At TransAlta, we are proud of our history as a leader in sustainable electricity production. We recognize that our operations produce significant emissions, and that we also have a responsibility to provide consistent, low-cost power. We continually pursue new sustainability solutions, while also being mindful of our impact to the environment, communities and shareholders.

Emissions management is a global challenge. Coal currently provides 40 per cent of the world’s power supply, a number that is increasing as developing countries use it as a way to cost-effectively bring the basic necessities of life to their populations. Retrofitting existing plants therefore becomes a key component of a global solution. Carbon capture and storage (CCS) is one of our best long-term strategies for carbon dioxide (CO₂) emissions management. We have launched an initiative called Project Pioneer piloting CCS at our operations west of Edmonton, Alberta. We expect to have the project operational by 2013. In the near-term, our compliance strategy leverages our years of expertise in offsets markets.

CCS is TransAlta’s long-term strategy for emissions control.

TransAlta has robust environmental management systems that are based on the ISO 14001 framework. Through 2008 we worked to standardize and improve upon these systems. We also instituted an executive environmental committee and an enterprise-wide steering committee to focus on enhancing and standardizing environmental management and reporting. An air emissions management software solution was developed to better manage the tracking of greenhouse gas emissions and provide more timely and detailed analysis and reporting. In early 2009, we introduced an environmental scorecard that standardizes the metrics that each facility tracks and reports on.

In 2008, a new risk assessment process was implemented at TransAlta that better quantifies environmental risks and clarifies mitigation required. The report is presented annually to the Board of Directors.

TransAlta uses a risk-based audit process; those operations with more associated risk are audited more frequently. This allows us to focus resources and attention where they are most needed.
In 2008, six management system audits were undertaken in addition to four compliance audits, and four audits that were project-specific. All audit findings that are not addressed within a four-month period are reported through the executive team to the Board of Directors. In 2008, for the first time since TransAlta began environment, health and safety audits in 1998, there were zero outstanding audit findings to report to the Board.

In 2008, we introduced five-year operational strategies for environmental initiatives to guide the company through the challenges of rapidly changing and inconsistent environmental policy across our operations. Our goal is zero environmental incidents; we aim to reduce incidents by 10 per cent each year to achieve this goal.

We have set targets to guide continuous improvement. Given the developing regulatory climate, our emissions targets are still being evaluated.

### Environmental Sustainability Targets

<table>
<thead>
<tr>
<th>Sustainability Focus</th>
<th>TransAlta Target &amp; Commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water</strong></td>
<td>Undertake a water audit at Alberta coal-fired power plants</td>
</tr>
<tr>
<td></td>
<td>Implement a closed loop cooling and ultra-filtration system at Sarnia</td>
</tr>
<tr>
<td></td>
<td>Increase the waste water recycled at Centralia by 10 per cent over the 2008 achievement of 50 million U.S. gallons</td>
</tr>
<tr>
<td><strong>Emissions</strong></td>
<td>Evaluate emerging technologies for greenhouse gas emissions reduction, including carbon capture and storage</td>
</tr>
<tr>
<td></td>
<td>Reduce mercury emissions by 70 per cent at Alberta operations by 2011</td>
</tr>
<tr>
<td></td>
<td>Undertake full-scale mercury technology testing at Centralia</td>
</tr>
<tr>
<td><strong>Spills and exceedances</strong></td>
<td>Reduce environmental spills or exceedances to 31, a 10 per cent reduction from 2008</td>
</tr>
<tr>
<td><strong>Waste</strong></td>
<td>Undertake a waste stream inventory in Alberta and determine a plan for reduction targets</td>
</tr>
<tr>
<td></td>
<td>Aim to reuse, recycle or recover at least 40 per cent of waste</td>
</tr>
<tr>
<td></td>
<td>Determine recycling opportunities for steel, copper, concrete and equipment from Wabamun decommissioning</td>
</tr>
<tr>
<td><strong>Energy consumption</strong></td>
<td>Quantify station service (the amount of energy consumed to produce energy) and identify opportunities for reductions</td>
</tr>
<tr>
<td><strong>Generation from renewable sources</strong></td>
<td>Continue to diversify our energy portfolio by increasing production in renewables</td>
</tr>
<tr>
<td></td>
<td>Generate a minimum of 10 per cent of electricity production from renewable sources by 2020 (capacity is currently 16 per cent)</td>
</tr>
<tr>
<td><strong>Environment, health and safety governance</strong></td>
<td>No overdue environment, health and safety audit action items reported to the Board of Directors</td>
</tr>
<tr>
<td><strong>Biodiversity</strong></td>
<td>Develop a biodiversity policy</td>
</tr>
</tbody>
</table>

