2011 IBM and the Environment Report

Committed to environmental leadership across all of IBM's business activities

IBM

IBM AND THE ENVIRONMENT

IBM has long maintained an unwavering commitment to environmental protection, which was formalized by a corporate environmental policy in 1971. The policy calls for IBM to be an environmental leader across all of our business activities, from our research, operations and products to the services and solutions we provide our clients to help them be more protective of the environment.

This section of IBM's Corporate Responsibility Report describes IBM's programs and performance in the following environmental areas:

A Commitment to Environmental Leadership

IBM's longstanding commitment to environmental leadership arises from two key aspects of its business: the intersection of the company's operations and products with the environment, and the enabling aspects of IBM's innovation, technology and expertise.

IBM's operations can affect the environment in a number of ways. For example, the chemicals needed for research, development and manufacturing must be properly managed from selection and purchase through storage, use and disposal. Our data center operations are generally energy-intensive, and some of our manufacturing processes use a considerable amount of energy, water or both. We continually look for ways to reduce consumption of these and other resources.

We design our products to be energy-efficient, using environmentally preferable materials that are capable of being reused, recycled or disposed of safely at the end of their useful lives. And as we incorporate more purchased parts and components into our products, our requirements for suppliers' overall environmental responsibility and the environmental attributes of the goods those suppliers provide to IBM are important as well.

IBM also applies its expertise, research and technology to develop solutions that can help our company and our clients be more efficient and protective of the environment. We offer the resulting innovation to help the world discover leading-edge solutions to some of the world's most challenging scientific and environmental problems.

Global Governance and Management System

IBM's Corporate Policy on Environmental Affairs calls for environmental affairs leadership in all of the company's business activities.

Global Environmental Management System

Our policy objectives range from workplace safety, pollution prevention and energy conservation to product design for the environment, continual improvement and the application of IBM's expertise to help address some of the world's most pressing environmental problems.

The policy is supported by corporate directives that govern IBM's conduct and operations worldwide. These directives cover areas such as pollution prevention, chemical and waste management, energy management and climate protection, environmental evaluation of suppliers, product stewardship, and incident prevention and reporting.

IBM's commitment to environmental protection is implemented through our Global Environmental Management System (EMS).

Employee and Management Responsibility

Every employee is expected to follow IBM's corporate environmental affairs policy and its directives and report any environmental, health or safety concern to IBM management. Managers are expected to take prompt action when faced with a potential violation of the policy or directives.

In addition, all of our employees are required by the company's Business Conduct Guidelines to comply with environmental laws and with IBM's own environmental requirements.

IBM executives are responsible for the environmental performance of their organizations. Site location executives are responsible for the environmental performance of their sites.

Our environmental programs and performance are reviewed annually by the Directors and Corporate Governance Committee of IBM's Board. Formed in 1993, the Charter for this committee established its responsibility for reviewing IBM's position and practices on significant issues of corporate public responsibility, including protection of the environment.

Environmental Goals

Environmental goals are an important part of IBM's EMS. We maintain environmental goals covering the range of our environmental programs, including climate protection, energy and water conservation, pollution prevention, waste management and product stewardship. These goals and our performance against them are discussed in their respective sections of this report, and are provided in the listing of IBM's environmental Key Performance Indicators.

ISO 14001 Standard on Environmental Management Systems

In 1997, IBM became the first major company in the world to earn a single global registration to ISO 14001. We achieved this credential within just one year of the finalization of the standard.

The initial registration covered IBM's manufacturing, product design and hardware development operations across its business units worldwide. We have since expanded our global ISO 14001 registration to include our research locations that use chemicals, several country organizations with their non-manufacturing locations, our product development function and our Global Asset Recovery Services.

As our business model has evolved to include more services offerings, we have updated our EMS to appropriately address environmental opportunities and challenges in the services area.

ISO 50001 Standard on Energy Management Systems

Upon the issuance of the ISO 50001 standard on energy management systems by the International Organization for Standardization in June 2011, IBM set forth a strategy to achieve verification of conformity of its Global EMS against this newly published standard.

Within one year of the issuance of this standard, we successfully achieved certification of IBM's energy management program at a corporate level and as an integral component of the company's Global EMS against the requirements of the ISO 50001 standard. Our approach recognizes and leverages the fact that IBM's existing Global EMS addresses both environment and energy management.

IBM's energy management program dates back to 1974, when a formal corporate policy was issued calling for the conservation of energy and materials in all of IBM's activities. In the intervening years, IBM has sustained its energy management program and integrated it into the company's Global EMS, which became certified to the ISO 14001 standard in 1997.

Public Disclosure

IBM's Corporate Policy on Environmental Affairs also calls for the company to publicly disclose information on its environmental programs and performance. This report marks IBM's 22nd consecutive year of annual corporate environmental reporting. We also participate in a number of other voluntary reporting programs, such as the Carbon Disclosure Project and the OneReport® Sustainability Reporting Network.

Environmental Evaluations of Suppliers

IBM has long been committed to doing business with environmentally responsible suppliers and was an early leader in providing requirements addressing this topic in its global EMS. Below are a few milestones of our leadership in this capacity.

- **1972**
  Established a corporate directive requiring the environmental evaluation of suppliers of hazardous waste services

- **1980**
  Expanded our environmental evaluations of suppliers by establishing a second corporate directive that required the environmental evaluation of certain production-related suppliers

- **1991**
  Further expanded our environmental evaluations of suppliers, adding a requirement that product recycling and product disposal suppliers be evaluated

- **2002**
  Nongovernmental organizations raised a concern about electronic waste being exported to some non-OECD countries. Though we confirmed that IBM was not shipping electronic waste products to non-OECD countries, we added a requirement to assess our suppliers and certain subcontractors they may use to handle recycling and/or disposal operations in non-OECD countries

- **2010**
  IBM established a requirement that all first-tier suppliers establish a management system to address their social and environmental responsibilities. Our objective in establishing this requirement was to help our suppliers build their own capability to succeed in this area.

  These suppliers are required to:

  - Define, deploy and sustain a management system that addresses

their intersections with their employees, society and the environment;
- Measure performance and establish voluntary, quantifiable environmental goals;
- Publicly disclose results associated with these voluntary environmental goals and other environmental aspects of their management systems; and
- Cascade these requirements to their suppliers who perform work that is material to the products, parts and/or services being supplied to IBM.

More information on these new supplier requirements may be found in the Supply Chain section of the latest Corporate Responsibility report and on IBM's Supply Chain Environmental Responsibility website.

Stakeholder Engagement

IBM has a variety of outreach programs through which we engage with various groups and individuals on the subject of the environment. Our community environmental outreach programs range from open houses and emergency preparedness drills with local organizations to the support of and participation in local environmental projects and environmental education efforts.

We also have ongoing dialogues with many stakeholders, including socially responsible investors and other shareholders, environmental nongovernmental organizations (eNGOs), governments, employees and others on a range of environmental issues. These dialogues are valuable, as they allow us to share ideas and obtain feedback about our programs, activities and performance.

Another example of engagement is collaborative innovation. We believe that integrating different minds and different perspectives can accelerate new solutions to longstanding problems. One avenue by which we have embraced this ideal is through IBM's Jams, an online collaborative brainstorming platform that enables global conversations on strategic business and societal issues across industries, disciplines, stakeholders and national borders. We have hosted more than 30 internal and external Jams, with results used to inform values, strategy and agendas for change and innovation.

In April 2011, IBM held the "Start Jam", which brought together hundreds of leaders from the UK and Ireland to explore how businesses can put sustainability at the heart of their strategies. Start Jam built on the success of the IBM Summit at Start, a nine-day business summit held in September 2010 in association with Start—a national initiative inspired by HRH The Prince of Wales to promote and celebrate sustainable living. The objective was to move forward from examining the value and importance of sustainability in business to determining how to affect the strategic and cultural changes required to

drive a genuine transformation in sustainability.

Another outcome of the Start summit was Energy Aid. In December 2011, IBM and the international development charity Practical Action announced the launch of Energy Aid, a new global charity with the goal of providing sustainable universal energy access for those who have limited or no access to energy for heating, lighting, cooking, communications and mechanical work. Energy Aid will provide investment and resources including data, technology, skill and research across the world's poorest areas.

As a founding partner of Energy Aid, we provided early development support from IBM employees to help get the charity off the ground and technology input to the IT and data infrastructure to support the Open Knowledge Base. This resource is aimed at increasing public awareness; sharing best practices and matching resources; and facilitating and encouraging long-term investment, all in support of achieving the goals of Energy Aid. We will continue to develop Open Knowledge Base projects utilizing our analytical and technological capabilities alongside our Smarter Energy® expertise.

Voluntary Partnerships and Initiatives

IBM is strongly committed to participation in voluntary programs and we have founded or joined many voluntary initiatives and partnerships with governmental and nongovernmental organizations over the years.

Some current governmental examples include the United States Environmental Protection Agency's (EPA) ENERGY STAR®, SmartWay® and WasteWise programs, and the European Union (EU) Code of Conduct for Energy Efficient Data Centers.

Examples of partnerships with eNGOs include our charter membership in the World Wildlife Fund's Climate Savers program and membership in the Center for Climate and Energy Solutions (the successor to the Pew Center on Global Climate Change). We also work with and support organizations such as The Conservation Fund, the Environmental Law Institute, and the World Environment Center (WEC).

In addition, we partner with other companies and institutions to foster solutions for environmental sustainability. For example, IBM is a founding member of the GridWise® Alliance, an organization representing a broad range of the energy supply chain—from utilities and technology companies to academia and venture capitalists. Its mission is to transform the electric grid to achieve a sustainable energy future.

In January 2012, IBM and the WEC announced the formation of the Innovation in Environmental Sustainability Council. Its purpose is to explore how innovation in business process and technology can enable strategic

solutions to major challenges involving materials, energy, water, infrastructure and logistics. Charter members of the Council also include Boeing, CH2M HILL, The Coca-Cola Company, The Dow Chemical Company, F. Hoffmann-La Roche AG, General Motors, Johnson & Johnson Family of Consumer Companies and The Walt Disney Company.

A more complete listing of our voluntary partnerships and initiatives may be found on IBM's Voluntary Environmental Initiatives website.

We also encourage our employees to support environmental efforts. For example, through our Matching Grants program, IBM matches contributions made by its US employees to a wide variety of environmental organizations ranging from international organizations such as The Nature Conservancy and the World Wildlife Fund to smaller groups dedicated to preserving lands and habitats in local communities.

In addition, our employees can support environmental organizations in their local communities through IBM's On Demand Community (ODC) program. ODC is a first-of-its-kind global initiative to encourage and sustain corporate philanthropy through volunteerism. It provides our employees and retirees with a rich set of IBM technology tools they can use to help schools and the nonprofit community organizations in which they volunteer, including environmental organizations. The program combines the expertise, interests and skills of our employees with the power of IBM's innovative technologies and solutions to help nonprofit organizations more effectively address community needs.

The Eco-Patent Commons

In July 2011, Hitachi Ltd. became the latest company to join the Eco-Patent Commons launched by IBM, Nokia, Pitney Bowes, Sony and the World Business Council for Sustainable Development in January 2008. Other members include Bosch, Dow, DuPont, Fuji Xerox, Hewlett-Packard, Ricoh, Tasei and Xerox.

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of the more than 100 patents pledged to the Eco-Patent Commons were pledged by IBM.

The Commons provides a unique opportunity for global business to share innovation that can foster sustainable development. It was designed to facilitate the use of existing innovation that is protective of the environment, and encourage collaboration for new innovation through an online collection of environmentally beneficial patents pledged by the member companies for free use by anyone.

Examples of the environmental benefits of patents that may be pledged to the Eco-Patent Commons include:

- Energy conservation or improved energy or fuel efficiency
- Pollution prevention (source reduction, waste reduction)
- Use of environmentally preferable materials or substances
- Water or materials use reduction

- Increased recyclability

To date, the member companies have pledged more than 100 patents to the Eco-Patent Commons, 28 of which were pledged by IBM.

Environmental Investment and Return

Over the past five years, IBM has spent $106.9 million in capital and $508.5 million in operating expense to build, maintain and upgrade the infrastructure for environmental protection at its plants and labs, and to manage its worldwide environmental programs.

Environmental Capital and Expenses Worldwide
($ in millions)

	2007	2008	2009	2010	2011
Capital	$30.0	$31.7	$14.3	$12.5	$18.4
Expense	$108.2	$111.3	$102.3	$90.6	$96.1*
Total	$138.2	$143.0	$116.6	$103.1	$114.5

* IBM modified its methodology for estimation of operating expenses in 2011 to collect information on expenses associated with compliance with worldwide environmental legal requirements for products, including costs associated with compliance with worldwide product takeback and recycling requirements.

IBM tracks environmental expenses related to the operation of our facilities worldwide, as well as environmental expenses associated with our corporate operations and site remediation efforts. In 2011, we expanded our tracking of environmental expenses to include expenses associated with compliance with environmental legal requirements related to products, including those costs incurred for compliance with product takeback and recycling requirements. Total environmental expenses associated with IBM's operations in 2011 were $114.5 million.

We also estimate the savings that have resulted from IBM's policy commitment to environmental leadership including savings from energy, material and water conservation; recycling; packaging improvement initiatives; reductions in chemical use and waste; and process improvements from pollution prevention. Ongoing savings from the previous years' initiatives are not carried over in this comparison, yielding very conservative estimates.

In addition, IBM realizes avoidance of costs that likely would occur in the absence of our Environmental Management System. These savings are not quantifiable in the same way that expenses are, but avoiding these environmental costs does result in savings for IBM, and a reasonable attempt has been made to estimate them. In 2011, IBM's estimated environmental savings and cost avoidance worldwide totaled $139.1 million.

