



HP's History of Environmental Stewardship in Imaging and Printing

Overview

Environmental stewardship is nothing new to HP. Founders Bill Hewlett and Dave Packard recognized that good business means more than making a profit, and, as a result, few companies can match HP's legacy of good corporate citizenship. In the 1950s, environmentally focused global citizenship became a core business objective for HP. Now, as HP has grown to become the world's largest IT company, it continues to emphasize corporate, social and environmental responsibility.

HP has a long history of providing products, services and solutions to help customers reduce their impact on the environment. Across HP, the approach to environmental management of products is considered in every facet of the product lifecycle – from design to manufacturing to recycling. In 1992, HP formalized its company-wide Design for Environment program to reduce the environmental impact of HP products through material usage, ease of recycling and packaging efficiency. Environmental product stewards are appointed on every design team to identify, prioritize and implement environmental improvements that aim to meet customer expectations, regulatory requirements and the personal commitments of HP employees alike.

For the Imaging and Printing Group (IPG) at HP, innovating to help customers reduce their imaging and printing impact has been an important goal. Following is an overview of existing products, solutions and services designed to help customers reduce their energy use, conserve resources and recycle.

Energy reduction

HP designs products to meet the energy-efficiency standards of many key eco-label programs – from the U.S. ENERGY STAR® program and Germany's Blue Angel label, to China's Energy Conservation Program, Sweden's TCO labels and others. To date, approximately 1,000 HP products have been ENERGY STAR qualified, including many imaging and printing products. With improvements on environmental impact as an engineering priority for many years, HP develops high-performance imaging and printing systems and solutions that are built to last, while putting efficiency first. Here are several examples:

- **Warm up Virtually Eliminated:** Introduced in 1993 for HP LaserJet printers, Instant-on Technology enables printing the first page in just a few seconds from sleep mode, saving customers up to 50 percent in power consumption while printing versus products without traditional fusing. HP estimates that for monochrome HP LaserJet products alone, the total energy consumption saved from 1993 to 2007 using Instant-

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on Technology represents 5.25 million tons of carbon dioxide, the equivalent of removing 1.1 million cars from the road for one year.⁽¹⁾

- **Energy-Conscious Copying:** Instant-on Copy allows copy jobs to begin within seconds from sleep mode, even first thing in the morning. Instant-on Copy uses LED copy technology, which consumes four times less energy in idle mode and 1.4 times less energy in copy mode compared to fluorescent tubes. LED is also more reliable and more energy-efficient than fluorescent tube technology.
- **Manageability Tool Benefits:** HP Web Jetadmin and HP Universal Print Driver help customers manage their printing fleet to conserve energy and reduce their carbon footprint. According to the EPA, customers lose 66 percent of their IT equipment energy during evenings and weekends when devices are not powered off. HP Web Jetadmin can help reduce power consumption for energy savings costs by pre-scheduling sleep and wake-up modes.
- **Built-in Intelligence:** HP LaserJet printers and new HP Inkjet printers automatically reduce power consumption after a designated period of inactivity, and most require no more than one watt of power in off mode. In addition, customers who use HP all-in-one printers can reduce energy use by as much as 40 percent by using only one product (versus providing power for an individual copier, scanner, printer and fax).
- **Supplies Innovation:** HP Enhanced Low-melt Toner Technology is designed to melt at lower temperatures, yet deliver print quality consistency at faster print speeds. As a result, it requires 15 percent less energy to reach fusing temperature than its predecessor – enabling a 10 to 15 percent improvement in printing system energy consumption per page while printing.⁽²⁾
- **Carbon Footprint Reduction:** The updated HP Carbon Footprint Calculator for printing gives users the power to evaluate the carbon footprint of their current printers in order to understand how they can reduce their environmental impact through responsible printing. This new and improved, customer-friendly calculator combines the capabilities of the existing HP Carbon Footprint Calculator and the HP LaserJet Power Calculator to create a more robust tool to better help customers determine and reduce their energy consumption, paper use, carbon output and the associated monetary costs.⁽³⁾

