

CSR and the Environment

The environmental challenges the world faces today have the potential to significantly alter how society functions and require a coordinated global effort. Climate change alone, even under best-case scenarios, could cause geopolitical instability, mass migration, destabilization of global food and energy markets, and the depletion of natural resources, particularly water.

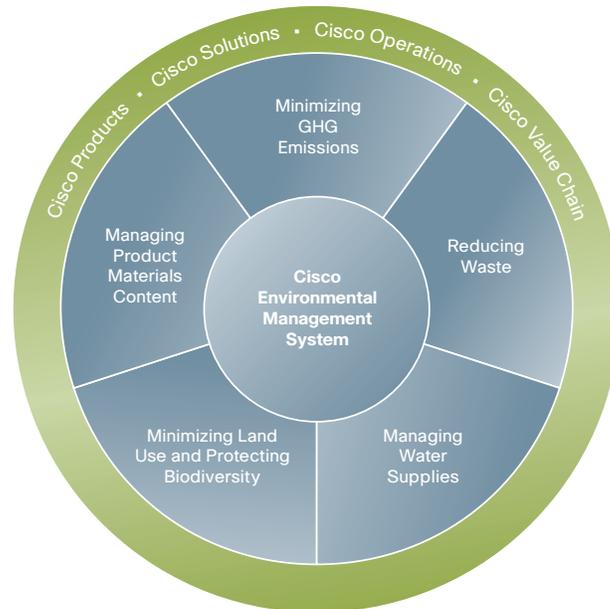
Our employees, partners, customers, and communities look to Cisco to participate in the efforts to protect the world's ecosystems for future generations. Together, we are working to reduce our environmental impacts by engaging in cross-sector partnerships and delivering solutions that help customers reduce their environmental impacts. These efforts help us meet the expectations of our stakeholders and also make good business sense, often reducing operating costs and business risks.

Cisco reports on the environmental topics identified in the Global Reporting Initiative (GRI). They include: greenhouse gas (GHG) emissions, materials, waste, water, land use, and biodiversity. We assess our impact in these areas and engage with stakeholders to understand their concerns. We establish initiatives to address opportunities for improvement.

We also recognize that environmental sustainability requires having an effective strategy, environmental management system, and leadership structure in place to manage these impacts and monitor issues that arise in the future.

Throughout this section we aim to highlight our efforts in reducing the environmental footprint of our company operations, designing environmental efficiencies and innovations into our products, and delivering solutions that enable our customers to significantly improve the management of their environmental impacts. We also engage our value chain in sustainable product manufacturing processes. For more information on our value chain practices, see the CSR and Our Value Chain section.

Environmental Impacts Discussed in this Section



As summarized in the diagram, this section of our CSR Report is organized around our efforts in the following areas:

- Managing our environmental impact
- Minimizing GHG emissions
- Managing product materials content
- Reducing waste
- Managing water supplies
- Minimizing land use impacts and protecting biodiversity

We believe that environmental sustainability includes looking for innovative solutions that transform the way people interact with the environment. Fundamental to our approach is the belief that the network can play an enabling role in the global response to today’s environmental challenges. Cisco’s greatest contribution is delivering solutions that enable the potential of the network to manage energy and natural resources, reduce the need for physical objects (“dematerialization”), and reduce the need for travel through collaboration and new ways of working.

In our activities, we continue to identify more ways to use our network and solutions to create connections and enable efficiencies. In the process, we can mitigate and avoid negative environmental impacts while promoting societal advancement and sustainable prosperity.

Letter from the Cisco EcoBoard

The Cisco EcoBoard is a group of senior leaders representing key areas of Cisco's global business. The board leads environmental initiatives across the company and assesses their effectiveness. Our vision is to promote environmental sustainability through innovation and collaboration. At Cisco, we believe anything connected to the network can be made greener, and by using the network as a platform for 21st century environmental management we can significantly reduce our greenhouse gas (GHG) footprint and help our customers meet their own sustainability goals.

In April 2007, Cisco joined the United States Environmental Protection Agency Climate Leaders. As part of this program, we committed to reducing our global Scope 1 and 2 GHG emissions, including emissions from all business air travel, by 25 percent absolute by calendar year 2012, using CY07 as a baseline. As of FY09, our emissions have dropped 40 percent absolute compared to FY07. We achieved this reduction through energy-efficiency programs, using collaboration technologies such as Cisco TelePresence and Cisco WebEx to reduce business air travel, and by purchasing renewable energy. Our focus for FY10 is to increase our energy-efficiency efforts and use collaboration technologies to effectively manage our emissions.

This year Cisco initiated several initiatives and innovations aimed at helping our customers reduce their own GHG emissions. For example, we launched the Smart Grid business unit, which focuses on developing an end-to-end and highly secure communications fabric to help utility companies optimize power supply and demand. We also introduced EnergyWise, a technology added to Cisco Catalyst switches that helps customers monitor and control their IP-enabled equipment to reduce energy costs and their carbon footprint.

In addition, we partnered with NASA to research and develop Planetary Skin, a comprehensive global monitoring system for reporting environmental conditions. When fully developed, this system will provide an intelligent, Internet-based collaborative platform for capturing worldwide environmental data from space-based, airborne, maritime, and terrestrial sensors that can be used to drive mitigation and adaptation to climate change, and to manage energy and natural resources more effectively.

Much of this progress can be attributed to the global governance structure that leads our sustainability efforts. We are very proud that in FY09 the Cisco EcoBoard environmental sustainability governance model was recognized as an ISO-14001 best practice for addressing global climate change. Cisco also ranked as the number-one information technology company in the Carbon Disclosure Project's annual survey.

In this year's CSR Report, we improved our reporting on climate change and added dedicated sections on waste, water use, land use, and biodiversity. These improvements more closely align our data with the Global Reporting Index (GRI). We look forward to applying our environmental governance and climate change reporting best practices and initiatives to the full range of environmental issues that concern our stakeholders.

We have accomplished many goals this year and look forward to an even more successful FY10. Over the coming year we will continue to concentrate on achieving our 25 percent GHG reduction goal through continued innovation, collaboration, advocacy, and by making our operations increasingly more energy efficient. We will also continue to align our global environmental sustainability strategies with current and new business priorities, while working with our customers, partners, and communities to develop innovative, practical solutions for the world's complex environmental challenges.

Laura Ipsen, Senior Vice President, Global Policy and Government

John McCool, Senior Vice President/General Manager, Data Center, Switching and Services Group

Ron Ricci, Vice President, Corporate Positioning

Managing Our Environmental Impacts

Cisco has adopted a holistic approach to managing our environmental impacts and helping our customers manage theirs. We are pursuing greater sustainability in all that we do with a global executive commitment to a “green” vision and strategy, an ISO 14001-certified environmental management system (EMS), and active engagement of our employees throughout our business.

This subsection provides insight into environmental management at Cisco and focuses on the following key aspects of our environmental program:

- Our vision and strategy
- Key performance indicators
- Goals
- Environmental management systems
- Governance
- Employee engagement
- Advocacy

Our Vision and Strategy

Cisco's environmental vision is to use network technologies to promote environmental sustainability. Our strategy is built on working collaboratively to address the environmental impacts of our:

- **Operations:** Impacting how we operate as a business
- **Products:** Creating efficiencies and innovations in our products
- **Solutions:** Enabling Cisco and our customers to address global environmental issues using our solutions

We pursue this strategy by setting goals and measuring performance, investing in our environmental management system, empowering employees to take action, and participating in global dialogue around our key issues.

We believe that over the coming years the network will be the key technology enabler to monitor, manage, and reduce environmental impacts, including climate change and energy utilization. The network can play a critical role in reducing avoidable GHG emissions and decreasing the risk of climate change.

Today, 1.32 billion people are connecting to the Internet using computers, cell phones, personal digital assistants (PDAs), televisions, and other electronic devices. Estimates suggest that over the next five years, the number of users will double while the number of connections will increase fivefold, to more than 5 billion. Creating connections between electronic devices and the Internet will provide visibility into how electricity and other resources are consumed, enabling a shift in individual and organizational behavior. Through our networks, technologies and solutions, we can bring important innovations to market that improve energy and other resource efficiency and address global environmental challenges.

Energy use and product end-of-life waste are the most significant environmental impacts from our business, and are also the areas where we feel we can significantly reduce the impact of both our own operations as well as those of our customers. We aim to use networks, and our increasing ability to extend the reach and impact of these networks, to deliver solutions for energy and resource management on a global basis, and apply these solutions to our own operations.

Key Performance Indicators

A summary of Cisco's environmental key performance indicators (KPIs) is provided in the following table. Assumptions and detailed calculation methodologies for each KPI are discussed in following subsections.

Indicators	FY06	FY07	FY08	FY09
ENVIRONMENTAL MANAGEMENT				
Number of Cisco sites with ISO 14001 EMS certification	19	25	25	26
Employee base covered by ISO 14001 EMS certification	75%	73%	71%	68%

Indicators	FY06	FY07	FY08	FY09
GHG EMISSIONS				
Total gross* GHG emissions: Scope 1 (metric tonne CO ₂ e)	27586***	52,498	52,084	53,216
Total gross* GHG emissions: Scope 2 (metric tonne CO ₂ e)	317,666***	467,478	550,312	579,183
Total contractual* GHG emissions: Scope 2 (metric tonne CO ₂ e)	316,893***	403,188	310,961	226,733
Total air travel GHG emissions: Scope 3 (metric tonne CO ₂ e)	190,940	205,797	197,872	115,995
Change in air travel GHG emissions from FY06 (CGI global goal: 10% absolute reduction against FY06 baseline)		+8%	+4%	-39% (goal met)
Total contractual* GHG emissions: Scope 1, 2, and 3 metric tonne CO ₂ e	535,419***	661,483	560,917	395,944
Change in Scope 1, 2, and 3 from FY07 (EPA global goal: 25% absolute reduction against CY07 baseline**)			-15%	-40% (goal year is 2012)

* Gross and *contractual* are used consistent with Carbon Disclosure Project 7 survey terminology. Gross GHG emissions figures do not include reductions from Cisco's renewable energy purchases. Contractual GHG emissions figures include the impact of buying low-carbon electricity.

** Cisco's EPA Climate Leaders 25 percent reduction goal is measured against a calendar-year baseline per EPA requirements, but all public Cisco reporting is on a fiscal-year basis. We are reporting progress against the EPA goal using fiscal-year emissions, although officially 2009 progress will be reported to EPA based on emissions tallied by calendar year. Cisco does not publically report calendar-year emissions to avoid confusion with previously reported fiscal-year data.

*** In our FY06 CSR report, we only reported Scope 1 and 2 emissions data actually collected from Cisco sites and separately noted the estimated completeness of the data. We now collect actual emissions data for over 90 percent of our real estate portfolio and estimate the balance based on building square footage and type of usage. We do not believe the Scope 1 and 2 data collected for FY06 is sufficient to support extrapolation to 100 percent. Therefore, FY06 Scope 1 and 2 data in the table should not be trended against FY07 or later data.

Indicators	FY06	FY07	FY08	FY09
ENERGY AND ELECTRICITY USAGE				
Energy usage (GWh)	889*	1281	1438	1507
Electricity usage (GWh)	749*	1053	1203	1275

* In Cisco's FY06 CSR report, we only reported electricity usage actually collected from Cisco sites and separately noted the estimated completeness of the data. We now collect actual electricity usage for over 90 percent of our real estate portfolio and estimate the balance based on building square footage and type of usage. We do not believe the data collected for FY06 is sufficient to support extrapolation to 100 percent. Therefore, FY06 electricity usage in the table should not be trended against FY07 or later data.

Indicators	FY06	FY07	FY08	FY09
PRODUCT RETURN AND RECYCLING				
Product return (million pounds)	**	**	22.1	23.6
Materials to landfill (percent of returned product not reused or recycled)*	**	**	0.46%	0.44%

* Landfilled material consists of nonrecyclable materials (such as broken pallets, wet cardboard, and shrink wrap)

** In previous reports, Cisco reported weight of material sent to Cisco's recyclers. Leveraging process improvements started last year, we are reporting weight of material received from end users, which is the metric of primary concern to stakeholders. Historical data, prior to FY08, is not sufficiently available and is not reported.

Indicators	FY06	FY07	FY08	FY09
WATER CONSUMPTION*				
Total water consumption (m ³)	Not available	1,725,618	1,570,831	1,654,030

* Data for 11 Cisco sites.

Goals

Cisco's environmental performance is supported by our recognition of external standards calling for action to mitigate the collective damage we do to the biosphere. Cisco is dedicated to supporting the [Millennium Development Goals](#), where Goal 7 is a dedication to making quantifiable progress in ensuring environmental sustainability. In addition, we are supporters of the [United Nations Global Compact](#), which seeks to align businesses around common goals, such as undertaking activities to promote greater environmental responsibility and encouraging the development and diffusion of environmentally friendly technologies. For more information on our support for these global initiatives, see the CSR and Governance section.

In June 2008, as part of the U.S. Environmental Protection Agency (EPA) [Climate Leaders](#) program, Cisco committed to reduce Scope 1, 2, and business-air-travel Scope 3 GHG emissions worldwide by 25 percent absolute by calendar year 2012 (against a CY07 baseline).

In September 2006, Cisco made a commitment to the [Clinton Global Initiative](#) to reduce GHG emissions from all Cisco business air travel worldwide by 10 percent absolute (against a FY06 baseline).