$139.1 million
estimated environmental savings and cost avoidance worldwide in 2011.

Our experience has shown that annual savings from IBM's focus on conservation, pollution prevention and design for the environment consistently exceed environmental expenses, demonstrating the value of proactive environmental programs and performance.

2011 Environmental Expenses Worldwide
($ in millions)

Personnel	$38.0
Consultant fees	3.0
Laboratory fees	3.2
Permit fees	1.2
Waste treatment and disposal	7.0
Surface water and wastewater management operations	8.9
Air emission control operations	0.7
Groundwater protection operations	1.1
Product takeback / recycling costs	1.3
Waste and materials recycling	1.7
Superfund and former IBM site remediation	21.7
Other environmental operations	8.3
Total	$96.1

2011 Estimated Environmental Savings and Cost Avoidance Worldwide
($ in millions)

Location pollution prevention operations*	$38.0
Corporate operations*	5.9
Packaging improvements	4.3
Environmentally preferable materials usage	0.3
Energy conservation and cost avoidance	61.5
Superfund and site remediation efficiencies	0.9
Spill remediation cost avoidance**	4.9
Compliance cost efficiency***	19.2
Potential fines, penalty and litigation avoidance****	4.1
Total	$139.1

* Savings or costs avoided by having internal professional staff and tools versus using external consultants and tools.

** These savings are estimates based upon certain assumptions. The figure for spill remediation cost avoidance is estimated considering IBM's actual experience with remediation costs.

*** Compliance cost efficiency considers costs avoided through proactive efforts to stay ahead of environmental regulations and requirements.

**** The estimation for the avoidance of potential fines, penalties and litigation does not include cost avoidance of potential business interruption or fines related to noncompliance with product environmental laws and regulations (e.g., E.U. REACH or RoHS requirements).

Process Stewardship

Among its objectives, IBM's Corporate Policy on Environmental Affairs calls for our use of development and manufacturing processes that are protective of the environment.

Environmentally Preferable Substances and Materials

As an integral part of the global Environmental Management System through which we support this policy objective, we routinely and consistently monitor and manage the substances we use in our manufacturing and development processes and in our products.

Our precautionary approach includes the careful scientific review and assessment of certain substances prior to their use in IBM processes and products. In specific instances, we have chosen to proactively prohibit, restrict or substitute substances used in our processes and products when the weight of scientific evidence determines a potential adverse effect upon human health or the environment, even when law permits the use of the substance.

We also conduct scientific assessments of existing approved substances when new processes or major modifications to existing processes are being developed. The objective of these scientific assessments is to identify potential substitutes that may be environmentally preferable. We believe that the same scientific rigor is required when investigating the human health and environmental effects of potential substitutes as was applied to the investigation of the substance in use.

The following provides a sampling of IBM's early leadership in prohibiting or restricting many substances of concern from our processes and products before regulatory requirements were imposed:

- **Chlorofluorocarbons (CFCs)**
  In 1989, IBM became the first major information technology (IT) manufacturer to announce a phase-out of CFCs, a Class I ozone-depleting substance, from its products and manufacturing and development processes.

- **Class I and II ozone-depleting substances**
  IBM completed the phase-out of Class I ozone-depleting substances in 1993. Subsequently, IBM eliminated Class II ozone-depleting

substances from its products and processes in 1995.

- **Trichloroethylene (TCE), ethylene-based glycol ethers and dichloromethane**
  Examples of other chemicals that IBM voluntarily prohibited from its manufacturing processes include TCE in the late 1980s, ethylene-based glycol ethers in the mid-1990s and dichloromethane in 2003.

- **Polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs)**
  IBM prohibited PBBs and PBDEs from its product designs in the early 1990s and then extended the prohibition to purchased commodities through its procurement specifications in 1993.

- **Cadmium**
  IBM prohibited the use of cadmium in inks, dyes, pigments and paints in 1993; in plastics and plating in 1994; and in CRT monitors along with nickel cadmium batteries in the mid-1990s.

- **Polyvinyl chloride (PVC) and tetrabromobisphenol A (TBBPA)**
  IBM ceased the specification of PVC in its IT system enclosures in 2000 and prohibited the use of TBBPA as an additive flame retardant in IT system enclosures for newly released products in 2007.

- **Specific perfluorinated compounds (perfluorooctane sulfonate [PFOS] and perfluorooctanoic acid [PFOA])**
  IBM prohibited the compounds' use in the development of new materials in 2005, in new manufacturing applications in 2007, and eliminated the use of PFOS and PFOA in manufacturing, development and research processes as of January 31, 2010.

A table summarizing IBM's voluntary material prohibitions and restrictions from 1978 through 2010 may be found on our Materials use page of our website.

The IBM restrictions on specific substances and other environmental requirements for our products are identified in our Engineering Specification: Baseline Environmental Requirements for Supplier Deliverables to IBM.

Nanotechnology

Nanotechnology is the application of scientific and engineering principles to make and utilize very small things (dimensions of roughly 1 to 100 nanometers). An important aspect of nanotechnology is creating materials where their unique properties enable novel and useful application.

Nanotechnology is already part of a wide variety of products—from cosmetics and sunscreens to paints, clothing and golf equipment. It can make products lighter, stronger, cleaner, less expensive and more precise, and has been critical to advancements in the IT industry.

Our company has been a pioneer in nanotechnology. IBM scientists won a Nobel Prize for inventing the scanning tunneling microscope, enabling researchers to see atoms on a surface for the first time. We devised methods to manipulate individual atoms for the first time, developed logic circuits using carbon nanotubes and incorporated sub-nanometer material layers into commercially mass-produced hard disk drive recording heads and magnetic disk coatings.

We were also one of the first companies to create safe work practices and health and safety training for our employees working with nanoparticles. In addition, IBM, along with International SEMATECH Manufacturing Initiative (ISMI) and other semiconductor companies, is participating in a collaborative study with NIOSH (National Institute for Occupational Safety and Health) and the College of Nanoscale Science and Engineering (CNSE) of the University at Albany-SUNY to monitor potential workplace exposure to nanoparticles during chemical mechanical planarization (CMP) operation and maintenance.

IBM's current nanotechnology research aims to devise new atom- and molecular-scale structures and methods for enhancing information technologies, as well as discovering and understanding their scientific foundations. We believe these technologies can bring with them significant social and environmental benefits.

The following are highlights of research milestones during 2011:

- IBM scientists were able to measure for the first time how charge is distributed within a single molecule. This achievement will enable fundamental scientific insights into single-molecule switching and bond formation between atoms and molecules. Furthermore, it introduces the possibility of imaging the charge distribution within functional molecular structures, which holds great promise for future applications such as solar photoconversion, energy storage or molecular-scale computing devices.

- Our researchers announced the first integrated circuit fabricated from wafer-sized graphene, and demonstrated a broadband frequency mixer operating at frequencies up to 10 gigahertz (10 billion cycles/second). Designed for wireless communications, this graphene-based analog integrated circuit could improve today's wireless devices, reducing their cost, making them more energy efficient and enabling them to work where they cannot today. In addition, because of their ability to operate at higher frequencies, they hold the potential for other uses, such as conducting medical imaging without the same radiation

dangers of X-rays.

- IBM scientists created the world's smallest magnetic memory bit using only 12 atoms. This is significantly less than today's disk drives, which use about one million atoms to store a single bit of information. The ability to manipulate matter by its most basic components—atom by atom—could lead to the vital understanding necessary to build smaller, faster and more energy-efficient devices.

Our nanotechnology and nanoscience research and development also involve interactions and collaborations with partners around the world. For example, in 2011, IBM and ETH Zurich, a premiere European science and engineering university, announced the opening of the Binnig and Rohrer Nanotechnology Center located on the campus of IBM Research in Zurich, Switzerland. The facility is the centerpiece of a 10-year strategic partnership in nanoscience between IBM and ETH Zurich where scientists will research novel nanoscale structures and devices to advance energy and information technologies.

This new Nanotechnology Center also has been granted the use of the MINERGIE® quality label, a Swiss standard for sustainable and energy-efficient buildings. The Center improves its energy efficiency with the use of photovoltaics, geothermal probes and heat recovery windows.

Binnig and Rohrer Nanotechnology Center, Zurich, Switzerland

Pollution Prevention

Pollution prevention is a critical aspect of IBM's environmental efforts, and it includes, among other things, the management of hazardous waste, nonhazardous waste and chemical releases.

Hazardous Waste

The best way to prevent pollution is to reduce the generation of hazardous waste at its source. This has been a basic philosophy behind IBM's pollution prevention program since 1971. Where possible, we redesign processes to eliminate or reduce chemical use and substitute more environmentally preferable chemicals. We maintain programs for proper management of the chemicals needed for research, development and manufacturing, from selection and purchase to storage, use and final disposal.

To more effectively track IBM's hazardous waste management performance, we developed a methodology to correlate the hazardous waste generated from our North American manufacturing operations to their production in 1992 and expanded it to our manufacturing operations worldwide in 1993. We established a voluntary environmental goal based on this methodology in 1995 to drive continual reduction in the hazardous waste generated from these operations, relative to the level of production. The metric covers specific waste streams at IBM's three microelectronics manufacturing locations that can be linked to production at the locations. These three locations generate more than 90 percent of IBM's hazardous waste generation attributable to manufacturing, although not all hazardous wastes generated at these locations is indexed to production.

In 2011, IBM's hazardous waste generation indexed to production output decreased by 3.5 percent, or 88 metric tons, over 2010. This year-over-year decrease was largely attributable to source reduction projects and process line improvements located at two of our three microelectronics manufacturing sites.

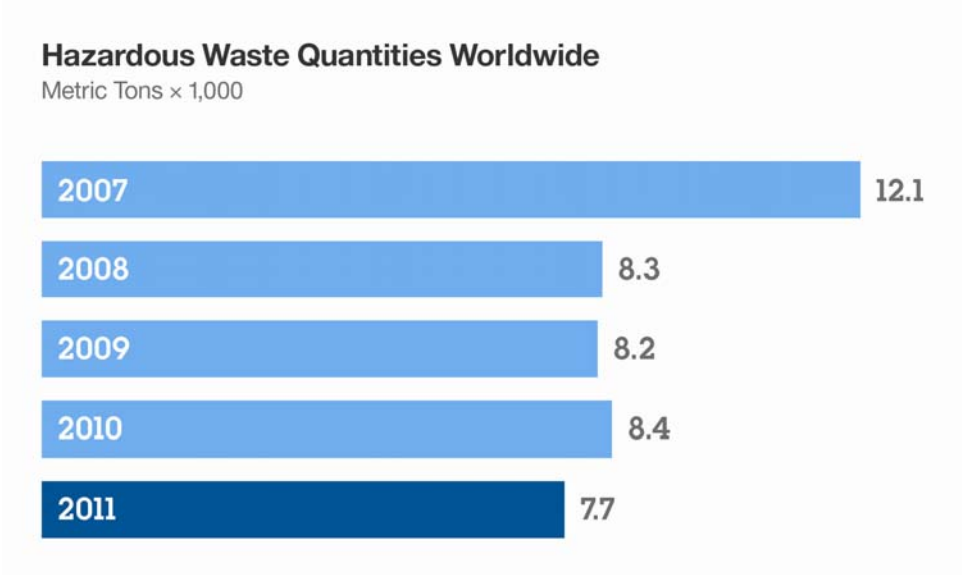
For hazardous waste that is generated, we focus on preventing pollution through a comprehensive, proactive waste management program. Of the nearly 7,700 metric tons of hazardous waste IBM generated worldwide in 2011, 44 percent was recycled and 36 percent was sent to landfills. Of the total amount sent to landfills, 85 percent was sludge from industrial wastewater treatment plants. Government regulations required disposition of this sludge in secure hazardous waste landfills.

Hazardous Waste Generation

-3.5%

In 2011, IBM's hazardous waste generation indexed to output decreased by 3.5% (88 metric tons) over 2010—achieving our goal of annual year-to-year reduction in hazardous waste generated from IBM's manufacturing processes indexed to output.

IBM's total hazardous waste generation has decreased by 36 percent or 4,360 metric tons over the past five years and has decreased by 97 percent or 220,500 metric tons since the 1987 base year of this metric.



Nonhazardous Waste

IBM also has focused for decades on preventing the generation of nonhazardous waste, and where this is not practical, recovering and recycling the materials that are generated. Nonhazardous waste includes paper, wood, metals, glass, plastics and other nonhazardous chemical substances.

We established IBM's first voluntary environmental goal to recycle nonhazardous waste streams in 1988. The goal has since developed on two fronts. The first expanded on the traditional dry waste streams to include nonhazardous chemical waste and end-of-life IT equipment from our own operations as well as IBM-owned equipment that is returned by external customers at the end of a lease. The second expansion was made to include nonhazardous waste generated by IBM in leased locations meeting designated criteria.

In 2011, IBM's operations generated approximately 70,000 metric tons of nonhazardous waste. This represents a decrease of 1,100 metric tons or 1.5 percent when compared to 2010 quantities. The reduction in waste generated was primarily due to a continued decrease in construction activities at plants and labs located in North America. This was despite an increase of 6 percent in the end-of-life IT equipment being processed from IBM operations in 2011 when compared to 2010 quantities.

Our voluntary environmental goal is to send an average of 75 percent of the nonhazardous waste generated at locations managed by IBM to be recycled. In 2011, we recovered and recycled 78 percent of our nonhazardous waste.

Nonhazardous Waste Recycling

75%

Goal

Send an average of 75% of the nonhazardous waste generated at locations managed by IBM to be recycled.

78%

Result

In 2011, IBM sent 78% of its nonhazardous waste to be recycled.