Resource conservation

HP designs imaging and printing products and solutions that help customers reduce their impact on the environment by using fewer resources. From smart design to materials selection, IPG innovations in resource conservation include:

- **Paper Policy:** As part of HP's ongoing commitment to environmental leadership, HP is pledging to reduce the environmental impact of the papers that the company buys, uses, and sells by establishing one of the most comprehensive paper policies in the industry. HP's new policy sets guidelines for the entire lifecycle of paper. The company will ensure that raw material inputs are used efficiently, give preference to suppliers who source fiber from credibly certified, sustainable forests and minimize carbon production and waste in the manufacturing process and enable the responsible use and recycling of paper. HP plans to report on the company's progress in implementing the policy and reducing the environmental impact of paper.



(www.hp.com/go/paperpolicy)

- **Duplexing Features:** HP Web Jetadmin and HP Universal Print Driver make it easy to set automatic duplex printing for entire fleets, helping users to consume less paper and save money. In fact, HP designs most printers with manual or automatic two-sided printing capability, allowing companies up to significantly reduce paper consumption.
- **Automatic Alerts:** Featured in many HP inkjet printers, Auto Sense technology helps prevent wasted supplies by alerting users if paper is improperly loaded or if the size of the paper in the main paper tray does not match the size the customer has selected. Also, HP Auto Sense-enabled printers can identify the type of paper loaded, enabling the system to deliver the optimal amount of ink.
- **Improved Web printing:** Furthering the company's Print 2.0 strategy, HP offers a range of capabilities aimed at making web printing less wasteful and more user friendly. HP's Smart Web Printing eliminates extra pages and right-edge clipping and allows consumers to mash together content from the web so they can print exactly what they want. The Tabblo Print Toolkit is an embeddable website widget and corresponding web service that allows web designers to incorporate print functionality into their websites, thus eliminating printing unwanted content and blank pages.
- **Reduced packaging:** HP engineered a way to package its high-end printers that, on average, cuts the volume of foam packaging materials needed to ship these products by almost 70 percent. The new clear packaging design eliminates the need for an outer corrugated box and extensive foam packaging, instead using minimal foam and supports along with a durable transparent film to encase the product for shipping. HP is the first in the technology industry to apply this method to printing products. HP first applied the concept on existing multi-function printers and is using it to ship recently introduced products such as the [HP LaserJet M5035x MFP](#), and now, HP is currently shipping three products using this new design and will add another five by the end of the year.
- Additionally, HP's redesigned print cartridge packaging in North America reduced greenhouse gas emissions by 37 million pounds in 2007 – the equivalent of taking 3,600 cars off the road for one year.⁽⁴⁾ The smaller, lighter packaging lowers the total carbon footprint of each cartridge and the transportation traffic required to ship it. Additionally, eco-conscious packaging designs allow some HP printers to be shipped with no plastic wrapping for cords or plastic “stuffing” for the box.
- **Pioneering Achievement:** Earlier this year, HP announced an engineering breakthrough that enables the use of post-consumer recycled plastics in the production of new Original HP inkjet print cartridges. The company's innovative recycling process facilitates the combination of multiple sources and grades of recycled plastics – from everyday water bottles to highly technical HP inkjet cartridges (returned through HP Planet Partners). In addition to closing the design loop, using recycled content saves energy and keeps plastic out of landfills. Since first piloting the process, HP has used enough recycled plastic to fill more than 200 tractor trailers⁽⁵⁾ and to make 200 million cartridges.
- Additionally, [HP launched its first printer made from](#) 83 percent recycled plastic content, the [HP Deskjet D2545](#). One of the first inkjet printers to feature HP's new Eco



Highlights label, the HP Deskjet D2545 is ENERGY STAR qualified, uses HP 60 inkjet cartridges made from newly molded recycled plastic resins and comes packaged in molded-pulp end caps made from recycled materials and features convenient HP Smart Web Printing, which optimizes web printing by letting users easily combine portions of numerous web pages onto one page.

