GREENING A PRODUCT LIFECYCLE

… AND MAKING MONEY AT IT!

THE HP EXPERIENCE

Christian Verstraete
Chief Technologist – Manufacturing
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"The best energy is the energy that is not used."

Jean-Pascal van Ypersele
Vice Chairman
Intergovernmental Panel on Climate Change

SUSTAINABLE DESIGN: DELIVERING SOLUTIONS DESIGNED FOR THE ENVIRONMENT

Design for Environment
DfE since1992, design products to reduce impact on the environment while maximizing value to customers, design for recyclability

Product return, re-use & recycling – programs and services taking responsibility for sound end-of-life management. Reuse materials in new products.

Product design

Reuse and Recycle

Manu-facture

Use

Manufacturing & Supply Chain — manage production processes to optimise overall environmental performance, use of recycled materials, smart packaging

Customer Use — more energy efficient products; solutions to measure and increase efficiency of data centers, clients and printers

Reducing impact throughout the product life cycle

BUSINESS CHALLENGES WE HEAR FROM CUSTOMERS

Reduce Costs

"How can I reduce my energy consumption to lower costs and help meet our environment goals?"

"Is there a way to eliminate waste and improve productivity and efficiency?"

"About 40% of my Opex goes to energy."

Mitigate Risk

"I have been stockpiling IT equipment for years, can you help me get rid of it so my data is protected and the environment isn't harmed?"

"I want to purchase environmentally preferable products but don't know how."

"Help me reduce our carbon footprint and prepare for regulation."

Enable Growth

"How can you help enable our environmental and sustainability initiatives?"

"My SLAs are being impacted by power and cooling capacity"

"I can't source additional grid capacity"

DESIGN FOR THE ENVIRONMENT

Product Design

DESIGNING FOR THE ENVIRONMENT

Energy Consumption

Product Reuse & Recycling

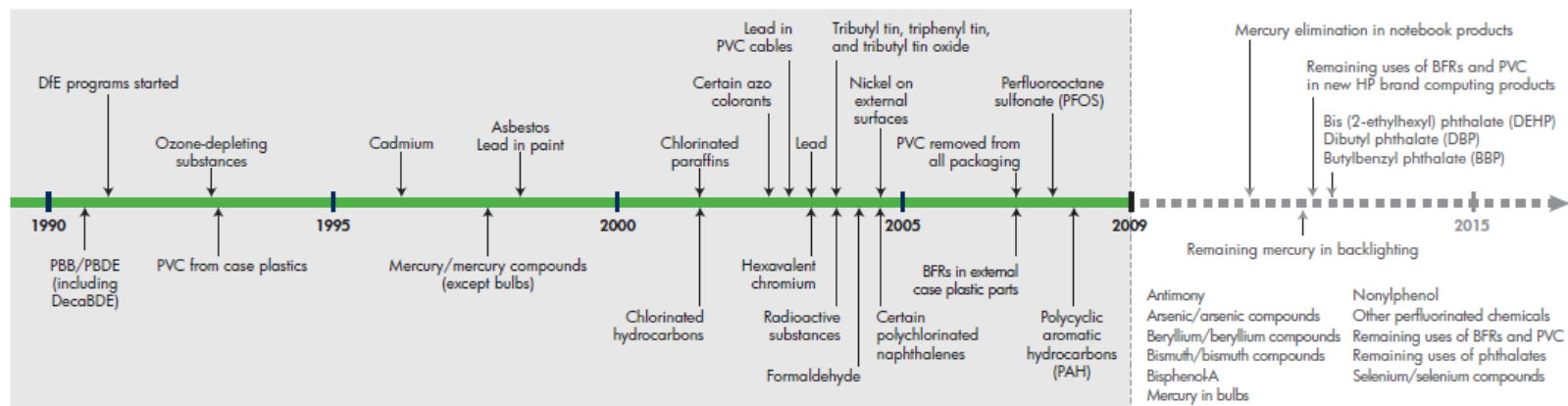Supply chain Impact

Material resources

MATERIALS INNOVATION

Mitigate Risk

– Materials substitution

– Eliminating materials of concern

– Reducing materials use

– Innovative and recycled materials

HP product materials restriction/substitution timeline[1]