In addition, through a separate commitment to the Clinton Global Initiative in 2006, we pledged to engage with global cities in a public-private partnership called [Connected Urban Development](#) (CUD) that demonstrates how information and communication technology (ICT) and network connectivity can increase efficiencies and reduce carbon emissions in urban environments. The CUD initiative was created to reduce global carbon emissions while promoting economic development by fundamentally changing the way cities operate and consume natural resources. By using network connectivity for communication, collaboration, and urban planning, we believe CUD can help cities improve efficiencies in the areas of service delivery, traffic management, public transportation, buildings, energy, economic development, and carbon monitoring tools.

Environmental Management System

Cisco's ISO 14001 Environmental Management System (EMS) provides a set of processes and practices that guide environmental activities at Cisco sites, as well as at the corporate level. As stated in Cisco's [Corporate Environmental Policy](#), the Cisco EMS seeks to minimize the negative and increase the positive impacts to the environment in the definition, design, manufacture, support, and use of our solutions by reusing, recycling, and adopting processes that conserve raw materials, energy, and water.

Through a continuous cycle of planning, implementing, reviewing, and improving processes, our EMS influences all aspects of Cisco's operations, products, and services, including compliance with environmental requirements and ongoing efforts to improve environmental business performance.

Beginning with an environmental impact matrix used to assess the most significant environmental impacts at each certified site, Cisco's EMS team ranks the impact, taking into account the surrounding geography, site activities, and products and services. The team then uses the assessment to develop goals and targets for each site. Our EMS focus areas are energy management, operational waste, reuse and recycling, electronic scrap reuse and recycling, "green" engineering, green communication, and value chain management. We work with teams at each site to implement strategies for measuring impacts, monitoring progress, and publishing metrics.

Once a plan is established, our sites work to implement environmental initiatives and goals. With the assistance of local EMS implementation teams, Cisco's corporate EMS team audits these sites virtually, using Cisco collaboration technologies such as Cisco TelePresence™ and Cisco WebEx®, and conducts in-person audits on a regular basis. We generally conduct a full audit at each site once every three years. We also engage a third-party audit firm to conduct annual onsite audits to certify our EMS against the ISO 14001:2004 standard.

In addition to measuring performance, these audits identify best practices at our local and corporate sites that can be adopted at sites across our operations. Examples from internal audits conducted in FY09 include the Green Bag program in Paris, local lunch meetings on various green topics; the Green Engineering Task Force governance model; and the Green Task Force's communications campaign for increasing employee awareness and participation in Cisco green activities on a global level. Third-party auditors also identified measuring GHG emissions as a best practice.

Through FY09, 25 Cisco sites have achieved ISO 14001:2004 certification through independent third-party audits, covering approximately 68 percent of Cisco's employee population. The percentage of employee population covered decreased by 2 percent since FY08 due to Cisco acquisitions in FY09. The number of certified Cisco sites increased by five since FY08, but this increase includes four sites that were previously certified and reported in 2008 under the umbrella of another Cisco site. As a result of changes in certification requirements, these sites became independently certified in FY09. Looking ahead, we intend to certify our site in Hong Kong, China, in early FY10 and integrate key acquisitions and sites in the coming years.

Indicators	FY06	FY07	FY08	FY09
ENVIRONMENTAL MANAGEMENT				
Number of Cisco sites with ISO 14001 EMS certification	19	25	25	26
Employee base covered by ISO 14001 EMS certification	75%	73%	71%	68%

Cisco EcoBoard consists of 14 executives from:

- Corporate communications
- Corporate finance
- Corporate marketing
- Corporate positioning
- Customer business consulting group
- Engineering (hardware and software)
- General Counsel
- Government affairs
- Information technology
- Sales
- Technical support services
- Value chain management

Governance

Cisco's environmental vision and strategy is managed by the Cisco EcoBoard, which was established in 2006 by John Chambers and reports to Cisco's Operating Committee. The EcoBoard includes 14 senior executives who represent key global business functions, providing diverse and comprehensive representation from all parts of Cisco's operations.

In FY09, the EcoBoard focused on closely aligning Cisco's environmental sustainability efforts with our business priorities by means of four focus areas:

- 1. Market Access:** Removing impediments and creating opportunities for Cisco "green" products and solutions
- 2. Market Enablement:** Opening markets to these products and solutions
- 3. Differentiation:** Creating sustainable engineering and product innovations that differentiate us from our competitors and allow Cisco and our customers to meet environmental goals
- 4. Positioning and Competition:** Ensuring that there is public awareness of Cisco's capabilities as a global IT company that provides environmental solutions and innovations

Each focus area is supported by workgroups that are responsible for planning and implementing a set of targeted initiatives that support the focus areas set by the EcoBoard. For example, the Cisco Green Engineering Task Force (GETF), a set of eight work groups supporting the EcoBoard's Differentiation focus area, is charged with delivering thought leadership around product solutions, including companywide coordination of energy-related product development efforts. In FY09, GETF efforts included educating product engineers and creating "green" metrics for product development; reducing power use in our labs and by our products; architecting solutions for our clients; and supporting industry standards and regulations to accelerate and coordinate the adoption of environmentally friendly product attributes.

There are over a dozen workgroups supporting the four EcoBoard focus areas. The leaders of each workgroup make up the Green Task Force (GTF). Consisting of senior leaders from each of the departments represented on the EcoBoard, the GTF provides critical cross-functional planning, management, monitoring, and coordination of Cisco's environmental programs.

The EcoBoard meets quarterly to review the progress of each of the workgroups and to address challenges. Each year, the EcoBoard and Green Task Force hold a joint meeting to discuss new issues and opportunities and to review plans for the coming year.

For more information on Cisco's overall CSR governance, see the CSR and Governance section.

Employee Engagement

It is of utmost importance to our environmental vision and strategy that we engage and inspire our employees to become “green ambassadors” for the company. Our strategy relies on embedding a “green” consciousness into the collective will of our company. We seek to inspire our employees to make the workplace more energy- and resource-efficient and to engender pride in Cisco’s environmental actions. We also look to our employees for their creative contributions to meeting Cisco’s environmental goals.

Our goal is to put Cisco’s environmental mission in the hands of our employees, facilitating their ability to collaborate, innovate, and share potential solutions across the company. Employees can educate themselves on Cisco’s environmental activities with resources like our Quarterly Environmental Newsletter and environmental dashboards. Our quarterly newsletter shares best practices across the company and news about programs, processes, and achievements. Our Environmental Aspect Team Dashboard and Eco-Dashboard provide transparency to our sites and our employees on our efforts to reach our environmental goals. In particular, our Eco-Dashboard, which is available to all Cisco employees, is creating a culture of transparency and engagement around Cisco’s environmental impacts.

Cisco further engages employees in our environmental efforts through our internal Cisco Green website. Launched in 2007, the Cisco Green website is a vibrant online community where Cisco’s employees can learn about Cisco’s environmental strategy, achievements, and “green works” in progress, as well as exchange information and ideas on any number of related topics. The site offers a wide range of ways to engage and learn, including a discussion forum, a collection of employee thoughts and commentary, a “green news” feed, and a calendar of worldwide events and volunteer opportunities.

Building on the success of the Cisco Green website, Cisco launched the Think Green, Act Green (TGAG) campaign on Earth Day 2009. The TGAG campaign encourages employees to pledge to implement environmentally sustainable behaviors in the workplace. In the fourth quarter of FY09, we collected over 1200 pledges.

In FY09, we held our first online Earth Day Fair, using Cisco WebEx technology, inviting employees to log onto our Virtual Earth Day portal at the appropriate time for their location and engaging them in virtual conversations, training sessions, and other events. During one 24-hour period beginning April 22, 2009, we showcased Cisco technology, customer solutions, and thought leadership related to environmental sustainability. Our online offerings included a mix of video and live presentations from a range of speakers, including former Vice President Al Gore and San Francisco Mayor Gavin Newsom, as well as senior representatives from Cisco enterprise customers, GridWise alliance, and the Carbon Disclosure Project. Content was tailored to each Cisco operating region.

Launched in March 2008, online discussion forums also play a key role in engaging Cisco employees. The “Let’s Talk Cisco Green” discussion forum has spurred numerous conversations on Cisco’s environmental initiatives and topics such as telecommuting and eliminating plastic water bottles.

We also engage our employees in environmental sustainability through events such as Bike to Work Day and Earth Hour, as well as regional initiatives such as Environment Day in India, where we promoted Think Green, Act Green in Bangalore.

Advocacy

The scale and urgency of today's global environmental challenges require solutions that involve cooperation across industries and public-private partnerships. Conversations with our stakeholders play a critical role in our approach to bringing about environmental improvements worldwide.

Cisco actively engages with governments and standard-setting bodies around the world to monitor and influence the development of emerging regulations, particularly around climate change. Cisco is directly affected by emerging product energy-efficiency regulations and indirectly affected by emissions regulations affecting our customers and partners.

We believe regulations and standards bring clarity to the global marketplace and create a level playing field while encouraging reductions in global emissions, hazardous materials, and waste. Cisco also believes that product efficiency standards can promote innovation by being performance-based, by taking into account product functionality, and by relying on objective criteria, real-world data, and system-level efficiency.

Cisco supports market-based mechanisms that will reduce carbon emissions over time and create market incentives for consumers and businesses to use energy more efficiently and producers to reduce their GHG emissions through efficiency and innovation. Cisco also supports policies that increase tax incentives for use of energy-efficient products, promote investment in renewable energy, increase funding for environmental/energy R&D, and provide incentives for smart grid deployment.

Cisco is very active in the environmental policy committees and councils of trade associations in the United States, Europe, and Japan, such as the Information Technology Industry Council, DigitalEurope, and TechAmerica, and in external collaborations such as the Global e-Sustainability Initiative (GeSI). Cisco is also actively engaged in the International Telecommunication Union, leading the working group focused on metrics for energy efficiency in ICT products and services.

In FY09, Cisco contributed to the global dialogue on environmental issues in a variety of ways:

- Cisco held a climate change policy panel on Earth Day with panelists from the European Commission and an advisor to the U.S. administration to educate Cisco employees about regulations to combat climate change and government actions to reach an international agreement on climate change.
- Cisco is a board member of [GeSI](#), an international strategic partnership of ICT companies and industry associations committed to creating and promoting technologies and practices that foster economic, environmental, and social sustainability and drive economic growth and productivity.

Cisco was chosen to lead the GeSI policy working group and participates in the climate change working group.

- In December 2008, Cisco joined 140 business leaders in signing the [Poznan Communiqué](#) pointing out key elements of an international deal on climate change.
- In September 2009, Cisco signed the [Copenhagen Communiqué on Climate Change](#), encouraging progress on an international agreement on climate change and reinforcing the message to governments that the international business community wants a strong and effective international climate framework.
- Cisco is a member of the [World Economic Forum Task Force on Low-Carbon Economic Prosperity](#) that recently launched the Eco-Sustainability project. The aim of the task force is to synthesize the role ICT can play in mitigating climate change and to develop a charter highlighting the sector's role in shaping a sustainable future. In March 2009, Cisco signed a letter directed to G20 Leaders and the UN Secretary General including a set of recommendations to give extra momentum to the climate discussions.
- Cisco developed the [One Million Acts of Green](#) initiative to show that individual, organizational, and community acts add up to something significant. In under a year, nearly 2 million "acts of green" have been recorded globally, avoiding an estimated 220,000 metric tonnes of greenhouse gases and demonstrating the power of mobilizing the human network to drive change. Watch a [video](#) to learn more.
- Cisco continued to take a leading role with the UN-led [Solving the E-Waste Problem](#) program, working within the Global Policy and Recycling task forces.
- Cisco became a coleader for the EU WEEE directive within the Environmental Policy Group of Digital Europe, an association that combines 39 national digital technology associations from 28 European countries with over 61 direct company members. Through the Environmental Policy Group, Cisco is working with industry peers to respect all applicable environmental legislation, while allowing the ICT sector to prosper.

Minimizing Greenhouse Gas Emissions

Climate change is a complex global challenge that requires an innovative and collaborative response. Projected GHG concentrations in the atmosphere suggest the need for significant improvements in energy efficiency and a global transition to a low-carbon economy. There is general agreement that increasing concentrations of greenhouse gases in the atmosphere are caused by human activity and are mostly a byproduct of the combustion of fossil fuels. The substantial increase in fossil fuel use since the beginning of the industrial revolution has changed the carbon balance between organic material and the atmosphere that is driven by photosynthesis and various decay mechanisms. Inventories of carbon from dead plant and animal deposits, such as oil and coal, are being recovered for fuel and converted to carbon dioxide at a rate exceeding available sink mechanisms, such as photosynthesis.

Mitigating climate change requires reducing GHG emissions, especially the emissions from energy generation and from land use change. Energy use is the largest source of GHG emissions for Cisco and for most companies and individuals. According to the International Energy Agency's [World Energy Outlook 2008](#), global energy-related GHG emissions are projected to increase by 45 percent from 2006 to 2030 if business continues as usual, with over 70 percent of the projected increase coming from the power generation and transport sectors. Climate change demands unprecedented focus on mitigating GHG emissions.