- **Consolidated mailings:** Exstream Software by HP helps dialogue customers design statements, invoices and marketing collateral more effectively and thereby print more responsibly. Through optimized whitespace management and householding – meaning fewer mailings or mailings with reduced page count – enterprise customers can save paper and postage.
- **Customer Participation:** The volume of cartridges returned through HP Planet Partners over the years made HP’s innovative “closed loop” plastics recycling process possible. Since the inception of HP Planet Partners, more than 197 million HP LaserJet and HP inkjet print cartridges have been returned and recycled worldwide, representing a weight of nearly 300 million pounds.⁽⁶⁾

Digitally green alternatives

The transition from analog to digital publishing has allowed HP to develop a host of new solutions for customers to reduce waste and overall costs, including fees associated with transportation and warehousing outdated inventory. Going “digital” uses fewer resources and helps customers reduce their carbon footprint, and HP is looking to all of our business segments to drive change to this end.

- **Travel alternative:** HP Halo Telepresence solutions help support global companies’ efforts to minimize greenhouse gas emissions associated with business travel while helping them meet their corporate citizenship objectives. For instance, if a team of four people uses a Halo studio instead of flying from New York to London, they can avoid emitting more than 12,000 pounds of carbon dioxide.⁽⁷⁾ This is the same as planting nearly 5,000 trees.⁽⁸⁾ On a larger scale, if a company eliminates 20,000 trips between New York and London, this is equivalent to planting 24.4 million trees. Currently, HP Halo is in 22 countries on five continents, and by the end of the calendar year 2008, HP Halo will be in over 35 countries.
- **Capture and send documents electronically:** HP can help automate workflows and change the way customers do business. Securely capturing and sending documents digitally eliminates the need for faxing, leading to streamlined document-based workflows and a reduction in paper usage.
- **Print-on-demand:** HP’s print-on-demand solutions support a publishing process that is more sustainable and efficient. Fewer trees are used when books are published based on demand rather than in large batches, eliminating copies that must be destroyed. This technology also allows publishers to offer customers more titles than ever before because a large first run is not required.
- **Distributed Printing:** HP wants its customers to be able to print exactly what they want, when they want it. Distributed Printing allows for on-site, customized printing at a moment’s notice. For instance, a large retailer with hundreds of locations probably has multiple different promotions going on at any one time. Rather than print generic merchandizing materials and shipping them around the country, each location could



print store-specific materials on-site and resulting in a more effective piece of marketing while saving on associated costs, transportation and warehousing.

- **Substances of Concern Reduced:** HP offers a range of dry printing solutions that reduce the environmental impact of silver halide wet lab systems. HP Photosmart pm2000e Microlab and HP Photosmart ml1000 Minilab printers are self-contained units that do not require a water source or drains, reducing the overflow of developer, fixer and wash water to municipal or private waste treatment facilities.⁽⁹⁾
- **HP Latex Printing Technologies:** Innovative, new water-based HP Latex Inks provide many of the benefits of solvent-ink technology without imposing the typical environmental, health and safety considerations. Odorless prints ⁽¹⁰⁾ produced with HP Latex Inks emit extremely low levels of volatile organic compounds. There is no special ventilation required to meet occupational exposure limits and there are no requirements for air discharge permitting ⁽¹¹⁾, facilitating an improved printing environment. Non-hazardous HP Latex Inks are not classified as hazardous waste ⁽¹²⁾ and are non-flammable and non-combustible. In compliance with the industry-leading certification, Nordic Swan, HP Latex Inks do not produce ozone emissions during printing and contain no hazardous air pollutants.⁽¹³⁾

Reuse and recycling

HP began electronics recycling in 1987 and officially launched the HP Planet Partners return and recycling program for HP LaserJet print cartridges in 1991. Today, HP Planet Partners makes it easy for customers to recycle any brand of IT equipment as well as HP print cartridges to customers in more than 50 countries, regions and territories.

