

Energy and Greenhouse Gas Management Information Brief September 2009

“The combination of rising fuel prices means we are under increasing pressure to improve our energy efficiency and look to alternative energy sources.”

- Andrew Harding, President and CEO, Kennecott Utah Copper, LLC

About us

At Kennecott, sustainable development is important to our success as a producer of copper, molybdenum, gold, silver, and sulfuric acid, and to the social and financial investment we have made in our surrounding communities. We accept the common definition of sustainable development which is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

While sustainable development cannot be achieved by one organization on its own, we believe that our business can make an important contribution to the ongoing, global transition to sustainable development. The minerals and metals we produce contribute to society's needs, creating wealth to support community infrastructure, health care and education programs, and delivering financial dividends for our shareholders. Our activities also provide the means and opportunity to develop new approaches to solving the world's environmental and human development challenges, such as climate change.

We also recognize that, if not managed appropriately, some aspects of our activities have the ability to detract from sustainable development, such as options for the future use of water and land; amenity impacts on local communities; and greenhouse gas and other air emissions from our operations and the use of our products. As a result, we aim to balance the complex interaction of environmental, economic and social factors that are fundamental to our business success.

The importance of energy and greenhouse gas management

The environmental, social, and economic implications of society's current energy use patterns (and associated greenhouse gas emissions) are high profile issues – both locally and globally. Government leaders, communities, businesses, and civil society have identified climate change and energy use as areas of increasing public focus. As an

industry leader, we are committed to develop an effective response to energy issues that enhance business value. As the nation continues to strive for a decreased reliance of imported sources of energy, we are working to do our part to promote energy efficiency and the development of alternative energy sources. As a major consumer of energy, we have identified energy cost and availability and climate change as business risks.

In addition, we accept the science behind climate change, and believe that emissions of greenhouse gases (GHGs) resulting from human activities are contributing to climate change. Avoiding human caused changes to the climate are an important international goal. In order to achieve this goal the world needs reductions in emissions of GHGs.

In 2003, our parent company initiated a climate change program based on preserving and maximizing value and reputation through addressing risks and capturing opportunities. Since its inception, the program has been structured around three core themes:

- Building support for government action
- Developing low emission pathways for our products
- Taking a proactive stance at our operations to reduce GHG emissions

Our strong interest in developing certainty around suitable climate change policy and improving energy efficiency in our operations is driven by the nature of our business activities. Nearly all our activities (mining, milling, refining, smelting and ancillary operations such as railways and power stations) are energy intensive. Existing operations have targets for increasing energy efficiency, reducing energy consumption and reducing emission GHGs. This includes developing technologies that are contributing to GHG reductions and using energy more efficiently.)

Q: What are GHG emissions?

A: The [US Environmental Protection Agency](#) (USEPA) defines GHGs as gases that trap heat in the atmosphere. Some GHGs such as carbon dioxide (CO₂) occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHGs (e.g., fluorinated gases) are created and emitted solely through human activities. The principal GHGs that enter the atmosphere because of human activities are:

- [Carbon Dioxide \(CO₂\)](#): CO₂ enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement). CO₂ is also removed from the atmosphere (or “sequestered”) when it is absorbed by plants as part of the biological carbon cycle.
- [Methane \(CH₄\)](#): CH₄ is emitted during the production and transport of coal, natural gas, and oil. CH₄ emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- [Nitrous Oxide \(N₂O\)](#): N₂O is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- [Fluorinated Gases](#): Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a

variety of industrial processes. Fluorinated gases are sometimes used as substitutes for [ozone-depleting substances](#) (i.e., CFCs, HCFCs, and halons). These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases (“High GWP gases”).

Demonstrating leadership

At Kennecott, we aim to manage our energy and increase efficiency where possible. We have an opportunity to take a leadership position with governments, business partners, community groups, customers and suppliers to develop innovative and effective responses to energy issues that enhance business value by positioning ourselves to be part of the solution. This involves securing a stable energy supply to ensure continued operations. It also involves demonstrating our commitment to improved energy efficiency, technology and innovation, and alternative energy sources. With increasing energy demands and decreasing resources, we continue to partner with various groups to be a leader in finding results that will benefit future generations.

