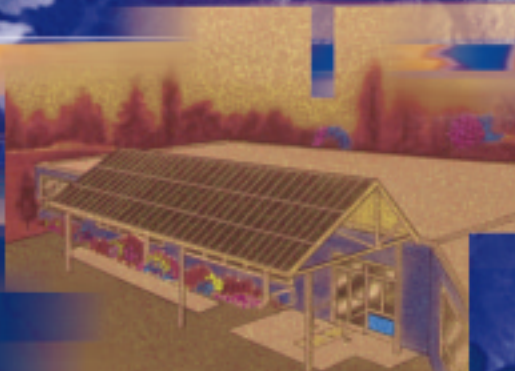


Towards Sustainable Development

1997
PROGRESS REPORT





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1

Environmental Commitment and Responsibility



Ron Osborne, named as Ontario Hydro's President and CEO in March 1998, shares his perspective on how sustainable environmental performance improvements will serve to enhance shareholder value in a competitive electricity marketplace.

You joined Ontario Hydro as President & CEO in March 1998. What are your priorities in the environmental area?

While these are early days for me, I believe that I need to embed the environment as a business issue for the organization. By that I mean a focus on the development and implementation of environmental management systems; pressing for increased environmental performance from the business units; looking for opportunities to get more value for the environmental dollars we are spending; moving from a reactive, fire-fighting mode to a more proactive, voluntary approach where the more elegant and economic solutions to environmental pressures lie; and looking for partners to help us achieve our performance targets. In short, my focus will be on creating shareholder value through improved environmental performance.

Given Ontario Hydro's environmental performance in 1997 with the copper and zinc emissions to the Great Lakes story in June, how can Hydro demonstrably improve shareholder value in this area?

I believe that Ontario Hydro learned some valuable lessons from both these situations and has taken some concerted actions to resolve the problems and to put systems in place so that such situations are not repeated. Environmental management systems have been strengthened across the organization. Programs have been established and are well under way within the nuclear business to improve the management problems which were identified last year. Reporting mechanisms to senior management, to the Board of Directors, and to the regulators have been strengthened. And, while I believe

that there are challenges to us to do what we say we will, our plans are achievable and I will be accountable for their success.

How will the nuclear recovery program affect Hydro's environmental performance?

Since Darlington came on line in 1992, our fossil generation has typically been in the 15 to 20 TWh a year range. With nuclear recovery under way, we forecast this will rise to 30 to 35 TWh per year in the 1998 to 2000 period. These are levels we used to see in the 1970s and 1980s. The forecasts thereafter will depend on decisions to bring the Pickering "A" and Bruce "A" units back to service, and the evolution of the marketplace.

Nevertheless, during the nuclear recovery period, we will continue to meet all environmental laws and corporate voluntary commitments on emissions of acid and greenhouse gases. Once nuclear recovery is complete and we have boosted our nuclear capacity to where it should be, we'll be able to displace that much more fossil generation.



So, even though our emissions will increase for the next 2-3 years, we will ultimately improve our environmental performance through the recovery of our nuclear program.

Is Hydro doing anything to reduce emissions from its own fossil plants?

Yes. Improvements we have already made in recent years make us one of North America's cleaner fossil operations. We have a pair of scrubbers in service at Lambton to reduce SO₂ emissions and a low sulphur fuel program which, taken together, have allowed Hydro to perform better than the US EPA Clean Air Act SO₂ Phase II requirements, which don't take effect until 2000. And in the early 1990s, we upgraded electrostatic precipitators at Lakeview GS, making it a much cleaner operation.

Even more improvements are under way now to reduce our contribution to smog. A second generation of low NO_x burners is being installed on Nanticoke units, and both Lambton scrubbed units will be modified to reduce NO_x emissions by 2000. At the same time, we are also converting two of the four Lennox GS units to allow them to burn natural gas, which is cleaner and less expensive than oil. It's another example of a good business case for better environmental performance.

One of the recommendations of the copper and zinc report was that relationships with the community, particularly at Pickering, needed improvement. Is that also one of your priorities?

I believe that our “licence to operate” in any community is contingent upon a good working relationship with the community. We have an obligation to work with the community and respect their concerns about our operations and plans. You may be aware that the accountabilities of the Executive Vice Presidents, who head up our three business units, were modified in 1997 to make it very clear that they are responsible for ensuring positive relationships with the communities within which they operate.

The Board of Directors made some changes in 1997 to the Corporation’s policies and principles on sustainable energy development and the environment. Were these significant changes?

I think so, particularly in the area of environmental management systems which, as I have said, need improvement. Under our revised Sustainable Energy Development Policy and Principles, we have committed to ISO 14001 specifications, an internationally recognized standard, for environmental management systems on a corporate-wide basis. This is a large step forward and we are committed to making it work well.

The other significant aspect of this policy change is that as an organization, meeting legislative requirements is stated as a minimum requirement, but our objective is



to move beyond compliance. We want to be a company that is known for its environmental commitment and responsibility.

We all realize that policies are just words and that it will take persistent effort to give them substance. We intend to sustain that effort.

It would appear that Ontario Hydro has a “window of opportunity” over the next year or so, to improve both its business and environmental performance prior to the opening of the market to competition. Are there other actions which you will be directing, in addition to the ones we have already discussed?

There are other actions we need to be taking to reduce the environmental liabilities associated with our past practices, while at the same time looking for innovative ways to achieve our environmental results. We need to move aggressively to assess and remediate contaminated properties (Ontario Hydro undertook a significant program in 1997 to identify such properties); destroy PCB wastes; and reduce the use of hazardous materials.

Other things that come to mind include continuing our efforts in emission reduction trading for NO_x and CO₂ through our involvement with other partners in the Pilot Emission Reduction Trading project and working with government and other business to develop programs to help Canada meet its commitment on greenhouse gas reduction. We also have opportunities to work with community partners to protect biodiversity through the wise use of our land holdings. These efforts will continue over the next year.

Does Ontario Hydro see any conflict between its need to be highly competitive and its obligations towards the environment?

Not at all, as long as there is a level playing field in which all market participants are held to the same environmental standards, which should not be compromised due to competition. Fairness is critical, but at the same time, we must not slip to the lowest common denominator of environmental performance.

We think the link between competitiveness and sustainability is clear in terms of managing financial, human and natural resources, eliminating unnecessary costs and improving environmental performance, all with



the objective of differentiating Ontario Hydro from its competitors. Our challenge, every business's challenge, is to embed environmental responsibility so that it becomes as much a part of our daily activity as any core function. Our environmental management systems and our focus on continual environmental performance improvement will help us do just that, which is why we have confidence that Ontario Hydro—and its successor companies—will be moving measurably closer to achieving our goal of sustainability.



2

1997 Performance Highlights

In 1997, Ontario Hydro continued to implement a broad range of programs and initiatives in support of its commitment to environmental improvement and sustainable development. This section provides a snapshot of some of the achievements and shortcomings in pursuit of that objective.

ISO 14001 Registration



Darlington NGS was the first nuclear generating station in North America and one of a few in the world to become registered to the International Organization for Standardization (ISO) 14001 Environmental Management System Standard in January 1997. Darlington retained its registration following an independent audit in January 1998.

Wildlife Habitats



In 1997, both the Darlington and Lambton generating stations were certified through the Wildlife Habitat Council's International Accreditation Program, in recognition of habitat management plans that were developed for each site. The certification represents a significant step forward in translating Ontario Hydro's Biodiversity Policy into meaningful action. Darlington also won the Wildlife Habitat Council "Rookie of the Year" award, ahead of 49 other first-time corporate sites.

Energy Savings



Internal energy savings totalled 318 GWh in 1997, bringing the total cumulative savings from 1994 to 1997 to 1,588 GWh. These savings are equivalent to about \$60 million of annual savings to Ontario Hydro without any loss of revenue. The energy savings also contribute to the reduction of emissions and wastes, thus improving Ontario Hydro's competitiveness and sustainability.



Darlington Generating Station

Worker Safety



The 1997 accident severity rate of 53.3 days lost per million hours worked is 3.3 days worse than the target of 50 days. Although the planned target was not achieved, this result is a 28% improvement over 1996 performance and is trending in a favourable direction. In addition to the improvement over the 1996 accident severity rate, "near misses" and accident frequency both continue to trend downward.

Spills



The volume of material that was spilled and lost to the environment in 1997 was 86% less than the 1996 results, although the total number of spills (403 in 1997) was similar to results from previous years.

LEGEND



improved performance



no change



performance deteriorated



Air Emissions



The carbon intensity rate for primary demand in 1997 was 0.18 Tg/TWh which exceeded the internal target of 0.14 Tg/TWh. This unfavourable result was due to the need for increased fossil production resulting from nuclear unavailability.

In September, the International Cooperative for Environmental Leadership (ICEL), of which Hydro is a member, received a prestigious award from the U.S. Environmental Protection Agency in recognition of the organization's leadership in protecting the Earth's ozone layer. ICEL, a non-profit global partnership which promotes innovative environmental solutions, was recognized for its work on identifying and sharing information on environmentally safe alternatives for ozone-depleting substances.

Environmental Management System



Hydro's Corporate Environmental Management System, which is consistent with the ISO 14001 Standard, was developed and implemented in December 1997.

Recycling and Reuse



Ontario Hydro was recognized as a contributor to Canon's 1997 Clean Earth Campaign for its efforts to recycle wastes such as toner cartridges from photocopiers, fax machines and laser printers.