Nonhazardous Waste Generated and Recycled from IBM Locations Worldwide

(Metric Tons × 1,000)

Year	2007	2008	2009	2010	2011
Total recycled	84	62	60	56	55
Total generated	107	82	79	71	70
Percent recycled	78%	76%	76%	79%	78%

Management of Chemical Releases

Under Section 313 of the United States Emergency Planning and Community Right to Know Act (EPCRA), companies are required to file an annual inventory of reportable quantities of more than 600 chemicals that were manufactured, processed or otherwise used in quantities exceeding the reporting threshold of 10,000 pounds (4.54 metric tons) for the preceding calendar year. These reportable quantities include:

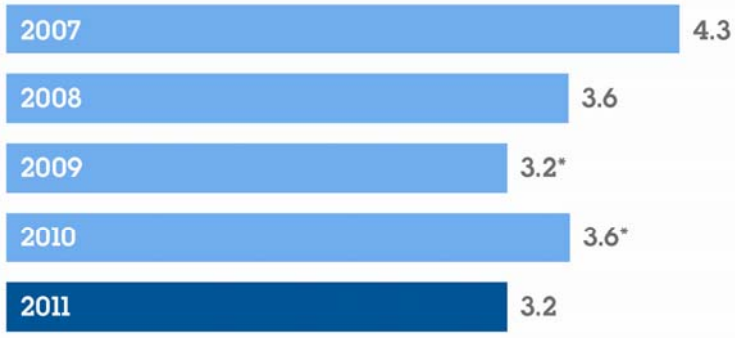
- Routine releases of chemicals to the environment (e.g., permitted air emissions, permitted water discharges, etc.)
- Chemical quantities that are treated, recycled or combusted for energy recovery on-site
- Chemical quantities that are sent off-site for recycling, combustion for energy recovery, treatment or disposal

Though this is a United States reporting requirement, we have voluntarily extended this reporting metric to cover our worldwide operations since 1994. In 2011, IBM's worldwide reportable quantities of EPCRA-listed chemicals amounted to 3,233 metric tons. More than 84 percent of this quantity was treated on-site or sent off-site for recycling or combustion for energy recovery.

2011 Worldwide Reportable Quantities of EPCRA-Listed Chemicals
(3,233 Metric Tons)

59.7%	On-site Treatment
21.1%	Off-site Recycling
15.1%	Release to Water
3.3%	Off-site Energy Recovery
0.4%	Release to Air
0.3%	Off-site Treatment
0.1%	Off-site Disposal
0.0%	On-site Recycling
0.0%	Discharge to Public Treatment Works
0.0%	Release to Land

Worldwide Reportable Quantities of EPCRA-Listed Chemicals, 2007–2011
(Metric Tons x 1,000)



*2009 and 2010 values have been revised

2011 Worldwide Reportable Quantities of EPCRA-Listed Chemicals

Chemical	Metric Tons
Sulfuric acid (aerosol only)	1,260
Nitrate compound	668
Xylene	517
Hydrogen fluoride	179
Nitric acid	168
n-methyl-2-pyrrolidone	132
Ethylbenzene	111
Ozone	42
All others	156
Total	**3,233**

IBM’s voluntary goal in this area is to achieve year-to-year reduction in routine releases of EPCRA reportable chemicals to the environment, indexed to output.

In 2011, IBM’s routine releases of EPCRA reportable chemicals to the environment indexed to output increased by 4.2 percent from the prior year. This year-over-year increase was largely attributable to process changes at one of our manufacturing sites—changes that required an increased use of ammonium and nitrate compounds, and therefore increased the final effluent nitrate discharge from that site. We continue to invest in process upgrades and treatments aimed at reducing the presence of these compounds in our effluents.

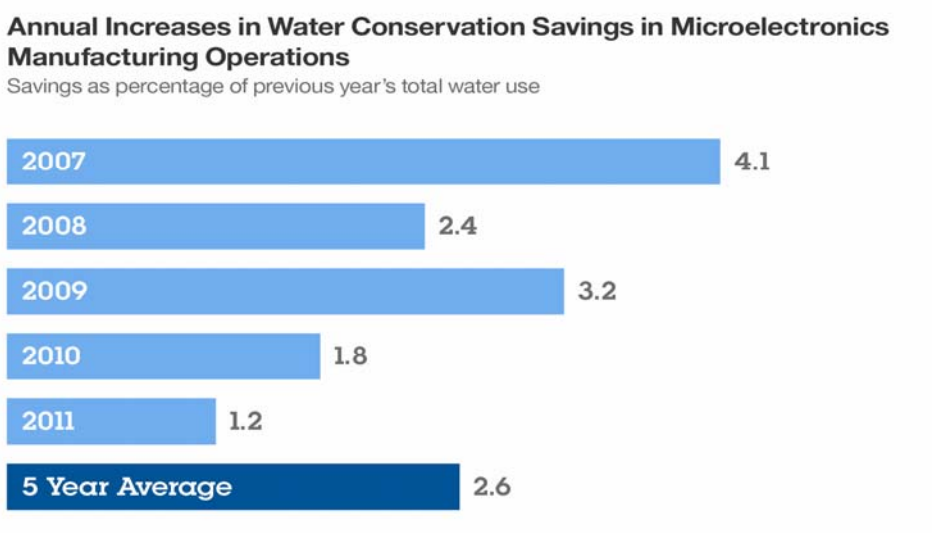
Water Conservation

The preservation and protection of the world's water supplies is a focus of IBM's internal operations and also our work with clients in building a Smarter Planet®.

Internally, IBM's microelectronics manufacturing operations are our company's most water-intensive. In 2011, these operations represented more than 80 percent—nearly 9,300 thousand cubic meters (TCMs)—of the approximately 11,500 TCMs of water used at our manufacturing operations and laboratories worldwide.

Though our microelectronics operations are not located in areas of water scarcity, in 2000 we established a water conservation goal to achieve average annual water conservation savings equal to 2 percent of IBM's annual water use at microelectronics manufacturing operations, based on the water usage of the previous year and measured over a rolling five-year period. This voluntary environmental goal measures increases in annual water conservation resulting from new water reduction projects and improvements in water reuse and recycling at these locations.

In 2011, new water conservation initiatives in IBM's microelectronics manufacturing facilities achieved an annual 1.2 percent year-to-year increase in water conservation savings over 2010 usage. Over the past five years, new water conservation initiatives at our microelectronics manufacturing facilities have achieved an average 2.6 percent water conservation savings versus the 2 percent goal.



Water Conservation in Microelectronics Manufacturing Operations

2%

Goal
To achieve an annual average water savings equal to 2 percent of total annual water usage in our microelectronics manufacturing operations, based on the water usage of the previous year and measured as an average over a rolling five-year period.

2.6%

Result
As of year-end 2011, IBM's microelectronics manufacturing operations had achieved an average annual water savings of 2.6 percent over the past five years versus the 2 percent goal.

The downward trend in IBM's reported water conservation savings over the last five years is due partly to the significant effort undertaken in the years prior to this period to improve water conservation. It is also due to the fact that new water conservation projects at these locations are seldom financially compelling or beneficial to the environment due to the low cost and high availability of water in the regions where we operate our microelectronics facilities. In addition, some new microelectronics manufacturing processes require more water for cleaning operations than in the past. We will continue to watch this trend while investigating suitable options to further drive the efficient use of water at our manufacturing operations and laboratories worldwide.

In 2011, 646 TCMs of water were conserved in our microelectronics manufacturing operations through new and ongoing reduction, reuse and recycling activities. Of this total conservation, 573 TCMs of water withdrawals were avoided through on-site water reuse, and wastewater and groundwater recycling projects. New water use reduction projects contributed a further 73 TCMs in water savings. The total accumulated conservation efforts over the past five-year period avoided the usage of 4,934 TCMs of water resource.

Product Stewardship

IBM's Product Stewardship program was established in 1991 as a proactive and strategic approach to the company's environmental design and management of products. The program's mission is to develop, manufacture and market products that are increasingly energy efficient; can be upgraded and reused to extend product life; incorporate recycled content and environmentally preferable materials and finishes; and can be recycled and disposed of safely.

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Fundamentals

IBM's product stewardship objectives and requirements are implemented through IBM's global Environmental Management System (EMS), internal standards, product specifications and other requirements in IBM's Integrated Product Development process. Product environmental attributes such as energy efficiency, materials content, chemical emissions testing, design for recycling, end-of-life management plans and packaging data must be documented and reviewed in IBM's Product Environmental Profile (PEP) tool at various checkpoints during the development process. Compliance management tools like the Product Content Declaration for IBM Suppliers support the assessments required for a complete PEP prior to product release. IBM's design and compliance controls, including a specification for Baseline Environmental Requirements for Supplier Deliverables to IBM, Product Content Declarations, and compliance assessment protocols are managed by an interdisciplinary team with representatives from all IBM organizations that design, manufacture, procure, deliver and service our product offerings. The team's activities are coordinated by IBM's Center of Excellence for Product Environmental Compliance.

Enhancing Compliance Processes

Worldwide environmental laws and regulations applicable to information technology products continue to increase, including new and expanded requirements related to product content, energy efficiency, recycling and labeling. In 2011, IBM's product development and supply chain organizations reviewed 109 new and modified environmental laws and regulations affecting information technology products in the global marketplace. In each case, compliance processes and implementation plans were tracked and executed. In addition, management system tools were enhanced to proactively inform suppliers of emerging requirements and to facilitate data collection and analysis for compliance evaluations. Examples of these tools include IBM's implementation of a new Product Content Declaration for batteries, and modification of the Product Environmental Profile tool to require transition plans for products containing certain phthalate compounds subject to provisions of the EU REACH Directive.

Development Highlights

Other key activities supporting product development in 2011 illustrate IBM's proactive efforts in science, engineering and research to advance environmentally conscious product design.

Lead (Pb) elimination: Unlike less complex consumer products, mission critical systems such as high-end server systems sold by IBM require a longer period of time to identify and qualify the non-lead based alternatives to ensure product reliability requirements are met. These uses of lead are still permitted in exemptions under the EU's Restriction of Hazardous Substances (RoHS) Directive (2011/65/EU).

To achieve elimination of these uses of lead while ensuring product reliability, we developed a systematic phase out program and supplier scorecard to track and implement engineering changes in the specifications and bills of materials for all products containing parts that use lead in compliant pin connector systems other than c-press connectors and lead in dielectric ceramic for capacitors. This effort requires the transition of more than 750 distinct parts used in nearly 250 IBM machine types. These applications will be eliminated by the end of 2012, in accordance with the EU's Directive.

Investigation of bio-based materials: An interdisciplinary team of materials scientists, procurement engineers and environmental product stewards investigated bio-based plastic materials and technologies for suitable applications for IBM's products. The project resulted in immediate implementation of a bio-based, open cell polyurethane foam for acoustic applications. The foam is fabricated from bio-based polyols derived from soybean and/or castor bean oil. IBM is continuing to work with suppliers to qualify a bio-based resin formulation with adequate flame retardancy to

replace PC/ABS (polycarbonate/acrylonitrile butadiene styrene) in thermoplastic housing parts for products.

Analytical testing for product compliance: IBM's scientists played a critical role in solving technical issues related to analytical testing methods for industry standard compliance testing of electronic products. International test standards organizations, such as the International Electrotechnical Commission (IEC), are working to develop test standards that can discern and differentiate between carcinogenic and regulated hexavalent chromium Cr(VI) versus the non-regulated and more stable species of trivalent chromium Cr(III) in plastic matrices.

The test protocol produced low results for Cr(VI) in known samples even when most of the plastics matrix was efficiently dissolved. IBM scientists discovered that antimony trioxide, a synergist often added with flame retardant compounds in these plastic resins, reacts with hexavalent chromium converting Cr(VI) to Cr(III). This interference from antimony in the plastic matrix results in erroneous quantification of hexavalent chromium. The discovery was a significant contribution toward IEC's progress in establishing a reliable test standard for Cr(VI) in plastics to confirm regulatory compliance.

2011 Product Stewardship Goals and Performance

Recycled Plastics	Recycled plastic used in IBM's products can range from 25 to 100 percent by weight of the commercial resin. In 2011, 35 percent of the total weight of plastic resins procured by IBM and its suppliers through IBM's corporate contracts for use in IBM's products were resins that contained between 25 and 100 percent recycled content. Comparing only the weight of the recycled fraction of these resins to the total weight of plastics (virgin and recycled) purchased, 12.4 percent of IBM's total weight of plastic purchases in 2011 was recycled plastic versus the corporate goal of 5 percent recyclate.
Use of Landfills	IBM's product end-of-life management operations worldwide processed more than 37,950 metric tons of end-of-life products and product waste, and sent only 0.4 percent of the total to landfills or to incineration facilities for treatment, versus IBM's corporate goal of minimizing its combined landfill and incineration rate to no more than 3 percent of the total amount processed.

Product Energy Efficiency*

Servers	IBM System p®: IBM released three models of Power Systems™ servers for which previous models or generations existed. These new servers provide reductions of 7.5 to 54 percent in the typical power consumption per unit of relative performance compared to their previous generation system. IBM System x®: The seven System x servers announced in 2011 for which comparison models existed provide reductions in watts/MTOPS** (the Japan Energy Saving Law metric) of 97 percent or greater over the previous generation server.
Point-of-Sale Terminals	IBM introduced a new Self Checkout System (SCS) in mid-year 2011 that integrates the industry standard power management capabilities of the Point-of-Sale (POS) unit (IBM SurePOS™ 700), which is the heart of the SCS. The SurePOS 700 unit controls all the components of the SCS, powering down the whole system when it is not in use and enabling wake on LAN to be used to power it on for software maintenance as well as normal daily operation. This could save a retailer hours of power-on time for each SCS. IBM did not introduce any new POS systems in 2011.
Storage Subsystems	IBM has upgraded the available hard disk drives for the IBM System Storage® DS3524, DS3524EXP, and DS8800, the IBM XIV® Storage System and the IBM Storwize® V7000 Unified Storage increasing the gigabyte/watt capacity metric by 13 to 50 percent. IBM continues to improve storage performance through its use of mixed drive systems with capacity and throughput improvements and optimization driven by software capabilities such as Easy Tier™, thin provisioning and storage virtualization.