Measuring our performance

Q: How does Kennecott report its greenhouse gas emissions?

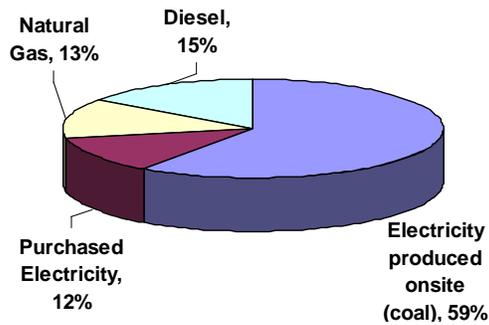
A: We measure and publicly report GHG emissions on an annual basis. In 2008, we joined [The Climate Registry](#) as founding members. The Climate Registry is a voluntary reporting system for GHG emissions. It was developed in collaboration with 39 states, including Utah, five provinces and three tribes. By joining the Registry, we will continue to report publicly on GHG emissions associated with our operations. The goal of this voluntary public reporting is to provide an accurate, complete, consistent, transparent and verified set of GHG emissions data supported by a robust reporting and verification infrastructure.

Q: What are Kennecott’s main sources of GHG emissions?

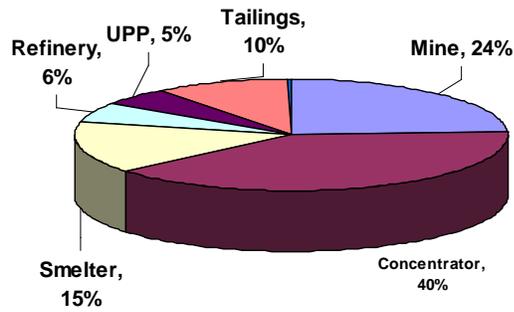
A: Our principal GHG emissions are in the form of CO₂. In 2008, we reported that our total CO₂ emissions were 1.78 million tonnes of CO₂-equivalent. (Reported emissions from previous years can be found in our [annual sustainable development reports](#).) The first graph below shows a breakdown of 2008 GHG emissions by each major energy source we use, including coal for electricity produced onsite, purchased electricity, diesel, and natural gas. The second graph below shows a breakdown of our total GHG emissions (in this case, CO₂ emissions) by plant.¹

¹ Our primary operations that consume energy include our mine, concentrator, smelter, refinery, and tailings. We also produce most of the electricity we consume at our on-site coal fired power plant (called the Utah Power Plant or the UPP).

KUC GHG Emissions by Source



KUC GHG Emissions by Plant



Q: What targets has Kennecott set to reduce or manage its energy use and GHG emissions?

A: We are actively working to improve how we manage our energy use, and are committed to improve energy efficiency across the business, as well as reduce emissions per tonne of product produced where we can. In 2003, we set aggressive, five-year GHG emission intensity and energy efficiency targets. While the specific numeric targets were not achieved at the end of the target cycle in 2008, substantial progress was made by embedding energy improvement efforts across our operation. Management against these five-year targets led to the successful implementation of more than 50 energy improvement projects and an operational energy management program. We are also aggressively studying efficient energy sources that will further diversify our overall energy supply. Aggressive, new 2008-2011 energy efficiency targets and 2008-2013 GHG emission intensity targets have been developed to help further advance our efforts. Our challenge in 2009 will be to further embed energy management strategies, advance efforts to integrate efficient sources of energy, and continue to actively manage our GHG emissions.

Reducing our impact

Q: Does Rio Tinto and Kennecott support government action on climate change?

