
Greening IT
City of Ann Arbor
Information Technology
CITY OF ANN ARBOR
MICHIGAN

Why Care?

- IT is a contributor to environmental problems and part of many solutions. Governments will need to deal with both aspects at the same time.
- Local governments will be more directly affected, because the most visible environmental concerns are under their direct policy responsibilities.
- Green IT will lead to new IT investments, as well as to changes in the way IT spending is assessed and managed.
- Bottom Line? **BECAUSE WE HAVE TO!**

How will this impact me?

- Two ways: IT Resource Requirements
  - **IT-Intensive Initiatives to Help the Environment**
    - Environmental monitoring
    - Fleet management systems
    - Government building automation
    - Alternative energy sources
    - Teleworking
    - Online services
    - Changes to tax and revenue systems
    - Waste management

How will this impact me?

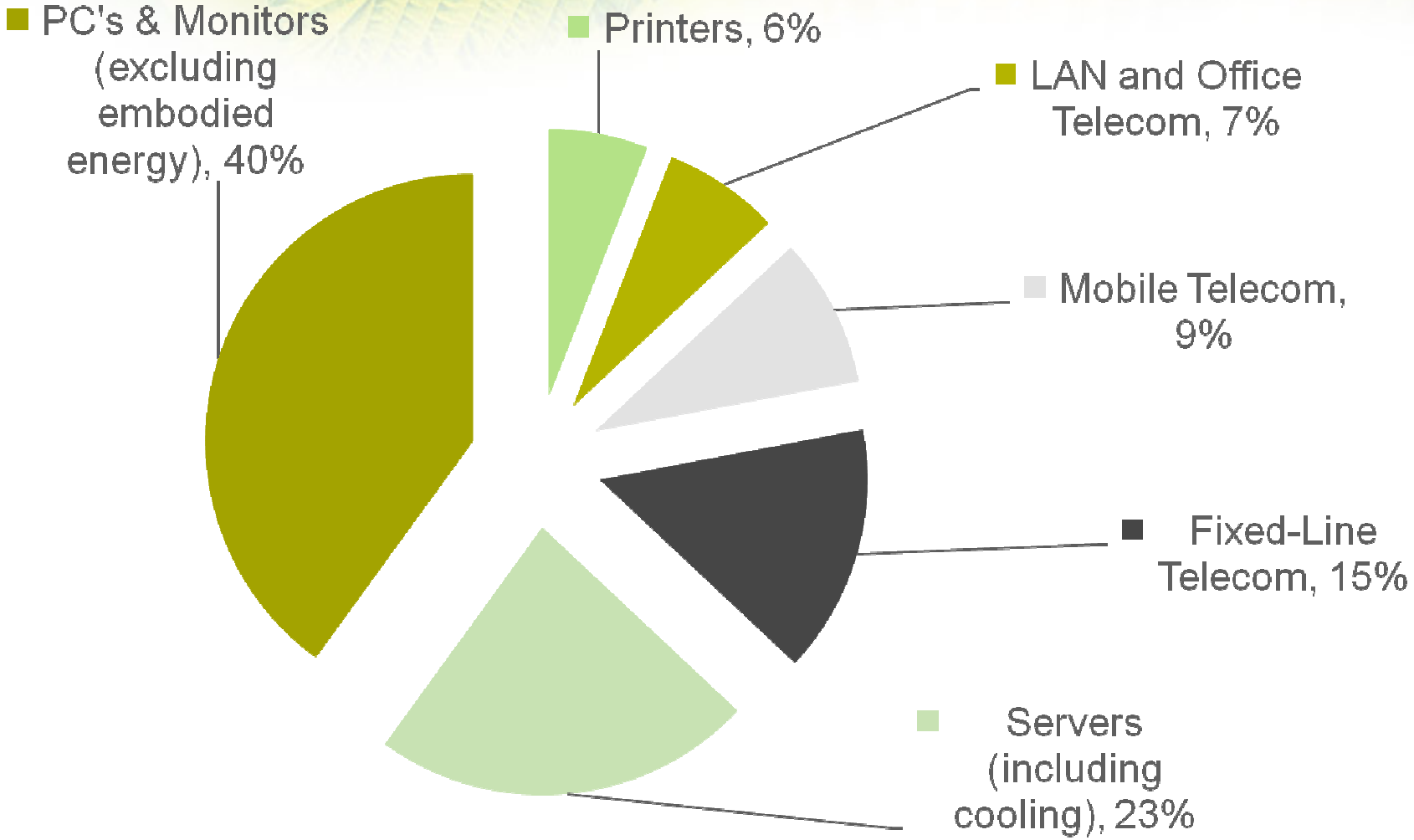
- Two ways: IT Behavioral Support
  - **"Greening" Government IT**
    - Consolidation and shared services
    - A boost to open source
    - Architectural choice
    - IT investment planning and management

How bad is it?