** IBM's product energy goal is to continually improve the computing power delivered for each kilowatt-hour (kWh) of electricity used with each new generation or model of a product.*

*** MTOPS-million theoretical operations per second is a calculation of machine operations based on a specified formula.*

Product Energy Efficiency

Product energy efficiency has long been one of IBM's environmental and climate protection objectives. It was formalized as one of the company's corporate objectives when IBM's Product Stewardship program was established in 1991. We have initiated and invested in innovations and integrated solutions through collaboration between IBM's Research and product development teams. These teams have also combined hardware and software innovations to improve the energy efficiency of IT equipment and data centers.

In addition to its internal focus, IBM continues to actively assist in the development of external product energy efficiency standards. As we did in 1992 when we helped to develop and were a charter member of the United States Environmental Protection Agency (EPA) ENERGY STAR® Computer program, IBM is currently participating in the development of the ENERGY STAR specifications for server and storage devices, providing technical assistance and equipment operating data to assist in the development of criteria.

In 2009, the United States EPA finalized ENERGY STAR program requirements for computer servers. IBM added new product families to its IBM Power® 730, 740 and 750 server systems and qualified seven newly released System x server systems during 2011. As of April 2012, IBM had 15 qualified server systems available on the market—four System p and 11 System x enterprise server systems. These servers meet the United States EPA's requirements for power supply efficiency, idle power limits or power management capability, and data reporting. A list of IBM ENERGY STAR qualified servers may be found on the IBM and ENERGY STAR page.

New Advancements for Increased Product Energy Efficiency Performance

The following are examples of new IBM technologies, software and solutions that have enabled the increased energy efficiency of IBM's servers and storage products:

- IBM engineers have utilized power management capabilities provided by the System x x86 server and POWER7® processors and memory and I/O components to reduce the power drawn by the server when no workload is present (idle power) by 25 to 65 percent when compared to the power used by the system at full workload.

- Storage systems are utilizing various software-based data management capabilities such as Easy Tier, thin provisioning and storage virtualization, which can reduce the number of terabytes required to accomplish a given storage task.

- Many IBM products are incorporating high efficiency power supplies. The new System x dx360 M4, 3650 M4 and 3550 M4 servers all utilize an 80 PLUS® Platinum power supply, the highest power supply efficiency designation currently achievable under the 80 PLUS program. All System p power supplies achieved the 80 PLUS gold designation.

- IBM continues to improve server and storage system virtualization capabilities, enabling clients to increase the utilization and delivered workload from hardware investments.

    - The IBM System Storage SAN Volume Controller is a virtualization appliance that can increase storage utilization by as much as 30 percent regardless of manufacturer, and the XIV Storage System can operate efficiently at greater than 90 percent utilization.

    - IBM's System x, System p and System z® servers offer a full range of virtualization capabilities and workload systems optimized for virtualization to improve hardware utilization and increase the amount of work delivered per unit of energy consumed.

- IBM continues to innovate in semiconductor, hard drive, storage and networking technologies, utilizing virtualization and other software solutions to improve server and storage system performance for each unit of power consumed by the equipment, and to reduce the quantity of equipment required to deliver a specified set of workloads.

Innovations in Semiconductor Manufacturing

IBM's new 3D manufacturing technology is the foundation for commercial production of a Hybrid Memory Cube (HMC) that combines high-performance logic circuitry from IBM with a standard dynamic random-access memory (DRAM). The HMC provides up to 15 times faster memory in a 90 percent smaller package compared to memory products available today. The HMC requires 70 percent less energy to transfer data. Initial applications for the HMC include large-scale networking, high performance computing and industrial automation, followed by consumer products.

70%

less energy is required by the Hybrid Memory Cube while providing 15 times faster memory.

In a related effort, IBM is working with another company to jointly develop adhesives that will be used to package semiconductors into a densely stacked silicon package. The goal is to develop the industry's first "glue" that will make it possible to connect a stack of up to 100 separate chips. The process could enable the packaging of logic, memory and other types of functions into a single "brick" that would be 1,000 times faster than today's fastest semiconductors while keeping power usage low—which is key for many manufacturers, particularly those producing tablets and smartphones.

Appliance Systems

IBM is increasing our offerings of "appliance" systems which integrate hardware and software components to optimize performance and reduce energy use for the performance of specific workloads such as analytics and web applications. The IBM WebSphere® DataPower® Integration Appliance for zEnterprise® XI50z is a workload-optimized appliance that helps data and applications on different servers to communicate regardless of the type of platform. When integrated, this system can offer up to 23 times better price/performance when compared to competitive systems.

High Performance Computers (HPC)

IBM has a full menu of HPC systems: the Productive, Easy-to-Use, Reliable, Computing System (PERCS), IBM System Blue Gene®, iDataPlex®, and the Roadrunner supercomputer programs. IBM's supercomputer solutions are prevalent on both the TOP500® and Green500™ supercomputer lists. In the November 2011 Green500 List, the top five spots are held by IBM Blue Gene/Q and 12 of the next 20 spots are held by iDataPlex systems. Technologies developed through IBM's HPC development efforts are leveraged across the entire IBM Systems and Technology Group product line to improve performance and energy efficiency.

Blue Gene has been identified as a leader in "green" supercomputing for available solutions every year from 2007 through 2011. The Blue Gene/Q utilizes a hydro-air cooled system, delivering a 9 percent savings on total data center power. The relative cooling cost for a Blue Gene/Q system decreased by 50 percent over the previous generation Blue Gene/P.

The IBM iDataPlex system was designed to meet the needs of high performance, large-scale Internet and cloud computing workloads at up to 40 percent lower energy consumption than 1U industry standard servers and BladeCenter® servers. Reduced energy use is achieved due to significantly lower air flow requirements and shared cooling fans, high-efficiency power supplies and a double-wide water cooled IBM Rear Door Heat eXchanger solution that can absorb 100 percent of the heat generated by the rack and virtually eliminate the need for air conditioning. The iDataPlex system was improved with the M4 update in early 2012, which introduced an 80 PLUS platinum power supply, increased the idle to maximum power ratio to 63 percent, and offered increased computing capability.

The speed and expandability of IBM's High Performance Computing products have enabled business and science to address a wide range of complex problems and make more informed decisions—not just in the life sciences, but also in astronomy, climate, system simulations and modeling and many other applications. The use of HPC systems enable simulations of a wide range of activities, such as crash testing, vehicle or airplane designs and fuel burners, without the need to expend physical resources on prototypes or physical testing. IBM continues its leadership performance in a space-saving, power-

efficient High Performance Computing package to address the most demanding performance applications.

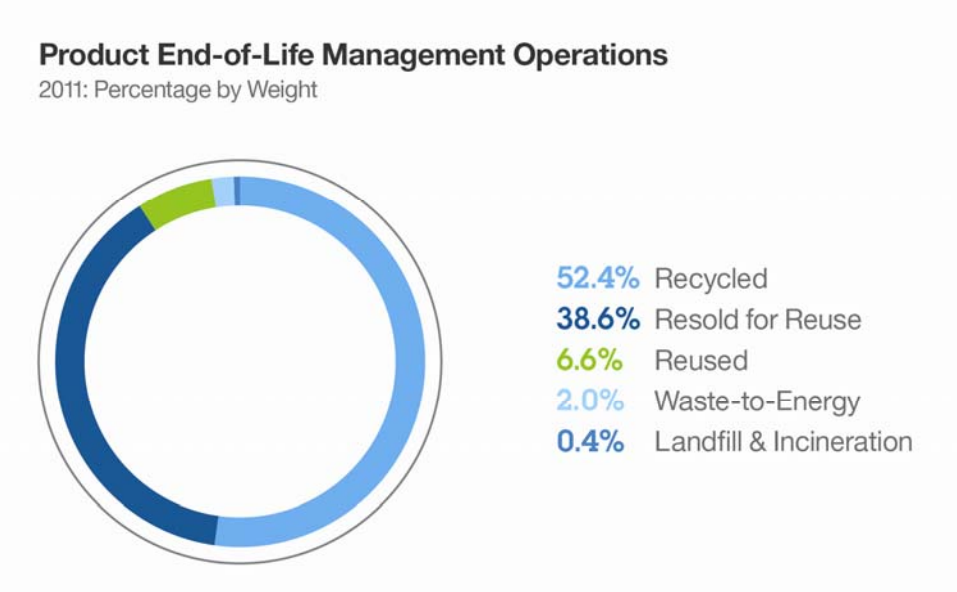
Product Recycling and Reuse

As part of our product end-of-life management (PELM) activities, IBM began offering product takeback programs in Europe in 1989, and has extended and enhanced them over the years. IBM's Global Asset Recovery Services organization offers Asset Recovery Solutions to commercial customers in countries where we do business, including:

- Management of data security and disk overwrite services
- Worldwide remarketing network for product resale
- State-of-the-art refurbishing and recycling capability for IT equipment
- Optional logistic services such as packing and transportation

In addition, in many countries and individual US states, IBM offers solutions to household consumers for the end-of-life management of computer equipment, either through voluntary IBM initiatives or programs in which we participate.

In 2011, IBM's PELM operations worldwide processed more than 37,950 metric tons of end-of-life products for reuse or recycling. This represents 60 percent of the estimated 63,400 metric tons of new IBM IT equipment put on the market in 2011.



Product End-of-Life Management (PELM)

3%

Goal
Reuse or recycle end-of-life products such that the amount of product waste sent by IBM's PELM operations to landfills or to incineration for treatment does not exceed a combined 3 percent of the total amount processed.

0.4%

Result
In 2011, IBM's PELM operations sent only 0.4 percent to landfills or to incineration facilities for treatment.

IBM's voluntary environmental goal is to reuse or recycle end-of-life products such that the amount of product waste sent by our PELM operations to landfills or to incineration facilities for treatment does not exceed a combined 3 percent of the total amount processed. In 2011, IBM's PELM operations sent only 0.4 percent to landfills or to incineration facilities for treatment.

From 1995, when we first began including product recovery in our annual corporate environmental report, through the end of 2011, IBM has documented the collection and recovery of an estimated 844,900 metric tons (over 1.86 billion pounds) of product and product waste worldwide.

Product Packaging

IBM has had a program focused on the environmental attributes of its product packaging since the late 1980s. Under the program, IBM packaging engineers design solutions that minimize toxic substances and packaging waste by specifying nontoxic materials and inks. We keep packaging to a minimum while continuing to provide protection to the product being shipped to clients, and collaborate with suppliers to use recycled and recyclable materials and promote reuse.

The design of rugged products and other optimization measures for the efficient use of protective product packaging are addressed within IBM's Product Stewardship program and associated engineering specifications. Efficient use of product packaging and less tangible environmental benefits associated with improvements in transportation efficiency are tracked though this program.

IBM's environmental requirements for product packaging are included in our Environmental Packaging Guidelines, which were first published in 1990 and have been updated as needed over the years. Key elements of IBM's Packaging Guidelines have also been embedded in various engineering specifications and procurement documents, which extend their reach beyond IBM to include our supply chain and other business partners. Find these documents on our Information for Suppliers page.

Protective Product Packaging

$4.3 million
savings in annual materials and transport costs.

In 2011, the integrated worldwide packaging engineering team saved approximately 780 metric tons of packaging materials through the implementation of 24 packaging redesign projects for parts and assemblies shipped to manufacturing operations and for packaged products supplied to clients worldwide. These projects delivered an annual materials and transport cost savings of $4.3 million. The following are highlights of a few of the key projects implemented:

- Storage system products were previously transported to customers in

China using outer wooden crates to protect against the harsh nature of the shipping environment. Following a redesign, the primary corrugated cardboard box was strengthened, which allowed the outer wooden crate to be eliminated. Wood packaging materials savings of 65 metric tons per year were achieved with corresponding annual cost savings of $416,100.

- The central processing unit option package of the IBM System x server was redesigned to eliminate the individual corrugated carton packaging for each part in the option package which consisted of processing chip, heatsink and fan module. Corrugated cardboard packaging savings of 10.8 metric tons per year were achieved with associated cost savings of $88,600 annually.

- Certain Power Systems server products were packaged individually in a pizza box with four pizza boxes per carton. After the collaborative redesign between IBM and the supplier, four systems were packaged per carton in a bulk format. The redesign provided materials savings and solid waste reductions of 20.5 metric tons and associated cost savings of $462,900 annually.

- Past Power System server chassis were packaged and shipped by the supplier to the IBM manufacturing location and the final manufactured product was then newly packaged prior to delivery to the customer. After the redesign, the chassis packaging was strengthened so it could be reused for final delivery of the completed product to the customer. The redesign eliminated the need for the use of new packaging resulting in a materials savings of 78 metric tons per year and a corresponding cost savings of $508,000 annually.

When suppliers apply the design improvements achieved through collaboration with IBM to packaging designs for other customers, the environmental benefits and cost savings can be far-reaching.

IBM's Requirement for Sourcing Packaging Materials

We established IBM's requirement for the responsible sourcing of paper and paper-/wood-based packaging in 2002. It requires that the paper and wood-based packaging directly acquired by IBM will be procured from suppliers who source from sustainably managed forests where such sources exist.

When this goal was first established, sufficient quantities of sustainably sourced packaging materials were not yet available for much of the company's needs. With a continued focus on this objective by IBM and our suppliers over the years, in 2011, 99 percent of the paper and paper-/wood-based packaging IBM procured worldwide came from suppliers who contractually warranted that the source was derived from forests managed in an ecologically sound and sustainable manner.