A: We recognize that addressing the climate change challenge will require significant changes in global energy, transportation, land management, industrial and community systems and infrastructure. We are a member of the [U.S. Climate Action Partnership \(USCAP\)](#), which is an alliance of major businesses and environmental groups encouraging a practical federal cap-and-trade program to reduce GHG emissions. USCAP believes the strongest way to achieve our country’s emission reduction goals is a federal cap and trade program coupled with cost containment measures and complementary policies for technology research, development and deployment, clean coal technology deployment, lower carbon transportation technologies and systems, and improved energy efficiency in buildings, industry and appliances. In a cap and trade system, one allowance would be created for each ton of GHG emissions allowed under the declining economy-wide emission reduction targets (the “cap”). Emitters would be required to turn in one allowance for each ton of GHG they emit. Those emitters who can reduce their emissions at the lowest cost would have to buy fewer allowances and may have extra allowances to sell to remaining emitters for whom purchasing allowances is

their most cost effective way of meeting their compliance obligation. This allows the economy-wide emission reduction target to be achieved at the lowest possible cost.

Q: What energy efficiency and improvement projects is Kennecott currently pursuing?

A: Consistent with our sustainable development principles, we are committed to continual improvement in energy efficiency across the business while improving how we manage, generate and use energy. Improving our energy efficiency and managing our GHG emissions is a top business priority demonstrated by the development of a senior leadership team focused on energy and climate change, as well as the establishment of a formal company-wide energy efficiency policy. The development of an operational energy management program is helping to achieve this energy efficiency directive by accurately metering and actively managing our use of energy, managing peak loads, completing a variety of improvement projects such as improving motor and pump efficiency, lighting upgrades, light, medium and heavy duty vehicle idle reduction, haul truck idle reduction, and improving the efficiency of our industrial operations, such as our ore crushing and floatation operations. Kennecott is also evaluating additional power generation options to meet growing electrical requirements.

In addition, we are committed to ensuring that many new buildings are built to meet high efficiency standards, and in some cases meet Leadership in Energy and Environmental Design (LEED) Green Building Rating System² standards for the use of recycled building materials, increased use of natural lighting, reduced water and energy consumption, and innovative design. Most recently, our new Rio Tinto Regional Center, also known as the Daybreak Corporate Center, achieved LEED Platinum certification and is about 30% more efficient than a building of similar size and age that is built to code, and is currently the first building in Utah to receive this distinction. In addition, three of our other facilities (the Bingham Canyon Mine Administration Building, Bingham Canyon Mine Visitor's Center, and the Rio Tinto Distribution Center) have achieved some level of LEED certification.

Q: Does Kennecott get any of its energy from renewable or alternative sources?

A: Currently, we generate about 10% of our total energy needs using alternative technologies. Specifically, a waste-heat power generation system at our smelter captures waste heat from the two furnaces (the flash-smelting and converting furnaces) at the smelter's acid plant (which captures 99.9% of sulfur dioxide emissions and converts it into sulfuric acid) and uses it to generate about two-thirds of the smelter's electrical power.

We are exploring additional renewable and alternative clean energy technologies to meet its energy needs, including the addition of combined heat and power systems at two facilities. Additional options under consideration include small scale solar, wind, geothermal and hydroelectric power generation opportunities. Our LEED platinum

² LEED is the internationally accepted benchmark for the design, construction and operation of high-performance green buildings.

administration building, the Rio Tinto Regional Center in Daybreak, uses solar (located on the roof of the building) to generate a portion of the building's energy needs.

While we support these kinds of alternative energy technologies, they will continue to only provide us with a small portion of our total energy needs. We will continue to explore more conventional energy production methods to help us meet our future energy needs.

Q: What new energy technology and energy improvement opportunities is Kennecott considering?

A: We and our parent company is committed to ongoing technology development. For example, we were a founding member of the [FutureGen Alliance](#), which is a public-private partnership to design, build, and operate the world's first coal-fueled, near-zero emissions power plant. Our parent company is also involved in a joint venture with BP, and formed the new company called Hydrogen Energy, will develop hydrogen-fueled power generation using fossil fuels and carbon capture and storage technology.