Cisco is committed to addressing the climate-related risks and opportunities affecting its business and to working collaboratively to develop a low-carbon economy. As a leading provider of networking technology hardware, software, and services, our material climate change risks and opportunities stem from:

- Greenhouse gases emitted as a result of our operations, including energy usage at offices, labs and data centers, and business travel
- Greenhouse gases emitted as a result of the operations of our business partners
- Greenhouse gases emitted by our customers as a result of the electricity used by our products
- Greenhouse gas emissions abated as a result of our solutions being applied to transportation, buildings, and energy management

Climate change poses limited direct physical risk to Cisco's business in the short term due to our geographic dispersion and global customer base. Although Cisco is not a heavy emitter of greenhouse gases, and therefore is less sensitive to changes in regulations than companies in carbon-intensive industries, regulatory risks and market access risks are increasing. Regulations and standards have been issued or are in process that could impact Cisco's operations, products,

and supply chain. For example, Cisco is affected by energy-efficiency requirements for the design and operation of network products; efficiency specifications for new or existing buildings, vehicle fleet, diesel generators, or other “direct” sources of emissions in Cisco operations; and regulations that change the price of energy. Similar changes in the supply chain could affect Cisco’s direct and indirect procurement, potentially increasing costs.

At the same time, Cisco is well positioned to contribute to the global effort to reduce GHG emissions. Cisco’s intelligent networking technology provides solutions that Cisco can test and apply in our own operations and that our customers can adopt to reduce the impacts of their own GHG emissions. Using technology-based alternatives to traditional ways of working and living requires a fundamental change in perceptions and a cultural shift at an individual and organizational level. Just as the Internet radically changed the way the world communicates, networking technology is enabling the world to work, live, play, and learn in new and more sustainable ways.

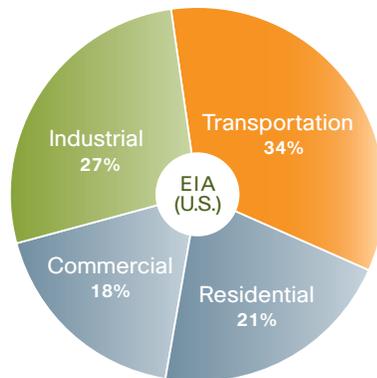
Our Approach

Our approach to minimizing GHG emissions spans three categories of activity that are discussed in greater detail in this subsection.

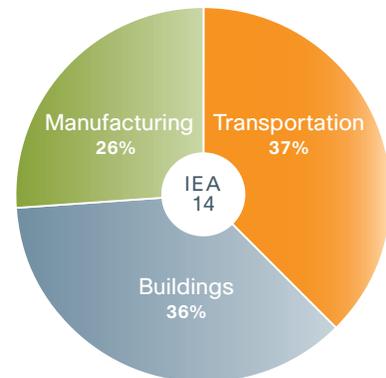
- **Network-Enabled Solutions.** Bringing the resources of the Cisco network to bear on addressing the challenge of climate change. Cisco innovates, develops, and deploys ICT solutions that displace emissions-intensive activities and reduce energy demands in critical areas of global society such as transportation, buildings, and power generation.
- **Efficient Products.** Cisco works to improve the energy efficiency and climate-related impacts associated with product use.
- **Sustainable Operations.** Cisco technologies are applied to our own operations, reducing our energy use and business travel, and improving energy efficiency in our facilities. We are also purchasing electricity from renewable sources.

Fundamental to our approach is the belief that the ICT sector can play a critical role in the global response to climate change. Per both International Energy Agency (IEA) and U.S. Energy Information Agency (EIA) data summarized in the following figure, about 75 percent of energy-related GHG emissions are from buildings and transportation.

Breakdown of U.S. and IEA14 Energy-Related Greenhouse Gas Emissions



Source: U.S. Energy Information Agency (EIA) Emissions of Greenhouse Gases Report Table 6 (U.S., 2007, preliminary)



Source: International Energy Agency (IEA) Energy Use in the New Millennium Figure 2.3 and p.24 description (IEA14, 2004)

Although the use of ICT products such as computers, data center devices, and network equipment consumes energy, there is substantial opportunity to use ICT products to reduce global energy-related GHG emissions and make the world more energy efficient. In FY09, Cisco sponsored and contributed to the [SMART 2020](#) report, published by The Climate Group and GeSI, which identified opportunities for the ICT sector to develop and apply network technologies to reducing annual GHG emissions by 15 percent, which is a substantial positive impact considering that the ICT sector is projected to be responsible for only 3 percent of global emissions in 2020. Potential abatements are concentrated in the areas of transportation, buildings, power/energy, and industry. Innovative application of network technologies promotes change through our solutions, our products, and our operations.

Network-Enabled Solutions

Cisco customers are looking for ways to reduce their energy-related costs and their carbon footprint. This creates market opportunities for Cisco. Cisco is researching, developing, piloting, and delivering network technologies that can help reduce GHG emissions by:

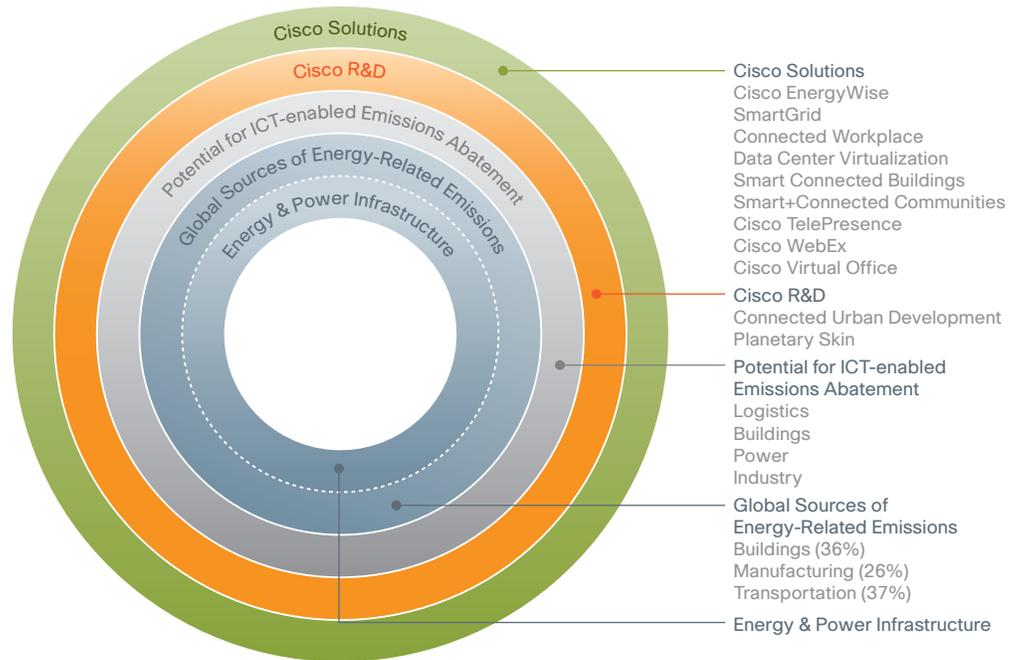
- **Offering low-carbon ways of learning, working, and traveling:** Customers are rethinking their behaviors and finding innovative, network-enabled alternatives, such as web-based collaboration rather than travel, and telework rather than daily commuting.
- **Providing connected energy management:** Customers can employ the network as the platform to measure, monitor, report, and plan for greater energy efficiencies.

The following figure demonstrates how global emissions are addressed by Cisco network solutions that actively displace emissions-intensive activities. As shown in the innermost ring, GHG emissions from energy use are separated into transportation, buildings, and manufacturing emissions, which are all affected by an underlying power and energy distribution infrastructure. Energy use shown is from IEA 14 data. U.S. EIA data shows essentially the same division among buildings, transportation, and manufacturing. The gray middle ring illustrates the abatement potential for the ICT sector, as described in The Climate Group and GeSI Smart 2020 report, which identified opportunities in the energy- and GHG-intensive areas of logistics, buildings, power, and industry. Cisco's network solutions and research initiatives, shown in the outermost rings, are directly taking advantage of these abatement opportunities by reducing emissions in one or more of the key sources of GHG emissions: transportation, buildings, and manufacturing.

"Over the next three to five years, as more people around the world migrate to urban centers, 3 billion individuals around the world will connect to the Internet. Cisco envisages a future where successful communities and cities will run on networked information, and where information technology will help the world better manage its energy and environmental challenges. Cities of the future, and many innovative cities now, are addressing the issues and opportunities of this new world by thinking about the network as the platform for economic development, better city management, and an improved quality of life for citizens."

— Wim Elfrink
Chief Globalization Officer and Executive Vice President,
Cisco Services

Cisco Network-Enabled Solutions Addressing Greenhouse Gas Emissions



At Cisco, we are developing solutions for both mitigating and adapting to climate change. To help mitigate avoidable emissions, we are looking for ways to increase energy productivity or energy efficiency, slowing growth in energy demand and reducing the rate of increase in global GHG emissions from energy usage increase. Cisco data center virtualization technologies, for example, significantly reduce the number of data center components. Fewer components means less electricity used to operate both the ICT equipment and the HVAC equipment used for data center cooling. Fewer components also reduce emissions from the manufacture of underutilized equipment.

In addition, we are investing in solutions that promote energy restraint, or solutions that decrease the long-term energy demand by eliminating energy-intensive activities. These solutions are fundamentally changing behavior, challenging traditional approaches, and creating alternative low-carbon paths for working, living, playing, and learning. For example, Cisco TelePresence and Cisco WebEx enable dynamic, network-based meetings and online collaboration that replace the need for business travel, dramatically reducing a company's GHG emissions.

Cisco recognizes that the application of technology alone will not result in a drop in emissions. It has to be coupled with changes in culture, management practices, and business processes in order to achieve the full potential of the technology. However, this evolution to collaborative technologies, smart buildings and work spaces, and connected energy management creates additional benefits, including faster decision making, improved cross-cultural communications, broader dissemination of information around the world, and increased ability to efficiently deploy scarce internal resources.

The following table highlights Cisco customer solutions and R&D programs that not only address the key sources of energy-related GHG emissions, but also address the challenges associated with adapting to climate change.

Cisco Solutions and R&D programs that Mitigate GHG Emissions

Emissions Addressed	Cisco Solution or R&D Program	Description	Impact
Transportation Building Manufacturing	Planetary Skin	<p>Public and private sector leaders have agreed that in addition to appropriate target setting and predictable large-scale financing, meeting the challenges of climate change will require the creation of transparent and trusted mechanisms for monitoring, reporting, and verifying changes to environmental conditions.</p> <p>Planetary Skin is a cross-sector partnership to develop a collaborative, online, global monitoring system that captures, collects, analyzes, and reports data on environmental conditions around the world. Planetary Skin will increase decision-making capabilities and provide a platform for open collaboration between public and private sectors around the challenge of climate change. Collecting data from space, airborne, maritime, terrestrial, and people-based sensor networks and other sources of structured and unstructured data, Planetary Skin will help model, analyze, and report on environmental conditions in a standardized usable format over an open and adaptable cloud computing platform that is governed as a global public good.</p>	<p>Planetary Skin will be developed based on the fundamental scientific and other research and development strengths of a number of world-class global institutions. The Planetary Skin R&D Program will focus on codeveloping three core capabilities:</p> <ul style="list-style-type: none"> • Manage resources (such as energy, biomass, food, water, and land) productively and effectively • Manage risks related to climate change such as rising sea levels that affect coastal infrastructures, drought-related crop yield reductions, and disease proliferation and pandemics • Enable new environmental markets for carbon, water, biodiversity, and other resources <p>See the "Reflections on Planetary Skin" sidebar for more information, or visit the Planetary Skin website</p>

<p>Transportation Building</p>	<p>Connected Urban Development (CUD)</p>	<p>As a result of our commitment to the Clinton Global Initiative, Cisco has partnered with select cities around the globe to reduce global carbon emissions while simultaneously promoting economic development by fundamentally changing the way cities operate and use natural resources. Networked architecture, applications, devices, and online services are fundamental to the CUD vision and approach. The integration of mobility, work, buildings, energy, and citizen services with information provision and dynamic decision making for city planners and authorities presents a unique opportunity for cities to operate more intelligently.</p> <p>Pilot projects underway in Amsterdam, San Francisco, Seoul, Birmingham (U.K.), Hamburg, Lisbon, and Madrid are proving the power of network technologies to reduce carbon emissions in urban environments by addressing service delivery, traffic management, public transportation, real estate, and carbon footprint monitoring tools.</p>	<p>In 2006, Cisco committed \$15 million to the CUD program over a five-year period, and we report on this commitment annually to the Clinton Global Initiative. In 2008, the European Commission recognized the program as a Benchmark of Excellence in its Covenant of Mayors program, and in 2009 CUD has become an official partner of Sustainable Energy Europe.</p> <p>Cisco has developed a CUD Solutions Toolkit that includes lessons learned, best practices, economic and environmental value case models, and CUD project outcomes.</p> <p>See the "Case Studies from Connected Urban Development" sidebar for initiative descriptions and discover more by visiting the CUD website.</p>
<p>Transportation Building</p>	<p>Smart+Connected Communities</p>	<p>Cisco has launched the Smart+Connected Communities initiative globally to leverage the thought leadership, ideas, and solutions incubated by the CUD program and drive economic, social, and environmental sustainability to our customers around the world. Through a holistic approach with solutions, services, learning academies, and an ecosystem of partners, Cisco's Smart+Connected Communities initiative will leverage the network to deliver integrated offerings across real estate, transportation, safety and security, utilities, health, education, and government to improve community management, economic growth, citizen quality of life, and sustainable development.</p>	<p>Smart+Connected Communities is our newest initiative, launched in FY09. Building on the innovations of the CUD program, we believe our Smart+Connected Communities initiative will demonstrate similar positive impact on a larger scale.</p>