99%

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Product Safety

IBM's product safety requirements are included in various steps of the product development, test and manufacturing process. Our Integrated Supply Chain organization helps us ensure that our suppliers provide hardware compliant with current international requirements. Required reviews by IBM Product Safety Review Boards ensure that newly announced products comply with applicable standards and national regulations, and that IBM obtains third-party certifications where required.

Programs for continual improvement include internal and third-party assessment of IBM's product safety design and process implementation. These assessment results are fed back into the evaluation and development cycle. In addition, incident reviews provide effective capture of information and correction of product safety-related incidents.

IBM plays a leading role in the development of national, regional and international product safety standards for information technology products.

Solutions

IBM offers a variety of software and system solutions that enable companies, governments and other entities to improve the energy efficiency of their operations and systems. IBM has responded to climate protection, energy management and operational efficiency opportunities with a suite of offerings from products to services to help clients plan and develop greenhouse gas (GHG) inventory processes and management strategies to improve the efficiency of their data centers, buildings, core business processes, logistics and other operations. Four examples of our suite of "intelligent" products and services are described below.

Smarter Buildings

IBM Smarter Building Software is an advanced solution that optimizes the energy and environmental performance of buildings. This system monitors energy-consuming equipment, manages maintenance activities and reports performance using IBM software. The solution applies analytic rules to heating, cooling, lighting and power systems that identify sub-optimal conditions. It automatically identifies savings, takes immediate action to optimize performance and provides a performance dashboard for management.

We are also deploying IBM's Smarter Building technologies to increase the energy efficiency of our own facilities. We leverage these technologies to uncover opportunities to achieve further efficiency improvements above the results generated from our longstanding, strong energy conservation programs. In 2011, our IBM Intelligent Building Management solution was deployed at

10 locations with plans for deployment at an additional 18 locations in 2012. Early saving results show a reduction of 12 percent or greater of the annual operating cost of the equipment connected to the Smarter Building Solution is possible.

Route Optimization

IBM offers Cognos® and Sterling Transportation Management Software Solutions to assist companies in optimizing their freight and transportation systems to increase container/truck capacity utilization on each trip, optimize routing and improve on-time delivery. These software products assist our clients in a range of industries to improve their efficiency, and reduce their fuel use and carbon emissions.

Rosenau Transport, a midsized business specializing in regional general freight transport in Canada, equipped its fleet of trucks with on-board technology to optimize routes, reduce fuel consumption and provide clients with up-to-the-minute alerts to keep track of their shipments. A performance analysis of the telemetric information utilizing IBM Cognos software helps determine the optimal load and vehicle configuration, reducing their fuel use and carbon footprint. It enables Rosenau's customers to make informed supply chain decisions even before shipments arrive.

IBM logistics solutions are being utilized by many clients to achieve logistics efficiency.

Wind Farm Management

IBM has created a portfolio of solutions that include software, field technologies, analytics and short-range weather forecasting to help wind farm operators optimize the performance of turbines, better predict and balance power output and commercialize wind output as a trading commodity.

We offer a suite of software tools to enable the management of maintenance and operations for wind farm installations. The instrumentation and interconnectedness of the IBM Wind Power Suite generates the data for proactive alerts and work orders. Advanced analytics and insight can enable better asset management decisions in near or real-time. In turn, the whole system becomes more efficient, reliable, adaptive—in a word, smarter.

IBM also provides computing solutions to optimize the electricity generation from wind farms. We are partnering with a commercial wind turbine manufacturer to deliver improved turbine siting capability using a supercomputer to execute an IBM-designed data modeling solution to slice weeks off the analysis of turbine placement decisions. The solution also reduces response time, managing wind forecasting information to improve wind farm electricity generation. These solutions are helping to address the variability of wind resources by better forecasting electricity generation levels to enable renewables to be more efficiently integrated into the grid.

Electrical Vehicles

IBM is developing solutions to manage electric vehicles within the electricity grid system. We are involved in three levels of system design and integration:

1. **Integration of electric vehicles into the electricity grid to manage demand:**
   Many renewable sources of energy, such as solar or wind power, can be used to augment the traditional generation of electricity, but only if the sun is shining or the wind is blowing. With the introduction of electric cars on a large scale, the power grid will have significant battery storage capacity attached to it. IBM is engaged in the development of the software and systems needed to manage and integrate electric vehicles into the grid infrastructure.

2. **Design of Electric Vehicle Software systems:**
   IBM software tools have been a key contributor to the development of the Chevrolet Volt. GM engineers used IBM products to develop some of the Volt's critical electronic controls for the vehicle's innovative battery system, electric drive unit and cabin electronics.

3. **Battery Development:**
   IBM researchers, along with colleagues in other companies and organizations, including national labs, have announced plans to develop a commercially viable lithium-air battery. Such a battery would use lithium, an energy-dense, highly flammable metal, to react with the readily available oxygen in the air to provide a battery with sufficient energy density to expand the range and capabilities of electric vehicles.

Energy and Climate Programs

IBM recognizes climate change as a serious concern that warrants meaningful action on a global basis to stabilize the atmospheric concentration of greenhouse gases (GHGs). We believe all sectors of society, the economy and governments worldwide must participate in solutions to climate change.

Climate Change

IBM has been a leader in addressing climate change through its energy conservation and climate protection programs for decades. Learn more about our position and policy on climate change. IBM's leadership is defined by our:

- Longstanding global commitment
- Comprehensive and multifaceted programs—covering the company's operations, products and services
- Leading-edge innovations and client solutions
- Significant results, both early and ongoing, benefiting IBM, our clients and the world

A Five-Part Strategy

We have a five-part strategy to reduce the GHG emissions related to our operations:

1. Designing, building, updating and operating facilities, including data centers and manufacturing operations, that optimize their use of energy and materials and minimize GHG emissions
2. Purchasing electricity generated from low CO_2-emitting and renewable energy-generating sources where feasible
3. Minimizing the use and emissions of perfluorocompounds (PFCs—a family of GHGs) in semiconductor manufacturing
4. Reducing employee commuting and business travel
5. Increasing the efficiency of IBM's logistics operations

In addition, in the area of our hardware and software products and services, IBM's strategy includes designing energy efficient products and providing clients with energy efficient solutions that also help protect the climate.

IBM does not have plans to use emissions offsets to become "carbon neutral" for all or part of its operations. Our efforts to reduce IBM's GHG emissions are focused on delivering results in the areas where the company can make the greatest positive impact on climate protection—by devoting available resources to actions, products and solutions that actually increase energy efficiency and reduce GHG emissions for both IBM and our clients, rather than offsetting them.

Conserving Energy

IBM's commitment to energy conservation dates back to 1974 and has continued, unabated, over the intervening years. Energy conservation is a major component of our comprehensive, multifaceted climate protection program because the release of CO_2 by utility companies powering our facilities, or from the use of fuel for heating or cooling, represents the greatest potential climate impact associated with our operations.

In 2011, IBM's energy conservation projects across the company delivered savings equal to 7.4 percent of our total energy use versus the corporate goal of 3.5 percent. These projects avoided the consumption of 378,000 megawatt-hours (MWh) of electricity and 326,000 million BTUs of fuel oil and natural gas, representing the avoidance of 175,000 metric tons of CO_2 emissions. The conservation projects also saved $43 million in energy expense. These strong results are due to the continued, across-the-board focus on energy demand reduction, efficiency and the implementation of standard, global energy conservation strategies for facility operating systems.

IBM's energy conservation goal recognizes only identified projects that actually reduce or avoid the consumption of energy in our operations. Reductions in energy consumption from downsizings, the sale of operations and cost avoidance actions, such as fuel switching and off-peak load shifting, are not included in the results for measuring performance against achieving this goal. Moreover, the above results are conservative in that they include only the first year's savings from the conservation projects. Ongoing conservation savings beyond the first year are not included in the tally. Accordingly, the total energy savings and CO_2 emissions avoidance from these conservation actions is actually greater than this simple summation of the annual results.

Energy Conservation

3.5%

Goal
Achieve annual energy conservation savings equal to 3.5 percent of IBM's total energy use.

7.4%

Result
In 2011, IBM's energy conservation projects across the company delivered savings equal to 7.4 percent of its total energy use.

175,000
metric tons of CO_2 emissions avoided through IBM's energy conservation projects

Electricity and Fuel Use and Related CO_2 Emissions
Scope 1 and 2 CO_2 Emissions

Year	Electricity and Fuel Use (thousand MMBTU)	CO_2 (EST) (metric tons x 1,000)
2007	23,638	2,541
2008	22,443	2,502
2009	21,507	2,436
2010	21,622	2,156
2011	21,758	2,182

IBM uses the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard developed by the World Resources Institute and the World Business Council for Sustainable Development for estimating and reporting its CO_2 emissions.

CO_2 emissions data includes the CO_2 avoidance associated with IBM's purchases of renewable energy.

Between 1990 and 2011, IBM saved 5.8 billion kWh of electricity consumption, avoided 3.7 million metric tons of CO_2 emissions (equal to 55 percent of the company's 1990 global CO_2 emissions) and saved $442 million through its annual energy conservation actions.

Our global energy management program leverages the expertise of more than 40 IBM energy management professionals deployed around the world. The team has created best-practices checklists that set minimum expectations for building systems and operations, including controls and equipment for lighting, HVAC, central utility plants (CUPs), compressed air, data center and IT systems, cafeterias and office systems. All IBM sites using 2,000 MWh/year or more of energy must complete the checklists, perform a gap analysis and develop an energy conservation implementation plan a minimum of every three years. The program is buttressed by several enterprise-level databases that collect and store energy-use data, conservation project results and completed checklists, enabling monthly metrics reporting to the management team. The continuous review of energy use and conservation performance has driven the strong results noted above.

We use a full range of energy efficiency initiatives in achieving our results. In 2011, more than 2,300 energy conservation projects were completed at 364 IBM locations around the world. Some examples:

- Projects to match building lighting and occupancy schedules or to install more efficient lighting systems were implemented at 203 locations, reducing electricity use by 16,220 MWh and saving $1.9 million.

5.8 billion kWh
of electricity conserved,

3.7 million
metric tons of CO_2 emissions avoided and

$442 million
saved between 1990 to 2011 through IBM's annual energy conservation actions

- HVAC systems or operating schedules were modified at 155 locations, reducing electricity use by 41,870 MWh and fuel use by 97,130 MMBTU, saving $5.2 million.

- CUP projects were implemented at over 60 locations:

    - Boiler and chiller optimization projects reduced electricity use by 12,330 MWh and natural gas use by 2,790 MMBTU, saving $1.4 million.

    - Free cooling projects reduced electricity use by 11,890 MWh and natural gas use by 1,700 MMBTU, saving $1.6 million.

    - Equipment upgrades reduced electricity use by 14,900 MWh and natural gas use by 2,500 MMBTU, saving $1.6 million.

- Re-commissioning projects at 12 locations delivered reductions of 14,800 MWh of electricity use and 32,100 MMBTU of fuel use, saving $1.2 million.

IBM is also implementing innovative, leading-edge technologies that enable real-time management of energy use. We are deploying IBM's Smarter Building technologies to increase the energy efficiency of our own facilities. In 2011, IBM deployed this solution at 10 of its highest energy consuming facilities with an additional 18 locations planned for deployment in 2012. In two of the initial projects, the IBM Rochester, Minnesota, and Silicon Valley Lab, California, facilities reduced energy consumption associated with air handlers by 12 percent and 8.3 percent respectively. Together, the energy reductions at these two sites generated significant savings. When fully deployed, the Smarter Building application will be used at facilities that represent 50 percent of IBM's energy usage—reducing consumption, eliminating GHG emissions and saving an estimated $5 million in annual operating expense by 2015.

Data Centers

IBM manages a diverse portfolio of data centers, consisting of both IBM and IBM-managed customer facilities all over the world. IBM also operates additional raised floor space to support our internal operations as well as design and test centers for our Systems and Technology Group and Software Group.

We take a holistic approach to managing our data center portfolio, building new, high-efficiency data center space where we need to expand our raised floor space to meet the needs of existing and new customers, and retrofitting and improving existing data center space to increase utilization and derive more workload per area, equipment and energy resources. These efforts are accomplished through the following initiatives:

1. Building new high-efficiency data center space. IBM's most recent data center expansions in the United States have achieved LEED® certification and use state-of-the-art design and system techniques to enable PUE measurements of 1.4 to 1.6 when the data center is fully populated. PUE (Power Usage Effectiveness) is the ratio of the total power required at the data center divided by the power required to operate the IT equipment.

2. Implementing best practices and thermal monitoring programs at our existing data centers to optimize cooling delivery and minimize energy use and cost.

3. Virtualizing and consolidating existing workloads for our internal operations and customer accounts, and utilizing cloud computing capabilities where it provides leverage to our operations and our client operations. Virtualizing workloads allows a single server to support multiple applications or images, making use of the full capabilities of state-of-the-art IT equipment and executing more workload in less space with less energy.

New Data Center Construction

IBM's most recent data center expansion, constructed in 2011 in New Zealand, uses state-of-the-art design and system techniques to enable PUE measurements of less than 1.4 when the data center is fully populated. The data center has several leadership characteristics:

- **Smarter data center management:** Intelligent building systems connect IT equipment with the centralized energy consumption analysis system, constantly measuring power, water and fuel use in real-time to identify opportunities to conserve energy in line with demand.

- **Free-flow cooling:** Energy consumption is reduced by taking advantage of free cooling—using the outside air to cool the data center, and rain water stored in over-sized underground pipes for cooling tower make-up. By extracting heat through plate exchangers connected to each cooling tower, this free cooling is made possible for longer periods, even in Auckland's sub-tropical climate. The facility also uses the cool temperatures of the public water supply to pre-cool outside air before releasing it to the data center systems.

