQ = grams Toxic Equivalent

(5) NO_x as NO₂ - includes small non-generation sources

(6) µ = microns (particle diameter)

Appendix C

SUSTAINABLE DEVELOPMENT PERFORMANCE

Global Reporting Initiative (GRI) Indicator Alignment

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Glossary

Advanced Biomass	an advanced bio-fuel derived from renewable biomass and is considered to result in life cycle greenhouse gas reductions.
Biodiversity	the degree of variation of life forms, and is a measure of the health of ecosystems.
Biomass	a renewable fuel from forest and agricultural products.
Bituminous Coal	a relatively soft coal containing a tar like substance called bitumen. It is of higher quality than lignite coal but of poorer quality than anthracite.
Canadian Nuclear Safety Commission	an independent agency of the Government of Canada that regulates the use of nuclear energy and materials to protect health, safety, security, and the environment.
Capability Factor	actual energy output of an electricity-generating device divided by the energy output that would be produced if it operated at its rated power output for the entire year.
Critical Group	a defined group of the population whose location, age, habits, and diet cause them to receive radiation dose equivalents from a given source that are higher than others in the population.
CO ₂	(carbon dioxide) the principle greenhouse gas, mostly generated by fossil fuel combustion.
Dose	the energy absorbed by the human body when exposed to ionizing radiation.
Effluent Toxicity	an effluent sample is considered toxic if there is more than 50 per cent mortality of the test organisms.
EMS	environmental management system (generally ISO 14001).
Fly Ash	a residual fine particulate generated in the combustion of coal, conveyed with flue gas. In OPG's thermal plants more than 99 per cent is captured by electrostatic precipitators.
Gigawatt hour (GWh)	One billion watt hours (one million kilowatt hours).
GHG	(greenhouse gas) gases that trap heat in the atmosphere.
GRI	(Global Reporting Initiative) a widely accepted sustainability reporting guideline standard.
ISO 14001	an internationally accepted management system standard for environment.
JHSC	Joint Health and Safety Committees consists of labour and management representatives who meet on a regular basis to deal with health and safety issues.
Kilowatt hour (kWh)	is a measure of electricity demand per hour by customers. The average Ontario household uses 1,000 kWh per month.
LILRW	low and intermediate level radioactive waste e.g. gloves, coveralls, tools, and wipes.
Megawatt (MW)	is one million watts.
Net generation	gross generation minus internal energy use.
NO _x	(nitrogen oxides) chemical compounds that contribute to the formation of smog and acidic deposits.
Polychlorinated Biphenyls (PCBs)	organic compounds that were widely used for a variety of applications, such as dielectric fluids in transformers, capacitors, and coolants.
Powder River Basin Coal	is "sub-bituminous" coal resulting in lower SO ₂ emissions than bituminous coal.
Radiation	is energy that is transmitted in the form of waves or streams of particles. It is present everywhere in our environment.
SF ₆	(sulphur hexafluoride) chemical compound widely used to insulate high voltage equipment – a powerful greenhouse gas.
SO ₂	(sulphur dioxide) chemical compound that contributes to the formation of acidic deposits.
Stakeholder	individual or group that has an interest in an organization's decisions or operations.
Tritium	a radioactive isotope of hydrogen.

In 2012, OPG achieved strong results in the areas of reliability, generation development, safety, and environmental stewardship.



Students join in on the Bring Back the Salmon restoration project

2012 ONTARIO POWER GENERATION SUSTAINABLE DEVELOPMENT REPORT

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