<p>Transportation Building Manufacturing</p>	<p>SmartGrid</p>	<p>This network infrastructure helps utility companies construct "smart grids" that optimize power supply and demand by routing power more efficiently and allowing demand-side management and two-way, real-time information exchange with customers. This information is critical for implementing dispersed renewable generation and adding hybrid/electric vehicles to the utility grid. Combined with smart meters, smart grids also allow customers to see how power is being used in order to influence behavior to reduce energy consumption or shift demand in time to permit use of lower-carbon sources of electricity.</p>	<p>Pilot projects, including one sponsored by the U.S. Department of Energy's Pacific Northwest Laboratory, have shown a 10–15 percent reduction in household energy use with smart grid technologies. Cisco is partnering with General Electric, Florida Power & Light, and Silver Spring Networks on Energy Smart Miami, a pilot to build the most comprehensive smart grid deployment in the nation. Cisco is participating in the Pecan Street Project to make the city of Austin, Texas, a test bed for clean energy and the smart grid goals. Cisco is also a member of the GridWise Alliance, advocating for the adoption of smart grid technologies. To learn more, visit Cisco's website.</p>
<p>Building</p>	<p>Cisco EnergyWise</p>	<p>Cisco EnergyWise is an energy management technology that allows organizations to report and reduce the energy use of their IT resources. Cisco EnergyWise is embedded into the Cisco Catalyst® switching portfolio and helps improve operational efficiency and reduce energy costs and greenhouse gas emissions across the corporate infrastructure, potentially impacting any powered device.</p>	<p>Cisco EnergyWise won the Best of Interop 2009 award in the Green category for leadership in improving corporate energy efficiency and lowering operational costs with its energy-management architecture. For the average size Cisco customer, EnergyWise could reduce energy usage by 20 percent in the first phase of the Cisco EnergyWise deployment and realize significant cost savings.</p>
<p>Building</p>	<p>Smart Connected Buildings</p>	<p>Cisco's Smart Connected Building systems transform the way buildings are built, operated, and experienced by integrating building systems (like HVAC, lighting, and elevators) with the IP network. This helps companies reduce energy consumption across global operations and enables demand management on a global scale. These solutions have benefits beyond reduced energy consumption. For example, Building Mediator, a product in the Smart Connected Buildings portfolio, enables faster notification and diagnosis of faults, enabling maintenance staff to pinpoint and properly diagnose problems.</p>	<p>Cisco's Smart Connected Buildings solutions are well positioned to help customers achieve significant reductions in GHG emissions by being able to access a broad range of the energy consuming systems, analyze the data from these systems, and then act on that data to reduce energy use. Early adopters have experienced a 25 percent reduction in energy consumption by optimizing the interactions of building systems over the IP network.</p>
<p>Building</p>	<p>Cisco Connected Workplace</p>	<p>Cisco Connected Workplace is a flexible work environment designed to support employee mobility and improve collaboration by providing a variety of workplace settings and enhanced technology tools. The initiative takes advantage of the fact that workplaces today are vacant up to 60 percent of the time because people are working away from their desks, collaborating formally and informally in person, and using rich remote technologies such as Cisco WebEx and Cisco TelePresence.</p>	<p>Cisco Connected Workplace case studies show reduced costs associated with real estate, furniture, workplace services, and IT infrastructure. Such environments typically support 40 percent more employees than a traditional layout, thereby substantially reducing footprint demands and associated costs.</p>

Transportation Building	Data Center Virtualization	Power and cooling are two of the biggest issues that data center managers and IT organizations face. Data center virtualization improves the utilization of data center equipment, reducing emissions from the manufacture of unnecessary equipment and facilities.	According to a Forrester Consulting study Cisco commissioned in 2008, firms initially deployed virtual servers to improve hardware utilization, allowing them to greatly reduce their server purchasing. But today these firms cite improved power and cooling efficiency as important motivators for adopting virtualization technology. Cisco data center solutions achieve resource savings of up to 70 percent through virtualization.
Transportation	Cisco TelePresence	Incorporating high-quality spatial audio and video, Cisco TelePresence enables live, face-to-face interactions over the network, reducing the need for travel to in-person meetings and allowing for faster decision making. It has the potential to greatly decrease the need for business travel and the associated GHG emissions.	By the end of FY09, over 170 Cisco TelePresence units had been installed across our company in more than 21 countries. For information on how we are using Cisco TelePresence to reduce our GHG emissions, see Sustainable Operations.
Transportation	Cisco WebEx	Cisco WebEx offers the ability to host dynamic web-based meetings, stimulating real-time collaboration without the need for travel to one location. Designed to enable people anywhere in the world with an Internet connection to connect and collaborate efficiently, Cisco WebEx helps save the time, money, and GHG emissions associated with traveling to meetings in person.	In 2009, there were more than 3 million registered users of Cisco WebEx, hosting an average of over 200,000 meetings each day. More than 10 million meeting participants connect through WebEx each month. For information on how we are using Cisco WebEx to reduce our GHG emissions, see Sustainable Operations.
Transportation	Cisco Virtual Office	The Cisco Virtual Office solution boosts flexibility and productivity and extends the enterprise by delivering secure, rich, and manageable network services to teleworkers and employees working outside the traditional office environment. By providing full IP phone, wireless, data, and video services, Cisco Virtual Office offers a smooth, office-caliber experience to staff, wherever they may be located. This solution helps limit the emissions associated with travel and enables energy savings for office buildings and real estate.	More than 16,000 Cisco employees use Cisco Virtual Office. Based on a FY09 Teleworker Survey of Cisco employees, the average user gains 2.4 hours per week by reducing commute time and saves approximately 23 travel miles per day. On average, this equates to over 19,000 metric tonnes of avoided CO2 emissions annually. In addition, the majority of teleworkers report a significant increase in work-life flexibility, productivity, and satisfaction as a result of their ability to work remotely. For information on how we are using Cisco Virtual Office to reduce our GHG emissions, see Sustainable Operations.

Reflections on Planetary Skin

Maintaining and expanding global rural carbon sinks — natural and manmade reservoirs that remove carbon from the atmosphere and store it for an indefinite period — represents roughly half of the total cost-effective mitigation of carbon emissions required to reach global emissions targets and prevent dangerous climate change. In other words, cost-effective carbon sink management would contribute about the same as lowering greenhouse gas through global decarbonization of energy supplies and energy-efficiency measures. The problem today is that, measured solely in terms of monetary value, trees in the rainforests are “worth more dead than alive.” Reversing that attitude requires capturing the true value of the carbon sink that rainforests provide.

Together with our partners, we have estimated that the economic value of eliminating deforestation globally is in excess of \$400 billion per year. In contrast, funding the associated opportunity, monitoring, protection, and transaction costs are likely to be in the range of \$40 billion per year. This opportunity for high returns is ripe for innovation through the creation of a “Rainforest Skin.” This will take the form of an open network platform for near real-time, highly distributed mass remote sensing, measurement, risk-profiling, and continuous monitoring of carbon stocks and flows that generates trust and enables collaboration among the players in all sectors. This platform will use a combination of georeferenced satellites, unmanned aerial vehicles, participatory networks, and multiple ground-based sensor networks to estimate the forest’s carbon stock dynamics and its risk profile.

Case Studies from Connected Urban Development

Personal Travel Assistant (Seoul, Amsterdam): The Personal Travel Assistant (PTA) is designed to help make on-the-go travel decisions in complex urban environments that take into account time, cost, and carbon impact. Streamlining information on available routes, transactions, and potential travel “disruptions” (like traffic congestion), PTA delivers dynamic, real-time support through several information devices, including PCs and mobile phones. Piloted in Seoul and Amsterdam in 2009, PTA aims to both reduce carbon emissions and increase users’ satisfaction with their urban mobility options, particularly public transportation.

Urban EcoMap (San Francisco): A pilot codeveloped with the city of San Francisco, the Urban EcoMap enables citizens, businesses, and policy makers to visualize and monitor their carbon footprints in their communities and build action plans for reducing their emissions. The forthcoming development of the Amsterdam Urban EcoMap scales the application globally.

Connected Bus (San Francisco): The Connected Bus is a public transportation innovation aimed at enabling people, traffic, and public transit vehicles to flow more efficiently. With real-time information on bus locations and wait times, riders can reach their destinations more reliably. The cost-benefit analysis of the Connected Bus pilot in San Francisco demonstrated long-term environmental and economic benefits due to increased ridership and more efficient traffic flow. In San Francisco, for example, Connected Bus is projected to increase ridership by 12,000 people per year, reducing the number of individual cars on the road and carbon emissions from transportation.

Smart UrbanEnergy for Schools (Lisbon): A partnership with the city of Lisbon and the Portuguese Ministry of Education, this project showcases how technology can improve global energy efficiency in both the physical environment and in energy networks. Energy savings of 33.4 percent were achieved during the first few months of the pilot.

Smart Transportation Pricing (Seoul): Currently being run as a technical pilot in Seoul, Smart Transportation Pricing encompasses a set of technology-based pricing reforms to encourage more efficient travel behavior and demand management solutions.

UrbanEnergy Management (Madrid): This pilot with the city of Madrid explores how energy is generated, managed, and consumed. A 33-unit apartment building is being outfitted with bioclimatic design and design innovations based on a broadband infrastructure that shares information about energy generation, consumption, and usage.

Smart Work Centers (Amsterdam): Being piloted in Amsterdam, Smart Work Centers is a new form of office center that provides flexible and scalable workplace options so people can reduce commute times. Thus far, users have saved an average of 66 minutes of commute time per day.

Efficient Products

Rising energy and resource demands affect the environment and a company's profits. Cisco recognizes that gains in energy efficiency for our network-based products will result in savings for our customers and the environment.

Energy conservation in networks, as in other areas, requires a number of distinct but complementary approaches: measure the current energy usage of the network, understand the productive function of the network, analyze the architecture and components of the network, and compare products at particular points in the network.

In FY09, we convened a team of product engineers to further explore opportunities for developing products that use less energy and products that create smarter systems. Advances in the energy and resource efficiency of Cisco products in FY09 included the following areas.

Standards Development

There is currently rapid and significant movement around "green standards," especially around energy efficiency, bringing together customers, vendors, governments, and nongovernmental organizations. Product energy efficiency regulations impacting Cisco products may increase compliance costs or affect time to market. All Cisco product categories will be potentially affected, including:

- Electronics for domestic/home use, including audio/visual equipment
- Wireless access points
- Set-top boxes
- External power supplies
- Data centers
- Service provider and enterprise routers and switches
- Small-business and home-office routers and switches
- Servers
- Displays and monitors

Cisco engages with regulatory and standards bodies, either directly or as part of industry groups, to ensure that regulations are clear and effective. Cisco's engineering, value chain, facilities, compliance, regulatory affairs, government affairs, and corporate affairs teams are involved in these efforts. We believe these regulatory and standards activities bring clarity and consistency to the global marketplace, creating predictable requirements and a level playing field that reduces risk.

Cisco is actively involved in work with many organizations to set standards. These organizations include ATIS (North America), Australia and Korea MEPS, ETSI (Europe), EU/EUP (Europe), IEEE (worldwide), ITU (worldwide), METI (Japan), U.S. Department of Energy and Environmental Protection Agency (U.S.), and WRI/WBCSD GHG Protocol (worldwide).

Cisco is committed to taking a standards-based approach to measuring product and solution energy efficiency and embedded GHG emissions. Product configuration, operating conditions, and carbon content of a product's electrical power supply pose significant challenges to reporting its GHG emissions. Standards, like the U.S. EPA's ENERGY STAR standard for personal computers, must be developed to take into account these measurement variables.

Cisco has been an integral part of efforts to develop network equipment power measurement standards. Cisco was coeditor of the Alliance for Telecommunications Industry Solutions standard [Energy Efficiency of Telecommunications Equipment: Methodology for Measurement and Reporting for Router and Ethernet Switch Products](#), which was released in July 2009.

Product Energy Profiles

While standards mature, Cisco has developed a methodology for profiling product power consumption and efficiency metrics for Cisco products. Our objective is to quantify improvements in energy efficiency and GHG emissions across product generations. We have integrated energy-saving features into product roadmaps. Energy profiling of products is an ongoing task, and we intend to have a large set of products profiled by the end of FY10.

Product Design Criteria

Cisco works to maximize product efficiency through the product design process. Cisco has introduced environmental sustainability requirements into its Product Development Methodology and product requirements document. This step formally inserts sustainability considerations into the design of all future Cisco products.

Through modular design and upgrade design criteria, Cisco is also working to minimize the emissions associated with product disposal. Opportunities for reducing GHG emissions at end of life include:

- Maximizing original product life
- Optimizing manufacturing processes such as testing, handling, and shipping to lower energy use
- Minimizing packaging and printed documentation
- Maximizing product reuse through return, repair, and redeployment
- Maximizing recycled commodity streams

Our service network offers customer return services for all Cisco products. Although take-back, reuse, and recycling programs consume energy, the net effect is substantial energy savings, given the energy required to produce new product from raw materials. Learn more about Cisco's waste management programs under Reducing Waste.

Energy Savings through Device and Function Integration

Energy savings of 50 percent or more within network infrastructure are possible through service integration, where one device integrates the work previously done by many devices. The figure below illustrates the substantial energy savings of the Cisco ASR 1000 Series, as compared to purchasing standalone devices that serve the same need.

By reducing the number of components in a system, Cisco's service integration efforts have the added benefit of cutting waste.