- **Variable speed fans:** The data center cooling system uses variable speed fans with directed air flow into the raised floor space, dampers on the perforated floor tiles to manage cooling air flow, and a ducted air return system to optimize the efficiency and coverage of the cooling air delivery.

- **Building standards:** The entire structure is built to a targeted Building

Green Star rating of four stars, a targeted Office Green Star rating of five stars and a targeted Data Center Green Grid Level 2 rating.

- **Cloud computing capability:** Built to global IBM cloud architecture specifications, the data center is enabled for virtualization, auto provisioning, metering and billing, and integrated service management to allow clients to access IT resources as they are needed.

Existing Data Centers

In 2011, we completed 228 projects at 86 existing data center locations that reduced energy use by over 33,700 MWh, and saved more than $3.8 million. These projects included blocking cable and rack openings, rebalancing air flow, and shutting down, upgrading and reprovisioning air flow from computer room air conditioning units. Total savings from these projects are equivalent to the energy use of a 4,000 to 6,000 square meter IBM strategic data center.

$3.8 million

saved by 228 energy conservation projects at 86 existing data center locations that reduced energy use by a total of over 33,700 MWh

IBM's Measurement & Management Technologies, a thermal monitoring management system, was installed at 40 data centers. This innovative technology from IBM Research produces a real-time three-dimensional thermal map of the detailed heat sources and sinks within a data center, allowing for accurate identification and mitigation of data center hot spots and increased data center operating temperatures, with attendant reductions in cooling requirements.

As an example, implementation of best practices, thermal balancing of the raised floor, and increasing the raised floor temperature by 2°F at IBM's Rochester, New York, data center achieved an annual 7.3 percent reduction in energy use in the raised floor area.

Our Global Technology Services business unit initiated a program to verify that x86 servers have power management capabilities enabled when they are installed in IBM data centers. Based on server purchase data and a conservative estimate of idle to maximum power ratio and server utilization rates, this effort is estimated to have reduced electricity use across IBM data centers by 5,000 MWh in 2011.

System Virtualization and Cloud Computing:

Virtualizing workloads allows a single system to support multiple applications or images, making use of the full capabilities of state-of-the-art IT equipment and executing more workload in less space with less energy.

IBM is utilizing virtualization technologies to consolidate multiple workloads from servers and storage systems with low utilization onto single systems, reducing energy use and cost by more than 142,000 MWh and $16.5 million in 2011. IBM has virtualized more than 90,000 applications in our owned/leased data centers in the past three years, moving them from single-use systems to either existing or new virtualized servers or storage systems, and we are continuing to implement virtualization projects at a similar pace in 2012, with

an expectation of similar results in improved operational efficiency and lowered capital and operating costs.

We expanded IBM's cloud computing programs over the course of 2010 and 2011. Cloud computing is an efficient model for providing IT services, representing a computing services model that optimizes the use of virtualization technologies. It allows us to better balance workloads, adjust power consumption and virtualize infrastructure in data centers to better align processing needs with power consumption. IBM has established a globally integrated cloud delivery network with centers in New Zealand, Singapore, Germany, Canada and the United States, including the leadership data centers in Raleigh, North Carolina, and Boulder, Colorado, along with 13 global cloud labs.

Voluntary Data Center Energy Efficiency Initiatives

In January 2012, the European Commission (EC), the executive body of the European Union (EU), awarded 27 IBM Data Centers in 15 different countries in the EU with "Participant" status in Data Center Energy Efficiency, based on the EU Code of Conduct (CoC) for Energy Efficient Data Centers. The registered data centers represent more than 70 percent of IBM's strategic outsourcing data center space in the EU. The honor represents the largest portfolio of data centers from a single company to receive the recognition to date. The EU CoC is a voluntary initiative that aims to promote energy efficiency performance standards for data centers.

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IBM data centers in 15 different countries were awarded "Participant" status in Data Center Energy Efficiency, based on the EU Code of Conduct for Energy Efficient Data Centers.

IBM maintains energy efficiency leadership in its data centers by deploying uniform practices across its global data center portfolio. In addition, IBM applies innovative solutions such as Measurement & Management Technologies thermal monitoring and control system, virtualization technologies, dynamically managed air conditioning control systems and development of alternate power systems such as the direct current solar system at IBM's Software Group lab in India.

IBM data center and IT system professionals continue to be involved in governmental and professional data center energy efficiency initiatives including the EU CoC for Energy Efficient Data Centers program, ENERGY STAR® and The Green Grid® initiatives. These programs set operating criteria or metrics that inform and encourage data center operators and owners to reduce energy consumption in a cost-effective manner while enabling operators to maintain the mission-critical functions of their data centers.

Renewable Energy

In 2011, IBM purchased 518 million kWh of renewable energy. These purchases represented 10.2 percent of the company's global electricity usage and a CO_2 emissions avoidance of 215,000 metric tons. IBM continued to contract for renewable energy purchases in Australia, Austria, Belgium,

Denmark, Finland, Japan, Netherlands, Sweden, Switzerland, the United Kingdom and the United States in 2011. Renewable electricity purchases declined by 7.6 percent from 2010 to 2011 due to varying market conditions and renewable energy availability in the various markets in which IBM purchases renewable energy. IBM's energy conservation efforts and its procurement of renewable energy in 2011 combined to avoid the emissions of 390,000 metric tons of CO_2.

IBM endeavors to procure renewable energy to power its data center operations whenever it is available and financially reasonable. Of the 27 data centers registered to the EU CoC, 18 receive some or all of their electricity from renewable generation sources. In the United States, both the Boulder, Colorado, and Raleigh, North Carolina, data centers receive a portion of their electricity from renewable sources.

Research to Advance Renewable Energy

In addition to procuring renewable energy for our own use, IBM is working to further the availability and affordability of renewable energy by investing in IT-related research and development. Three recent examples:

- **IBM Teams With Bureau of Energy Efficiency to Prepare for India's First Smart Grid Project**
  In May 2011, IBM announced a collaboration with The Bureau of Energy Efficiency (BEE) in India to create the country's first smart grid project. Together they will create a cost-benefit analysis for smart grid activities as part of the National Mission for Enhanced Energy Efficiency (NMEEE). A BEE project, NMEEE is one of eight national missions that promote innovative policy and regulatory regimes, financing mechanisms and business models that help sustain the market for energy efficiency.

  Through this project, IBM plans to apply our deep services expertise to help determine smart grid readiness in India. We will lay out a strategic assessment framework that looks at the adoption of new smart grid technologies and identifies alignments in policy and regulatory frameworks to make each solution possible. We will help BEE determine global smart grid potential and also create toolkits for regulators and utilities to assess the benefits of smart grid investment decisions.

- **IBM Joins European Consortium to Build a Smart Grid Using Renewable Energy**
  In October 2011, IBM announced we had joined a collaborative consortium to help develop an energy grid that uses at least 50 percent of renewable energy sources such as wind power, solar energy and biogas. Led by an EU-funded consortium, the EcoGrid EU project will demonstrate a smart energy grid that allows smart devices to use renewable electricity based on near-real-time pricing and availability.

With 16 partners from 10 different countries, the project will continue for the next 48 months with set goals to increase consumer interest in smart grids, and develop new technologies that will improve energy forecasting and cost balancing, as well as reduce the congestion and losses across the distribution grid.

- **IBM and Sustainable Energy Authority Ireland Focus on Renewable Energy**
  In October 2011, IBM announced a collaboration with The Sustainable Energy Authority Ireland (SEAI) to understand and minimize the environmental impact of converting wave energy into electricity. This project, the first to utilize real-time streaming analytics for monitoring underwater noise generated by wave energy conversion devices, represents a significant step toward the ability to successfully and sustainably utilize the ocean as a new renewable energy resource.

CO_2 Emissions Reduction

IBM has committed to reduce our operational CO_2 emissions in accordance with the objective detailed in the adjacent sidebar. As of year-end 2011, our energy conservation results and procurement of renewable energy resulted in a 16 percent reduction in our energy-related CO_2 emissions from the 2005 base year of this goal. Operational CO_2 emissions increased slightly from 2010 to 2011 primarily due to the decrease in renewable electricity purchases and associated 12.9 percent decrease in avoided CO_2 emissions.

IBM's CO_2 emissions reductions have been achieved through the actions outlined below. In addition, improvements in the CO_2 emissions profile of the electricity that IBM purchased also had a favorable, albeit limited, impact on the company's performance.

- IBM's energy conservation efforts have reduced or avoided a total of 1.5 million MWh of electricity and 2.7 million MMBTU of fuel use (based on one-year savings associated with conservation projects) from 2006 to 2011, which represents a reduction in IBM's electricity and fuel use of 2.6 percent and 23.2 percent, respectively, against the 2005 baseline use adjusted for acquisitions and divestitures.

- IBM purchased 518,000 MWh of electricity generated from renewable sources in 2011, resulting in an avoidance of 215,000 metric tons of CO_2 emissions associated with the generation of the electricity used by IBM. We contract for these purchases through programs sponsored by suppliers or the responsible utility.

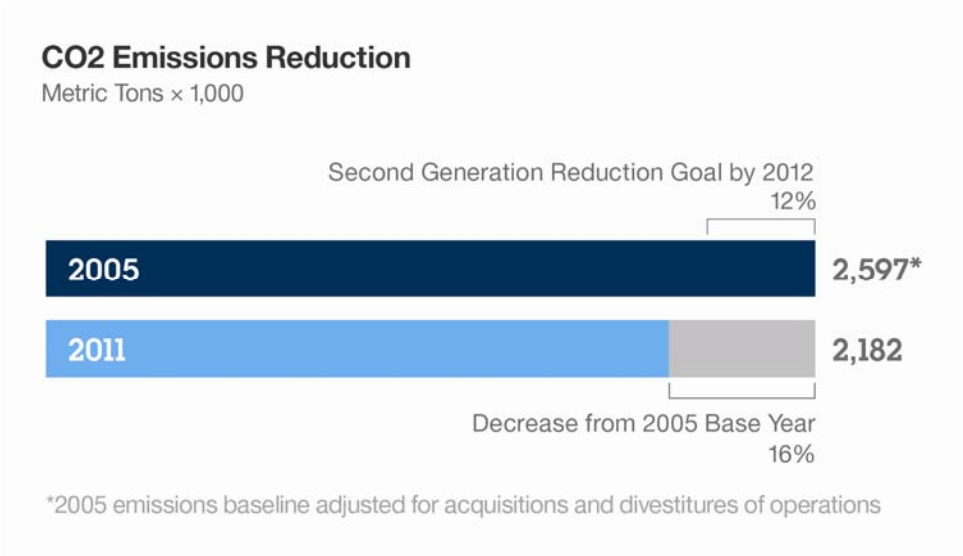
CO_2 Emissions Reduction

12%

Goal
Between 1990 and 2005, IBM's energy conservation actions reduced or avoided CO_2 emissions by an amount equal to 40 percent of its 1990 emissions. To further extend this achievement, IBM set an aggressive "2nd generation" goal: to reduce the CO_2 emissions associated with IBM's energy use 12 percent between 2005 and 2012 through energy conservation and the procurement of renewable energy.

16%

Result
As of year-end 2011, IBM's energy conservation results and procurement of renewable energy resulted in a 16 percent reduction in IBM's energy-related CO_2 emissions from 2005.



PFC Emissions Reduction

IBM releases some perfluorocompounds (PFCs) from our semiconductor manufacturing operations. Although the releases are in relatively small amounts (in CO_2 equivalents, when compared to IBM's indirect CO_2 emissions), IBM was the first semiconductor manufacturer to set a numeric reduction target for PFCs in 1998. We subsequently set a second generation goal to achieve an absolute reduction in PFC emissions from semiconductor manufacturing of 25 percent by 2010 against a base year of 1995. We exceeded this goal by reducing IBM's PFC emissions by 36.5 percent at year-end 2010.

IBM is presently evaluating a third generation goal for PFC emissions reduction. A separate but relevant activity is the Semiconductor Industry Association's current work with the United States Environmental Protection Agency (EPA) to update various parameters (e.g., process emissions factors, emissions abatement system destruction efficiencies) and methodologies for estimating PFC emissions from semiconductor operations. IBM plans to incorporate, as appropriate, the updated factors and methodologies at the conclusion of this industry and EPA effort in establishing its next generation PFC emissions reduction goal.

While our goal-setting process is underway, we continue to take actions to reduce our PFC emissions and monitor performance. Between 2010 and 2011, we reduced our PFC emissions by 2.8 percent—primarily as a result of work at the Burlington, Vermont, facility where C_2F_6 was substituted by C_4F_8 in several chamber clean processes in the 200 mm fab. C_4F_8 is more fully utilized in the clean process and has a lower global warming potential than C_2F_6.

IBM also monitors two other materials with global warming potentials that are used in connection with manufacturing operations: 1) nitrous oxide (N_2O),

which is used in the manufacture of semiconductors but has lower global warming potential than the PFC gases; and 2) heat transfer fluids that are primarily used in tool-specific chiller units associated with manufacturing processes.

- IBM emitted 29,200 metric tons of CO_2e of N_2O, which has a lower global warming potential than the PFC gases used in its semiconductor operations.

- IBM generated a CO_2e of 51,000 metric tons from fugitive emissions of heat transfer fluids used in chiller systems.