Year	Material
1990	DfE programs started
	PBB/PBDE (including DecaBDE)
	PVC from case plastics
	Ozone-depleting substances
1995	Cadmium
	Mercury/mercury compounds (except bulbs)
	Asbestos
	Lead in paint
	Chlorinated paraffins
	Chlorinated hydrocarbons
2000	Lead in PVC cables
	Certain azo colorants
	Hexavalent chromium
	Radioactive substances
	Formaldehyde
	Lead
	Tributyl tin, triphenyl tin, and tributyl tin oxide
	Nickel on external surfaces
	Certain polychlorinated naphthalenes
2005	PVC removed from all packaging
	BFRs in external case plastic parts
	Perfluorooctane sulfonate (PFOS)
	Polycyclic aromatic hydrocarbons (PAH)
2009	
	Mercury elimination in notebook products
	Remaining uses of BFRs and PVC in new HP brand computing products
	Bis (2-ethylhexyl) phthalate (DEHP)
	Dibutyl phthalate (DBP)
	Butylbenzyl phthalate (BBP)
	Remaining mercury in backlighting
2015	

Antimony
Arsenic/arsenic compounds
Beryllium/beryllium compounds
Bismuth/bismuth compounds
Bisphenol-A
Mercury in bulbs

Nonylphenol
Other perfluorinated chemicals
Remaining uses of BFRs and PVC
Remaining uses of phthalates
Selenium/selenium compounds

[1] Dates refer to when the materials restrictions were adopted by HP. Often regulations allow exemptions for certain applications for some materials, and HP may take advantage of those exemptions.
Materials in gray text beyond 2009 have been identified by stakeholders as potential materials of concern. Future possible restriction of those materials depends, in part, on the qualification of acceptable alternative materials.

ENERGY AND RESOURCES SAVINGS:
HP ECO SOLUTIONS INNOVATIONS
Reduce Cost

HP Deskjet D2545 Printer

- 83% recycled plastic content by weight

- 100% of the outer casing and tray parts made from recycled content

- ENERGY STAR® compliant, power consumption decreased by 40% (from previous Deskjet models)

- Packing and storage efficiency improved by over 28%

- More than 70 percent of ink cartridge is recycled content from used HP cartridges collected through HP Planet Partners

8/25/2

WALMART DESIGN CHALLENGE

Enable Growth & Reduce Cost

1. The PC, battery, AC adaptor, cord and documentation are packed in the messenger bag.
2. An insert is added and the polybag is closed and labeled.
3. Messenger bags are then placed in an overpack and shipped to stores.
4. The customer takes home the computer in the stylish messenger bag—without any packaging.

HP Wins Walmart Design Challenge with Innovative Notebook Packaging
BENTONVILLE, Ark., September 3, 2008 – Walmart today named HP the winner of its Home Entertainment Design Challenge, singling out the technology company for further reducing the environmental impact of personal computers. The HP Pavilion dv6929 Entertainment Notebook features an innovative design that reduces product packaging by 97 percent, conserving fuel and reducing CO2 emissions by removing the equivalent of one out of every four trucks

Offer includes:
- Free Recycling
- EnergyStar® qualified PC with EPEAT™ Silver registration
- Aggressive power-management settings
- Bag made with 100% recycled material

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BUILD FOR THE ENVIRONMENT

Manufacturing

LEADING SUSTAINABLE PRACTICES THROUGH OUR SUPPLY CHAIN

Mitigate Risk

- first IT company to implement a supplier code of conduct in the late 1990s.
- jointly develop the Electronic Industry Code of Conduct in 2004
- audited suppliers representing >95% of spend
- first in Electronics Industry to publish supplier list
- first to announce emissions data of our largest suppliers
- first electronics company to qualify for SMARTWAY

HP TRANSPORTATION MILESTONES

- All consumer desktops and monitors qualify to display the U.S. Environmental Protection Agency (EPA) SmartWay logo

- HP was the first electronics company to qualify

- HP was awarded SmartWay Excellence Award from EPA

ADAPT SUPPLY CHAIN THROUGH PIPE CONCEPT

Reduce cost

Factory	Ship		Truck	Postp. Center	Distrib. Center	Truck	Channel Partner
Factory	**Value Add Pipe**			PC	DC		Channel Partner
Factory	**Low Touch Pipe** PC				DC		Channel Partner
Factory	**No Touch Pipe** PC						Channel Partner