Sample Energy Comparison: Multiservice Devices vs. Multiple Single-Function Devices



Sustainable Operations

Cisco believes that the global problem of climate change requires a significant reduction in emissions in absolute terms. For our operations, Cisco has made the following public commitments:

- Clinton Global Initiative commitment to reduce GHG emissions from all Cisco business air travel worldwide by 10 percent absolute (against a FY06 baseline)
- EPA Climate Leaders commitment to reduce all Scope 1, 2, and business-air-travel Scope 3 GHG emissions worldwide by 25 percent absolute by CY12 (CY07 baseline)

Cisco used EPA criteria and worked with EPA to ensure that our 25 percent absolute reduction goal was significant, challenging, and compared favorably to industry sector benchmarks. According to EPA, "The sector benchmark is a combination of projected average energy intensity improvement and any projected process-related emissions intensity changes. EPA expects every goal to be significantly better than the projected benchmark performance for the Partner's sector."

Based on collected Scope 1, 2, and 3 emission data, Cisco has identified opportunities to reduce GHG emissions. Investments and activities in FY09 were focused on the following areas:

- Continue to improve the completeness and accuracy of energy use measurement and reporting
- Increase the energy efficiency of labs, data centers, and office facilities
- Decrease indirect emissions associated with business travel
- Support development of renewable and low-carbon electricity through "green power" purchases

Greenhouse Gas Emissions

Cisco's total global GHG emissions over the last four fiscal years are shown in the following table. Cisco reports emissions by fiscal year and uses fiscal-year emissions for initiative planning.

Indicators	FY06	FY07	FY08	FY09
GHG EMISSIONS				
Total gross* GHG emissions: Scope 1 (metric tonne CO ₂ e)	27586***	52,498	52,084	53,216
Total gross* GHG emissions: Scope 2 (metric tonne CO ₂ e)	317666***	467,478	550,312	579,183
Total contractual* GHG emissions: Scope 2 (metric tonne CO ₂ e)	316,893***	403,188	310,961	226,733
Total air travel GHG emissions: Scope 3 (metric tonne CO ₂ e)	190,940	205,797	197,872	115,995
Change in air travel GHG emissions from FY06 (CGI global goal: 10% absolute reduction against FY06 baseline)		+8%	+4%	-39% (goal met)
Total contractual* GHG emissions: Scope 1, 2, and 3 metric tonne CO ₂ e	535,419***	661,483	560,917	395,944
Change in Scope 1, 2, and 3 from FY07 EPA global goal: 25% absolute reduction against CY07 baseline**			-15%	-40% (goal year is 2012)

* Gross and contractual are used consistent with Carbon Disclosure Project 7 survey terminology. Gross GHG emissions figures do not include reductions from Cisco's renewable energy purchases. Contractual GHG emissions figures include the impact of buying low-carbon electricity.

** Cisco's EPA Climate Leaders 25 percent reduction goal is measured against a calendar-year baseline per EPA requirements, but all public Cisco reporting is on a fiscal-year basis. We are reporting progress against the EPA goal using fiscal-year emissions, although officially 2009 progress will be reported to EPA based on emissions tallied by calendar year. Cisco does not publically report calendar-year emissions to avoid confusion with previously reported fiscal-year data.

*** In our FY06 CSR report, we only reported Scope 1 and 2 emissions data actually collected from Cisco sites and separately noted the estimated completeness of the data. We now collect actual emissions data for over 90 percent of our real estate portfolio and estimate the balance based on building square footage and type of usage. We do not believe the Scope 1 and 2 data collected for FY06 is sufficient to support extrapolation to 100 percent. Therefore, FY06 Scope 1 and 2 data in the table should not be trended against FY07 or later data.

All prior-year Scope 1, 2, and 3 emissions data vary to some extent from previously reported values, either in CDP7 or our 2008 CSR Report, because of updates to emissions factors, methodology, and correction of minor errors found upon repeated review. (No significant error has been found.) Cisco continues to invest in improving the accuracy of our GHG emission calculations. To support standardization and benchmarking across companies, Cisco uses the [Greenhouse Gas Protocol Corporate Accounting Standard](#) as the basis for our Scope 1, 2, and 3 (business air travel) emissions calculations. The EPA Climate Leaders program provides additional [program guidance](#).

All emissions calculations and data are reviewed in June of each year by a representative of U.S. EPA as part of the EPA Climate Leaders Partnership. Cisco has also received technical assistance from EPA in determining organizational and operational boundaries, in identifying the most appropriate emission factors for Cisco's business, and in documenting these decisions in an Inventory Management Plan (IMP) that is designed for consistency and transparency in the inventory over time. EPA performs desktop reviews of both the inventory data and IMP to verify that EPA quality standards are met. EPA also conducts a risk-based on-site IMP review to test that the IMP is being implemented at the facility level.

"We're very pleased with the 40 percent reduction in GHG emissions compared to the base years of our CGI and EPA reduction commitments. Going forward, we'll be increasing our focus on reducing energy consumption. After all, the cleanest and cheapest energy is the energy you do not use."

— Rob Rolfsen
Cisco Director of Workplace Solutions, Cisco

Cisco's internal ISO 14001 team audits the emissions reporting process. The latest internal audit occurred in April 2009. Our processes for determining our GHG inventory were also externally audited in September 2009 by a third party as part of Cisco's ISO 14001 certification processes.

Cisco is now focusing resources on developing standards to better characterize, measure, and report indirect emissions categories, including emissions from Cisco's supply chain and product use. Key activities in FY09 include participation in the development of the Scope 3 Accounting Standard of the Greenhouse Gas Protocol, being led by the World Resource Institute and World Business Council for Sustainable Development.

Cisco has reported to the Carbon Disclosure Project (CDP) in all seven years of the CDP's existence. CDP is an independent, not-for-profit organization that holds the largest data base of GHG emissions in the world. Cisco was ranked the #1 Information Technology company in 2009 based on our [responses](#) to Carbon Disclosure Project's CDP7 survey, which was submitted in May 2009. The CDP questionnaire and our answers provide a comprehensive view of the following topics related to climate change: risks and opportunities, actual emissions, reduction goals, avoided emissions, and regulatory and policy activities.

Reducing Emissions from Operations

The following table summarizes Cisco's global energy and electricity usage.

Indicators	FY06	FY07	FY08	FY09
ENERGY AND ELECTRICITY USAGE				
Energy usage (GWh)	889*	1281	1438	1507
Electricity usage (GWh)	749*	1053	1203	1275

* In Cisco's FY06 CSR report, we only reported electricity usage actually collected from Cisco sites and separately noted the estimated completeness of the data. We now collect actual electricity usage for over 90 percent of our real estate portfolio and estimate the balance based on building square footage and type of usage. We do not believe the data collected for FY06 is sufficient to support extrapolation to 100 percent. Therefore, FY06 electricity usage in the table should not be trended against FY07 or later data.

As can be calculated from the GHG emissions table from the previous section, Scope 2 emissions from electricity consumption make up slightly more than 75 percent of our total worldwide Scope 1, Scope 2, and Scope 3 business air travel emissions. Therefore, reducing GHG emissions from electricity use is a priority. A reduction in emissions can be made by reducing electricity consumption as well as purchasing electricity from low-carbon sources, including energy generated from renewable sources.

Purchasing Renewable Energy

Purchasing electricity generated from renewable and non-carbon sources has been an important component of Cisco’s initial GHG reduction strategy. Cisco purchases renewable power where it is available in the local power market. Cisco currently purchases power from non-carbon sources in both the United States and Europe and plans to support non-carbon energy sources in other regions of the world as they become available in the marketplace. Cisco’s global renewable electricity purchases is summarized in the following table:

Renewable Electricity Purchases	FY06	FY07	FY08	FY09
Electricity from renewable sources (GWh)	2	110	342	466
Electricity from renewable sources (%)	<1%	10%	28%	37%
GHG emissions avoided (metric tonne CO ₂ e)	773	64,290	239,351	352,450

The percent of electricity purchased from renewable energy sources for various regions is shown in the following table.

Region	Percent of FY09 Electricity from Renewable Sources
Global	37%
United States	41%
Europe	61%

Cisco has increased renewable power purchases since FY06 by buying Renewable Energy Certificates (RECs) and entering into green power contracts with various electricity suppliers in the United States to reduce GHG emissions from Cisco operations. Purchased RECs are certified by Green-e, an independent auditor of renewable energy products, and are generated from hydropower projects in Washington; wind projects in Iowa, Texas, North Dakota, and New Mexico; and biomass projects in Tennessee and Kentucky. In addition, Cisco purchased approximately 76 million kWh through various European green power suppliers. We follow the [guidelines](#) from the United Kingdom’s Department for Environmental and Rural Affairs (DEFRA) and use a grid average rate when calculating emissions associated with this power.

Cisco participates in the U.S. EPA’s [Green Power Partnership](#). As of July 2009, Cisco was listed ninth among the National Top 50 and seventh among Fortune 500 companies in the EPA’s [green power ranking](#). This ranking is updated quarterly by the U.S. EPA.

Reducing Electricity Consumption in Facilities

Roughly 70 percent of our electricity is used to power equipment in labs, with the balance roughly equally split between our data centers and office space. Through joint efforts of Cisco’s Green Engineering Task Force and Workplace Resources team, Cisco is working to improve power efficiency in our engineering labs and data centers.

Efforts include implementing Cisco’s proven data center virtualization technologies and installing IP-enabled power distribution units (PDUs), or smart power strips, to permit remote shutdown of unused lab equipment through the network. Early tests of smart PDU devices demonstrated the potential to achieve 20 to 30 percent savings in energy use. In FY10 and FY11, Cisco will work to implement this technology across the company.

Cisco is also an active participant in the Green Grid initiative, a global consortium dedicated to advancing energy efficiency in data centers and business computing systems.

Buildings at Cisco's headquarters in San Jose, California, represent over 31 percent of Cisco's global real estate space. All of the buildings in San Jose surpass [California Title 24, Part 6](#) energy standards by 12 to 15 percent, and buildings outside California have implemented similar technologies to reduce energy and operating cost. These technologies include:

- High-efficiency chillers
- Variable air volume systems
- High-efficiency lighting systems
- Motion sensors
- Building Automation System to control air conditioning and lighting operations
- Energy-efficient window and glazing systems

In addition to technological innovation, Cisco has reduced lighting levels in cafeterias, de-energized water fountain pumps, and installed energy-saving vending machines that reduce Cisco's total energy demands.

We are also working to incorporate environmental standards into new site design and existing site retrofits. As specified in Cisco's 2009 Global Green Building Policy, Cisco is committed to having all new construction certified under the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Green Building Rating System. As of January 2009, Cisco was evaluating, designing, constructing, or applying for LEED certification for 29 buildings. We achieved our first Gold Certification in August 2009 for the new Cisco LifeConnections Center, an integrated childcare, medical center, and fitness facility located at our headquarters in San Jose, California.

Cisco estimates that our energy efficiency programs in California avoided 11 million kWh of energy consumption in FY09, representing approximately 5490 metric tonnes of CO₂e and savings of approximately \$1.2 million in energy costs. In addition, Cisco received nearly \$600,000 in rebates from local utilities for implementing these measures, all of which have a payback of three years or less.

Although these programs make clear business sense and are critical to reducing Cisco's environmental impacts, it remains a challenge to roll out programs across the company. Cisco recognizes that there is still untapped opportunity for making a larger impact within its labs, data centers, and other facilities. We will continue to expand existing initiatives and pilot new efforts across our global real estate portfolio.

Reducing Emissions from Air Travel

As part of the Clinton Global Initiative, Cisco committed to reducing its worldwide Scope 3 GHG emissions associated with business air travel by 10 percent, using FY06 as a baseline. To replace physical travel and meet our goal, Cisco is relying on the rollout and implementation of Cisco remote collaboration technologies, including Cisco TelePresence, Cisco WebEx, and Cisco MeetingPlace® web conferencing.

Worldwide utilization of general-use Cisco TelePresence units remains just under 50 percent based on a ten-hour day. Many Cisco TelePresence units are booked at or over 100 percent capacity based on a ten-hour day. Further utilization is constrained by room availability or because of substantial time differences between endpoints. The table below illustrates our rollout of Cisco TelePresence across the company since September 2006, which was the first quarter of FY07.

Cisco TelePresence Room Deployment

Cumulative, as of end of fiscal year	Total number of TelePresence rooms	Total number of cities	Total number of countries
2007 (general use units)	72	50	20
2008 (general use units)	179	109	37
2009 (general use units)	369	156	44
2007 (private or EBC units)*	26	6	3
2008 (private or EBC units)	53	12	7
2009 (private or EBC units)	179	47	21

*EBC stands for Executive Briefing Centers, regional meeting facilities that Cisco uses for presentations to customers.



Cisco CTS-500 TelePresence unit (1-2 users)

We have installed various Cisco TelePresence models at many locations to accommodate the different requirements of each site. This includes models that accommodate anywhere from one or two users in a private office setting to larger group meetings of up to 18 people. By having a range of Cisco TelePresence units available, more types of interactions can be virtualized, avoiding more physical travel and reducing travel expenses and GHG emissions.



Cisco CTS-3000 TelePresence unit (6 users) with CTS-3200 TelePresence (on screen, 18 users)

In addition to Cisco TelePresence, Cisco WebEx and Cisco MeetingPlace products are also part of the suite of solutions used by Cisco employees to avoid physical travel by using remote collaboration within Cisco and with our customers, partners, and other stakeholders. As shown in the following table, our use of Cisco MeetingPlace and Cisco WebEx has doubled each of the last two years, mirroring a similar growth in Cisco TelePresence use. A "people-hour" is one person attending a remote meeting for one hour, either by teleconference or via the web and a personal computer. Five people attending a two-hour meeting would equal ten people-hours.