*Represent 2009 targets unless indicated otherwise*
Project Pioneer underway

In April 2008, TransAlta, along with partner Alstom Canada, announced an agreement to develop a large-scale, pre-commercial carbon capture and storage (CCS) facility in Alberta. The project will pilot Alstom’s chilled ammonia process and is expected to reduce TransAlta’s annual carbon dioxide (CO₂) emissions by one million tonnes per year.

Named Project Pioneer, this undertaking is the culmination of an 18-month study by TransAlta. The announcement marked the beginning of an intensive process we expect to see completed in 2013 that will ultimately make coal-fired power generation ‘cleaner’ than natural gas-fired generation. Coal-fired generation accounts for almost half of the generating capacity in North America and is the largest source of power generation worldwide. An economically viable way to retrofit existing coal-fired infrastructure is essential. CCS is TransAlta’s long-term strategy for CO₂ emissions control.

Alstom’s technology is a post-combustion process that captures CO₂ from flue gas. It is designed to retrofit any existing coal plant. TransAlta considers the process the most promising and potentially the lowest cost solution for carbon capture.

Project Pioneer will involve retrofitting one of TransAlta’s existing Alberta coal-fired facilities with Alstom’s technology. The technology is capable of capturing approximately one million tonnes of CO₂ from the coal plant’s flue gas emissions stream.

The technology is not yet commercial, so costs are not yet economic without government support. In July 2008, the Alberta government committed to providing $2 billion for the development of CCS technology. Alberta wants five million tonnes of CO₂ captured and stored annually by 2015; Project Pioneer represents one-fifth of that amount. We applied for further funding through the Alberta government plan, and were shortlisted late in the year. Funding announcements are expected in mid-2009.

The Government of Canada has also committed to CCS funding. In April 2008, a $125 million fund to support the development of CCS technologies was announced; in April 2009, TransAlta was awarded $23 million through this initiative.

While further funding decisions are being made, work is progressing on the preliminary front-end engineering and design work for the project. Engineering and project management firms have been engaged. TransCanada PipeLines became a partner in the project in December 2008, and will design and construct the pipeline for the project.

In March 2008, TransAlta partnered with the Institute for Sustainable Energy, Environment and Economy (ISEEE), part of the University of Calgary, in the Wabamun Area Sequestration Project (WASP). WASP’s goal was to determine the viability of large volume sequestration in the area. Dialogue with local stakeholders in the Wabamun area began in early 2009.
Additionally, we are exploring the use of the captured CO₂ for enhanced oil recovery, to complement the storage solution that is planned. This involves injecting CO₂ into existing conventional oilfields, to enhance the resources being recovered.

TransAlta is one of the largest CO₂ emitters in Canada and the Pacific Northwest. We have an opportunity and a responsibility to make a meaningful and sustainable difference. CCS is a viable solution and TransAlta and Alberta are ideal testing grounds. The advancement of Project Pioneer will depend on visionary partnerships. By advancing this technology, TransAlta can unlock the potential of our coal reserves, provide low-cost energy with minimal environmental impact and lead the reduction of our industry’s carbon footprint.