Ontario Hydro was one of 46 businesses and municipalities that were honoured for their efforts in recycling garbage. The Recycling Council recognized Hydro's efforts for recycling almost 600,000 tonnes of ash and clinker from its coal and oil-fired generating stations. In addition, Darlington NGS also received an award from the Recycling Council for diverting approximately 88% of its conventional waste from landfill.



Metals Emissions to the Great Lakes



In 1997, Ontario Hydro commissioned an independent assessment of copper and zinc emissions into the Great Lakes. Among other things, the assessment concluded that:

- there had been and continues to be large quantities of copper and zinc emitted to the Great Lakes from Admiralty brass condenser corrosion/erosion at Ontario Hydro generating stations using these condensers;



- there was little evidence of adverse environmental effects from copper and zinc releases but more study is required;
- no measurable effect on drinking water quality in surrounding municipalities could be identified.

Further analysis undertaken in 1997 has concluded that the copper and zinc emissions are not causing any adverse effect on the environment.

Actions taken or planned by Ontario Hydro include:

- replacing Admiralty brass condensers at Pickering NGS;
- evaluating coatings as an option for Bruce NGS Units 1 and 2 and fossil stations;
- implementing other measures to minimize copper emissions;
- evaluating and revising copper-bearing heat exchanger management programs as necessary, so that areas of high potential risk are eliminated.

Hydro's Board receives quarterly progress reports on these actions, prepared by independent experts.

1997 KEY FIGURES AND STATISTICS

Item	1997	1996
Revenues (\$M)	8,925	8,886
Net Income (\$M)	*254	572
Total Energy Supply (TWh)	144.8	143.5
Number of Employees	20,953	20,854
CO ₂ (Gg)	23,500	21,232
SO ₂ (Gg)	124	85
NO _x (Gg)	43	35
Accident Severity (days lost/million hours worked)	53.3	74.4
Environmental Expenditures (\$M)	175	244
Internal Energy Savings (GWh)	318	467
Charitable Contributions (\$M)	1.48	1.98
Renewable Energy (% of Hydro generation, excluding purchases)	27.7	27.9

* Income before corporate write-offs

ENERGY SOURCES



ENERGY SALES

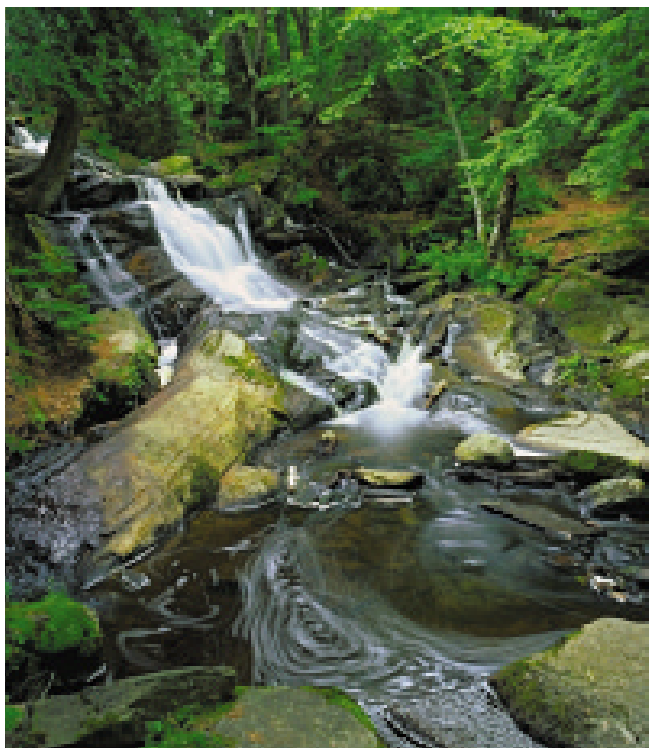


3

Commitment to Improved Environmental Performance

In the midst of unprecedented change in the structure and operation of the electricity industry, Ontario Hydro remains committed to continually improving its environmental performance, not just because it is our responsibility as a corporate citizen and steward of public assets and natural resources, but also because it is good business.

Ontario Hydro has been demonstrating in recent years that its sustainable energy development (SED) objectives are both achievable and effective in improving competitiveness, but much remains to be done before we have thoroughly integrated SED perspectives into every aspect of our business. Indeed, it is precisely because our industry is changing so rapidly that we must have SED policies that are clearly communicated and carefully monitored. As well, Ontario Hydro has identified the need for a recognized system for ensuring that these policies become activities and that movement towards sustainability is real, measurable and continuous. In 1997, Ontario Hydro made progress towards all of these objectives.



Revised Sustainable Energy Development Policy and Principles

Ontario Hydro's mission is "to make Ontario Hydro a leader in energy efficiency and sustainable development, and to provide its customers with safe and reliable energy services at competitive prices." Hydro has adopted the definition of sustainable development as "development which meets the needs of present generations without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987).

Hydro's policy towards the environment is addressed in its Sustainable Energy Development (SED) Policy and Principles. In 1997, Hydro revised its SED Policy following a comprehensive review of existing policies and environmental governance. The revised SED Policy

establishes the basis upon which Hydro's environmental management system (EMS) has been developed, sets the direction and framework for identifying and reviewing objectives and targets, and establishes senior management commitment to the environment. The revised SED Policy received Board approval on October 7, 1997. The policy framework for Ontario Hydro is illustrated in Figure 1.

Ontario Hydro's Sustainable Energy Development Policy and Principles

Ontario Hydro will apply the principles of sustainable development throughout its business. We will increase our competitiveness and promote a more sustainable energy future by: (a) achieving continual, measurable progress in pollution prevention; (b) making efficient use of resources; (c) maintaining and, where possible, improving the integrity of the ecosystems in which we operate; and (d) developing energy products and services consistent with the principles of sustainable development. Our objective is to move beyond compliance and we will, at minimum, comply with all legislative requirements.

We will implement this policy through an environmental management system that is consistent with the International Organization for Standardization (ISO) 14001 Environmental Management System Specification.

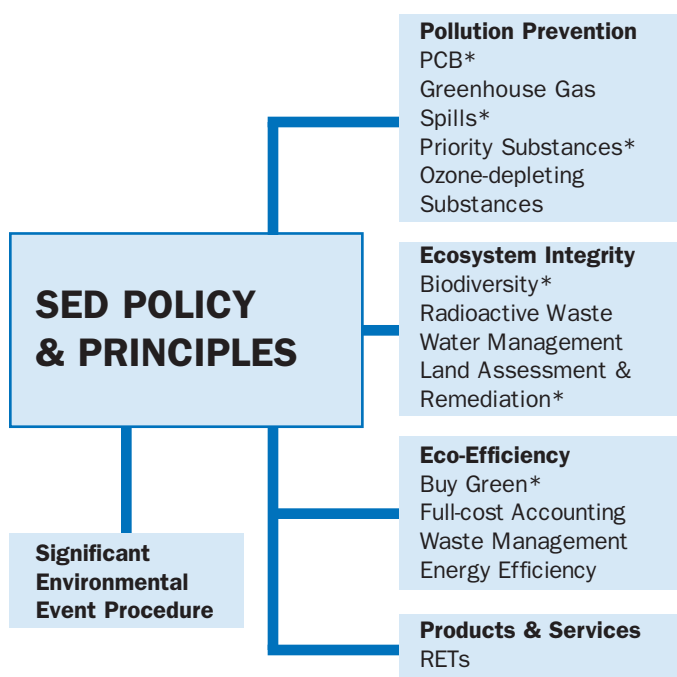


Guiding Principles

1. We will practice eco-efficiency, that is, continuously adding value to products and services, while constantly reducing energy use, material use, pollution and waste.
2. We will apply the "precautionary principle" with respect to the human health risks and environmental damage resulting from our activities and will take all cost-effective measures, even where scientific consensus has not yet been established on the level of risk or damage.
3. We will integrate environmental and social factors into our planning, decision-making, and business practices.
4. We will continually improve our environmental performance by identifying the environmental impacts of our activities, preventing pollution where possible and implementing appropriate mitigation or compensation for environmental impacts that cannot be avoided.
5. We will develop and promote opportunities for the use of renewable energy and energy-efficient technologies.
6. We will work in partnership with stakeholders to promote business decisions and practices which will move towards sustainable development.
7. We will contribute to the development of public policy which promotes sustainable development through business, government, non-government and educational initiatives.
8. We will educate, encourage and empower our employees to conduct their activities in an environmentally responsible and sustainable manner.
9. We will monitor progress towards achieving sustainable development using measurable indicators and report regularly to all stakeholders.

Figure 1

Corporate Environment/Sustainable Development Policy Framework



* Policy Areas Under Development/Revision in 1998.



Environmental Management System

The strength and success of an organization's environment/SED policy is largely determined by the performance results it delivers. Environmental management systems (EMS) provide the tools and processes for addressing that need. An effective EMS will ensure that the company's environment/SED policy is managed, implemented, checked and periodically reviewed within the overall context of continual improvement. An EMS provides both the process and assurance that the policy is improving the environmental performance of the corporation, while also demonstrating management's due diligence with respect to managing the corporation's environmental impacts.

In 1997, Ontario Hydro developed and implemented a corporate EMS that is consistent with the International Organization for Standardization (ISO) 14001 Environmental Management Systems Standard.

ISO 14001 describes a system based on continual improvement in the following key areas: environmental policy, planning, implementation and operation; checking and corrective actions, and management review. By adopting this approach, Ontario Hydro obliges its Signature Business Units to evaluate, in a consistent manner, the quality of processes used to manage the environmental impacts of their facilities' operations.

In 1998, the environmental management systems within the Generation Company, the Services Company and Ontario Hydro Nuclear will be finalized and implemented. By the end of the year, Ontario Hydro will have operationalized an integrated environmental management system from the corporate level down to the shop floor.