Port of Entry
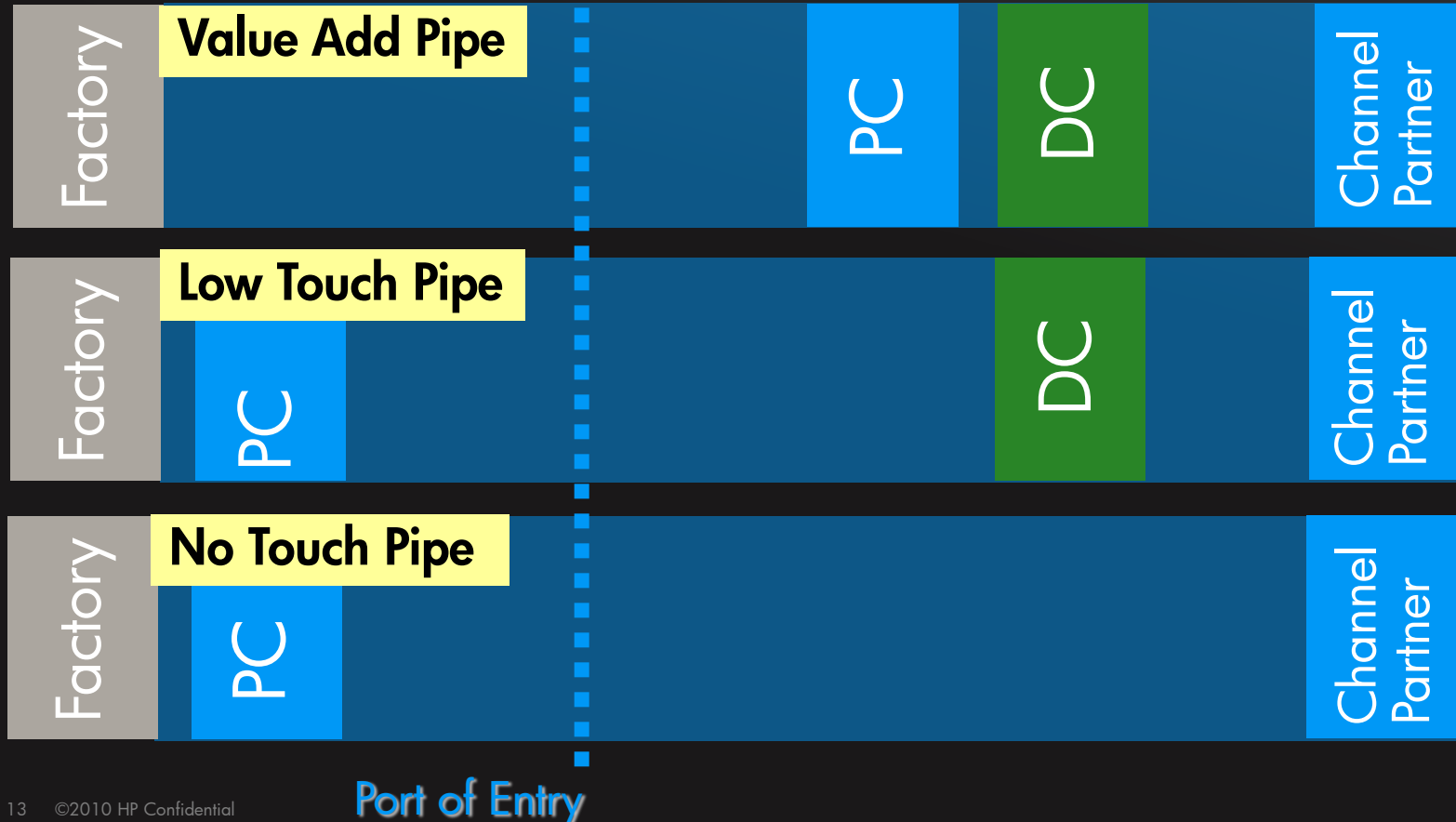
TOTAL CUSTOMER EXPERIENCE

Use

ECO 2.0 DATA CENTRE – WYNYARD PARK

Cooling

- 97% Outside Air Economizers
- Variable Speed Fans
- low velocity undercroft plenum pressurized to 20 pascals
- ~50% carbon reduction*

Monitoring

- ENMS system continuously monitors and optimizes energy consumption
- BREEAM expected rating "very good"

Power

- 10% Renewable (not on premises)
- High efficiency UPS and generators
- 20+% total power consumption reduction*