**Project Pioneer Timeline**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 2008</td>
<td>U of C / TransAlta study begins at Wabamun</td>
</tr>
<tr>
<td>April 2008</td>
<td>Announcement of Project Pioneer</td>
</tr>
<tr>
<td>April 2008</td>
<td>Federal government announces funding</td>
</tr>
<tr>
<td>July 2008</td>
<td>Alberta government announces funding</td>
</tr>
<tr>
<td>December 2008</td>
<td>FEED (front-end engineering design) begins</td>
</tr>
<tr>
<td>December 2008</td>
<td>TransCanada Pipelines becomes partner</td>
</tr>
<tr>
<td>January 2009</td>
<td>Stakeholder engagement begins</td>
</tr>
<tr>
<td>July 2009</td>
<td>Alberta government announces further funding</td>
</tr>
<tr>
<td>June 2010</td>
<td>FEED study complete</td>
</tr>
<tr>
<td>Early 2010</td>
<td>Drill test well</td>
</tr>
<tr>
<td>September 2010</td>
<td>Project approval</td>
</tr>
<tr>
<td>Environmental approvals:</td>
<td></td>
</tr>
<tr>
<td>February to December 2009</td>
<td>Public meetings/presentations</td>
</tr>
<tr>
<td>May 2009 to February 2010</td>
<td>Air quality application/approval</td>
</tr>
<tr>
<td>February 2013</td>
<td>Pipeline application/approval</td>
</tr>
<tr>
<td>June 2010 to June 2011</td>
<td>Sequestration application/approval</td>
</tr>
<tr>
<td>2010</td>
<td>CCS construction begins</td>
</tr>
<tr>
<td>2012 to 2013</td>
<td>Sequestration construction</td>
</tr>
<tr>
<td>September 2012</td>
<td>CCS commissioning</td>
</tr>
<tr>
<td>January 2013</td>
<td>CCS shakedown</td>
</tr>
<tr>
<td>December 2013</td>
<td>Commercial operation date</td>
</tr>
</tbody>
</table>
Electricity produced by TransAlta through wind generation in 2008 decreased 43 gigawatt hours, 34 of which were due to curtailments imposed by the Alberta Electric System because of constraints on the overtaxed Alberta transmission system. These constraints should be addressed by a 240-kilovolt transmission line that is expected to be complete in 2010.

**What is CCS?**

CCS is a technology that reduces greenhouse gas emissions by permanently injecting and sealing CO₂ in deep underground rock formations. The same geology that developed the abundance of hydrocarbon resources in Alberta is ideally suited to the permanent storage of CO₂.

Experience with this technology in Canada and around the world has shown that CCS is safe and produces positive environmental results.

The emissions are captured right at the power generation facility, separated from other emissions, dehydrated, compressed and transported by pipeline to a storage site. There they are injected approximately two kilometres underground into the porous rock formation. The site is then sealed and monitored by experts to ensure no leakage or impact on people or the environment.

**Offsets to bridge to CCS**

In Alberta, legislation called the Alberta Climate Change and Emissions Management Act was introduced in March 2007. Facilities that emit more than 100,000 tonnes of greenhouse gases a year must reduce their emissions intensity by 12 per cent from a baseline of average emissions intensity from 2003 to 2005. Those who do not meet the 12 per cent reduction have the option to either pay $15 per tonne into a technology fund or purchase emissions offsets. The fund will be used by industry to research and develop emissions reduction technologies. Additionally, federal reporting requirements will come into effect in 2010 and will involve additional penalties.

Carbon capture and storage (CCS) is TransAlta’s long-term strategy for emissions reductions. Purchasing carbon offsets will help TransAlta meet our emissions reduction goals until CCS is commercially viable.

In March 2008, TransAlta successfully negotiated the largest offset deal in Alberta since the new regulations were announced, a transaction that meets approximately two years of the company’s entire compliance obligation. Our years of expertise in offsets trading resulted in competitive prices. The 400,000 tonnes of credits, subject to government approval, were purchased from Emissions Credits Corporation and were created through reduced tillage and no tillage systems on farms across Alberta.

During 2008 TransAlta also sold offsets, at a profit, including the first sale of wind-generated power offsets in the province. TransAlta is uniquely positioned to explore this market because of our history in offsets trading and wind power generation. Due to confidentiality agreements, details of the transactions cannot be divulged.

