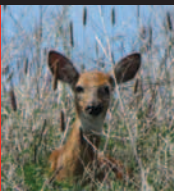




# Thunder Bay

## Generating Station

Ontario Power Generation



**ONTARIO** **POWER**  
GENERATION

Ontario Power Generation produces about sixty per cent of the electricity Ontario's communities need.

billions  
of kilowatt-  
hours

Ontario Power Generation (OPG) is owned by the people of Ontario and each year our 65 hydroelectric stations, three nuclear stations and five thermal stations generate billions of kilowatt-hours\*. Our commitment to you is to provide safe, reliable electricity for families, communities, farms, businesses and industries across Ontario – now and in the future.

\*an Ontario household will use around 12,000 kilowatt-hours of electricity each year.



OPG's thermal stations help Ontario meet peak electricity demand.

OPG's thermal stations contribute to a reliable supply of electricity by satisfying electricity demand that cannot be met by Ontario's nuclear, hydro and growing portfolio of wind and solar energy sources. OPG operates four coal-fuelled generating stations (GS): Atikokan GS and Thunder Bay GS



in northwestern Ontario, Lambton GS and Nanticoke GS in southwestern Ontario; and the oil/natural gas-fuelled Lennox GS in southeastern Ontario. OPG is also a partner in the natural gas-fuelled Portlands Energy Centre in Toronto, and Brighton Beach station in Windsor.

The balance between supply and demand on the electricity system needs to be maintained every second. Thermal

plants help maintain this balance by being able to quickly respond to sudden changes in demand while running, starting and stopping on short notice. This flexibility means that electricity production from these plants will vary from minute to minute and day to day.

OPG is making the transition to a lower carbon future and will phase out the use of coal by the end of 2014. We are committed to staffing, maintaining and operating our coal-fuelled plants as safe, reliable and environmentally responsible producers of electricity for as long as they are required.



# Thunder Bay Generating Station

Thunder Bay Generating Station (GS), is located in the City of Thunder Bay, next to the Lakehead Region Conservation Authority's Mission Island Marsh. It is one of Ontario Power Generation's (OPG) five Thermal electricity generating stations.

Thunder Bay GS's two operating coal-fuelled generators produce up to 306 megawatts (MW) of electricity, using low-sulphur Powder River Basin sub-bituminous coal. In the past decade, Thunder Bay GS's annual electricity production has been as high as 1 billion kilowatt-hours (kWh), enough to power 83,000 homes. More recently, due to economic downturn, Thunder Bay GS's role has changed to meeting peak demand times and back up electricity generation when other sources are not available.

Looking to the future, Ontario's Long-Term Energy Plan, announced by the Minister of Energy in November 2010, affirmed the province's commitment to repower Atikokan GS with biomass fuel and proposed that Thunder Bay GS be repowered to natural gas fuel.

OPG is assessing plant modifications required for operation on gas and, potentially, biomass fuel at some time in the future. For more information, visit [opg.com](http://opg.com).



Maintenance ensures reliability



## Caring for the Environment

OPG and its employees at Thunder Bay are committed to caring for the environment and reducing our impact on it. Some examples are:

- Thunder Bay GS uses low sulphur coal to reduce acid gas emissions.
- Thunder Bay GS is certified to the internationally recognized ISO 14001 Environmental Management standard which promotes continuous improvement.
- The station is certified by the Wildlife Habitat Council for biodiversity stewardship.



White Tailed deer at Station

- The station's recycling program received a zero waste environment award from the City of Thunder Bay.
- Thunder Bay GS was recognized by the Lake Superior Binational Forum for environmental stewardship efforts.

We share the concerns people have about carbon dioxide (CO<sub>2</sub>), a greenhouse gas, and climate change.

OPG is working to reduce emissions from all aspects of its business in a manner that is consistent with Ontario's regulatory framework.

OPG's environmental performance is published in the annual Sustainable Development Report found at [opg.com](http://opg.com).



Community Biodiversity

# Commitment to the Community

As a large company and a major employer in many Ontario communities like Thunder Bay and the region, OPG and its employees believe we have a responsibility to be good corporate citizens and neighbours. That means operating our electricity generating facilities in a safe, efficient and environmentally responsible manner and giving back to the community. We want to make a positive difference by supporting community projects and events, youth recreation and educational and environmental initiatives. It doesn't stop there. Our employees contribute hundreds of hours of volunteer time to community organizations.



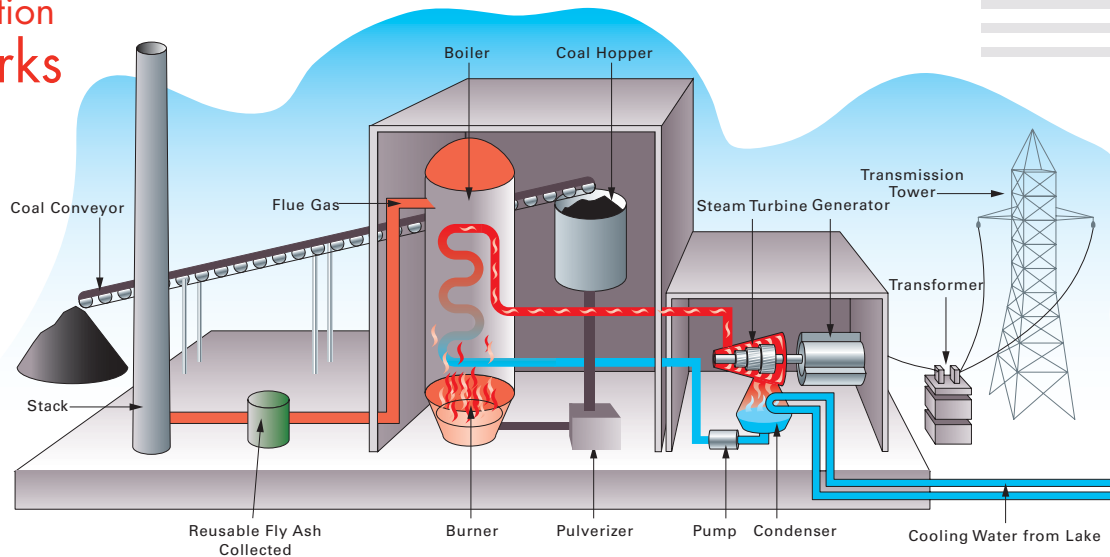
Thunder Bay GS volunteering and fundraising



Thunder Bay GS volunteers for Community Spring Clean Up

## Thermal Generation How It Works

In a coal-fuelled station, finely crushed coal is burned in a large industrial furnace surrounded by walls of water-filled boiler tubing. When this water turns to steam, it moves at high speed to a turbine. There, it pushes the blades of the turbine, which is connected to a shaft or rotor, causing the rotor to spin. The spinning rotor is a large electromagnet that produces rotating magnetic fields. These fields move across coils of wire in the generator, producing electricity that can be sent across transmission lines to customers.



The steam from the turbine is condensed back into water, using cooling water from a lake or river, and reused in the boiler.

See the "How It Works" video at [opg.com](http://opg.com).

# Safety is our Top Priority

OPG is committed to the safety of our neighbours and employees. Our primary objective is to promote excellence in public and employee safety through a corporate culture of safety across all of our generating stations.

In 2010, OPG became the first employer in Ontario to be awarded the Infrastructure Health and Safety Association's ZeroQuest® Platinum Safety Award, which recognizes excellence in Health and Safety Management.

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Materials used in this report are environmentally friendly. Cover and text stocks are recycled and recyclable, with a minimum of 30% post-consumer waste. Vegetable-based inks have been used throughout.

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