Lighting

- Dimmable, Addressable, Lighting Interface
- 40-50% energy reduction
- 45º orientation

Data Hall

- Encapsulated Cold Air Aisles
- Distributed High Performance Servers
- Light Grey Racks
- Higher operating set points

Grounds

- Groundwater Recovery System
- Restored Ecosystem
- Public Transportation
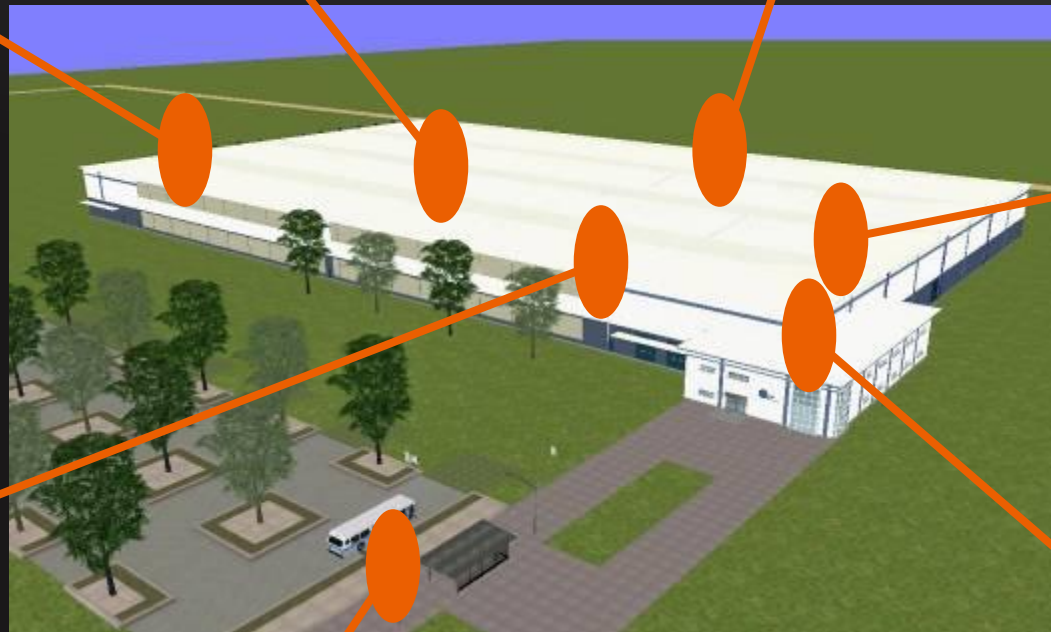
Building

- Southern Exposure
- 95% shell reuse
- 65% salvage recycled
- 25% new from recycled
- High efficiency Roof

* to comparable conventional facility

hp

INNOVATION - PHOTONICS

Copper that's never mined…

- 2012: Servers
  Annual savings: 13 TeraWatt-hours of electricity

- 2017: Servers + Chips
  Annual savings: 110 TWh of electricity

- Reduce the need to mine, smelt copper
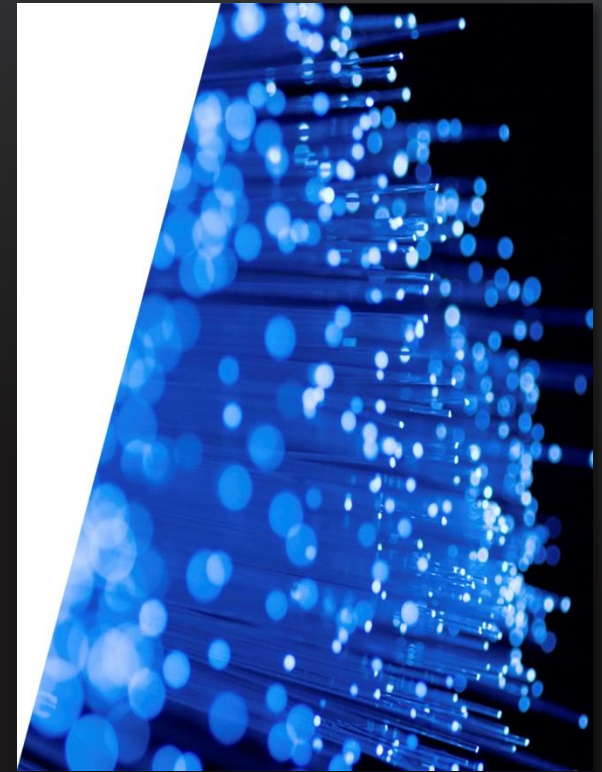
Light…

DELIVERING SMART CHOICES: HP ECO HIGHLIGHTS
Enable Growth

Identify environmental attributes of HP products quickly and easily

DESIGN FOR RECYCLING

Reuse/Recycle

WHAT ARE MY END-OF-USE OPTIONS?