Locally, we are looking at a variety of solutions to better manage energy use and GHG emissions. In addition to the improvement actions listed above, we are evaluating additional base load power generation options to meet our existing and future electrical requirements. Current evaluations underway include retrofit opportunities at the existing power plant, and possible expansion of generation capacity using combined cycle gas turbines.

Additionally, we plan to construct a new Molybdenum Autoclave Process (MAP) facility. This will enable low-grade concentrate to be processed more efficiently than in conventional roasters, allow improved molybdenum recovery and operating flexibility and enable production of chemical grade molybdenum products. The MAP design includes a number of energy conservation features and environmentally responsible technologies for producing molybdenum products. A steam recovery system will be included to capture excess steam from the autoclave for use in downstream processes. This recycling system will supply about 40 percent of the plant's thermal requirements and emit significantly less sulfur dioxide and CO₂ by processing molybdenum through MAP.

Q: What else is Kennecott doing related to energy and climate change?

A: We are exploring ways to create low emission pathways for our products (i.e., exploring how our products can be produced using alternative, more efficient, or lower GHG emitting methods), and are working with others in the industry (such as the International Molybdenum Association and Copper Development Association) to investigate new ways that the products we produce can be used to enhance energy efficiency. In our operations, we plan to continue to implement prioritized energy improvement projects which are cost effective. Future expected CO₂ prices³ are included in the economic evaluation of all capital projects. As GHGs become priced into the market, we will continue to look for ways to reduce our emissions.

³ Carbon price assumptions are based estimated carbon prices that might result from passage of climate change legislation.

Continued improvement

We have embarked on a number of different internal business improvement projects to better manage our energy use and also reduce our greenhouse gas emissions, some of which are mentioned above in this document. A summary of a few of our key projects follows:

1. Mine Truck Idling Management Project: To help manage our fuel costs and improve emissions output, a team of engineers and Six Sigma Master Black Belts is exploring reducing idling time of our haul truck vehicle while maintaining a safe and productive work environment. This project is currently in the initial stages and will continue through 2009.
2. Purchase of Hybrid and Fuel Efficient Vehicle Fleet: In 2007, our vehicle management team began replacing our aging pool vehicles available to our office-based employees with smaller, more efficient vehicles such as the Toyota Prius, Ford Escape Hybrid, and Ford Focus. To date, we have replaced 11 pool vehicles with new more fuel-efficient vehicles, 5 of which are hybrids. As more vehicles are scheduled to be replaced, we will continue to follow these replacement protocols and policies.
3. Light, Medium and Heavy Mobile Equipment Fleet Vehicle Idling Reduction Project: In 2008, we completed a vehicle idle reduction pilot project involving 28 vehicles in total (10 heavy mobile, and 18 light and medium duty vehicles), for which we won the 2009 Outstanding Achievement in Pollution Prevention Award from the Utah Department of Environmental Quality. Due to the success of this pilot in reducing idle time, fuel consumption, and emissions, over half of our entire light and medium duty fleet are now in the program. As of July 2009, the project has led to \$700,000 in fuel savings and prevented 2100 tonnes of CO₂-equivalent from being emitted.
4. Motor Inventory/Upgrade Project: A Motor Equipment Management System (MEMS) we developed that will help improve electric motor efficiency. Through the project, old or inefficient motors will begin to be replaced with premium efficiency motors as they wear out. The system will also increase the reliability and documentation of our electric motors.
5. Power System Instrumentation Upgrade: In order to reduce energy use, it is important to know what operation is using energy and when. Therefore, in 2005, a project was initiated to install meters across the property to help reduce peak demand costs by controlling power spikes across all of our operations. The scope of the Upgrade project was to install reliable plant level instrumentation to measure energy and demand that is critical to future improvements in:
 - Energy Consumption
 - Greenhouse Gas Reductions
 - System Reliability
 - Peak Demand Management.

This project has allowed managers to see precisely where power is being consumed and when it is peaking in real time so they are able to better manage and coordinate energy use in peak times across the business.