Following are several examples of how the ISO 14001 model has been applied to Ontario Hydro's corporate environmental management practices.

Environmental Accountabilities

Environmental accountabilities were clarified at the senior management level in 1997 and are being rolled out in the businesses. These accountabilities include:

- the Board of Directors approves environmental and sustainable development policies. The Environment and Public Policy Committee (EPPC) of the Board recommends for approval environmental and sustainable development policies and monitors the operation of the EMS.
- the President and CEO is the Chief Environmental Officer and directs the environmental and sustainable development performance of the company.
- the Executive Vice Presidents direct the environmental and sustainable development performance of their businesses; ensure at a minimum, compliance with applicable laws, regulations, corporate policies and voluntary commitments; develop positive relationships with communities in which they operate; and minimize the environmental risks associated with their businesses.
- the Senior Vice President, Corporate and Environmental Affairs, advises the President and CEO on environmental and sustainable development policies, monitors and reports on corporate environmental performance, maintains the corporate EMS and supports the EPPC.



Corporate Performance Measures

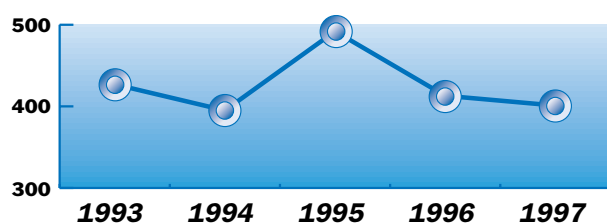
Ontario Hydro measures its environmental performance using a number of parameters. In 1997, three measures were selected as corporate performance measures, one of which was tied to executive compensation. The results are provided below:

- Internal Energy Savings—the 1997 annual results were 318 GWh compared to a target of 300 GWh. About 52% of these savings are from electricity efficiency improvements and 48% are from generation conversion process improvements. The energy savings contribute to the reduction of emissions and wastes, thus improving Ontario Hydro's competitiveness and sustainability.
- Carbon Intensity Rate—The carbon intensity rate for primary demand in 1997 was 0.18 Tg/TWh, which exceeded the internal target of 0.14 Tg/TWh. This unfavourable result was due to the need for increased fossil production resulting from nuclear unavailability.

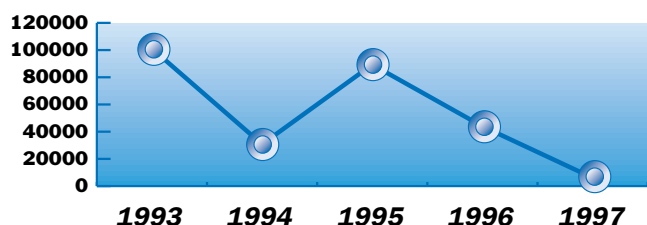
- **Spill Volume Lost to the Environment**—In 1997, a total of 6,126 litres were lost to the environment. This was significantly below the target and well below the 1996 result of 43,932 litres lost to the environment. This positive result reflects the added emphasis that Hydro has placed on spills prevention and management. In 1998, this measure will be complemented by a Spill Severity Rating that will provide an additional indication of the environmental impact of a spill.

SPILLS

Number



Volume lost to the environment (litres)



Water Quality Testing

External Reporting of Environmental Performance

In addition to this annual Progress Report and the Corporate Annual Report, Ontario Hydro submits environmental performance data to federal environmental programs such as the National Pollutant Release Inventory and the Accelerated Reduction/Elimination of Toxics. Ontario Hydro also reports regulated acid gas emissions to the provincial government.

National Pollutant Release Inventory 1996 Results Megagrams (Mg)

Environment Canada collects and publishes emissions results for a number of substances from a variety of companies across Canada. Ontario Hydro is obligated, under NPRI, to provide emissions to air, water and landfill results for a number of substances. The 1996 results for some of these substances are provided below.

Substance/Source	Nuclear	Fossil	Total
Hydrazine	2.4	—	2.4
Ammonia	79.4	1.5	80.9
Sulfuric Acid	1.3	—	1.3
Copper	38.2	48.7	86.9
Zinc	12.9	40.3	53.2

Accelerated Reduction/Elimination of Toxics

Hydro's total emissions in 1996 were approximately 24% lower than the 1993 baseline. Year 2000 results are projected to be 83% lower than the 1993 baseline. Hydro's releases to water from nuclear and fossil stations (Mg) are provided below.

Substance/Year	1996	1995	1993 (Baseline)	2000 Target
Arsenic	0.1	0.01	0.01	≤0.07
Copper	42.80	46.01	56.48	≤8.00
Zinc	17.11	18.33	22.37	≤3.70
Hydrazine	2.36	1.59	3.67	1.25

Further details on how Ontario Hydro intends to address copper and zinc emissions are provided on page 19.

Acid Gas Emissions (Mg)

Quarterly reports on Ontario Hydro's regulated acid gas emissions are submitted to the Ontario Ministry of the Environment.

Gas/Year	1997	1996	1995	1994
SO ₂	124,000	85,000	74,500	106,000
NO _x	43,000	35,000	29,000	30,000
Total	*167,000	120,000	103,500	136,000

*Regulatory limit for acid gas: 215 Gg total of which 175 Gg is SO₂

Environmental Audit Program

Ontario Hydro has had an environmental audit program since the late 1980s—focusing primarily on compliance with environmental regulations and corporate/Business Unit policies. During 1997, the environmental audit program was incorporated into Corporate Audit. As a result of this change, modifications to the audit processes are underway. These modifications are expected to provide enhanced assurance to the President/CEO and the Board with respect to potential corporate environmental risks.

In 1997, eight audits and reviews were conducted within Ontario Hydro by Corporate Audit on a range of issues, including the management of PCB destruction and fossil fuels management, as well as participation in investigations into the tritium release at Pickering GS and the fire at Ear Falls GS. In addition, four Business Unit compliance audits were completed.



Calibrating Pollution Control Equipment

Signature Business Unit Actions

As noted earlier, Hydro's Signature Business Units are developing their own environmental management systems consistent with the ISO 14001 Standard. These management systems will provide linkages with corporate requirements. The goal is to have EMSs established throughout the organization by the end of 1998. Some areas of the organization are ahead of others. Of particular note is that Darlington NGS, which was ISO registered in 1997 (the first generating station in North America and one of a few in the world) retained this registration following an independent audit in January 1998.

Pollution Prevention

Ontario Hydro is committed to continually reduce its impact on the environment and human health.

The challenge underlying all our sustainability efforts is how to simultaneously meet this environmental goal and our customers' need for reliable, affordable electricity. Continually reducing our emissions, primarily by taking advantage of cost-effective technological advances such as low NO_x burners at coal-fired generating stations, is one way of meeting this challenge.

Air Emissions Management

During the Nuclear Asset Optimization Plan, when power to replace that lost in the lay-up of several reactors will be required, Ontario Hydro will continue to meet its regulatory obligations and voluntary commitments related to fossil emissions. A number of initiatives now under way are contributing to this objective.

Nitrogen Oxides

- **Combustion Process Modifications**

Over the next two years, seven units at Lambton GS and Nanticoke GS will be retrofitted with low NO_x burners.

The retrofits are expected to reduce unit NO_x emissions by up to 30% at all Nanticoke GS units and the two Lambton GS scrubbed units. In addition, Lambton GS expects to install and operationalize in 1998 a new NO_x combustion expert system for at least two units, possibly four. This new technology has the potential to reduce NO_x emissions by an additional 10–20%.

- **Oil to Gas Conversion**

Two of the four Lennox GS units that now burn oil are being converted to burn natural gas as well. This will reduce both atmospheric emissions and generation costs from these units.

- **Pilot Emissions Reduction Trading**

Since 1996, Ontario Hydro, other industry, and government and non-governmental organizations have been operating the Pilot Emission Reduction Trading (PERT) project. The goal of the project is to provide

market incentives to improve environmental performance in order to reduce pollutants (NO_x, SO₂, CO₂) being released to the environment in North America. In addition to agreeing on a set of principles to guide the development of emission reduction trading, several NO_x trades have been executed under the auspices of PERT. 1997 PERT-related activities include:

- **negotiations are progressing with several northeastern U.S. utilities to purchase Ontario Hydro NO_x credits created from low NO_x combustion technology at the Lambton and Nanticoke Generating Stations.**

- Ontario Hydro has entered into agreements with municipal, education and public health sectors involving building energy management initiatives which have produced 40 tons of NO_x (as NO₂), 63 tons of SO₂ and 15,622 tons of CO₂ emission reduction credits.
- the conversion of Ontario Hydro in-house energy efficiency initiatives to emission reduction credits. A total of 3,200 tons of NO_x (as NO₂), 5,700 tons of SO₂, and 1,082,000 tons of CO₂ emission reduction credits were banked in 1997 from energy efficiency initiatives. These credits result from the displacement of fossil generation and resultant emissions reductions.
- A total of 6,000 tons of NO_x credits (as NO₂) are being booked as a result of emissions reductions achieved through implementation of low NO_x combustion technology at one Lambton unit and two Nanticoke units.

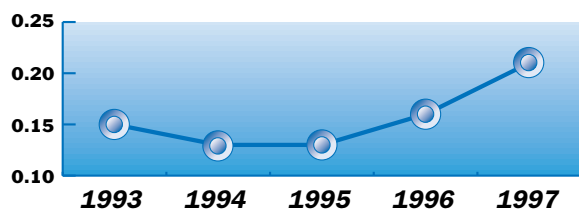
Smog Plan

Ontario Hydro has signed Ontario's Smog Accord and participated in the development of "Ontario's Smog Plan: A Partnership for Collective Action." The goal of the Smog Plan is to reduce smog-causing emissions by 45% by the year 2015. Ontario Hydro's voluntary commitment to limit NO_x emissions to 38 Gg beginning in the year 2000 is one of the key elements of the Plan.