TransAlta submitted a draft protocol to the Alberta government in 2008 that recognizes the carbon emissions offset created by using fly ash, a by-product of coal generation, in concrete in Alberta. TransAlta worked with BlueSource, EPCOR and Ashcor and consulted academics in the creation of the proposal. A ruling on the proposal is expected in 2009.

TransAlta holds the co-chair position with an innovative organization called IPOG, or Industry Provincial Offsets Group. The purpose of IPOG is to work with the federal government to ensure a functional and effective offsets system in Canada. IPOG’s executive membership includes three Canadian provincial governments as well as several other corporations and non-profit organizations.
Wind comes of age

Wind-generated power has come of age. Once seen as an alternative or niche business, wind power now has mature technology, economic scale and healthy competition.

In February 2008, TransAlta announced the 66 megawatt (MW) Blue Trail wind power project in southern Alberta. The project will house 22 three-megawatt turbines and, once complete in 2009, will provide an annual average of 195,000 megawatt-hours per year. Blue Trail is expected to cost approximately $115 million.

An expansion of TransAlta’s Summerview wind farm in southwestern Alberta was announced in May 2008. The expansion will be located adjacent to the original site and will include 22 three-megawatt turbines. Construction is slated for late 2009. Commercial operations are expected to begin in early 2010. The expanded Summerview site will provide on average a total of 396,000 megawatt-hours each year, while offsetting 257,000 tonnes of carbon dioxide (CO₂).

TransAlta’s first east coast project, and New Brunswick’s first wind farm, was successfully completed in 2008. Through 2007 TransAlta’s wind team undertook extensive consultation and, as a result, the local community has fully embraced the project. Locals lined the roads when the turbines arrived. Subsequently, TransAlta has been asked to speak at local schools about renewable energy and at the Nature New Brunswick annual general meeting.

TransAlta continues to investigate opportunities for wind power generation in Alberta, as well as in British Columbia, Saskatchewan and elsewhere. Currently we have a memorandum of understanding with a Saskatchewan First Nation to pursue a wind project.

The company is proposing another new 69 MW wind farm development near Ardenville, approximately 13 kilometres south of Fort Macleod, Alberta. We are currently conducting analysis and fieldwork surveys to better understand how the project may interact with the social and natural environment. Community open houses were held adjacent to the site in late 2008 and at the Piikani First Nation in early 2009.

Bats

Wind generated power is known to sometimes cause bat deaths. TransAlta undertook four years of research with academics to find a solution that could be used by the wind power industry. This research determined that when the wind is strong, bats are not flying at the height of the turbines. In 2008, we tried a number of mitigation strategies, including changing turbine operations in low winds, when bats are flying. Results show that our experiment was successful, with more than a 50 per cent reduction in bat mortalities.

Why not just wind?

While opportunities abound, expansion of the wind business is still hindered by a lack of power transmission systems. Until the transmission system expands or catches up to the needs of renewable energy sources, the projects we undertake will be limited by proximity to or capacity of the existing system.

The other reason that we cannot rely on wind generated power alone is that the wind does not always blow everywhere. The need for electricity is constant and megawatts cannot be stored. Wind projects are often backed up by other sources such as hydro or thermal generation. Averaged over a typical year, a wind farm produces approximately 30 per cent of its total capacity. In comparison, hydro and thermal power plants, providing baseload, typically provide 20 to 40 per cent and 85 to 90 per cent of their rated capacity, respectively.
Exploring other options

In order to meet our environmental goals, we will need to continue to pursue new technologies. To a great extent, the technologies available today are not sufficient. Additionally, TransAlta will continue to efficiently operate our thermal facilities and look for ways to reduce or eliminate emissions, particularly through the advancement of carbon capture and storage (CCS). At the same time, we will continue to pursue renewable or ‘clean’ resources. Along with our wind power generation interests, TransAlta is investigating the following power generation options:

Cogeneration
TransAlta currently has cogeneration facilities in northern Alberta, supporting our customer Suncor at their oil sands project near Fort McMurray, as well as at Fort Saskatchewan, Alberta; Lloydminster, Saskatchewan; and Mississauga, Ottawa, Sarnia and Windsor, Ontario. The company also has interests in cogeneration facilities at Big Springs, Texas; Plattsburgh, New York; and Yuma, Arizona*. Other cogeneration facilities are being investigated as a growth possibility for future years.