Mitigate Risk & Enable Growth

Reuse and Recycling Offerings:
www.hp.com/go/reuse-recycle

Trade-in

Return for cash

Leasing

Donation

Recycling

Asset recovery

Remarket/refurbish

HP Planet Partners

- Recycle used print cartridges
- Extends to customers in 53 countries
- No original HP Planet Partner cartridges are sent to landfills

REUSE & RECYCLING IN PRACTICE

Mitigate Risk & Enable Growth

| Customer	Asset recovery services	Outcomes	
	Trade-in	Reuse (hardware only) 34,000 tonnes in 2008	Remarket to customer
	Return for cash		Materials for other products
	Leasing return	Responsible recycling (hardware and cartridges) 120,000 tonnes in 2008	
	Donation*		Energy capture
	Recycling		Disposal (if applicable)

- In 2008, we increased reuse by 16% and recycling by 6%
- The objective is to have recycled 900,000 tonnes (since 1987) and recycle 200,000 tonnes (since 2003) by end 2010

CARTRIDGE CLOSED LOOP PLASTICS RECYCLING PROCESS
Reduce Cost

– HP's Cartridge Recycling process is an industry first that uses post-consumer recycled plastics in the production of new Original HP Inkjet print cartridges and still meets HP's demanding standards for quality and reliability

– In 2008, HP used 10.5 million pounds of recycled plastic from cartridges and water bottles in its original HP inkjet print cartridges, more than twice the amount we used in 2007.