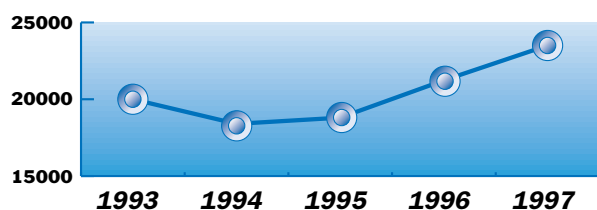
Greenhouse Gases

ENVIRONMENTAL PERFORMANCE

Emission Rate (Gg/GWh)



Total: Corporate GHG Emissions (Gg)



Action Plan to Manage Greenhouse Gas Emissions

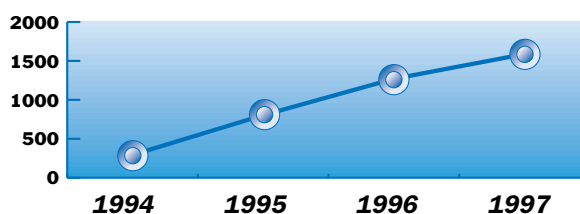
Ontario Hydro has committed to stabilizing its net greenhouse gas (GHG) emissions at 1990 levels by the year 2000 and to reduce them by a further 10 per cent by the year 2005 as part of the climate change voluntary commitment. The Corporation's Action Plan to Manage Greenhouse Gas Emissions is based on four program areas:

- supply-side energy efficiency;
 - customer energy efficiency;
 - renewable energy supply; and
 - market mechanisms and offsets.
-
- **Supply-Side Energy Efficiency**

Hydro's internal energy efficiency program has exceeded expectations for improving the efficiency of electricity generation and transmission. Specific actions have included: the upgrade of hydroelectric units; a reduction in transmission line losses; efficient lighting; and more efficient use of generating station circulating cooling water pumps. During the period 1994–1997, these initiatives resulted in over 1,500 GWh being saved annually, equivalent to over 1.3 million tonnes of carbon dioxide (CO₂). By the year 2000, it is expected that annual savings will reach 2000 GWh, equivalent to approximately 1.6 million tonnes of CO₂ per year.

INTERNAL EFFICIENCY: CUMULATIVE SAVINGS

Internal Energy Savings (GWh)



- **Customer Energy Efficiency**

The promotion of the wise use of energy remains a key consideration in our efforts to provide value to our customers and contribute to their success. In 1997, Hydro issued a Request for Proposal (RFP) for energy efficiency projects aimed at reducing customer electric energy usage. Hydro received 25 submissions amounting to 1,500 GWh. Negotiations with a short-list of candidates is expected to begin in 1998. Cumulative energy and GHG emission savings, forecast to the year 2000 as a result of our programs, is 6.9 TWh/year, which is equivalent to approximately 5.6 million tonnes of CO₂/year.

- **Renewable Energy Supply**

Hydro's Renewable Energy Technologies (RETs) Program has been realigned to respond to increasing customer interest in these technologies and the demand for "green power". The program will continue to promote RETs in areas where their application makes economic sense or provides competitive advantage. New RETs Program installations to the end of 1997 included: 800 kW wind, 100 kW photovoltaic, and 1,150 kW microhydro. RETs capacity now totals 2.05 MW, representing approximately 8 GWh/year, which is equivalent to about 6.5 Gg CO₂/year.

- **Green Energy Sales**

In November 1997, Hydro launched its Green Choice Program which is aimed at developing bilateral, multi-year contracts with customers willing to pay a premium for "green" energy, i.e., electricity generated from wind, solar, biomass and small, run-of-river hydro sources.

The first customer for the Green Choice Program was Interface Flooring in Belleville. Hydro is also investigating the potential for a green power exchange where electricity suppliers and buyers could trade green energy on the Interim Electricity

Market, a concept that is being tested in California. Hydro's green power exchange will likely be pilot tested in 1998.

- **Northern Wind Power Pilot Project**

Kasabonika Lake is a First Nations community 600 kilometres north of Thunder Bay that has relied for many years on diesel-generated electricity. Because of its good wind speeds and relatively low winter temperatures, the 610-person community was an ideal test site for a new wind turbine that is designed to operate in extremely cold climates. With the endorsement of the community, three 10-kilowatt turbines were erected in late 1996 and ran successfully throughout 1997, displacing about 15,000 litres of diesel fuel annually. The wind-driven generators supplement the conventional sources so that reliability of supply is maintained, but in a more environmentally-friendly manner.

- **Market Mechanisms and Offsets**

The Greenhouse Gas Offsets program is becoming increasingly important to our greenhouse gas management plan. In 1997, Hydro registered over 1 Tg CO₂ credits from in-house energy efficiency projects. By the year 2000, Hydro plans to acquire offsets equivalent to approximately 4.8 Tg CO₂.

Ontario Hydro is working to achieve recognition for emissions reduction trading (ERT) as a useful market mechanism to encourage early compliance with voluntary commitments and agreements. Several pilot greenhouse gas reduction trades are under negotiation and are expected to deliver GHG credits in 1998, an example of which is Hydro's agreement in principle to purchase CO₂ reduction credits from Southern California Edison.

- **Ontario Hydro and Southern California Edison CO₂ Emission Reduction Trade**

In 1997, Ontario Hydro agreed in principle to purchase 10,000 tons of carbon dioxide (CO₂) emission reduction credits from Southern California Edison. These credits are the result of improvements in plant energy efficiency at the Mohave Power Plant in the state of Nevada. This small-scale trade was undertaken to promote the inclusion of GHG emissions reduction trading and credits in the international climate change negotiations. It also emphasizes the growing importance that trading, credits and offsets will have in Hydro's greenhouse gas management plan. Emission reduction trading does not diminish Ontario Hydro's stewardship responsibilities towards the assets it manages. It is merely a short-term way to provide the flexibility and financial tools needed to continue operation of existing facilities while establishing longer-term strategies for environmental and asset management. Nor does trading allow emissions sources to evade responsibility for making emission reductions. It simply provides lower-cost options for meeting this responsibility and rewards early action to reduce emissions.

Ozone-depleting Substances

Chemicals such as chlorofluorocarbons (CFCs) and halons cause atmospheric reactions which destroy the earth's ozone layer. Thinning of the ozone layer has impacts on biological systems at the earth's surface, including increased incidence of skin cancer in humans.

1997 marked the 10th anniversary of the Montreal Protocol, a global environmental milestone. Signatory countries committed themselves to taking actions to reduce the production, use and release of ozone-depleting substances (ODS). In addition, regulations controlling the manufacture, use and release of ozone-depleting substances continue to tighten. Hydro's ODS Policy,

developed in 1994 and revised in 1997, recognizes these trends and proposes a course of action which will allow the corporation to continue to balance environmental and economic goals. The revised ODS Policy requires:

- removal of portable halon 1211 systems by June 30, 1998, and the development of plans to phase out halon 1301 flood systems by June 30, 1998;
- achieving near-zero emissions of CFCs from in-service chillers and then phasing out the CFCs by 2015; and
- retrofitting heavy-vehicle air-conditioning systems by December 31, 1999.

Hydro's emissions of CFCs, normalized using an ozone-depleting-potential equivalent, have dropped from 32 Mg in 1992 to less than 2 Mg in 1997. The reductions were largely due to the conversion of Hydro's dry-cleaning operations at nuclear facilities to a non-CFC based solvent system and an improved laundry screening process. Smaller-scale changes, such as replacing halon fire extinguishers with carbon dioxide and dry chemical units, eliminating solvents, and improving maintenance practices, also helped to lower ODS emissions.

In support of the ODS Policy, the Transmission Company has removed all halon 1211 and 1301 fire extinguishing systems and has replaced all CFC-filled chillers. Fossil has removed some CFC-11 chillers from service and upgraded existing systems still in operation in order to minimize emissions. Alternative refrigerants to CFCs are also being used. The Generation Company's Generation Services group has removed all halon fire extinguishers from the Head Office complex and has retrofitted R-11 chillers.



Scientist Deploying Lake Current Meter

Great Lakes Metals Emissions

In 1997, Ontario Hydro released a comprehensive assessment on the amount of copper and other metallic emissions into the Great Lakes from Admiralty brass tubing used in condenser cooling water systems at a number of its nuclear and fossil generating stations in southern Ontario. The assessment, prepared by a senior-level Review Team commissioned by the President, was compiled following a thorough review of documentation dating back to 1981 and formal interviews with 24 former and current Ontario Hydro staff. Key findings and recommendations included the following.

- 1813 tonnes of metals, primarily copper and zinc, have been emitted into the Great Lakes due to brass condenser corrosion/erosion at Ontario Hydro generation stations over the past 25 years.
- There was little evidence of adverse environmental effects as a result of the emissions, but more study is required, particularly the establishment of a metals monitoring program specific to water, sediment and aquatic biota.
- Several gaps were identified in Ontario Hydro's management system, particularly in the areas of environmental accountabilities and awareness, and internal and external reporting.