Hydro
TransAlta currently has 15 hydro plants, 13 of which are in Alberta. These include two storage reservoirs in the North Saskatchewan River Basin, and six storage reservoirs and three run-of-river hydro developments in the Bow River basin. In 2008, TransAlta reviewed all of our hydro assets. In 2009, we will examine how to implement economic and environmental improvements, through upgraded technology, as well as enhanced water flow.

Geothermal
Geothermal power generation is low-risk and resource-friendly, and holds promise for more immediate growth opportunities. TransAlta currently has geothermal assets in California* and we are investigating the possibility of expanding this asset, as well as opportunities to develop additional geothermal interests.

Solar
An assessment of solar power was undertaken in 2008 by TransAlta. Developments in solar technology suggest that this solution may be as economically viable as wind power generation in 10 years. We will continue to monitor its development, as well as the possibility for government sponsorship or funding of trial projects.

Gasification
In 2007, TransAlta committed to support a four-year engineering study of coal gasification. Led by EPCOR and supported by TransAlta and SaskPower, the project is being operated under the auspices of the Canadian Clean Power Coalition (CCPC). Coal gasification is a process for converting coal partially or totally to gases. The environmental benefits of the technology are promising: burning coal-derived gases results in extremely low sulphur dioxide (SO2), nitrogen oxides (NOX) and particulate levels. Coal gasification may also offer further advantages in addressing greenhouse gases such as carbon dioxide (CO2). Results from the gasification project will be shared with all of industry.
Increasing efficiencies
Wherever we can increase the efficiency of our operations, we are able to realize environmental and economic benefits. To produce 300 megawatts (MW) of power, a thermal plant must use 20 MW. Our goal is to reduce our usage to 18 MW or lower wherever possible. Efficiency projects are constantly being evaluated. The following are current examples of our efforts.

Efficiency uprates
Uprates address the issues of aging thermal power plants. Plants are designed for optimal efficiency. As they age we can attempt to increase production efficiency by implementing updated technology and replacing older components such as steam turbines. The improved energy conversion that results from an uprate typically results in lower emissions per megawatt hour, but higher production.

An uprate usually occurs only once in a plant’s life. A 53-MW, $75 million uprate to Sundance 5 was approved in 2007, and will be completed in 2009. In January 2009, TransAlta announced two 23-MW efficiency uprates at our Keephills plants in Alberta. Both Keephills units 1 and 2 will be upgraded to 406 MW. The uprates are expected to be operational by the end of 2011 and 2012 respectively. The total capital cost of the projects is estimated at $68 million.

Uprates: a timeline

<table>
<thead>
<tr>
<th>Plant</th>
<th>MW</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sundance 6</td>
<td>44</td>
<td>2001</td>
</tr>
<tr>
<td>Sundance 4</td>
<td>53</td>
<td>2007</td>
</tr>
<tr>
<td>Sundance 5</td>
<td>53</td>
<td>2009 to be completed</td>
</tr>
<tr>
<td>Keephills 1</td>
<td>23</td>
<td>by 2011</td>
</tr>
<tr>
<td>Keephills 2</td>
<td>23</td>
<td>by 2010</td>
</tr>
</tbody>
</table>

Keephills 3
Keephills 3 is TransAlta’s only thermal power growth project. Located in the same area as our other Alberta coal-fired power plants, west of Edmonton, Alberta, it was approved in 2007 and is currently close to 60 per cent complete. The project is on schedule for commissioning in February 2011 and employs the best available technology that can be used with sub-bituminous coal. Carbon capture and storage will likely be fitted to Keephills 3 once success is proven through the upcoming pilot project.

