

Environment

Each Alcoa Canada Primary Products facility has a team of environment professionals and technicians, which are supported by a regional team that coordinates our efforts and works on shared initiatives. In environmental matters, as in matters of production, Alcoa's approach is based on the development, identification and sharing of best practices, which play an important role in achieving the objectives briefly outlined below.

Voluntary agreements, which exceed environmental regulations, were established with government authorities on various issues. This includes a 2008 agreement with Environment Canada to reduce polycyclic aromatic hydrocarbons (PAH) at the Baie-Comeau Smelter. That same year, we also signed two agreements with the Government of Québec, one to reaffirm our commitment to reducing greenhouse gas emissions, and the other regarding our environmental performance. The latter helped consolidate the agreement to modernize the Baie-Comeau Smelter.



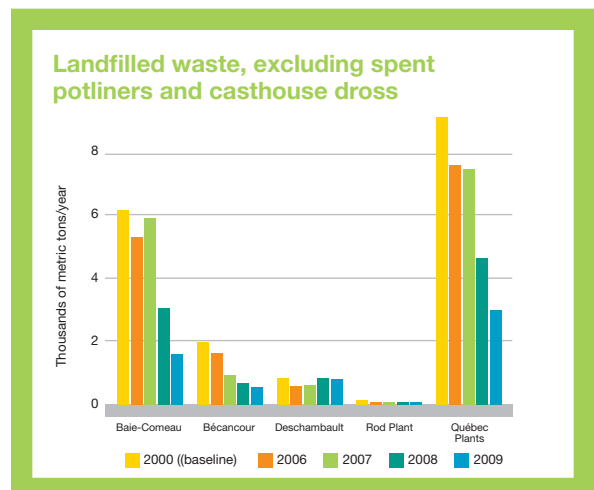
Material use and recycling

We set an ambitious objective for 2009: to reduce waste landfilled, excluding spent potliners and casthouse dross, by 60% compared to 2000. We were able to surpass our target with a reduction of 67% for all of our facilities, achieving reductions of 72% and 74% at the Bécancour and Baie-Comeau smelters, respectively. Since 2000, we have reduced, recovered, recycled or reused nearly 6,000 metric tons of waste.

All of our plants achieved the highest level of the *ICI ON RECYCLE* program, namely "Performance". Their success in reducing at the source also earned the Bécancour Rod Plant and the Deschambault Smelter a "Special Mention" from Recyc-Québec.

The spent potliners from our smelters were shipped to the Alcoa facility in Gum Springs, and 24% were recycled by U.S. cement plants in 2009. In addition, two new projects were launched at the end of the year to enable the reuse of the carbon portion of this by-product, as an alternative fuel, and of the refractory portion as a raw material for cement plants.

The quantity of casthouse dross generated in 2009 was the lowest since 2003. The substantial efforts and technical modifications made over the last few years at the Baie-Comeau Smelter, combined with the shut-down of a line of Söderberg pots at the end of 2008, and lower production of value-added metal, all contributed to reducing the amount of dross generated.



Since the company that recycled the dross from our Bécancour facilities closed down in 2008, only 54.5% of this by-product could be recycled last year. Our objective to recycle 100% of all our waste remains a priority, and we continue to actively seek new solutions.

Energy

After having achieved substantial energy savings of 127 GWh in 2007 and 349 GWh in 2008, additional reductions were more modest in 2009 as further improvements will be more difficult to attain going forward. Yet, we still were able to optimize our electricity consumption by 41.2 GWh in 2009. Consumption of No. 2 fuel oil also decreased by 250,000 GJ at the Baie-Comeau Smelter thanks to the implementation of best practices for the control of fuel consumption at the furnaces. This is a major improvement.