- **Ontario Hydro must develop “a real sense of urgency about developing specific, integrated and enforceable environmental accountabilities at all levels of the company.”**

The assessment made specific recommendations on resolving the problem, including evaluating options such as replacement of the brass condensers, protectively coating them, and other reductions programs. Ontario Hydro accepted these recommendations and is currently investigating the feasibility of their implementation. Hydro's Board receives quarterly progress updates, prepared by Dr. Peter Victor, Dean of Environmental Studies at York University, and Dr. Len Ritter, Executive Director of the Centre for Toxicology and Professor of Biology at Guelph University. The second progress report, prepared in February 1998, stated that: “Ontario Hydro has made a strong and sustained effort to implement the recommendations. While there has been some slippage in meeting deadlines for some recommendations, this is generally not serious, given the complexity of the implementation process and the difficulty of effective implementation during a period of ongoing organizational change.”

Further analysis undertaken in 1997 has concluded that the copper and zinc emissions are not causing any adverse effect on the environment.



Pickering Nuclear Generating Station

Compliance Violations

The Ministry of Environment issued two Director's Orders to Ontario Hydro in 1997. The first Order related to both tritium contamination at Pickering NGS and historic and current contamination of land at all power generating facilities. The second Order related to metal emissions from brass condensers at some of Hydro's generating stations described above. Hydro has developed plans for addressing both Orders, in consultation with the Ministry.

In 1997, Atikokan GS was charged by the Ministry of Environment for failure to provide fourth quarter Municipal/Industrial Strategy for Abatement reporting results from a stream that it was required to monitor. The station was fined \$3,000 and was required to make a donation of \$7,000 towards environmental programs at Confederation College in Thunder Bay.

Nuclear Waste Management

Ontario Hydro recognizes that the management of nuclear waste and decommissioning of nuclear generating stations is a significant environmental, social and financial responsibility. Ontario Hydro's nuclear reactors will produce 70,000 tonnes of nuclear fuel waste over their lifetime, together with lesser amounts of low and intermediate-level waste. By the end of 1997, approximately 1.1 million used fuel bundles have been produced by the nuclear units located at Pickering, Bruce and Darlington. The fuel is currently stored at the reactor sites in water-filled bays or in above-ground dry storage containers.

A federal environmental review panel completed public hearings in March 1997 on the Nuclear Fuel Waste Management and Disposal Concept. At the hearing,

Ontario Hydro proposed taking a lead role in the next steps towards implementing used fuel disposal. The panel report was released on March 13, 1998, and its recommendations are currently under review by the federal government with a decision expected later in 1998.

In 1998, Ontario Hydro plans to review its Radioactive Waste Disposal Strategy (originally approved in 1995) to ensure compliance with applicable government policy, legislation, regulation and customer and stakeholder expectations.

Radioactive Emissions

Ontario Hydro's nuclear facilities are licenced to operate by the Atomic Energy Control Board. The Atomic Energy Control Board also approves limits for the release of airborne and liquid radioactivity from Hydro's nuclear facilities to the surrounding environment. As a management target, Ontario Hydro strives to limit emissions to this approved limit. In 1997, Ontario Hydro's radioactive emissions to air and water were less than the management limit. In 1998, a plan will be developed to reduce radioactive emissions.

At Ontario Hydro, ecosystem integrity means that we will reduce the adverse effects of our activities on the ecosystems in which we operate and strive to seek a balance between a healthy environment and a healthy business.

Ecosystem Integrity

This includes efforts to conserve biodiversity through the protection of significant habitats, the restoration or reclamation of degraded lands, and the enhancement or creation of new habitats for wildlife. This is an attempt to

demonstrate that industrial lands and activities do not have to be incompatible with the conservation and protection of nature. Indeed, industrial lands often represent real opportunities for meaningful habitat enhancement projects that are of benefit to employees and the communities in which we operate.

Biodiversity

In 1995, Ontario Hydro adopted a Biodiversity Strategy that helps the company plan and manage its activities in a manner that encourages the continued existence of native species and the ecosystems upon which they depend. A number of initiatives in this area of environmental management were completed or under way in 1997.

Initiatives within Ontario Hydro Nuclear

During 1997, Ontario Hydro Nuclear (OHN) conducted a number of flora and fauna site surveys and rehabilitation measures. Among them:

- Surveys of white-tailed deer populations were completed at Darlington NGS and Bruce NGS as well as management recommendations reports. A survey of amphibian breeding ponds at Bruce was also conducted.
- The Duffin's Creek Project again this year received direct financial support from Pickering NGS to rehabilitate this wetland and fish habitat. Specific actions included purple loosestrife control, plantings of wetland plants and buffer trees, and garbage clean-ups.
- The west-site tree-planting program was continued at Darlington NGS with 2,661 trees planted in four different areas. A shoreline fish survey was also completed to test the need for ecological restoration



of the armoured shoreline areas. In addition, work was completed on revegetation of the former construction landfill to improve the multi-use value for habitat and recreational use.

• At Bruce, 2,500 trees were planted on adjacent OHN properties and a partnership for an information-sharing study of whitefish populations was begun in response to a request from local First Nations groups.

- A partnership with the Waterfront Regeneration Trust, Environment Canada and the Ganaraska Region Conservation Authority produced a biological survey of three key natural areas (ravines, bluffs and marsh) identified by the Trust at Wesleyville, near Darlington. The natural-areas-management guidelines and recommendations report identified brook trout streams and old-growth forest as needing attention in 1998.

Initiatives within the Transmission Business

During 1997, Hydro's Transmission Business pursued a number of biodiversity initiatives including the following.

- **Community partnership greens up provincial park**

Ontario Hydro's Transmission Business planted 13,200 shrubs in Short Hills Provincial Park last year, in partnership with Ontario Parks, the Niagara South Board of Education's Outdoor Study Center at St. Johns, and the Friends of Short Hills. This planting, which involved some 600 students from several high schools in the Niagara Region, was initiated through the Transmission Line Investment Program. The project was the subject of local media attention and Ontario Hydro received an award of appreciation from Ontario Parks.

- **Conservation Authority partnership**

Transmission undertook six initiatives in 1997 in partnership with the Kettle Creek Conservation Authority that led to the planting of some 2,100 shrubs and 7,600 trees in four conservation areas. Signage was erected for each initiative, stating the program, partnership and amount of material planted.

- **Maintenance costs reduced; wildlife habitats enhanced**

A Transmission partnership with the Middlesex Stewardship Council, the Upper Thames Conservation Authority and the City of London was launched in 1997. Its objective, to be executed in 1998, is to plant a portion of the transmission right-of-way leading out of Highbury Transformer Station in London. This program is intended not only to enhance wildlife linkages but to reduce corridor maintenance costs. The public has been involved to gain their support and assistance.



Assisting the recovery of an endangered species —the Great Lakes bald eagle

Since 1988, Ontario Hydro has been assisting actively in the recovery of the endangered bald eagle population in southwestern Ontario.

This began with the provision of staff and equipment to the Province's first-ever installation of an artificial nest platform in Essex County and the development of a video presentation describing the bald eagle banding process. Additional platforms were installed by foresters from the Strathroy, London, Kingston and Picton areas between 1988 and 1995. The most recent work done in Transmission's Western District was a nest-tree stabilization completed in December 1997 to preserve a nest site for future populations. Reports received in March 1998 indicated that the eagle pair were exhibiting nesting behaviour.

Initiatives within the Generation Business

During 1997, Hydro's Generation Business pursued a number of biodiversity initiatives, including the following:

- **Local ecosystems restored at Lambton and Nanticoke**

Over 19,000 trees and shrubs were planted in the spring of 1997 on two Fossil station sites. Lambton GS planted 11,000 trees to link up an isolated 10-hectare woodlot on-site with a creek that bisects the property. Connecting the woodlot to the creek will restore the site and allow migration of species between these natural areas, enhancing their biological value. At Nanticoke GS, over 8,000 trees and shrubs were planted on 30 hectares of previously landscaped parkland in order to restore it as a vibrant wildlife area. A total of more than 30,000 trees and shrubs will be planted over the next few years.

- **Reforestation and partnership at R. H. Saunders Hydroelectric Generating Station**

In partnership with the Ontario Forestry Association through the Trees Ontario program, as many as 50,000 tree and shrub seedlings have been planted on property around the R.H. Saunders station over the past two years. Children from local schools assisted in the reforestation efforts. The ten species of trees and shrubs that have been planted provide habitat for wildlife and enhance the aesthetic quality of lands adjacent to the St. Lawrence River.

- **Beautifying the Niagara area**

A two-year program to beautify the Niagara Plant Group area was begun in 1997 by the Hydroelectric Business Unit.

The plan calls for the planting of 2,600 mixed trees and shrubs during 1997–98 to restore the original tree cover in the region. The Niagara Parks Commission and the cities of Niagara Falls and Niagara-on-the-Lake are all involved with the project.

- **Threatened species habitat preserved**

A provincially significant wetland on the Lennox GS property has become home to the largest known colony of black terns in eastern Ontario. The black tern has experienced drastic population declines over the last two decades, primarily due to habitat loss. Lennox GS has designated the wetland as protected and has established a partnership with the Canadian Wildlife Service and the Kingston Field Naturalists to study the biology of the black tern in order to help ensure its continued survival.

- **Wildlife Habitat Council recognition**

The Wildlife Habitat Council, an international organization dedicated to assisting corporate landowners in the development of programs that protect, conserve and enhance wildlife habitat and biodiversity needs, has accredited Ontario Hydro's habitat management plans at Lambton GS and Darlington NGS. The plans for the two stations were submitted to the council for independent third-party professional review and accreditation. Both sites satisfied rigorous accreditation requirements and the Darlington management plan was recognized with the "rookie of the year award" for first-time accredited sites.