Coal beneficiation
Regulatory applications for a coal beneficiation system for TransAlta’s Keephills and Sundance plants will be filed in 2009. Coal beneficiation removes rocks and dirt from coal and results in the ability to decrease mercury emissions and ash production. Additionally, it will reduce boiler erosion and allow us to salvage more coal seams than we can at present. If approved, the project will be commissioned in 2010.

Flex fuel at Centralia
A flexible fuel project was completed on Unit 2 of TransAlta’s Centralia operations during a maintenance turnaround in the spring of 2008. The installation of improved boiler cleaning equipment and modification of the boiler have allowed Centralia to safely and efficiently use coal from the Powder River Basin which has lower sulphur and nitrogen content than the coal at the Centralia Mine. As a result, in 2008, nitrogen oxides (NOx) emission intensity improved almost 19 per cent from 2006, before the improvements took place. Boiler modifications are scheduled to be completed on Unit 1 in 2009, completing the project.

Uprate, cycle management or repowering
Uprates are defined as modifications to existing units. Certain components are replaced or upgraded for increased capacity or improved efficiency, which is referred to as heat rate.

Life cycle investments are not intended to improve capacity and heat rate. They are undertaken to decrease risk and liability and maintain the life of a facility past the power purchase agreement period, meaning more revenue for the company. An uprate can have a positive impact on the life cycle of an asset.

Repowering could be called a large-scale uprate. The boiler might be torn down and a new one built. A repowering is a partial replacement of a unit and is usually undertaken to achieve increased capacity and heat rate.
Sulphur dioxide (SO$_2$) and NO$_x$ emissions are a focus at Alberta plants as well. New SO$_2$ and NO$_x$ regulations are expected in the 2015 timeframe in Alberta and TransAlta has entered into a preliminary $1$ million study at our Alberta operations to assess existing and new technologies.

**New control systems in Alberta**

Four of TransAlta’s six Sundance units and two of the Keephills units are slated for installation of state-of-the-art control systems. The plants, built in the 1970s and 1980s, are receiving computerized technology that in some cases replaces original equipment. The timing of the installation will be driven by our plant turnaround schedule. This approach ensures minimal disruptions to production. The new system allows for future enhancements such as emissions intensity improvements and heat rate optimization.

The Sundance 6 controls were installed in late 2008 and include four 40-inch and eight 24-inch screens on which operators monitor and control nine key processes on the unit. Operators can now view 7,500 points of data, compared to 2,500 in the former system. The entire project will cost approximately $40 million, including a $2 million simulator for training operators, and will be completed over the next four years.

**New turbines in Ontario**

TransAlta is allocating approximately $46 million for productivity upgrades to gas turbines at Ottawa, Mississauga and Windsor operations. The upgrades improve the overall efficiency of the machines and therefore reduce emissions intensity by six per cent while increasing production by nine per cent. The turbines are the same engines as used in 747 aircraft.

**Pulverizers**

TransAlta invested $6 million in 2008 to upgrade coal mills at Alberta locations. The upgrade, which will be completed in 2009, allows coal to be ground more uniformly, which will help with opacity – the amount of particulates released to the air.

**Poplar Creek steam traps**

Small changes can add up to a big impact. At Poplar Creek, our gas-fired power plant near Fort McMurray, Alberta, staff was spending a great deal of time on the heat tracing and steam trap system, which returns condensed steam back to the water and boiler system. To keep the system from freezing in cold weather, the traps would be opened, resulting in the need to replace wasted energy and increase the amount of water drawn from the Athabasca River.

In 2008, more than $500,000 was invested to address ineffective steam traps and piping. As a result, we expect to decrease our draw from the Athabasca River by one million gallons per year. The investment is expected to pay for itself within a year.

**Tackling mercury**

Mercury regulations were introduced in Alberta in 2006, that mandate at least 70 per cent of the total mercury be removed from the coal used for power generation. By January 1, 2011, mercury controls will be required at all of TransAlta’s coal-fired units in Alberta, plus those at which we have an operating interest.