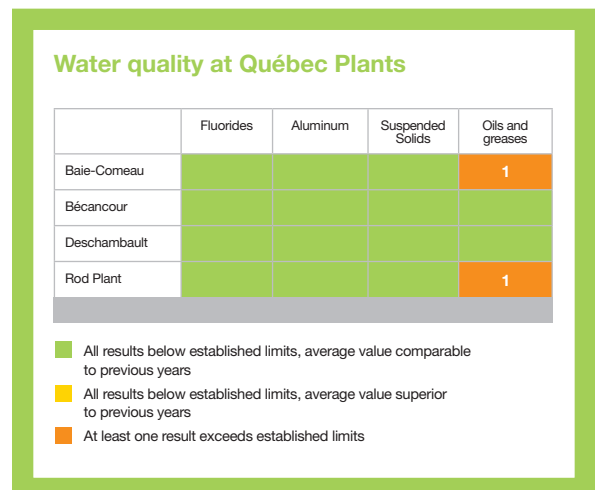
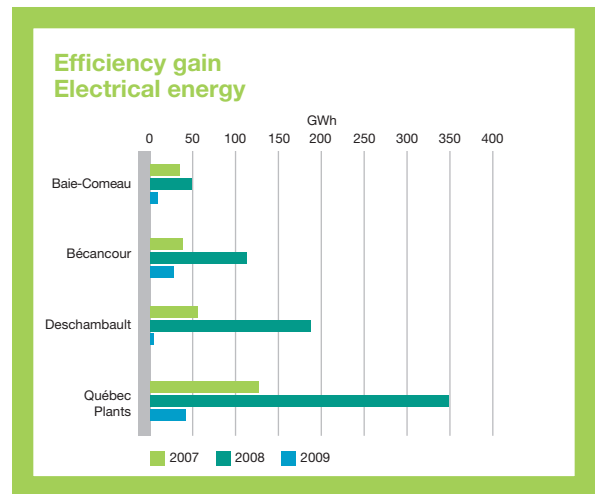
Our Bécancour and Deschambault smelters belong to the Écoélectrique network of Hydro-Québec, a grouping of top energy efficient companies. In 2009, Alcoa Canada Primary Products received a Leadership Award in the Monitoring and Tracking category as part of Natural Resources Canada's Canadian Industry Program for Energy Conservation (CIPEC). The monitoring of energy consumption at the 34 industrial furnaces at our four facilities has enabled us to achieve energy savings of 27% and to reduce GHG emissions by 15,000 metric tons per year.

Water

Consumption of both industrial and potable water decreased significantly in 2009. In fact, the use of industrial water fell by 25% throughout our network of plants, or 257,000 m³. Most of this reduction was achieved at the Baie-Comeau Smelter. These results are attributable to repairs to several gates, the sealing of leaks in pipes or equipment, as well as a review of water used for cooling compressors and reconditioning heat exchangers on this system. A designated work team was formed to continue the improvements.

Potable water consumption decreased by 54,000 m³ in 2009, or 14%. The Baie-Comeau Smelter performed outstandingly once again, achieving nearly two thirds of this reduction. After having recorded a significant increase in 2008, the Bécancour Rod Plant lowered its consumption of potable water to one of the lowest levels in its history in 2009 by automating blow-off at its casting pool.

All wastewater quality parameters at our plants were stable or improved in 2009. However, two isolated non-compliances were recorded during the year, for which action plans have been implemented.



Biodiversity

Due to the measures taken in response to the highly unfavourable economic context in 2009, the Alcoa-wide 10 Million Trees program was suspended in Québec last year. We nevertheless planted mature trees at the Boisvert school in Baie-Comeau, and our employees planted some 40 trees as part of various volunteer initiatives under the ACTION program.

As part of the environmental impact study for the Baie-Comeau Smelter modernization project, we will be testing a new World Resources Institute (WRI) tool to evaluate the dependence and impact of our future operations on the services provided by ecosystems. If the trial is conclusive, this approach could be expanded to our other plants. ([Read the case study](#))