Eco-efficiency

Searching for the most efficient and economic ways to convert natural resources to energy typically leads to more sustainable business activities. Conversely, the search for ways to reduce environmental impacts often results in previously undiscovered economies. Some examples from 1997:

- **Greener, less costly transmission plan**

To replace an aging 115kV transmission line serving Oakville, Ontario Hydro initially chose to run a 230kV line along a route that, when announced, was opposed by a number of residents along its path. After working closely with area stakeholders and local municipal councils, Hydro investigated thirteen alternative ways to ensure long-term reliability in Oakville, a rapidly growing community. The result was a new plan that significantly reduced the number of transmission towers, had minor overall impact on the environment, used less land, was visually less intrusive and cost the least. In fact, the new plan cost \$32 million, about half the estimated cost of the original proposal.

- **Biomass gasification gets fuel from landfill**

Biomass gasification converts organic material, such as wood wastes, shredded tires, agricultural by-products, municipal solid waste and sewage, to a fuel gas by a thermo-chemical process. This conversion has the potential to very significantly reduce the amount of solid wastes sent to landfill. The gas produced is an excellent substitute for most of the diesel fuel now being used to produce energy in rural and off-grid areas in Ontario and elsewhere.

Using technology developed by Thermogenics, Ontario Hydro built and will begin testing a self-contained, highly mobile biomass-fueled gas producer. The success of this technology will likely lead to dramatic improvements in waste management practices, as waste producers will be able to manufacture bio-fuel profitably on-site from what once had to be transported and disposed in landfill sites.

Environmental Assessments

In 1997, Ontario Hydro carried out 34 environmental assessments related to small transmission and hydro-electric projects. At year-end, another seven projects were still under way.

Product Stewardship

In 1997, Ontario Hydro began to re-assess opportunities to reduce the environmental impact of its electricity manufacturing activities, the expected outcome of which is a more focused approach towards product stewardship. In 1998, Hydro will monitor and assess opportunities in a number of areas including production and use of fuels, electricity and heat; disposal of process wastes and products; and recovery of used products.

- **Fossil recycling award**

In April, the Recycling Council of Ontario awarded Ontario Hydro Fossil its Waste Minimization Award in the Outstanding Product/Service Responsibility category. The recognition was for Fossil's efforts in diverting fly ash, bottom ash and gypsum away from disposal into beneficial uses. The Council stated that "Hydro's innovative efforts are at the leading edge of diversion, are expanding demand for secondary materials and are definitely raising industrial diversion standards to new heights...a truly remarkable and award-winning accomplishment."

In 1997, Fossil diverted 595 Gg of fly ash and gypsum from landfill, or 56% of the total produced. In addition, atmospheric CO₂ was reduced by approximately 250,000 tonnes due to the use of fly ash in cement making and as a cement replacement.



- **Contaminated lands management and remediation**

Hydro owns over 1,500 power generating, transmission and distribution, and other properties, about 60 of which are surplus to Hydro's needs. Industrial operations at these sites have the potential to contaminate soil and groundwater and may pose a significant risk to the corporation.

- The Generation Company's Service Group diverted from landfill 70% of Head Office wastes, such as paper, wood products, plastics and batteries.

In 1997 senior management approved a corporate program to assess Hydro's sites and, depending on the findings, develop preventive and remediation plans.

The assessment employs a human health and environment risk-based approach for identifying priority contaminated sites across the corporation. Following the receipt of a consultant's report in early 1998 that will rank the sites in order of potential risk, Ontario Hydro will establish priorities for further action for the period 1998 to 2000, in conjunction with the Ministry of the Environment.

- **PCB Management**

There are an increasing number of Federal/Provincial regulated and voluntary programs which identify PCB as a priority substance for environmental management. In response to this challenge, Ontario Hydro incorporated its 1996 PCB Management Strategy into a comprehensive Corporate policy on PCBs, scheduled for Board approval in mid-1998. This Policy targets the destruction of approximately 80% of all in-storage PCB waste and high-level in-service PCBs by 2005, with the remainder to be destroyed by 2015.

Ontario Hydro has used external waste management facilities to destroy about 1,900 tonnes of the Corporation's high-level PCBs and PCB waste over the past three years, leaving an estimated 5,800 tonnes still to be destroyed.

4

Employee Focus

Employee Health and Safety

Ontario Hydro has a fundamental commitment to ensuring the health and safety of its employees. Hydro is morally and legally obliged to continuously strive to reduce work-related injuries in all Ontario Hydro operations to zero. The nature of much of our work makes this an often challenging goal, as the ice storm of January 1998 attests. But even in comfortable indoor environments, health and safety hazards are found. Naturally, priority and more resources must be assigned to eliminating the more potentially serious hazards employees might encounter. Nevertheless, whether in offices, on transmission towers, at nuclear or fossil generating stations, or in any of the dozens of other types of Ontario Hydro workplaces, it is the responsibility of all, the Corporation and its employees alike, to ensure that all work is performed safely.



The Corporate health and safety goal is “to have healthy employees working safely in an accident-free workplace.” Progress towards this goal is measured, at Ontario Hydro and elsewhere, by the Accident Severity Rate (ASR).

Our 1997 ASR was 53.3 days lost per million hours worked, versus an ambitious target of 50 days.

The 1997 result is a 28% improvement over the 1996 ASR and a 39% improvement over that in 1995.

These are encouraging numbers, as they show a significant and steady improvement in the state of health and safety at Ontario Hydro. Maintaining the pace of this progress is the shared objective of everyone in the Corporation.

• President’s Award for Safety

Established in 1997 to highlight Ontario Hydro’s commitment to its Corporate health and safety goal, the first President’s Award for Safety went to Transmission Projects (TP) in the Transmission Company. The award recognized the outstanding results of a five-year program to make safety the number one priority of everyone in TP. Today, TP has the best safety record of any division with a comparable workplace risk and is aiming to go through 1998 without a single lost-time injury.



President's SED Champion Award

• President's SED Champion Award

Employees who distinguish themselves through exceptional performance, innovative thinking or unique contributions to the commercial success and public image of the Corporation are recognized through Ontario Hydro's extensive Corporate awards program.

The President's Sustainable Energy Development Champion Award was created in 1995 to recognize individual or team achievements that both make Ontario Hydro more competitive and promote a more sustainable energy future.

There were three SED Champion Awards in 1997. The first went to a group of employees from the Retail Company (Barb Allen, Octavio Melo, Marc Boucher) and Corporate Business Development (Per Drewes) for their unique photovoltaic solution to the task of eliminating an overhead distribution line in Point Pelee National Park that interfered with the park's natural sanctuary setting. A rooftop photovoltaic array, combined with a battery storage system, provides a renewable energy solution for lighting and other electrical needs.

The Pilot Emission Reduction Trading (PERT) Project and the first international NO_x credit trade agreement between Ontario Hydro and Detroit Edison have two things in common. Each could lead to significant emission and cost reductions and each was made possible by the recipient of the second SED Champion Award, Brian Jantzi of the Fossil Business Unit.

Darlington's Ray Kissel was the third SED Champion Award winner in 1997. Ray strived for and received the ultimate stamp of approval from the International Organization for Standardization—certification of Darlington's environmental management system to the ISO 14001 Standard. Darlington's system, which is based on sustainable development principles, has facilitated the development of environmental management systems in the rest of the company.

Darlington's Environmental Awareness Training

Environmental awareness training is required by both the Ontario Hydro Nuclear Environmental Policy and the ISO 14001 Environmental Management System Standard. In 1997, a self-guided computer-based training programme was developed as part of the ISO-registered environmental management system at Darlington NGS. The programme comprises eight modules that provide training on areas such as biodiversity and a sustainability concept called The Natural Step, as well as more plant-specific areas. By the end of 1997, 1,350 Darlington staff had completed the training and the remaining 20% were to have been trained by February 15, 1998. All new Darlington employees are required to complete the training within their first two weeks on-site.

Ontario Hydro endeavours at all times to maintain mutually beneficial relationships with the communities it serves and additional attention in this regard is given to those communities in which Hydro has significant operations. A number of ongoing and special Corporate initiatives is aimed at fulfilling this objective of productive, healthy and sustainable Hydro/community relationships.

Public Electrical Safety

A new strategy for continuing to improve Ontario Hydro's public electrical safety performance was approved by senior management in April, 1997 and endorsed by the Environment and Public Policy Committee of the Board of Directors in July. Its goal is to make Hydro a leader among Canadian utilities in reducing injuries to the public from our operations, facilities or products. Other 1997 public safety initiatives:

- Ontario Hydro participated in a CEA-sponsored Public Safety Benchmarking Project which identified best practices in public electrical safety both within and outside of electrical utilities.
- Approximately 17,000 poles owned by Bell Canada and used jointly by Bell and Ontario Hydro were tested by Hydro staff in 1997. Improper treatment of some southern yellow pine poles has caused them to develop fungus which leads to their premature deterioration. This creates a potential hazard for the public as well as for those employees who must climb them. All poles found to be deteriorating were replaced.
- The Generation Company's Safety Services Group continued to supply public safety literature in both French and English to local utilities.
- New public safety standards were established during the year to require rigorous monitoring of Ontario

Hydro Retail's distribution stations. Hazard warning signs, security fencing and station locks must be regularly inspected to ensure that they are in place and in good repair.



- **An electrical safety CD-ROM for children 9-12 years old was developed and distributed by Ontario Hydro Retail.**

The bilingual CD uses a multi-media format that is both educational and fun for children. Through a variety of games and exercises, children learn how to recognize and avoid electrical hazards. The CD was distributed to all Ontario elementary schools and public libraries and has been integrated into Ontario Hydro's overall electrical safety education program for children. It is also available for purchase by municipal electric utilities and other Ontario Hydro customers.