In 2006, in conjunction with General Electric, we conducted a mercury control test that involved the injection of a sorbent-activated carbon at our Sundance 5 facility. Results of the test were promising; the overall capture rate consistently met the 70 per cent threshold.
From August 2007 to November 2008 a long-term pilot test was undertaken at TransAlta’s Keephills 2 facility. The test showed that the technology is viable, though to a lesser extent; we recovered 60 per cent of the mercury in the coal at Keephills 2. The difference is attributed to differences in plant technology, the age of the plant and effects of weather. We will continue to refine the process as it’s implemented at other Alberta facilities in 2009 and 2010. In addition, we continued monitoring mercury emissions at Alberta locations using mass balance and stack testing in 2008.

At TransAlta’s Centralia, Washington operations, continuous emissions monitoring systems (CEMS) for mercury were installed voluntarily in 2007. Testing of this new technology continued through 2008 and certification will take place in 2009.

In March 2009, a proposed agreement between TransAlta and the Department of Ecology was unveiled, regarding a significant step forward in improving air quality in Washington State. Key to the agreement is TransAlta’s willingness to voluntarily reduce mercury emissions by 50 per cent by 2012, and further reduce nitrogen oxides (NOx) emissions to 20 per cent below our current permit limit. TransAlta estimates US$20 to 30 million will be spent to test and install activated carbon technology. Testing will begin in 2009.

**Wabamun decommissioning**

Over the next three to four years, 30,000 to 40,000 tonnes of steel and 300 to 400 tonnes of copper will be removed from TransAlta’s Wabamun, Alberta plant, as part of the site’s decommissioning. Wabamun began operating in 1956 and is our oldest thermal facility.

The removal of steel and copper will involve 120 rail cars. A portion of the materials will be used at other TransAlta sites. Through 2008, we developed opportunities for recycling and reuse of the remaining materials and equipment.

In 2008, the removal of asbestos-contaminated soil was almost completed, with close to 370,000 tonnes of soil shipped to registered landfills. The asbestos originated in construction dumps from the early 1960s, when asbestos was not separated from other waste. The small amounts deposited at that time contaminated large amounts of soil. Removal of salt-contaminated soil was completed in 2007. In early 2009, ash, a by-product of coal combustion, was moved from the former settling pond to storage or shipped to customers. An estimated five million tonnes will be recycled into the cement industry over 20 years.

Decommissioning of Wabamun is expected to be complete by 2013. The site will be reclaimed for wildlife, industrial and commercial uses. TransAlta is in the process of constructing a 21-hectare lake in a completed area of the mine that supported the Wabamun plant, close to the Yellowhead Highway.

On the lakefront, a plot of land will be donated for a Western Grebe colony. TransAlta is working with Alberta Fish and Game to create a wildlife trust that will own the land in perpetuity. The colony of Grebes currently lives on the site. If a colony’s habitat is destroyed, the whole colony is destroyed. The colony is currently safe; the trust will ensure that it remains intact after plant decommissioning.

**Minimizing water use**

TransAlta’s Centralia plant cannot discharge wastewater during the summer months; the wastewater is too warm for the receiving stream. In years past, a very labour intensive irrigation system was used to apply the excess wastewater to land during summer. Two years ago, we began investing in a series of automated wastewater controls and a new system to allow us to recycle a portion of our wastewater into our flue gas desulphurization scrubber. The system was

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**What’s up with waste?**

TransAlta currently sends approximately $1 million worth of nonhazardous waste to landfills each year. We realize that we need to do better. We are planning a waste assessment to determine how to improve waste management, and standardize practices across the company.

**Reclamation fast facts**

In 2008, TransAlta:

- Planted 281,000 plants and 107,000 trees at our Centralia, Washington mine.
- Contoured close to 50 acres at our Highvale Mine in Alberta in preparation for reclamation.
- Salvaged one million cubic meters of subsoil and 320 cubic meters of topsoil at the Highvale mine for future reclamation.

In 2009, applications are being submitted to certify another 625 acres (253 hectares) of land in Alberta. At Centralia, TransAlta will submit 500 acres of land for phase one bond release. The terminology refers to the first stages of reclamation, in accordance with approved reclamation plans filed with the U.S. Office of Surface Mining.
commissioned during the summer of 2008, and by year-end we reached our goal of recycling 50 million gallons of wastewater, the equivalent of more than 75 Olympic-size swimming pools.