- **Peace of Mind:** HP's state-of-the-art processes ensure that unwanted hardware and empty HP inkjet and LaserJet cartridges are recycled responsibly – reduced to the extent possible to materials that can then be used to make new metal and plastic products. HP makes certain no HP cartridges returned through HP Planet Partners end up in landfills, in contrast to some third-party manufacturers.
- **Continued Progress:** In 2007 alone, HP recycled nearly 250 million pounds of hardware and print cartridges in its fiscal year 2007, almost a 50 percent increase over the previous year. HP has surpassed its goal to recycle one billion pounds of electronic equipment and is well on its way to reaching its new goal to recover two billion pounds of products by the end of 2010. Additionally, HP is on track to meet its goal to recycle 250 million HP inkjet and LaserJet cartridges by fall 2008.
- **Lifecycle Discipline:** HP Asset Recovery Services help businesses return equipment and manage the disposal of imaging and printing technology that no longer meets their needs or is no longer wanted. Known for its global citizenship, HP addresses the complex laws and regulations on disposal requirements, disposing of equipment safely and in an environmentally sound way. Now available through an HP Managed Print Services contract, HP Asset Recovery Services helps companies reduce the stress and hassle as well as mitigate risks, such as data security concerns, associated with the disposition of IT equipment.

⁽¹¹⁾ The tons of CO2 avoided is based on power plant emissions that otherwise would occur to generate the



electricity saved; cars removed is based on annual emissions from cars burning gasoline.

⁽²⁾ For example, the P1505 printer, which utilizes HP-enhanced Low-melt Toner Technology, uses almost 25

⁽³⁾ The Carbon Footprint Calculator generates estimates of energy consumption during use of a printer, emissions of carbon dioxide from production of that electricity, and carbon dioxide emissions from production of estimated volumes of paper consumed during printing (i.e., estimated CO₂ from electricity production and CO₂ from paper production). It is based on certain key assumptions and makes use of data and models generated by third parties. For more information visit:

www.hp.com/go/carbonfootprint.

⁽⁴⁾ Estimates are based on projected 2007 print cartridge sales in the U.S. and Canada. Global warming gas (carbon dioxide equivalents) emissions reductions calculated based on anticipated 2007 unit sales, using packaging configurations before and after recent improvements. Environmental impacts modeled with SimaPro 7 (PRé Consultants, The Netherlands, 2006) life cycle inventory software. Carbon equivalency factors from Intergovernmental Panel on Climate Change.

⁽⁵⁾ Based on a nominal payload of 44,000 pounds.

⁽⁶⁾ Figures as of December 2007.

⁽⁷⁾ Calculated using HP Corporate and Brand Marketing Carbon Calculator. Key assumption is that .447 lbs CO₂ are emitted per passenger air mile.

⁽⁸⁾ Based on a 25-year-old forest, Northeast Maple, Beech, Birch, 1,760 lbs. CO₂ per acre per year. Average of 700 trees per acre or 2.52 lbs. CO₂/tree/year.

⁽⁹⁾ HP data tested and verified by HP RPS Lab. Silver halide data validated by f/22 Consulting.

⁽¹⁰⁾ Printers using HP Latex Inks use internal heaters to dry and cure the latex polymer film. Some substrates may have inherent odor.

⁽¹¹⁾ Special ventilation is not required to meet U.S. OSHA requirements on occupational exposure to volatile organic compounds (VOCs) from HP Latex Inks. Ventilation equipment installation is at the discretion of the customer – no specific HP recommendation is intended. Typically no air discharge permitting required with inks that emit extremely low levels of VOCs. Customers should consult state and local requirements and regulations.

⁽¹²⁾ HP Latex Inks are generally not considered hazardous waste. Customers should consult state and local requirements and regulations.

⁽¹³⁾ No ozone products expected based on ink composition and printing technology; no hazardous air pollutants per U.S. Environmental Protection Agency Method 311.

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