- **Environmental partnerships with municipal electric utilities**

The Transmission Business Unit represents Ontario Hydro on the Municipal Electric Association's Environmental Matters Committee, providing technical support, advice and information related to a broad range of issues. Some of the issues addressed in 1997 included SF6 gas management, PCBs and the disposal of waste fluorescent lamps.

Relationships with Aboriginal Communities

- **Resolving grievances from past developments**

Ontario's First Nations communities maintain a continuing interest in environmental stewardship. The Hydroelectric Business Unit and two First Nations communities completed projects in 1997 that support this stewardship role of First Nations. The first was the dedication of a monument—called the "Settling of the Grandfathers"—to the memory of the ancestors of the Ginoogaming First Nation whose graves around Long Lac were flooded. The second was the rehabilitation and protection from erosion of Wabaseemoong First Nation's cemetery at One Man Lake. Both these projects were successfully managed by the First Nations themselves.

In these and other ways,

Ontario Hydro continues to address the grievances of First Nations relating to past developments.

Our hope is that this work will result in enhanced sustainability for both Hydro's energy projects and First Nation cultures and economies.

- **Educational Support**

Ontario Hydro continues to support several post-secondary educational awards for Aboriginal students and the Native Access Program for Engineering (NAPE) at Lakehead University. Ontario Hydro's role in NAPE was recognized this year when NAPE was selected for a Partnership Award by the Conference Board of Canada.



Working with Communities

- **Joint efforts at Bruce Nuclear Development**

The Bruce Nuclear Development has addressed First Nation concern about low-level radioactive waste management at the station through joint work with the local communities to protect an on-site Aboriginal burial site and to develop a whitefish monitoring program.

- **Land use consultation**

Ontario Hydro continues to consult with First Nation communities regarding right-of-way clearing on First Nation reserves and adjacent lands in order to address community needs for environmental protection and contracting opportunities.

Moose River Basin

In partnership with the Ontario Ministry of Natural Resources and stakeholders in the Moose River Basin, the Hydroelectric Business Unit participates in the Steering Committees of the Moose River Basin Environmental Information Partnership and the Large River Ecosystem Unit. Hydroelectric has provided funding and in-kind support to these groups to carry out fisheries and hydraulic studies. Through the Committees' activities, useful information has been gathered to help manage the Moose River resources in a sustainable way.

Environmental Commitment and Responsibility Program

Ontario Hydro supports the Environmental Commitment and Responsibility Program of the Canadian Electricity Association (CEA).

This program was launched in November 1997 and is founded on four Principles:

- To be more efficient in our use of resources;
- To reduce the adverse environmental impact of our business;
- To be accountable to our constituents;
- To ensure that our employees understand the environmental implications of their actions and have the knowledge and skills to make the right decisions.

A set of performance indicators has been developed for each principle to assess the performance of CEA member utilities and the industry as a whole, as well as to provide a basis for public reporting. The CEA will issue the first public report on industry performance in December 1998.

Corporate Citizenship

In 1997 Ontario Hydro's charitable contributions totalled \$1.48M, of which \$509,000 was contributed to SED initiatives. These initiatives covered a range of activities including support for several local community stewardship initiatives and educational programs such as York University's Haub Program.



Electric and Magnetic Fields (EMF) Issues Management

Ontario Hydro's EMF team combines strategic planning, issue management, program development and risk communication to provide information, education and best practices related to EMF concerns. In 1997, the EMF team:

- formed a partnership with several government agencies and numerous provincial electric utilities to develop an integrated response to communication, education and research issues associated with EMF;
- coordinated the completion and public release of a large study of EMF and carcinogenesis in laboratory animals. The study, which was published in

November 1997 in the scientific journal FASEB, found that long-term exposure to a continuous 60 Hz magnetic field did not affect survival, solid tumour growth or leukemia development in a specific species of female laboratory rats;

- sponsored a five year, World Health Organization International EMF Project to pool current EMF knowledge and resources from key agencies and scientific institutions in order to arrive at scientifically sound recommendations for health risk assessments of exposure to static and time-varying electric and magnetic fields;
- chaired the CEA EMF Working Group and participated in numerous international EMF Task Forces in order to assist in resolving the EMF issue;
- continued to communicate balanced, accurate and timely information to Ontario Hydro stakeholders, employees, customers, municipal utilities, international utilities and private industry. Information was provided in a number of ways, including a toll-free number, workshops, Ontario Municipal Board hearings, and Hydro information centres.

St. Lawrence River

The Hydroelectric Business Unit is a sponsor of the Natural Sciences and Engineering Research Council of Canada—Industrial Chair in Ecotoxicology and is an active participant in the St. Lawrence River Institute of Environmental Sciences. The aim of the Chair program is to use recent advances in environmental research to assess and predict the impacts of environmental problems and to develop rational management policies for environmental sustainability.

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Sustainable Development Indicators

<i>Indicator/Year</i>	1997	1996	1995	1994	1993
Energy Sources (GWh)					
Nuclear	70,200	77,700	86,200	91,100	78,500
Hydroelectric	36,400	37,600	35,300	35,500	36,800
Fossil	24,400	19,000	16,300	15,000	18,000
Total Internal Generation	131,000	134,300	137,800	141,600	133,300
Purchases	13,800	9,300	8,400	5,900	5,000
Total Energy Supply	144,800	143,500	146,200	147,500	138,400
Energy Sales (GWh)					
Primary Delivered Sales	133,300	131,700	131,600	129,500	128,000
Secondary Sales	6,400	6,100	9,200	12,600	4,800
Internal Sales	200	300	300	400	500
Diversity & Losses	4,800	5,400	5,100	5,100	5,100
Total Energy Sales & Uses	144,800	143,500	146,200	147,500	138,400
Internal Efficiency: Cumulative Savings					
Internal Savings (GWh)	1,588	1,270	803	293	–
Internal Savings Target (GWh)	1,403	1,103	600	175	–
Fuels Consumed					
Coal (Gg)	9,310	7,416	6,459	5,840	5,657
Uranium (Mg)	1,185	1,299	1,478	1,610	1,262
Ign. & CTU Oil (thousand litres)	35,624	53,173	47,969	41,060	45,269
Residual Oil (m ³)	82,861	49,808	57,756	50,657	18,194
Natural Gas (m ³)	674,302				
Fuel Conversion Efficiency					
Coal (net efficiency %)	35.2	34.6	34.2	33.81	34.38
Uranium (MWh/Kg U)	59.8	59.8	58.32	56.60	62.20
Water Spills (cms-d)	633,150	568,830	252,760	217,035	409,918

<i>Indicator/Year</i>	1997	1996	1995	1994	1993
Environmental Performance					
GHG Emissions (Gg)					
Fossil BU	22,700	18,117	15,500	14,800	19,100
Total: Corporate	23,500¹	21,232 ²	18,800 ³	18,400 ⁴	20,000 ⁵
Emission Rate (Gg/GWh)*	0.21	0.16	0.13	0.13	0.15
CFC Emissions (Mg ODSe)	1.03	1.9	2.3	31.1	32.9
Acid Gas Emissions (Mg)					
SO ₂	124,000	84,900	74,500	106,000	95,300
NO _x	43,000	35,400	29,000	30,000	36,000
Total	167,000	120,200	103,500	136,000	131,300
Acid Gas Emission Rate (Mg/MWh)					
SO ₂	0.95	0.62	0.54	0.75	0.71
NO _x	0.32	0.26	0.21	0.21	0.27
Total	1.27	0.88	0.75	0.96	0.98
Waste Management					
Fly ash Generated (Gg)	845	697	632	580	620
Fly ash Diverted (Gg)	377	352	324	210	217
Diversion Percentage	47	51	51	36	35
Gypsum Generated (Gg)					
Gypsum Generated	220	176	175		
Gypsum Diverted	218	176	57		
Diversion Percentage	99	100	33		

¹ Does not include 6500 Gg from NUGs and Imports. ² Includes 3,115 Gg from NUGs and Imports. ³ Includes 3,300 Gg from NUGs and Imports.

⁴ Includes 3,400 Gg from NUGs and Imports. ⁵ Includes 900 Gg from NUGs and Imports.

* As defined in the Greenhouse Gas Management Strategy. ** Excludes coal pile run-off of 1,520 K litres in 1994. NA not available

<i>Indicator/Year</i>	1997	1996	1995	1994	1993
Hazardous Waste					
Total Manifest (Mg)	5,163	548	3,093	3,138	2,186
Hazardous Waste by Type (Mg)					
Paints/pigments/coatings	15	0.445	22.2	46.7	29.7
Oil skimmings/sludges	141	4.5	87.9	88.4	238.7
Waste oils/lubricants	2,246	88.0	463.3	544.0	526.6
Varsols/solvents	2,039	0	2,298	1,616	1,085
PCBs (destroyed)	669	1,181	63		
Herbicides (kg active)	21,787	34,083	29,680	34,881	38,599
Radioactive Waste Management					
Used Fuel (Mg)	1,185	1,299	1,478	1,580	1,250
Used Fuel in Storage (Mg)	22,087	20,894	19,578	18,100	16,520
Low-level Wastes (m ³)	6,855	6,304	6,864	5,460	5,734
Radioactive Emissions (% of Licence Limit)					
Air	<1%	<1%	<1%	<1%	<1%
Water	<1%	<1%	<1%	<1%	<1%
Other Compliance Measures					
Opacity (% time exceeded)	0.06	2	2	0.84	0.6
Orders/Charges/Convictions	3	1	0	0	–
Spills					
Number	403	413	492	395	427
Volume Lost to the Environment (litres)	6,126	43,932	89,313	30,740**	101,138
Environment Related Expenditures (\$M)					
Capital	50	66	92	190	322
OM&A	69	88	95	100	100
Fuel	57	90	79	41	26
Total	175	244	266	331	448