In addition to monitoring emissions, IBM continues to evaluate preferable replacements for these materials. At IBM's Burlington facility, a wafer test team completed a two-year project to qualify a new non-conductive heat transfer fluid used in tool-specific chiller units. The new fluid fills the microscopic air gaps between the wafer chuck and the physical wafer, on wafer test equipment. It has a lower vapor pressure and a lower global warming potential, resulting in fewer process fluid losses and reducing the metric tons of CO_2e emitted from the process by more than two orders of magnitude and the fluid expense by over $100,000 a year.

Voluntary Climate Partnerships

IBM continued its participation in the World Wildlife Fund's Climate Savers program in 2011, working toward the committed reduction goal: Between 1990 and 2005, we reduced or avoided CO_2 emissions by an amount equivalent to 40 percent of our 1990 emissions through our global energy conservation program. To extend this achievement, we intend to reduce CO_2 emissions associated with our operational energy (electricity and fuel) use by 12 percent between 2005 and 2012 through energy conservation and the purchase of renewable energy.

Under Climate Savers, IBM has also committed to improving the energy efficiency and energy utilization of our internal and clients' data centers through activities and offerings for data center best practices, measurement and monitoring programs, and virtualization and consolidation programs. Activities in support of this commitment are detailed in the Data Centers section above.

Though the United States EPA discontinued the Climate Leaders program in 2010, IBM intends to meet the second generation GHG reduction commitment we set under the Climate Leaders program: To reduce total global GHG emissions by 7 percent from 2005 to 2012. We achieved our initial goal by reducing total global energy-related GHG emissions by an average of 6 percent per year and PFC emissions by 58 percent from 2000 to 2005.

Transportation and Logistics Initiatives

Employee Commuting and Leased/Rental Vehicles

IBM has been active in promoting programs that reduce the commute to work for our employees. Key contributors to this effort are IBM's two flexible work programs:

- Work-at-home: Enables many employees to work from a home office
- Mobile employees: Enables many other employees to work from home a designated number of days each week

In 2011, more than 128,000 of our employees (29 percent) globally participated in one of these two programs, which not only helps employees balance their work and personal responsibilities, but also benefits the environment. In the United States alone, IBM's work-at-home program conserved approximately 6.4 million gallons of fuel and avoided more than 50,000 metric tons of CO_2 emissions in 2011.

IBM joined the reconstituted United States Best Workplaces for Commuters℠ (BWC) program in 2009. Currently, 22 IBM locations are registered as BWC sites, which represent approximately 60 percent of the company's United States employees. Many locations actively work with their local or regional transit commissions to integrate IBM's programs with regional programs to increase commuting options for the company's employees. Globally, many of our locations provide support for the use of public transit systems, including shuttles from locations to mass transit stations, and alternate transportation or "loaner" cars for business trips during the workday.

In some countries, IBM provides leased vehicles for employees as part of their compensation package. In these cases, we continue our effort to move to more fuel-efficient vehicles by setting standard guidelines for smaller engine sizes with lower emissions profiles. These guidelines enable reductions in average car emission levels as their car fleets are renewed. For the cars our employees rent while travelling, we have worked with rental car companies to require and/or offer higher mileage vehicles for employee rentals.

Business Travel

In 2011, IBM further expanded the use of collaboration tools, both internally and externally, which provides business efficiency and boosts productivity by connecting our global workforce 24/7 while reducing travel-related resource consumption and emissions. We conducted more than one million online meetings and exchanged more than 15 billion instant messages. We also have increased our use of video conferencing to help reduce the need for travel while enabling team interaction. In addition to more than 400 video-equipped IBM conference and briefing rooms globally, we completed work on an initial IBM Sametime® desktop video pilot to extend video capability to employees'

desktops. Expansion of this capability through further global desktop video pilots is planned for 2012.

Efficiency of Logistics

IBM is reducing the CO_2 emissions associated with transporting our products through the efficient design of our packaging, working with suppliers on their packaging designs and optimizing logistics. In the area of logistics, IBM has been an active member of the United States EPA's SmartWay® Transport Partnership since 2006.

SmartWay is a voluntary initiative to improve fuel efficiency and reduce GHG emissions associated with logistics operations.

Since 2009, 100 percent of IBM's spend for shipping goods within the United States and from the United States to Canada and Mexico went through a SmartWay logistics provider. IBM also voluntarily applies specific SmartWay requirements to our distribution operations globally.

IBM's packaging programs also help reduce transport-associated CO_2 emissions by reducing the volume and weight of the company's product shipments through innovative packaging design. Accomplishments in this area are discussed in the Product Stewardship section of this report on page 31.

Energy and Climate Protection in the Supply Chain

During 2011, we continued our focus on working with IBM's supply chain to foster greater energy efficiency and climate protection.

- As noted elsewhere in this report, IBM is committed to doing business with environmentally responsible suppliers. We require that all of our "first-tier" suppliers—those firms with which we hold a direct commercial relationship—establish and sustain a management system to address their corporate and environmental responsibilities—including their use of energy. They are also required to measure their performance, establish voluntary, quantifiable goals in this area and publicly disclose their performance against those goals.

- IBM has been an active participant in the Electronic Industry Citizenship Coalition (EICC) Carbon Reporting System, which completed its third year of operation. EICC requests that selected suppliers providing components or products to EICC members disclose their operational energy and water use and GHG emissions to EICC via any one of the following means: a spreadsheet tool developed by EICC, responding to a Carbon Disclosure Project (CDP) Questionnaire or a company's Global Reporting Initiative (GRI) report. As companies gain an understanding of their energy use and GHG emissions, we

believe they are more likely to take actions to improve their performance. EICC and its member companies have developed education modules to assist suppliers in developing their energy use and GHG emissions inventories. Companies in the electronics industry share many suppliers, and the EICC GHG emissions disclosure process is expected to provide efficiency associated with information disclosure.

- Through the CDP's Supply Chain program, IBM and other participating companies are focused on how suppliers are addressing climate change and working to reduce GHG emissions. As a participant in the program, IBM invited 107 of our suppliers to respond to the CDP's Supplier Questionnaire in 2011 (reporting 2010 data). These 107 companies represent a cross-section of IBM's supplier expenditures. They included service, general and production-related suppliers, as well as third-party data centers, logistic suppliers and rental car companies.

  Of the 107 IBM suppliers that received questionnaires, 93 responded. The 86 percent response rate exceeded the 44 percent average response rate for the companies participating in this CDP program. The following are highlights of the findings from the responding suppliers:

  - 93 percent report Scope 1 & Scope 2 GHG emissions
  - 67 percent have a GHG emissions reduction target in place
  - 97 percent have undertaken emissions reductions initiatives

IBM concluded its participation in the CDP supply chain project in 2011. We remain committed to doing business with responsible suppliers, and we believe we can be more effective if we focus our resources through the EICC by leveraging its programs and network within the IT hardware, software and services sector. Participation in the EICC Carbon Reporting process allows us to more efficiently reach a broader set of companies, including medium-sized and smaller enterprises, to build their capabilities and improve and report their performance in energy and water conservation and GHG emissions reduction.

IBM's Position on the Determination of Scope 3 GHG Emissions

Gross approximations of Scope 3 GHG emissions can help entities recognize where the greatest amounts of GHGs may occur during the lifecycle of a typical process, or general product or service on a macro level. This can be helpful when assessing, for example, what phases of a general product's design, production, use and disposal are ripe for improved energy efficiency and innovation. However, IBM does not assert on a micro level what the Scope 3 GHG emissions are from the operations of our suppliers and external distribution partners in their work that is specific to IBM, or associated with the use of our products and services. The necessary estimating assumptions and corresponding variability simply do not allow for adequate credibility, let

alone calculations that could be perceived as deterministic.

Like many manufacturers, IBM has thousands of suppliers around the world. They are in all types of businesses and very few, if any, work solely for IBM. Furthermore, the sources of energy used by these suppliers vary, and IBM does not believe we could determine a credible estimate or apportionment of the energy used by these suppliers that would be associated with the products or services provided to IBM versus that associated with products or services provided to other companies and customers. In addition, IBM's specific scope of business with any given supplier remains dynamic, as it is driven by business need.

Moreover, one company's asserted Scope 3 emissions are another company's Scope 1 and Scope 2 emissions. Since the ultimate goal for climate protection is for global societies to achieve demonstrable reductions in actual GHG emissions, IBM believes real results in GHG emissions reduction are directly achieved when each enterprise takes responsibility to address its own emissions and improve its energy efficiency. This is reinforced by IBM's announcement in 2010 that all of our first-tier suppliers will be expected to develop a management system, inventory their key environmental impacts, including GHG emissions, and develop reduction plans for those key impacts.

Remediation

When groundwater contamination was first discovered at one of IBM's sites in 1977, the company initiated groundwater monitoring at all of its manufacturing and development locations worldwide. Today, IBM has 2,677 monitoring wells and 107 extraction wells.

In 2011, 16,069 pounds of solvents from past contamination were extracted while remediating, controlling and containing groundwater at six currently operating sites and 11 former sites in three countries. At four of these sites, an additional 1,837 pounds of solvents were removed by soil vapor extraction or other methods. IBM also has financial responsibility for remediation at two other former sites.

As a result of the United States Superfund law, IBM is involved in cleanup operations at some non-IBM sites in the United States. The Superfund law creates a retroactive responsibility for certain past actions, even though they may have been technically and legally acceptable at the time.

As of year-end 2011, IBM had received notification (through federal, state or private party) of its potential liability at 110 sites, since the beginning of the United States Superfund program back in 1980. Of these, 57 are on the United States National Priority List. At the majority of the 110 sites, it has been determined that IBM either never had liability or has resolved its potential liability. As of now, IBM believes it may have potential liability at only 17 sites noticed through 2011.

When investigation and/or remediation at an IBM location or an off-site facility is probable, and its costs can be reasonably estimated, IBM establishes accruals for loss contingency. Estimated costs connected with closure activities (such as removing and restoring chemical storage facilities) are accrued when the decision to close down a facility is made. As of December 31, 2011, the total accrual amount was $262 million.

Audits and Compliance

IBM measures its environmental performance against both external and internal requirements.

Every year, and more frequently for some, IBM's manufacturing, hardware development and research sites and organizations—such as Product Development, Global Real Estate Operations, Global Asset Recovery Services, Global Logistics and Global Service Environmental Compliance—complete a comprehensive self-assessment. Each year, certain sites are audited for environmental, health and safety compliance by IBM's Corporate Internal Audit staff. Audit results are communicated to top management. Follow-up, accountability and actions are clearly delineated.

In addition, as part of IBM's single, global registration to ISO 14001, approximately 25 sites or registered entities are audited annually by an independent ISO 14001 registrar. The company's manufacturing, hardware development and chemical-using research sites are audited by either the Corporate Internal Audit team or the external ISO 14001 registrar at least once every two years.

Accidental Releases

IBM sites around the world report environmental incidents and accidental releases to IBM management through the company's Environmental Incident Reporting System (EIRS). IBM's environmental incident reporting criteria are equal to or exceed legal reporting requirements, and every event meeting IBM's reporting criteria must be reported through EIRS. Each IBM location must have a documented incident prevention program (including provisions for preventing environmental incidents or their recurrence) and reporting procedure.

In 2011, a total of 27 accidental releases of substances to the environment related to IBM operations were reported through EIRS. Of these, 10 were to air, eight to land, three to water, and six to both land and water.

Emissions to the air included nine releases of refrigerants and one release of a fire suppression gas.

Releases to land included two releases of diesel fuel, two releases of hydraulic fluid and one release each of chilled water, treated domestic water, untreated industrial wastewater and a petroleum substance.

Releases to water included two releases of water from fire protection systems

and one release of hydraulic fluid.

Releases to both land and water included one release each of untreated industrial wastewater, chilled water, treated industrial wastewater, potable water, sprinkler water and well water.

The root cause was investigated for all releases and corrective actions were taken as appropriate. None of the releases were of a duration or concentration to cause long-term environmental impact.

Fines and Penalties

One significant measure of a company's environmental performance is its record of fines and penalties.

In 2011, IBM received 83 successful agency visits worldwide with no fines being assessed.

Over the past five years, IBM has paid three fines for a total amount of $31,000.

Fines and Penalties Worldwide

($ in thousands)

	2007	2008	2009	2010	2011
Number	1	0	2	0	0
Fines	$1.0	$0.0	$30.0	$0.0	$0.0

Awards and Recognition

Internal Recognition

Chairman's Environmental Award Program

IBM established the Chairman's Environmental Award Program in 1991 to encourage leadership and recognize achievement and progress in environmental affairs on the part of IBM's organizations.

For 20 years, the Chairman's Environmental Award has promoted the contributions of IBM's business units toward the objectives of IBM's Corporate Policy on Environmental Affairs. IBM's organizations were required to address their accomplishments over the past three years in all eleven elements of the Corporate Policy, to the extent that each policy element is applicable for their global operations.

The Chairman's Environmental Award recipients are selected based on their degree of leadership, initiative and results in contributing to IBM's environmental policy objectives. Performance against these criteria is evaluated against each nominee's opportunity to contribute given its mission and operations. IBM's Global Real Estate Operations received the 2011 Chairman's Environmental Award.

(Left to right) IBM Chairman Sam Palmisano presents the 2011 IBM Chairman's Environmental Award trophy to Mark Loughridge, Senior Vice President and Chief Financial Officer, Finance and Enterprise Transformation and James Kavanaugh, Vice President and Controller.

Global Real Estate Operations (RESO) has global management responsibility for the IBM real estate portfolio of more than 1,600 locations in 97 countries, overseeing all facilities operations, engineering, workplace design and construction. RESO plays a vital role in implementing IBM's environmental and energy programs, and the development and implementation of IBM's Smarter Building Solutions at the company's high energy usage sites worldwide.