Cisco WebEx and MeetingPlace Usage

Year	Total web conferencing (millions of people-hours)
FY07	3.7
FY08	7.2
FY09	15.0

Use of web conferencing is pervasive at Cisco because of the global nature of our collaborative business processes and management practices. (See the CSR and Governance section for a discussion of Cisco's Collaborative Management Model.) In the last fiscal quarter of 2009, Cisco employees conducted approximately 1.25 million meetings using Cisco WebEx sites. In July 2009, the last month of our fiscal year, more than 40,000 unique Cisco employees hosted WebEx meetings on these WebEx sites, indicative of the broad adoption of these technologies within Cisco.

Using Cisco TelePresence and web conferencing, Cisco has piloted and developed the business processes and management practices for remote company meetings, executive operational reviews, our annual sales meeting, and our annual senior leadership "offsite" meeting, thereby expanding the types of interactions that can effectively be completed remotely. This real-world

experience guides product development and supports rollout of the supporting management practices. Use of and familiarity with these and related products will continue to expand at Cisco for more functions and business activities. As more organizations transform their operations to fully leverage our remote collaboration technologies, air travel emissions and associated expenses will be further reduced, while employee productivity and work-life balance will improve. Cisco has found that a workforce fully versed in remote collaboration is more effective overall than a culture requiring travel for face-to-face meetings. Decisions are made faster, cross-cultural communications are improved, stakeholder and customer feedback from around the world is better disseminated within the company, and products move to market faster.

The employee skill sets developed to reduce business air travel and the accompanying business processes and management practices are also used to reduce employee travel between home and work, as well as between buildings at a Cisco site. The wide availability of sophisticated collaboration tools within Cisco permit employees to become well versed in integrating these technologies into daily business activities. Several Cisco technologies permit flexible working environments, including [Cisco Virtual Office \(CVO\)](#). As shown in the following table, employees have rapidly adopted Cisco Virtual Office technologies, which include an integrated services router and IP phone, to effectively work remotely. Although telecommuting or working in a flexible office space does not directly reduce air travel, it does afford opportunities to become more proficient in using collaborative technologies. This proficiency can be applied directly to business activities where remote collaboration does reduce air travel.

Cisco Virtual Office Usage

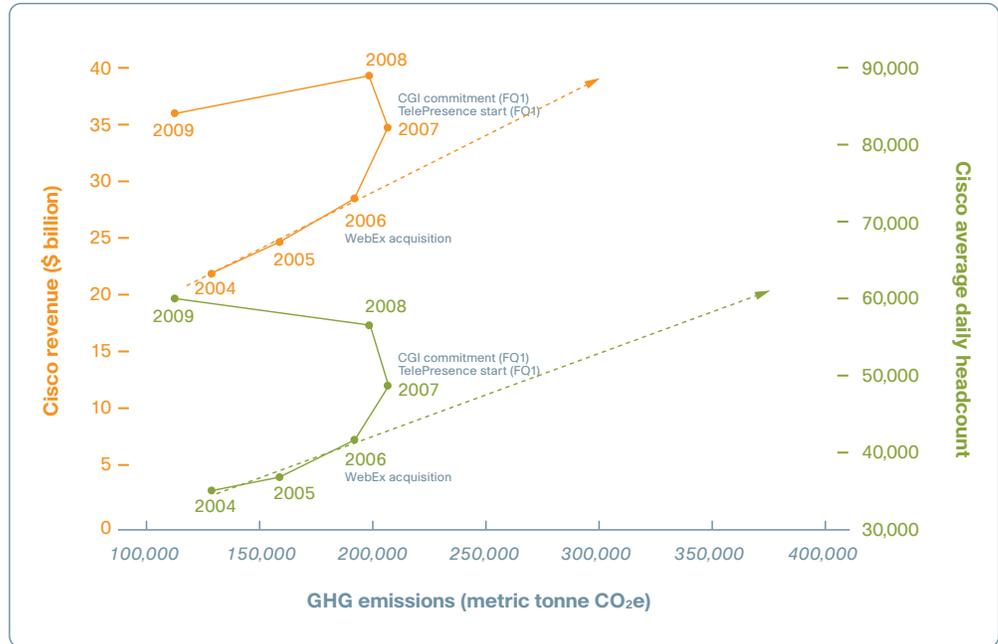
Calendar Year	Total users
2005	1,467
2006	5,006
2007	8,234
2008	13,052
2009 (through October)	16,890

Avoided CO₂ Emissions

It is difficult to project with certainty what might have happened to Cisco air travel emissions without widespread use of these collaborative technologies. However, in response to stakeholder inquiries, Cisco has compared changes to our actual air travel emissions against changes to revenue and headcount. Revenue and headcount are the two factors believed to be the primary drivers of air

travel. In the following figure, actual emissions are plotted against headcount (green line, right axis) and revenue (orange line, left axis).

Avoided CO2 Emissions from Use of Collaborative Technologies



The timing of Cisco’s WebEx acquisition in mid-FY06, as well as the start of Cisco TelePresence use and our CGI air travel emissions reduction commitment in early FY07, are also shown. From FY04 to FY06, changes to GHG emissions were roughly proportional to changes in revenue and headcount. This observation is consistent with the fact that about two-thirds of Cisco’s air-travel emissions were from our sales and service organizations, both “high touch” business functions. The more products sold and the more customers Cisco serves, the more the potential for business travel.

The case for collaborative technologies to reduce physical travel and GHG emissions is unambiguous. With a 27 percent increase in revenue and more than 40 percent increase in headcount compared to FY06, FY09 air-travel emissions have dropped almost 40 percent on an absolute basis compared to FY06, which exceeds our CGI goal of a 10 percent absolute reduction. In prior years, Cisco worked to first overcome upward pressure on travel from business growth, and then achieve absolute reductions in emissions compared to the base year. As a result of this earlier effort, we experienced an initial reduction in air-travel emissions starting in FY08. Because of the economic downturn first seen toward the beginning of FY09, the emissions-reduction emphasis changed to growing customer relationships in spite of restrained travel. The net effect of our collaborative technologies has been a reduction in travel, carbon emissions, and travel costs and an increase in employee productivity and work-life integration while maintaining and growing the customer relationships needed for continued revenue growth when the worldwide economy improves.

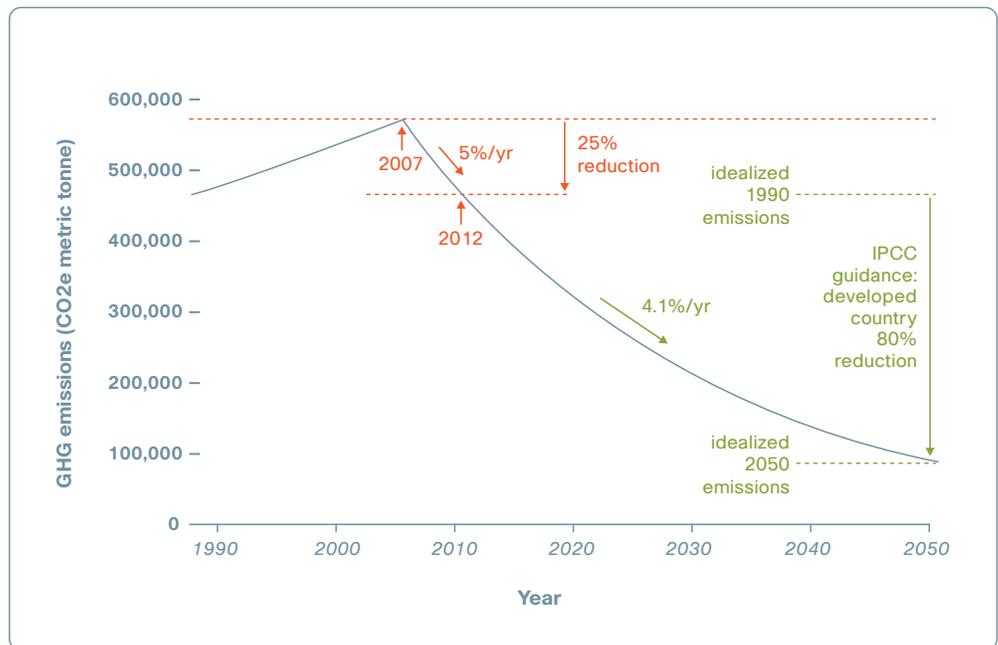
Replacing business air travel with remote collaboration requires more than just installing more technology. Business processes, management practices, and culture must change to adapt to, and take full advantage of, the new network technologies. As experience with remote collaboration technologies increases, both within Cisco and among our customers and partners, remote interactions will progress from the exception of a few years ago, to standard practice within Cisco, to the expected behavior worldwide in the future.

Looking Ahead

Cisco has met its FY06 commitment to CGI to reduce absolute emissions from Cisco's worldwide business air travel by 10 percent. Cisco's EPA Climate Leaders goal of a 25 percent absolute reduction by CY12 includes emissions from Scope 3 business air travel as well as Scope 1 and 2 emissions. Therefore, Cisco will need to sustain the current low level of GHG emissions from business air travel as the economy recovers. To maintain similarly reduced levels of Scope 1 and 2 emissions through 2012, Cisco will direct investment to initiatives that improve electrical energy efficiency and reduce consumption when equipment is not used or not fully utilized.

Some stakeholders have requested reduction goals beyond 2012. We believe our focus on executing existing commitments is best practice given the five-year horizon (2007 to 2012) of existing goals and the substantial existing challenge to the business. However, we have reviewed global reduction goals and Cisco's potential role in meeting the global challenge of climate change. The following figure places our 25 percent reduction goal in the context of the 80 percent goal for developed countries highlighted by the [Intergovernmental Panel on Climate Change \(IPCC\)](#). More discussion will be needed to better understand how developed and emerging country emissions allocation will affect future Cisco reduction goals.

Idealized Greenhouse Gas Emissions Reduction Model



To generate Cisco's 1990 emissions levels in the above figure, we assumed the average worldwide rate of emissions growth from 1990 to 2007 and calculated a generic 1990 baseline. Cisco's actual 1990 emissions levels are not available and would be unrealistic to use as a baseline given how rapidly our business has grown; our FY1990 revenue was only 0.2 percent of FY2009 revenue.

In addition Cisco will continue to develop products that leverage network technologies and implement the recommendations of the [Smart 2020](#) report issued by The Climate Group and the Global e-Sustainability Initiative. Roughly 75 percent of energy-related GHG emissions are from buildings and transportation. By advancing Cisco solutions discussed in this section, we are well positioned to reduce not only our own building and transportation emissions, but also the aggregated emissions of all of our customers.

Managing Product Materials Content

Material selection and chemical use in products is a growing concern of Cisco's stakeholders and a critical aspect of the global challenge of electronic waste (e-waste). Certain heavy metals and organic chemicals used in key product components such as circuit boards and cables, although critical to product functionality, can have negative environmental and health impacts when products are not properly disposed of. It is incumbent upon companies to focus on responsible management of hazardous materials, product material selection, and product end-of-life management to minimize the impact of products on the environment.

Cisco recognizes that hazardous substances pose a risk to the environment and our collective health and safety. Through Cisco's Product Materials Management program, we seek to minimize the use of potentially hazardous substances in our products and operations, and ban certain substances as necessary.

Our Approach

Key objectives of Cisco's materials management efforts are:

1. Complying with product-related environmental laws and regulations restricting the use of certain substances worldwide.
2. Proactively minimizing the amount of hazardous substances in our products through materials innovation, while maintaining Cisco's high standards for product quality and reliability.

To achieve these objectives, Cisco's engineering and value chain teams coordinate to infuse sustainable product design through the value chain. Cisco has adopted a Controlled Substances Specification to outline requirements for the materials, parts, and products used in manufacturing Cisco products. For more information, see the CSR and Our Value Chain section. Cisco design and manufacturing engineers are also charged with designing products with end of life in mind, optimizing for products to be remanufactured or recycled to minimize the amount of e-waste generated. To learn more about our product take-back, recycling, and waste management programs, see Reducing Waste in this section.

Global Compliance

Cisco closely monitors standards and regulations relating to product toxicity and adheres to worldwide directives relating to the use of materials and potentially hazardous substances. This includes monitoring our direct activities and the activities in our supply chain.

In FY09, we developed an internal tracking tool to better educate Cisco employees on existing and emerging standards and regulations. All Cisco employees can access the tool and contribute relevant information.

Cisco works closely with our value chain to monitor compliance of products and materials supplied by partners, and we employ a Product Compliance Assurance Process as part of our due diligence for compliance with applicable standards. We have also developed specifications to validate our suppliers' management of restricted substances and their documentation of compliance standards.

Key regulations affecting Cisco operations and supply chain in FY09 include:

- **EU/EEA Restrictions on Hazardous Substances (RoHS) Directive:** Six substances of concern have been restricted from use in Cisco products shipped into the European Market since July 1, 2006. Cisco's [Position Statement](#) on the RoHS Directive is published on our website.
- **EU/EEA Registration, Evaluation, Authorization, and Restriction of Chemicals Regulation (REACH):** Cisco has a comprehensive REACH compliance program in place to monitor compliance with all applicable obligations. Although we are not directly impacted by REACH preregistration obligations, Cisco continues to work with our suppliers to comply with all relevant REACH requirements and to minimize disruption to business continuity from changes to product composition. Cisco also works proactively with our supply chain and industry research work groups to determine the presence of Substances of Very High Concern (SVHCs) in products, and to provide recipients of Cisco products with relevant information as mandated by the REACH Regulation. Cisco's REACH [Declaration Regarding SVHCs](#) in Cisco products is published on our website. Cisco will continue to update our REACH declaration should any changes occur or new relevant substances be added to the candidate list. In addition, Cisco is working with electronics industry peers on a common regulatory and industry approach to REACH compliance.