<i>Indicator/Year</i>	1997	1996	1995	1994	1993
Environment Related Expenditures (by medium)(\$M)					
Air	66	100	89	83	NA
Water	36	13	7	13	NA
Waste	48	57	66	101	NA
Land	11	8	10	15	NA
Environmental Support	10	24	22	25	NA
Energy Efficiency/RETs	3	42	72	94	NA
Renewable Energy					
Renewables Generation (GWh)	36,365	37,560	35,300	35,400	36,800
Renewables as % of Total Sales (excluding purchases)	27.7	27.9	25.6	25.1	27.6
Employee Focus					
Accident Severity Rate					
Days lost/million hours worked	53.3	74.4	87	318	268
Target	50.0	80	130	–	–
Community Focus					
Number of Public Fatalities					
Electrical Contact	4	8	10	3	11
Non-electrical Contact	3	4	5	1	1
Total	7	12	15	4	12
Community Support					
Charitable Contributions (\$M)	1.48	1.98	1.76	–	–
Payments in Lieu of Taxes (\$M)	91	88	86	85	82

* As defined in the Greenhouse Gas Management Strategy. ** Excludes coal pile run-off of 1,520 K litres in 1994. NA not available

B

Performance by Business Unit (selected measures)

1997 PERFORMANCE BY BUSINESS UNIT

	<i>Nuclear</i>	<i>Fossil</i>	<i>Hydroelectric</i>	<i>Retail</i>	<i>Transmission</i>
Energy Sources (GWh)	70,200	24,400	36,400		
Internal Energy Savings (GWh)	63	88	103*	21	39
Target	60	65	115	15	20
Fuels Consumed					
Coal (Gg)		9,310			
Uranium (Mg)	1,185				
Ignition and CTU Oil (thousand litres)		35,624			
Residual Oil (m ³)		82,861			
Natural Gas (m ³)		674,302			
Acid Gas Emissions (Mg)					
SO ₂	1,185	124,000			
NO _x	344	43,000			
Total	1,529 [†]	167,000			
Planned Level		94,000			
Regulatory Limit		215,000			
Waste Management					
Fly ash Generated (Gg)		845			
Fly ash Diverted (Gg)		377			
Diversion Percentage		47			
Gypsum Generated (Gg)		220			
Gypsum Diverted (Gg)		218			
Diversion Percentage		99			

	<i>Nuclear</i>	<i>Fossil</i>	<i>Hydroelectric</i>	<i>Retail</i>	<i>Transmission</i>
Hazardous Waste					
Total Manifest (Mg)	1,631	1,773	397	898	464
Hazardous Waste (Selected types in Mg)					
Paints/pigments/coatings	12	0.6	1.3	0	0.6
Oil skimmings/sludges	97		5.8	38	0.4
Waste oils/lubricants	1,116	64	274	452	340
Varsol and solvents	406	1,600		29	4
PCBs (destroyed)	0	109	83	387**	90
Compliance					
Orders/Charges/Convictions	2	1			
Number of Spills	41	17	11	318	16
Volume Lost to the Environment (litres)	2,544	75	942	1,701	864
Environment Related Expenditures (\$M)					
Capital	17	24	3	1	4
OM&A	38	16	4	6	3
Fuel	6	51	0	0	0
Total	62	91	7	7	7
By Medium (\$M)					
Air	4.9	61	0.1	0	<0.1
Water	17.7	18	0.7	0	<0.1
Waste	32.3	8	1.8	3	2.6
Land	2.3	0.4	1.6	4	3.1
Environmental Support	4.5	3	1.3	0	1.3
Energy Efficiency/RETs	<0.1	1	1.6	<0.1	0.16
Employee Focus					
Accident Severity Rate (days lost/million hours worked)	23	116	52	168	34
Target	45	75	80	78	37

* Planned deferral of unit upgrade at R.H. Saunders to prevent water spill due to high flow.** includes 26 tonnes from former Corporate Services Group
Note: Totals may not add due to rounding. † Not included in Acid Gas Regulation Limit.

G

Glossary

Accident Severity Rate is of the number of days lost or charged due to accidents per million hours worked. This rate includes the actual days lost due to temporary total disabilities and the charged days due to permanently disabling injuries and fatalities.

Acid Gas refers to the emissions of sulphur dioxide (SO₂) and nitrous oxides (NO_x) from fossil generating plants.

Carbon Dioxide - A colourless gas found in the atmosphere and forming part of nature's lifecycle. Human activities, especially the combustion of fossil fuels, emit carbon dioxide in the atmosphere, and this is thought to affect the climate. Carbon dioxide is considered the substance that contributes most to the greenhouse effect.

Carbon Intensity Rate is the rate of emission of greenhouse gases (GHG) in teragrams per watt-hour equivalent of useful energy Hydro supplies to its customers. The target includes emissions from all sources that provide electricity to Hydro's customers, including Hydro's generation and purchases from other generators. Compliance with regulatory limits on emissions is a minimum Ontario Hydro corporate objective.

CFC - See Freons.

Chlorofluorocarbons (CFCs) are chemical compounds that are used as aerosol propellants, solvents and refrigerants. CFCs contribute to the depletion of the ozone layer and to the build-up of greenhouse gases.

CTU stands for Combustion Turbine Unit.

Electric and Magnetic Fields are invisible lines of force surrounding an electrical wire or device. They are created whenever electricity flows through a wire, whether a power line, an appliance cord or home wiring.

Emission Trading is a market-based mechanism for emissions control whereby emission reductions achieved at one source can be purchased by another source to help the latter achieve its environmental objectives at a lower cost.

Environmental Expenditures include monies spent on both natural and social environmental initiatives, whether capitalized or charged to operations, for equipment, labour, fuel and programs to manage or reduce Hydro's impacts on the environment.

Fly Ash is the fine non-combustible particulate material resulting from fossil fuel combustion that is transported out of the boiler in the flue gas and collected in an electrostatic precipitator for disposal or reuse.

Freons - Named after a Du Pont registered trademark, freons are a group of halogenated hydrocarbons where fluorine atoms, chlorine atoms or both have replaced one or several of the molecule's hydrogen atoms. Freons, or CFCs (chlorofluorocarbons) have been used as cooling agents and as expanding agents in insulation foam. As they contribute to both the depletion of the ozone layer and to the greenhouse effect, use of them is banned or is being phased out in many countries.

Giga (G) is a prefix meaning a billion (10⁹). For example, one gigawatt equals 1,000,000,000 watts.

Greenhouse Effect - Various atmospheric gases keep the earth's surface temperature at a global average of about 15 °C. Environmental scientists are concerned that changes in the atmosphere's CO₂ content, caused by human activities such as the combustion of fossil fuels, could warm the Earth's surface and increase the potential for serious environmental consequences.

HCFC (hydrochlorofluorocarbon) - An alternative to CFCs with approximately 10% of their ozone-depleting properties and greenhouse gas potential.

Ign. Oil is ignition oil that is used when starting up a fossil generating unit.

Industrial Ecology occurs when one industry's by-product becomes another industry's feedstock, thereby improving resource use efficiency and reducing environmental impacts.

Internal Energy Savings includes savings in electricity uses and losses, as well as thermal and conversion efficiency improvements at generating stations. To qualify, these improvements must increase the net GWh output of the stations and be sustainable. This indicator is a measure of how efficiently Hydro is producing, delivering and consuming energy within its facilities.

ISO 14000 - A series of international standards for environmental management systems, lifecycle assessment, environmental auditing of processes, environmental labeling, and environmental performance evaluation. The International Organization for Standardization (ISO) was founded in Geneva in 1946 and is concerned with standardization in a number of technical and non-technical fields.

Kilo (k) is a prefix meaning a thousand (10^3). For example, one kilogram equals 1,000 grams.

Kyoto Protocol - An agreement under which industrialized countries will reduce their collective greenhouse gas emissions. The agreement was reached in Kyoto, Japan, in December 1997 at a meeting arranged by the United Nations Environmental Program and attended by 160 countries.

Low NO_x Burners - A technology that reduces nitrogen oxide emissions generated in the combustion process.

Mega (M) is a prefix meaning a million (10^6). For example, one megawatt equals 1,000,000 watts.

OM&A stands for operation, maintenance and administration.

PCBs (polychlorinated biphenyls) A group of biologically persistent organic compounds containing chlorine, previously used in electrical transformers and capacitors because of their insulating capacity and fire resistance. Due their toxicity, they are being phased out and destroyed.

Primary Energy Sales are energy sales by Ontario Hydro to customers in Ontario, comprising municipal utilities, retail customers and direct industrial customers. The sales include both firm and interruptible (for direct industrial customers) sales.

RETs is an acronym for renewable energy technologies and includes solar, wind, micro-hydro, biomass and methane recovery from landfill.

Secondary Energy Sales are energy sales by Ontario Hydro to neighbouring interconnected utilities.

Signature Business Unit refers to one of three major groups within Hydro. The three SBUs are the Generation Company (comprising the Fossil and Hydroelectric businesses), the Services Company (comprising Transmission and Distribution businesses), and Ontario Hydro Nuclear.

Sustainable Development has been defined as economic development that meets the needs of the present without compromising the ability of future generations to meet their own needs (*Our Common Future*, World Commission on the Environment and Development, 1987).

Tera (T) is a prefix meaning a trillion (10^{12}). For example, one teragram equals 1,000,000,000,000 grams.





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