The selection of RESO for the 2011 IBM Chairman's Environmental Award recognizes this organization's outstanding leadership and execution of globally integrated business processes. Since 2009 RESO has achieved:

- Factory Mutual Global's "Highly Protected Risk Status" for fire protection at 170 locations
- Annual energy conservation rates of 5 percent or more from 2009 to 2011, saving 698,000 megawatt-hours (MWh) of electricity and 1,052 million BTU of fuel while reducing expenditure by $77 million from implementing over 4,000 energy conservation projects
- Purchasing 11 percent of IBM's annual electricity usage from renewable sources, equivalent to 560 MWH each year since 2009, avoiding 200 tons of carbon dioxide emissions
- Implementation of highly effective alternative commuting programs as well as leading community volunteer initiatives and IBM Centennial Events
- 24 percent reduction in nonhazardous waste generation through the implementation of innovative programs addressing construction debris, composting, furniture reuse, and paper consumption reductions
- Reduction of four million square feet of office space and associated environmental demands through space utilization improvements
- Expansion of its Environmental Management System to include landlord-managed leased locations
- Sustainable building design and operation which resulted in twelve IBM buildings certified to the Leadership in Energy and Environmental Design™ (LEED) and other environmental performance standards
- Internal deployment of IBM Smarter Building Solutions while demonstrating capabilities of the solutions
- Recognition with 25 external awards for leadership in environmental and energy management.

While only one organization is selected each year to receive the Chairman's Environmental Award, it is the integrated picture of the efforts of all IBM organizations' that demonstrates the company's exceptional commitment to environmental affairs leadership.

External Recognition

- **2012 Gold Medal, World Environment Center**
  IBM received the World Environment Center's 28th Annual Gold Medal for International Corporate Achievement in Sustainable Development, becoming the first and only company to earn the award twice.

- **Inaugural Climate Leadership Award, Organizational Leadership**
  IBM received an inaugural Climate Leadership Award in the Organizational Leadership category in 2012 from the US Environmental Protection Agency, the Center for Climate and Energy Solutions (formerly the Pew Center on Global Climate Change), The Climate Registry and the Association of Climate Change Officers. The award recognized IBM for its climate and energy program leadership, initiatives and sustained results.

- **#1 Ranking of World's Greenest Companies, Newsweek**
  IBM was rated the #1 US (and #2 global) company in Newsweek's annual "World's Greenest Companies" ranking. The methodology compares a company's environmental footprint, management (policies, initiatives, controversies) and transparency, and is then weighed by a panel of corporate sustainability consultants.

- **#1 Ranking, Supercomputing Green500™ List**
  IBM ranked #1 in the November 2011 Supercomputing Green500 List announced by Green500.org. The Green500 ranks the top 500 supercomputers in the world by energy efficiency. IBM's Blue Gene/Q supercomputer holds the top five spots on the list. The list shows that five of the top 10 most energy efficient supercomputers in the world are built on IBM high-performance computing technology.

- **Top 12 Green IT Vendors, Computerworld**
  IBM ranked #6 in Computerworld's Top 12 Green IT Vendors. This analysis rates technology vendors, data center suppliers and their end user organizations on their efforts to reduce energy consumption in their IT equipment, and to use technology to conserve energy and lower carbon emissions.

- **Corporate Energy Management International Award, AEE**
  IBM was recognized by the Association of Energy Engineers (AEE) with its 2011 Corporate Energy Management International Award. AEE recognizes organizations and individuals that have achieved national and international prominence in promoting the practices and principles of energy engineering and energy management.

- **ISM Award for Excellence in Supply Management, Institute for Supply Management**
  IBM received the ISM Award for Excellence in Supply Management (the "R. Gene Richter Award") from the Institute for Supply Management in the Sustainability category for 2011. The award recognized IBM for three initiatives including its Center of Excellence for Environmental Compliance/Social and Environmental Management System, Supply Chain Social Responsibility Initiative and Green ISC Initiative.

- **PM100 Awards**
  Three of the eight 2011 Progressive Manufacturing 100 (PM100) Awards IBM received were related to its environmental leadership. The awards recognized IBM for its Supply Chain Environmental and Corporate Responsibility Management System requirement, its Center of Excellence (CoE) for Product Environmental Compliance and its Environmental Reporting Tool (ERT). The PM100 Awards recognize companies from around the world that have achieved significant breakthroughs in innovation, the use of advanced technologies and the effective management of their businesses.

- **Business & The Environment Award, DECISION Magazine, UK**
  IBM received a 2011 Business & The Environment Award from DECISION magazine in the UK. The award recognized IBM for its best practices in the management of environmental and social requirements in its supply chain.

- **China Sustainability Award**
  IBM received a China Sustainability Award in recognition of excellence in sustainable development (environmental protection, society and economy) for both strategic planning and long term practices. This award was established in 2010 by Sohu.com, a Chinese portal website, and A.T. Kearney, a global consulting firm.

- **CIPEC Leadership Award, Canada**
  IBM Canada's Bromont site received a Canadian Industry Program for Energy Conservation (CIPEC) Leadership Award in the category "Integrated Energy Efficiency Strategy" at the Energy 2011 conference held in Toronto. IBM received the award in recognition of its significant and innovative contributions to energy efficiency.

- **Distinction Award for Energy Efficiency, Canada**
  IBM Canada's Bromont site received the 2011 Distinction Award in the category of Energy Efficiency. The award was presented to IBM by the Agency for Energy Efficiency of Quebec and the Federation of Quebec Chambers of Commerce.

- **Vermont Governor's Awards, US**
  IBM Burlington, Vermont, received two 2011 Vermont Governor's Awards for Environmental Excellence and Pollution Prevention for its nitrate reduction in waste water effluent and U-Tube scrubber design and installation. IBM also received a 2012 Vermont Governor's Award for Environmental Excellence for its work on perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) elimination in semiconductor manufacturing. IBM became the first in its industry to eliminate all known uses of PFOS and PFOA from its semiconductor manufacturing processes. The latest award marked 19 consecutive years that IBM has been recognized with at least one of these awards—which is every year the competition has been held.

- **Best Overall Energy Project in New England Award, US**
  IBM Burlington, Vermont, received the "2011 Best Overall Energy Project in New England Award" from the New England Chapter of the Association of Energy Engineers for its "Free Cooling" project.

- **Excellence in Environmental Engineering Award, US**
  IBM East Fishkill, New York, received a 2011 Excellence in Environmental Engineering Award in the small projects category from the American Academy of Environmental Engineers (AAEE) for the catalytic reduction of hydrogen peroxide in ammonia wastewater.

- **Smith Seal of North Carolina Sustainable Business Award—Lifetime Achievement, US**
  IBM Research Triangle Park, North Carolina, was recognized by the Greater Raleigh Chamber of Commerce with the 2011 Smith Seal of North Carolina Sustainable Business Award—Lifetime Achievement for Large Organization. The award recognizes businesses, not-for-profits, colleges/universities and municipalities that have embraced the spirit of sustainability by incorporating environmentally conscious practices into the everyday operations of the company, and making strides to improve the lives of their employees or community.

Summary of IBM's Environmental Performance

IBM maintains goals covering the range of its environmental programs, including climate protection, energy and water conservation, pollution prevention, waste management and product stewardship. These goals and our performance against them are discussed in the Environment section of this report. The goals identified here as KPIs are based on stakeholder interest and materiality. IBM considers all of its goals to be important metrics of the company's performance against its commitment to environmental protection.

Energy Conservation:

IBM's goal is to achieve annual energy conservation savings equal to 3.5 percent of IBM's total energy use. IBM again achieved this goal in 2011, attaining a 7.4 percent savings from energy conservation projects.

Energy Conservation	2007	2008	2009	2010	2011
As % of total electricity use	3.8	6.1	5.4	5.7	7.4

CO_2 Emissions Reduction:

Between 1990 and 2005, IBM's energy conservation actions reduced or avoided CO_2 emissions by an amount equal to 40 percent of its 1990 emissions. To further extend this achievement, IBM set an aggressive "2nd generation" goal: to reduce the CO_2 emissions associated with IBM's energy use by 12 percent between 2005 and 2012 through energy conservation and the procurement of renewable energy.

As of year-end 2011, IBM's energy conservation results and procurement of renewable energy yielded a 16 percent reduction in its energy-related CO_2 emissions since 2005.

CO_2 Emissions Reduction	2007	2008	2009	2010	2011
% reduction against the 2005 base year	+2.0	-1.6	-5.7	-16.7	-16.0

Renewable Energy Procured:

In 2011, IBM purchased 518 million kWh of renewable energy. These purchases represented 10.2 percent of the company's global electricity usage and a CO_2 emissions avoidance of 215,000 metric tons.

Renewable Energy Procured	2007	2008	2009	2010	2011
As % of total electricity use	8.5	8.6	11.3	11.2	10.2

Product Energy Efficiency:

IBM's product energy goal is to continually improve the computing power delivered for each kilowatt-hour (kWh) of electricity used with each new generation or model of a product. Performance is tracked by product line: Servers, Point-of-Sale Terminals and Storage Systems.

Product Energy Efficiency	*Please see the Product Energy Efficiency table on page 26.*

Recycled Plastics:

In 2011, 35 percent of the total weight of plastic resins procured by IBM and its suppliers through IBM's corporate contracts for use in IBM's products were resins that contained between 25 and 100 percent recycled content. Comparing only the weight of the recycled fraction of these resins to the total weight of plastics (virgin and recycled) purchased, 12.4 percent of IBM's total weight of plastic purchases in 2011 was recycled plastic versus the corporate goal of 5 percent recyclate.

Recycled Plastics	**2007**	**2008**	**2009**	**2010**	**2011**
% of total plastics procured through IBM contracts for use in its products that is recyclate	10.6	10.3	13.2	11.5	12.4

Product End-of-Life Management:

IBM's goal is to reuse or recycle end-of-life IT products such that the amount of product waste sent by IBM's Product End-of-Life Management (PELM) operations to landfills or incineration for treatment does not exceed a combined 3 percent of the total amount processed.

In 2011, IBM's PELM operations sent only 0.4 percent of the total processed to landfill or incineration facilities for treatment.

Product End-of-Life Management	**2007**	**2008**	**2009**	**2010**	**2011**
% of total processed sent by these operations to landfill or incineration for treatment	0.8	0.6	0.5	0.6	0.4

Hazardous Waste Management:

IBM's goal is to achieve year-to-year reduction in hazardous waste generated from IBM's manufacturing processes indexed to output. IBM's hazardous waste generation indexed to output decreased by 3.5 percent in 2011.

Hazardous Waste Reduction	2007	2008	2009	2010	2011
% reduction in hazardous waste generated from manufacturing operations indexed to output	-8.4	-10.9	+8.4	-21.6	-3.5

Nonhazardous Waste Recycling:

Our voluntary environmental goal is to send an average of 75 percent of the nonhazardous waste generated at locations managed by IBM to be recycled. In 2011, we recovered and recycled 78 percent of our nonhazardous waste.

Nonhazardous Waste Recycling	2007	2008	2009	2010	2011
% recycled of total generated	78	76	76	79	78

Water Conservation:

IBM’s goal is to achieve annual water savings equal to 2 percent of total annual water usage in microelectronics manufacturing operations, based on the water usage of the previous year and measured as an average over a rolling five-year period. In 2011, new water conservation and ongoing reuse and recycling initiatives in IBM’s microelectronics operations achieved an annual 1.2 percent savings in water use, resulting in a rolling five-year average of a 2.6 percent savings versus the 2 percent goal.

Water Conservation	2007	2008	2009	2010	2011
% annual water savings in microelectronics manufacturing based on 2010 usage, measured as an average over a rolling five-year period	6.0	4.6	3.1	2.8	2.6

IBM ENVIRONMENTAL AFFAIRS POLICY

IBM is committed to environmental affairs leadership in all of its business activities. IBM has had long-standing corporate policies of providing a safe and healthful workplace, protecting the environment, and conserving energy and natural resources, which were formalized in 1967, 1971 and 1974, respectively. They have served the environment and our business well over the years and provide the foundation for the following corporate policy objectives:

- Provide a safe and healthful workplace and ensure that personnel are properly trained and have appropriate safety and emergency equipment.
- Be an environmentally responsible neighbor in the communities where we operate, and act promptly and responsibly to correct incidents or conditions that endanger health, safety or the environment. Report them to authorities promptly and inform affected parties as appropriate.
- Conserve natural resources by reusing and recycling materials, purchasing recycled materials, and using recyclable packaging and other materials.
- Develop, manufacture and market products that are safe for their intended use, efficient in their use of energy, protective of the environment, and that can be reused, recycled or disposed of safely.
- Use development and manufacturing processes that do not adversely affect the environment, including developing and improving operations and technologies to minimize waste; prevent air, water, and other pollution; minimize health and safety risks; and dispose of waste safely and responsibly.
- Ensure the responsible use of energy throughout our business, including conserving energy, improving energy efficiency, and giving preference to renewable over nonrenewable energy sources when feasible.
- Participate in efforts to improve environmental protection and understanding around the world and share appropriate pollution prevention technology, knowledge and methods.
- Utilize IBM products, services and expertise around the world to assist in the development of solutions to environmental problems.
- Meet or exceed all applicable government requirements and voluntary requirements to which IBM subscribes. Set and adhere to stringent requirements of our own no matter where in the world the company does business.
- Strive to continually improve IBM's environmental management system and performance, and periodically issue progress reports to the general public.
- Conduct rigorous audits and self-assessments of IBM's compliance with this policy, measure progress of IBM's environmental affairs performance, and report periodically to the Board of Directors.

Every employee and every contractor on IBM premises is expected to follow this policy and to report any environmental, health or safety concern to IBM management. Managers are expected to take prompt action.

IBM Corporate Environmental Affairs
294 Route 100
Somers, New York 10589

For more information about
IBM's environmental initiatives,
please visit our website:
www.ibm.com/environment