Proactive Measures

Cisco proactively works to incorporate materials and components in our value chain that reduce the environmental impact of Cisco products and packaging. These include the following initiatives:

- **Lead-free Solder:** Lead-based solder has historically been a key component of circuit boards and other electronic parts. There is concern that if products containing lead are not properly disposed of, lead can leach into soil, posing risks to human health. While lead solder is currently exempt from the RoHS directive for networking infrastructure equipment, product conversion and testing efforts have allowed Cisco to make significant progress toward removing lead solder from all Cisco products by 2014. For the transition, Cisco has developed a lead-free solder specification for components, interconnects, and printed circuit board reliability; implemented lead-free data management systems, assessed supplier capabilities; tested the reliability of alternative substances; and developed a product conversion roadmap. To protect product quality, we are working with global industry associations to develop highly reliable lead-free solder.
- **BFRs and PVC:** Public concern over the health impacts associated with human exposure to brominated flame retardants (BFRs) and polyvinyl chloride (PVC) has increased in recent years. BFRs and PVC are included in Cisco's controlled substances specification. Cisco is working with industry-standards technical committees to investigate the implications of substituting for BFRs and PVC in our products. In FY09, we began evaluating the impact of eliminating BFRs and PVC on our value chain and product integrity. We have set a target of confirming the viability of substitutes for use in Cisco products by 2011.
- **Batteries:** In FY09, Cisco implemented a Global Battery Specification for Cisco products that is enforced throughout our value chain.

Looking Ahead

As the regulatory environment continues to evolve, Cisco will stay closely connected and will prepare to enact changes throughout the organization and value chain. With transitions to new materials, Cisco is acutely aware that there are often trade-offs, and we will continue to evaluate the consequences of any transition so the ultimate goals of sustainability can be met without compromising other environmental, health, or product quality objectives.

Reducing Waste

Cisco works to minimize the waste output of our operations and our products and packaging. By designing products that use fewer materials, we are minimizing waste before it is created. Through product upgrades, refurbishment, and recycling programs, we are extending the useful life of products. By working with certified product disposal partners, we look to minimize the environmental impact of the small portion of returned materials that cannot be recycled.

Electronic waste is a particular concern, because it is both Cisco's most significant waste stream and the fastest growing type of global waste. According to the UN Environmental Programme, the global e-waste stream will soon reach 50 million metric tonnes annually. Responsible waste management, particularly around e-waste, has become the target of regulation and stakeholder interest. In addition to complying with existing regulations, Cisco has established comprehensive end-of-life management and asset recovery programs to keep our products out of landfills while creating value for our company and our shareholders. We also seek to minimize product waste through our product and our packaging design.

Our Approach

Key objectives of our Waste Management Program are to:

1. Reduce our product waste footprint and return value to the business through product end-of-life management
2. Further incorporate environmental considerations into the product design process, resulting in extended product lifecycles
3. Design packaging to use fewer materials or more recyclable materials
4. Continue to reduce waste from our operations through our Waste Reduction and Recycling Program

Product End Of Life

Cisco has developed a global closed-loop reverse supply chain that allows us to recover and reuse or recycle more than 99 percent of our returned electronic equipment in major markets worldwide. Cisco has many end-of-life processes specifically designed for receiving products from different sources and focused on gaining the highest and best use for all material being returned. The products we reclaim are refurbished and remarketed, disassembled and reused for materials, recycled, or disposed of responsibly. The group at Cisco responsible for the reverse supply chain, reuse, and recycling is our Value Chain Customer Operations team.

Product Reclamation

Cisco receives equipment and materials from many sources. Our largest flow of materials comes in through the Cisco Technology Migration Program, which encourages product returns by offering a discount on new products in exchange for returning used equipment. Depending on current demand, some of these products are refurbished, then resold by Cisco Capital Remarketing or put to reuse by our Global Service Supply Chain team or internal users. In addition to the positive environmental impacts, in FY09, our Value Recovery group was able to save \$153 million.

Cisco requires our contract manufacturers, contract repair manufacturers, distribution depots, internal Cisco labs, and all internal groups at Cisco to submit any unused end-of-life or excess materials for reuse or recycling.

We also receive a smaller flow of equipment from Cisco's TakeBack and Recycle program, which is designed for customers with older or broken equipment that does not qualify for the Technology Migration Program. Returned broken and old products that are beyond capability for reuse, and materials otherwise unqualified for reuse, are sent to a recycler that demanufactures, shreds, and sorts materials into the fraction commodities that constituted the product. These fraction commodities include steel, aluminum, copper, plastic, cardboard, and wire, which are either sold or given to downstream recyclers for use in new products. There are 17 metals in a printed circuit board that can be harvested for reuse. Cisco uses one of a few companies in the world with smelting processes in place to harvest these metals and redeploy the materials back into the metals market.

We house our reclaimed products in locations across the globe and manage our inventory with a Returned Materials Database, providing transparency into collection and reuse patterns. In FY09, we reused or recycled all electronics that were returned to us. Only 0.44 percent of materials were sent to landfill, and these were nonrecyclable items such as broken pallets, wet cardboard, and shrink wrap. A summary of our impact is provided below.

Indicators	FY06	FY07	FY08	FY09
PRODUCT RETURN AND RECYCLING				
Product return (million pounds)	**	**	22.1	23.6
Materials to landfill (percent of returned product not reused or recycled)*	**	**	0.46%	0.44%

* Landfilled material consists of nonrecyclable materials (such as broken pallets, wet cardboard, and shrink wrap).

** In previous reports, Cisco reported weight of material sent to Cisco's recyclers. Leveraging process improvements started last year, we are reporting weight of material received from end users, which is the metric of primary concern to stakeholders. Historical data, prior to FY08, is not sufficiently available and is not reported.

Product Receivers and Recyclers

Cisco has established relationships with four world-class recyclers distributed around the globe. Key partner locations are shown in the following figure. These partners adhere to a strict Scope of Work governing treatment of submitted materials, and each of these contracted partners are ISO 14001 certified and audit their downstream recyclers. We require our recyclers to provide us with a monthly accounting of all submitted materials by weight to ensure visibility into all downstream recycling processes. To learn more about our product end-of-life process, watch a [video](#).

Cisco Product Reclamation, Recycling, and Reuse Operations



Global Compliance

Cisco closely monitors regulations relating to product reclamation and adheres to all worldwide directives. Since 2005, Cisco has gone beyond the requirements in the EU Directive on Waste from Electrical and Electronic Equipment (WEEE) by registering as a producer in all EU countries where Cisco is permitted to do so, despite not being defined as the producer in most EU countries.

In 2009, a limited number of Cisco products were affected by regulations in several Canadian provinces. Cisco has met all the requirements in the legislation. Cisco is also closely monitoring developing legislation in many countries and jurisdictions, including Argentina, Brazil, China, the European Union, and India.

Product Design

Cisco has long been committed to designing our products for extended life. Our modular approach to system design means that our networking products are compatible with previous and future versions of Cisco's network components, decreasing the need for premature product disposal. Customers can easily upgrade these products while retaining components such as chassis, power supplies, and back planes. In addition, these products are designed to be compatible with industry-standard chassis dimensions, allowing customers to keep using their existing equipment.

In 2008, we upgraded our Product Requirements Document (PRD) to include a "green" specification. Cisco's product take-back and recycling teams were consulted during the development of this new requirement.

Product Packaging

Over the past year, we have significantly invested in reducing the environmental impacts of packaging. In response to customer feedback and analysis of our FY08 packaging volume data, we recognized the opportunity to reduce the volume of materials that we use and to cut costs, while still effectively protecting our products. Our focus is on finding ways and working with suppliers to use less raw material by reducing the size and weight of packaging and to incorporate more sustainable content in packaging.

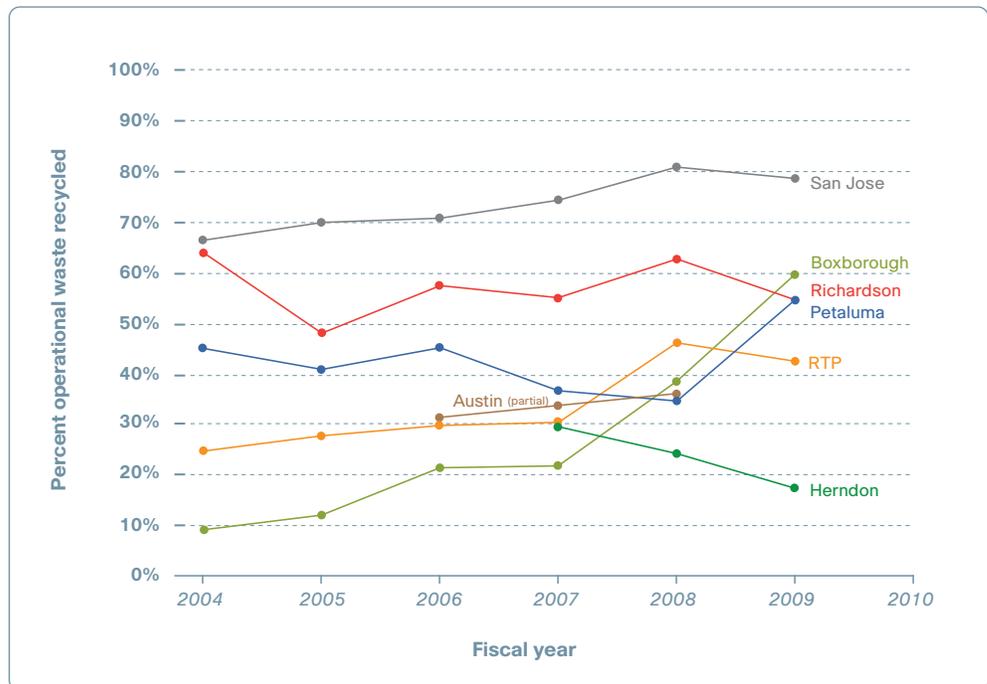
In FY09, Cisco implemented over 40 improvement projects focused on reducing the environmental impacts of product packaging, many of which also served to improve the customer experience with the Cisco brand. More information on our product packaging focus and activities is provided in the CSR and Our Value Chain section.

Operational Waste

Cisco's Waste Reduction and Recycling Program is a key component of Cisco ISO 14001 certification and our global environmental policy. We routinely collect and recycle batteries, CDs and diskettes, beverage containers, trash, wood and pallets, cardboard, mixed paper, confidential waste, packaging materials, toner cartridges, compost, polyurethane foam, landscape waste, mobile phones, food waste, and construction waste.

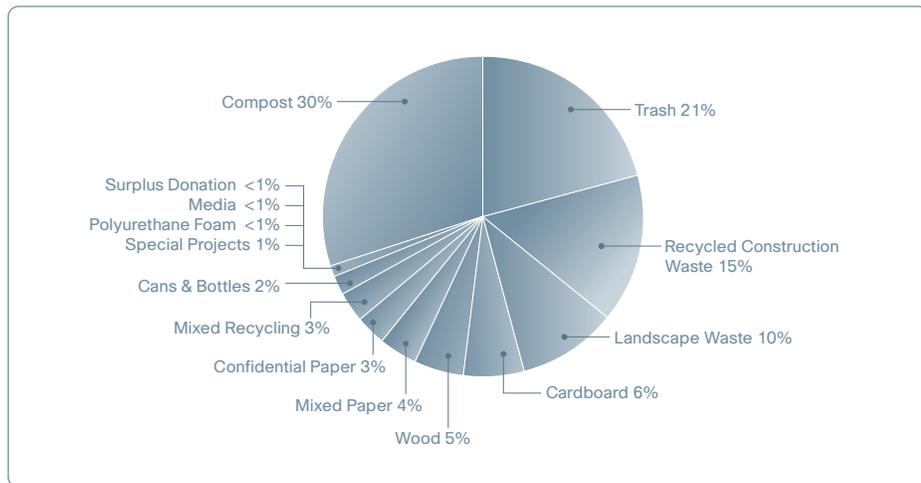
Our offices and facilities throughout North America diverted 68 percent of operational waste from landfill in FY09. Cisco has operational waste reduction and recycling teams established at 21 ISO 14001 sites in North America, Europe, Asia-Pacific and Japan. We are working to standardize reporting worldwide so that consistent, site-level metrics can be reported for each site. Annual operational waste recycling rates for select North American sites is summarized in the following graph. Operational waste recycling performance depends both on Cisco performance and the availability of supporting services by local waste hauling and disposal vendors.

Operational Waste, Select North American Sites



We encourage all Cisco facilities to take steps to reduce their operational waste. Initiatives at our San Jose headquarters, for example, diverted 79 percent of waste in FY09. A breakdown of our waste stream for our San Jose site is provided in the following chart as an illustration of our key sources of operational waste. Since FY08, our San Jose campus has sent waste through a sorting facility prior to landfill to capture additional compostable materials from break rooms and restrooms. We installed a foam densifier in our San Jose office that recycled over 1 ton of polyethylene and polystyrene foam in FY09 that would have otherwise gone to landfill. In addition, we invest in carpet maintenance to extend use beyond the original projected lifespan. As a result of carpet maintenance decisions, we have avoided sending an estimated 1.2 million pounds of carpet to local landfill.