1/25/2010
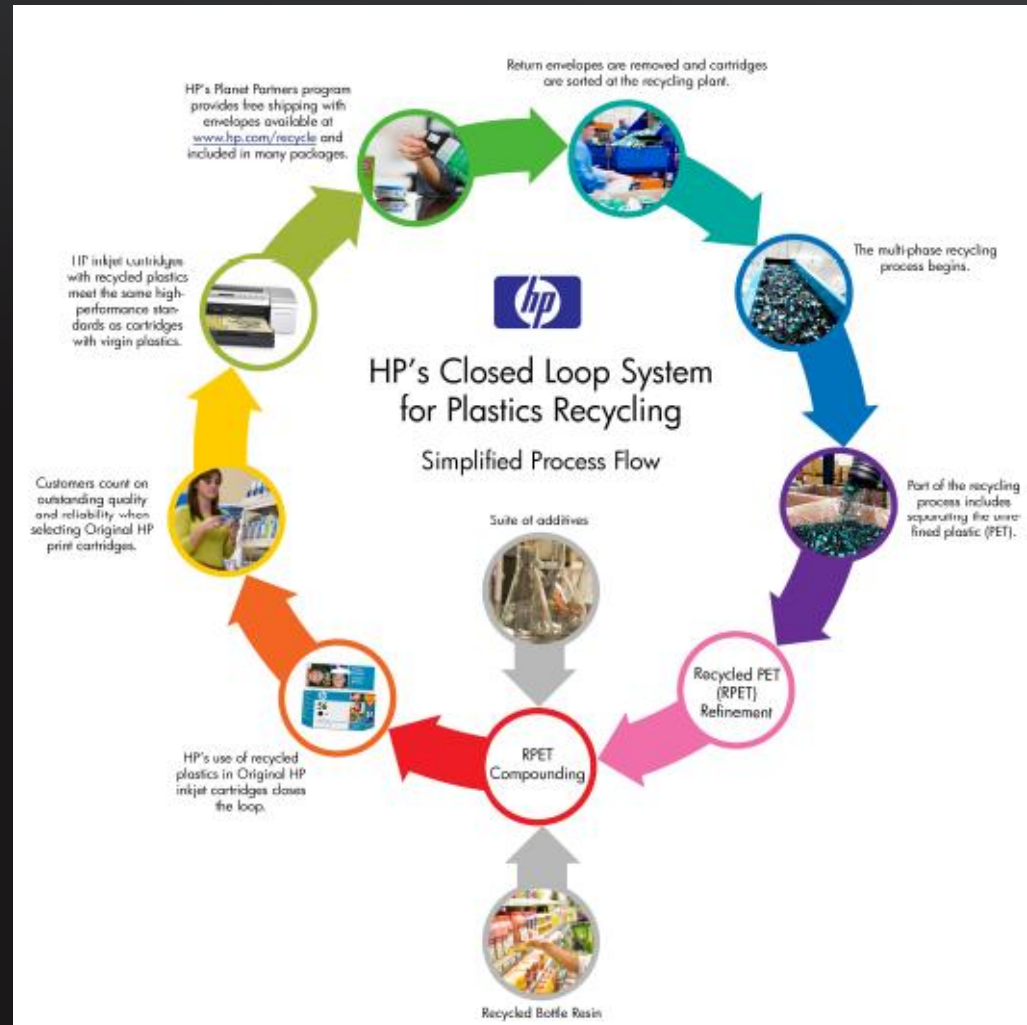
CONCLUSION

WORLD WILDLIFE FUND (WWF)

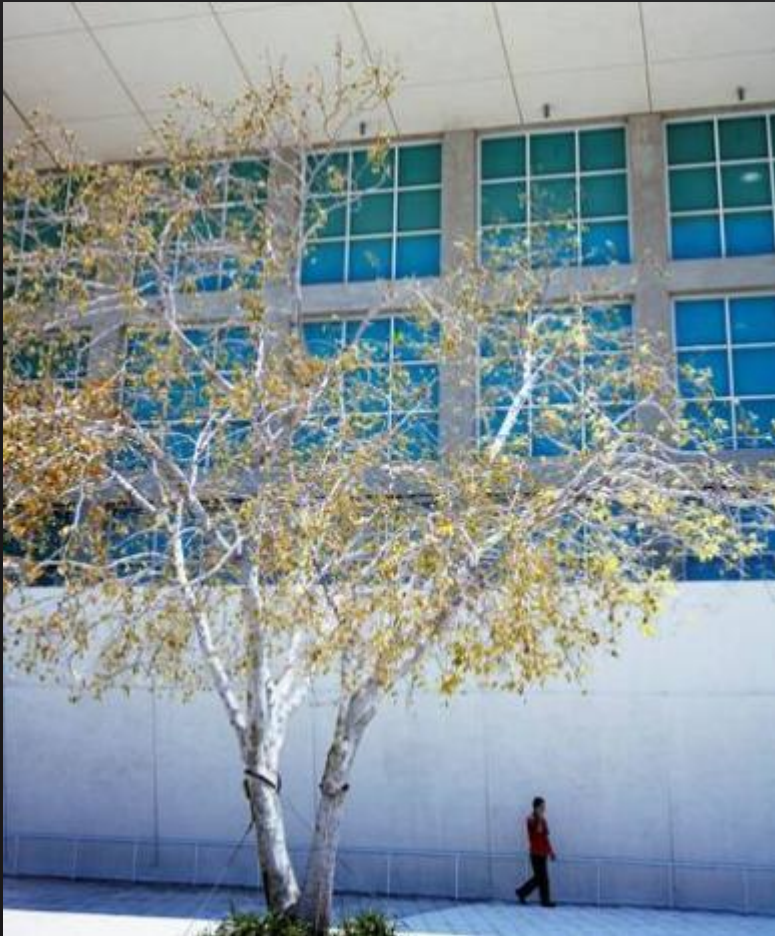| Emissions reductions in our own operations | Product energy efficiency for our customers | A climate strategy to drive towards a low-carbon economy | Policy, collaboration, leadership |

WHERE ARE WE HEADED?

HP will:

- Reduce the energy consumption and associated GHG emissions of all products to 40 % below 2005 levels by end 2011

- Reduce GHG emissions from HP-owned and leased facilities 20% under 2005 levels by 2013

- Double voluntary purchases of renewable energy to 8 percent by 2012

- Recover 2 billion pounds of computing and printing equipment by 2010 (since 1987)

- Triple the amount of recycled materials used in our inkjet printers by 2010 (relative to 2007)

- Reuse 450 million pounds (200,000 tonnes) of electronic products by the end of 2010 (since 2003)

Q&A

Mail: Christian.verstraete@hp.com
Blog: http://www.hp.com/blogs/manufacturing-distribution
Twitter: @christianve