The new system reduces the amount of water requiring discharge and therefore, on a gallon-for-gallon basis, reduces the fresh water we are required to withdraw from the river for our operation. Additionally, labour and maintenance costs have been greatly reduced. Our goal is to increase this water recycling by 10 per cent annually for the next 10 years.

In Alberta, at our Sundance coal-fired power plant, TransAlta continues to operate a water treatment plant to offset the impact of our Alberta coal-fired power plant operations on lake levels. We use Lake Wabamun water for cooling, and for boiler feed water, and water captured in mining operations is diverted from the lake – a total of 11.8 million cubic meters annually, which equals about six inches of lake water. At one point our operations had created a negative impact on lake levels; TransAlta’s efforts ensured that the lake had returned to historic levels by early 2007.

In 2009, a water audit will take place at TransAlta’s Alberta coal-fired power plants. This exercise will ensure we report actual consumption at all locations, taking into account that TransAlta uses water and returns it to source, and determine net use as well as reduction initiatives. We will also implement a closed loop cooling and ultra filtration system at Sarnia and polishers at Windsor and Mississauga, which will reduce water use. Generally, water used by TransAlta evaporates in cooling ponds or is returned to source, clean.

**What’s an ash lagoon?**

At some plants, coal combustion by-products – fly ash and bottom ash – are mixed with water and pumped to an ash lagoon where the ash particles are removed by settling or flotation. The decanted water is recovered and reused in the plant’s closed loop ash system. This system prevents the ash from becoming an airborne nuisance. At other plants, fly ash is sent to a fly ash plant and bottom ash is buried in the mine and later reclaimed.

**Fly ash recycled**

Burning coal results in several by-products including fly ash, bottom ash, cenospheres and gypsum. Today, TransAlta’s by-product recycling represents a product line with revenues of approximately $39 million annually.

TransAlta’s Sundance plant sells approximately 40 per cent of its fly ash production each year to the concrete industry. Our Centralia plant has even higher utilization rates. Bottom ash is used as a substitute for gravel in roads in construction sites and it is also used as a fuel for cement production. Bottom ash is produced primarily from our Wabamun and Centralia facilities.

While sales of fly ash increased to 675,000 tonnes in 2008, compared to 660,760 tonnes in 2007, profits decreased due to transportation costs and fuel surcharges. A monthly record was set in September 2008, with the sale of 35,544 tonnes.

Fly ash is typically loaded directly into rail cars and trucks at site. When no rail cars or trucks are available it is stored in the mine and becomes part of the reclamation process.

Ash lagoon dyke slump

In July 2008, a crack was detected in a dyke at the Keephills ash lagoon that quickly turned into a slump in the lagoon wall. TransAlta notified Alberta Environment and local authorities and began taking measures to prevent a breach and mitigate any effects on the surrounding environment.

As soon as the situation occurred, an environmental and biodiversity baseline was quickly undertaken on a large wetland pond system to the north of the ash lagoon. The wetland, fish and biological assessment ensured conditions were documented in the event that the lagoon did breach and mitigation was necessary. Press releases were issued to notify the public.

TransAlta staff worked tirelessly over the following days and weeks, pumping water from the lagoon, and erecting emergency dykes to prevent the ash-laden water from entering a nearby natural pond or flooding the highway. Though Alberta Environment approved a temporary lagoon, three kilometres of pipeline were constructed to divert water coming from the plant to the Sundance plant cooling pond.

Nearby roads were readied for possible closure. In total, 110,000 cubic meters of earth were moved to raise dykes and erect temporary berms.

An environmental incident was completely avoided. Not once did the plant lose production. There were no safety incidents among the teams working round the clock for weeks to ensure the system was stable.

In November 2008, it was determined that the current situation is stable. Probes were added around the lagoon to monitor the situation. The long-term effect of this change and plans to support it are being evaluated.