Breakdown of Waste Stream for Cisco’s San Jose Site



In addition to specific initiatives at individual facilities, Cisco has implemented programs at multiple sites that address the following kinds of waste streams:

- **Electronic Waste:** Building on our customer-focused product recovery efforts, Cisco has implemented the eScrap Program to collect and recycle electronics resulting from Cisco’s operations. Through the eScrap Program, we place green bins in our labs for the collection and recycling of materials damaged in research and development. Cisco also hosts Recycle IT events every year for our employees to bring in end-of-life electronics from home for proper recycling. Cisco will take back any electronic goods, regardless of whether it is a Cisco branded product.
- **Food Waste:** In addition to lessening the impacts of our office environments, we strive to reduce the environmental impacts of our cafeterias. Cisco partners with Bon Appétit Management Company, a leader in sustainable food service, to provide Cisco employees in North America with healthy, sustainable, and socially responsible food options. Our sustainable food purchasing initiatives date back to 1999 with the establishment of Bon Appétit’s Farm to Fork program, an initiative to purchase food locally, which promotes local farming and supports sustainable farming and harvesting techniques.

Cisco campuses in San Jose, California, and other North American locations host programs for composting and recycling food wastes where municipal facilities are available to process these materials. During FY09, the food waste separation program at Cisco’s San Jose campus diverted

more than 1416 tons of food waste that otherwise would have been sent to local landfills. The waste was then turned into compost and made available by the municipality for purchase by gardeners. In addition, Cisco's facilities in San Jose and Research Triangle Park, North Carolina, recycle waste vegetable oil. This vegetable oil is converted into biodiesel fuel used to power traditional diesel vehicles.

- **Bottled Water:** In FY08, Cisco's North American offices disposed of 13.7 million plastic bottles of water. In FY09, we ran a pilot water filtration program in Boxborough, Massachusetts, and several San Jose campus buildings that reduced our plastic water bottle consumption level to 11.6 million units. After fully implementing the water filtration program as well as a new beverage vending program throughout North America, we expect the total plastic beverage units consumed will fall further in FY2010. Through these programs, we expect to keep millions of plastic bottles from entering North America's landfills.

Cisco also contracts with vendors to provide facility services that have a low impact on the environment. For example: Xerox uses recycled paper stocks for its Cisco print jobs. Valley Crest Landscape Maintenance, our landscape services provider, follows a standard process of recycling the waste oil used in landscape trucks and equipment, recycling over 200 quarts of oil each year. And ABM, our janitorial services supplier, installed solar power trash compactors on the San Jose campus in FY09, reducing the need to empty the trash from three times a day to once every 10 days.

Managing Water Supplies

Climate change, increasing global population, and polluting human practices underscore the reality that water is a precious and limited resource. According to UN Water, 1.8 billion people will be living in countries or regions with absolute water scarcity, and two-thirds of the world population could be under stress conditions by 2025.¹

With headquarter offices in drought-prone northern California, Cisco has always been conscious of water use in our operations. In FY09, Cisco selected 11 sites, representing 61 percent of employees, for a study of water usages and local water availability. Using the World Business Council for Sustainable Development water tool, we believe three of the eleven sites studied are located in water-scarce areas, and two sites are in water-stressed areas.

Our impact on local water, both what we take from the water system and what we contribute in waste water, has always been an important issue for us and for the communities in which we operate. Key objectives of Cisco's water management program are to:

- Identify and respond to site-level water conservation opportunities for our operations
- Work with partners such as local governments, water utilities, and owners of our leased buildings to pursue and replicate best practices in our operations and beyond

¹ UN Water. "Coping with Water Scarcity- Challenge of the Twenty-First Century." March 2007. <http://www.fao.org/nr/water/docs/escarcity.pdf>

Our Impact

Cisco's primary water impacts come from office building potable water and sanitation, landscaping, and data center cooling. We previously have not reported on our water inventory, despite implementing substantial water conservation projects. Over the past year, we invested in measuring and aggregating our water use so we can better understand the impact of our programs. Given the size and geographic dispersion of our operations, this proved to be challenging. At the Cisco San Jose campus alone, there are 137 water meters that must be manually aggregated. Data we were able to collect from the 11 largest Cisco sites is summarized below.

Indicators	FY07	FY08	FY09
WATER CONSUMPTION*			
Total water consumption (m ³)	1,725,618	1,570,831	1,654,030

* Data for 11 Cisco sites.

Despite our efforts to reduce water use, total water consumption increased in FY09 due to the expansion of Cisco's San Jose campus. The data we collected also revealed some surprising peaks in water consumption at individual sites, which we plan to research to better understand root causes and identify potential reduction opportunities.

Water Management at Boxborough, Massachusetts

Cisco operates two campuses in Boxborough, Massachusetts (NEDC Sites I and II). Because there is no municipal water supply or sewer system in Boxborough, both sites maintain their own onsite wells, wastewater treatment facilities, and treated effluent infiltration systems. As a result, the water cycle is closed for each property, with withdrawals and recharge occurring within the same watershed. Our awareness of water quality and quantity issues is heightened by the water-cycle stewardship responsibilities that we have assumed at these sites. For example, hand soaps and cleaning products selected for use in restrooms must be nontoxic so they do not cause problems at our wastewater treatment facilities.

Groundwater recharge is further supplemented through onsite storm water infiltration and is important to maintaining aquifer yields. The site plan for NEDC Site II achieves an effective coverage ratio for Site II that is less than 15 percent. Rain that falls on the ground largely infiltrates the aquifer, and rain that falls on impervious surfaces such as parking lots is managed closely.

Recognition for Smart Water Management

In March 2009, Building Owners and Managers Association of Silicon Valley (BOMA-SV) magazine profiled Cisco as a "good example of smart adoption of water conservation measures in the commercial office park environment," highlighting our reductions in water use through changes in landscaping, water features, and irrigation systems, as well as our reduction in turf (grass). In addition to the environmental benefits, BOMA-SV emphasized our cost savings as a result of these measures, underscoring the financial benefit of adopting green practices.

Water Reduction Activities

We are minimizing our water impacts through innovative approaches to both reductions and reuse. Although our efforts to date have recognized the importance of a locally relevant approach to water management, we are now acting to institutionalize water management systems.

Wherever appropriate, Cisco reduces water consumption and uses reclaimed water for landscaping and similar applications. We have been able to make many changes to our landscaping practices, while also creating attractive and inviting landscapes for our employees and our surrounding communities. Taking our San Jose campus as an example, our landscaping programs in FY09 included:

- **Using recycled water:** Our headquarters in San Jose, California, uses only recycled water for landscape irrigation and fountains, representing approximately 30 percent of our 700,000 cubic meters of water consumption.
- **Installing irrigation controls:** These controls track variables such as plant type and weather patterns to ensure that the least amount of water needed is dispensed via the drip system. This resulted in an approximate 8 to 10 percent water savings during the first six months of 2009.
- **Changing groundcover:** In FY09, we returned over 250 yards of mulch from onsite tree trimming back to the landscape as part of our Weed Abatement Program. In addition, we instituted a Growth Density Reduction Program which replaces plants, and reduces the need for watering, with natural mulch.
- **Eliminating decorative fountains:** We are taking fountains or water features offline or converting them to landscaped beds with California native and drought resistant plants. In FY09, our Offline Fountain Program resulted in a savings of 7340 cubic meters of water, \$90,834 in electricity charges, and \$55,368 in total maintenance savings. Our Fountain Conversion Program resulted in a total water savings of 1785 cubic meters each year and a total electrical savings of \$44,613 in FY09.

We also work to proactively mitigate our impacts in water-scarce areas by incorporating resource constraints into our local office building and data center development plans. Cisco seeks to site our operations in areas where we can be most successful at serving our customers while minimizing our negative environmental impacts.

Operations siting is an especially important consideration with our data centers. Cisco currently cools most of our data centers by air movement. However, as equipment becomes more compact and consumes more power per unit area, we need to identify more efficient cooling mechanisms, and one of the options we are considering is water-based cooling.

Through these and other initiatives, such as flow restrictors on faucets and waterless urinals in our facilities, we have significantly reduced our overall water use over the past decade. In California alone, we continue to save more than 300,000 cubic meters of water each year as a result of our water conservation efforts.

Working with Others

Cisco seeks out partners, such as local governments and utilities, who can provide support and best-practice sharing to help reduce water use. We count on these experts and leaders as a resource in our own operational efforts. Cisco participates in the California Environmental Dialogue Longview Committee, a forum for frank and honest discussion about California's long-term, strategic-level environmental, economic, and resource management issues.

Cisco also works closely with the owners of our leased spaces to incorporate environmentally sound practices into lease agreements. Our "Green Leases" incorporate LEED criteria, allowing us to negotiate requirements, such as water use measures, into new leases as well as those up for renewal. Given the nature of office buildings, these changes often benefit all tenants and frequently provide cost savings to the landlord.

Looking Ahead

In FY09 we began to lay the groundwork for the development of a Global Water Management System. Water use is currently tracked by some campuses, with each local site owning its information. Using our GHG emissions tracking system as a model, we are in the process of developing a robust and standardized reporting system for collecting data, measuring impacts, and designing a global water strategy. We expect to develop this program over the course of FY10 and begin rolling it out to our global operations. This approach will allow us to better understand our water footprint, assess it against regional water issues, and increase the strategic impact of our water reduction efforts.

Minimizing Land Use Impacts and Protecting Biodiversity

Although GHG emissions, energy, materials, and waste represent Cisco's most significant environmental issues, we manage and monitor other aspects of our environmental footprint. These include:

- Land use impacts and biodiversity
- Airborne emissions (beyond GHG emissions)
- Spills and other discharges

Many of these impacts relate directly to Cisco's real estate portfolio and environmental management system. Cisco's environmental management system, compliance programs, and workplace initiatives help minimize these impacts.

Land Use Impacts and Biodiversity

At Cisco, land use for facilities and office-based operations represents our largest impact on biodiversity. Cisco works to reduce our impact by reducing the demand for physical office space. Cisco employee telework programs and support solutions, such as Cisco Connected Workplace, Cisco Virtual Office, and Cisco WebEx, are instrumental to our strategy. The flexibility of Connected Workplace and Cisco collaboration technologies reduces the demands for office space by more efficiently using existing space and enabling employees to work remotely yet still maintain productivity. A 2007 Cisco [study](#) demonstrated that a space using Connected Workplace could accommodate 140 employees, compared to the 88 who would be assigned to the same space in a traditional layout, substantially reducing office space requirements and associated costs.

In addition, Cisco actively evaluates the biodiversity and land-use impacts of potential facility sites through environmental impact assessments required for permitting. In Boxborough, Massachusetts, for example, we worked closely with state and regional agencies to restore the site and develop a Cisco campus in 2002. Of the 350 acres of campus, 270 acres are designated as open space, including 60 acres that serve to protect wetlands and rare species habitat. The cluster design of the buildings and parking areas allows for more usable open space and facilitates collection of rainwater runoff. Furthermore, the buildings and parking areas are concentrated in the areas previously disturbed by mining activities. See the case study below.

Maintaining Biodiversity, Open Space, and Rural Character in Boxborough

During the 1980s, much of the land that Cisco's Boxborough, Massachusetts, campus now occupies was cleared and mined for sand and gravel, leaving large areas stripped of vegetation. While developing the site, Cisco was able to restore it to a more natural state with rolling terrain, stone walls, and a mixture of landscaped areas, fields, wetlands, and forest.

We created habitats through the strategic placement and design of stormwater management features such as ponds. Other environmental features include permanent conservation restrictions, turtle tunnels beneath roadways and roadway barriers to enable safe migration, multiyear onsite wildlife studies, and the creation of approximately two acres of additional wetlands that were planted with native vegetation.

In addition, the campus provides both active and passive recreation areas with a 10-acre playing field constructed for the town's use and over two miles of trails that wind through the areas set aside as open space.

Adjacent to the campus are other conservation lands held by government and private entities. Cisco's natural, open spaces provide extensions to and continuity between these areas, thereby enhancing the robustness of wildlife habitats and corridors.

Airborne Emissions

Because most of Cisco's production is outsourced to supply chain partners, Cisco's global operations primarily consist of standard office activities and research labs, which may require the use of occasional cleaning products containing volatile organic compounds (VOCs). Quantities of VOC-based chemicals are minimal and are not required to be monitored.

The following table summarizes other airborne emissions: nitrous oxides (NOx) and sulfur oxides (SOx). NOx and SOx emissions originate from combustion of fossil fuels in vehicle engines, boilers, or emergency generators that are occasionally tested on sites. These emissions are calculated based on fuel consumption collected in the past three fiscal years. NOx emissions are included in Cisco's GHG inventory. As Cisco is working on reducing overall GHG emissions, we expect a proportional reduction of NOx and SOx emissions across our operations.

NOx and SOx emissions

Emissions	FY07	FY08	FY09
NOx (metric tonne)	176.57	167.29	143.74
SOx (metric tonne)	0.67	0.71	0.70

At locations across California, Cisco cooperates with the California Air Resources Board and does not use any mechanical equipment, such as gasoline-powered lawn mowers, after 11 a.m. on designated Spare the Air days, when air quality is poor in the Bay Area. In addition, we have instituted Summer Saturday Shift Work, which reduces equipment emissions due to improvements in maintenance staff productivity. Over the course of 32 weeks, we saved 44 hours per week of grounds crew time as a result of increases in efficiency.

Spills and Other Discharges

Cisco works to prevent unintended spills or discharges and has a comprehensive emergency response system in place. In FY09, there were no reportable spills or discharges to the environment from Cisco facilities or operations.

Looking Ahead

Cisco expects that the impacts associated with land use, airborne emissions, and spills and other discharges will continue to be minimal relative to other environmental impacts of our products and operations. Cisco will continue to monitor these issues in our operations and dedicate resources as necessary. Through our workplace solutions and collaboration technologies, like Connected Workplace, we will continue to develop innovative approaches for addressing the world's environmental challenges.