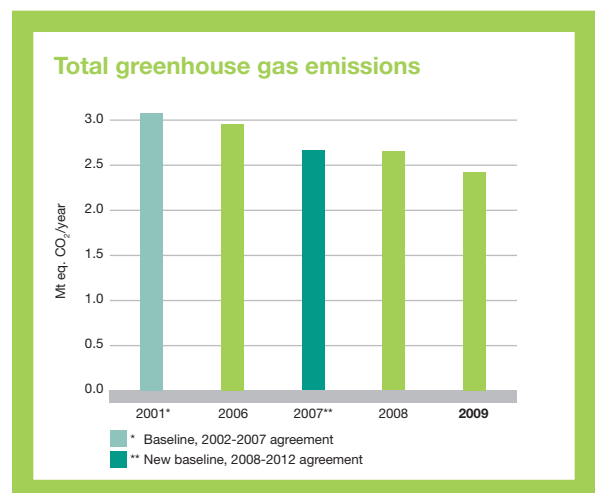
We continued our partnership with the Manicouagan-Uapishka World Biosphere Reserve, within which the Baie-Comeau Smelter is located. We supported the actions of the Reserve by contributing financially to its activities through the Alcoa Foundation. Once again, a Québec employee, Denis Drouin ([Read his diary](#)), took part in an Earthwatch expedition in 2009, as part of a sponsorship agreement between Alcoa and Earthwatch Institute.

Air emissions

Absolute greenhouse (GHG) gas emissions for Alcoa Canada Primary Products decreased in 2009. The prebake plants at our facilities recorded their best year ever for perfluorocarbon (PFC) emissions related to anodic effects. At the Baie-Comeau Söderberg plant, after a record year in 2007, performance fell below expectations in 2008 and 2009. The fact that a Söderberg line was shut down in November 2008, however, compensates for these results and total GHG emissions associated with the Söderberg process decreased in 2009. Since 2001, we have achieved an absolute reduction of 24% in total GHG emissions.

SO₂ production is essentially dependent on the percentage of sulphur found in the pitch and coke used to manufacture the anodes. A shipment of coke containing less sulphur received at the Baie-Comeau Smelter's Söderberg plant contributed to a 5% decrease in SO₂ emissions in 2009 for all of our facilities. On the R&D front, we worked on developing a treatment pilot project for the electrolysis process.

In addition, we met all of the commitments of our environmental performance agreement with the Ministère du Développement durable, de l'Environnement et des Parcs du Québec (MDDEP), as well as those of the voluntary agreement with Environment Canada on the reduction of PAH emissions at the Baie-Comeau Smelter.



2009 Objectives	Results	Comments
Zero non-compliances with environmental laws and regulations	5	Action plans were implemented in each case.
Complete the environmental impact study for the modernization of the Baie-Comeau Smelter.		Modelling to be completed in 2010
Meet the requirements of the Environmental Performance Agreement with the Ministère du Développement durable, de l'Environnement et des Parcs (Read the detailed results).		All requirements have been met. However, the additional ambient air sampling station at Baie-Comeau was only installed at the end of the year.
Meet the requirements of the voluntary agreement with Environment Canada to reduce polycyclic aromatic hydrocarbons (PAHs) emissions at Baie-Comeau (Read the detailed Results).		
Achieve perfluorocarbon (PFC) emissions of 0.43 t CO ₂ eq./t Al.	0.56	Good results were recorded in the prebake plants; there were difficulties at the Baie-Comeau Söderberg plant but with a significant improvement at year-end. We are in a good position for 2010.
Complete energy efficiency projects totalling 115 GWh in 2009-2010.	41.2 GWh	In 2009, we recorded efficiency gains of 41.2 GWh of electricity and 250,000 GJ of fuel. We will continue to pursue this target in 2010.
Reduce waste landfilled by 60% compared to 2000.	67%	

2010 Objectives

- Zero non-compliances with environmental laws and regulations.
- Meet the requirements of the Environmental Performance Agreement with the Ministère du Développement durable, de l'Environnement et des Parcs.
- Meet the requirements of the voluntary agreement with Environment Canada to reduce PAH emissions at Baie-Comeau.
- Achieve perfluorocarbon (PFC) emissions of 0.37 t CO₂ eq/t Al.
- Complete energy efficiency projects totalling 115 GWh in 2009-2010.
- Reduce waste landfilled by 10% compared to 2009.