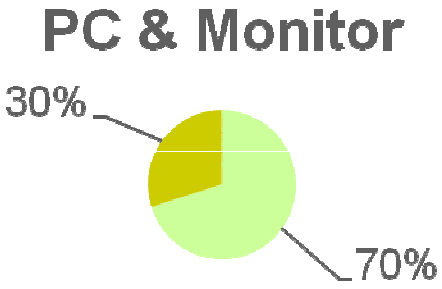
The IT Carbon Footprint is

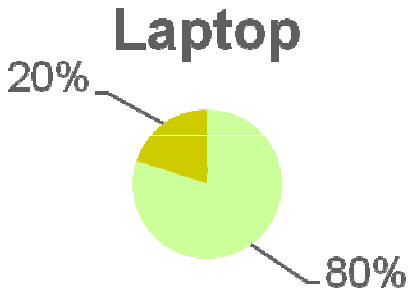
2%

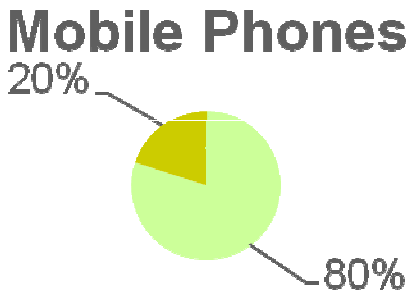
IT's CO^2 Emissions



The Dirty Little Energy Secret



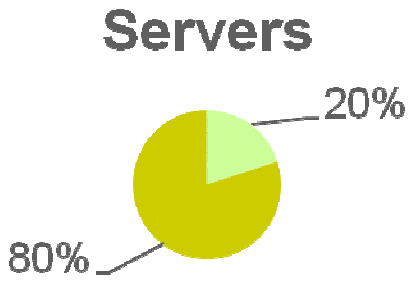




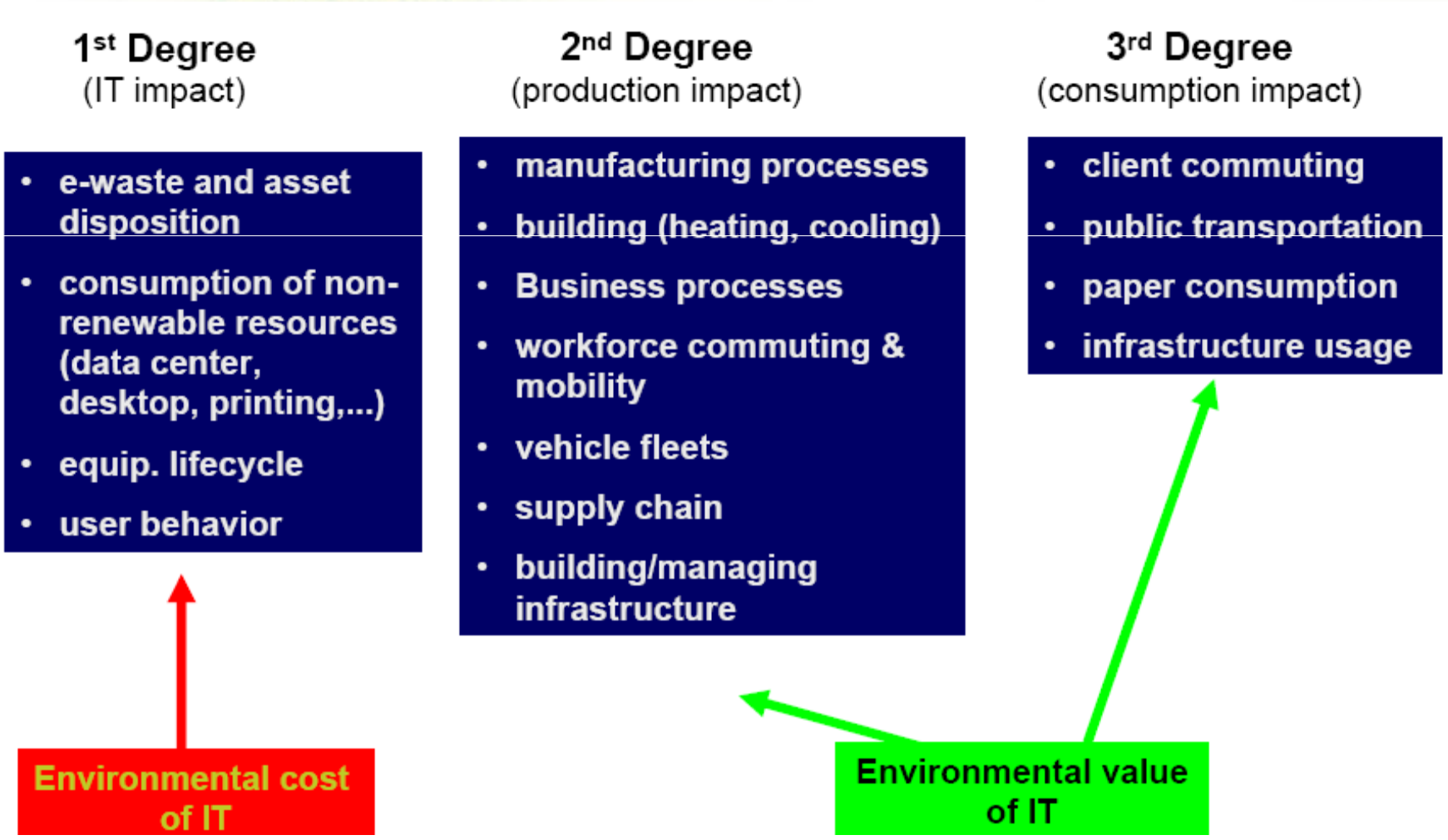
EMBODIED Vs. IN-USE ENERGY

The "dirty" little secret is that no vendor knows what their full lifecycle energy needs are.

As you can see the manufacturing, shipping and disposal often consume more than the use.



Three Degrees Of Environmental Impact



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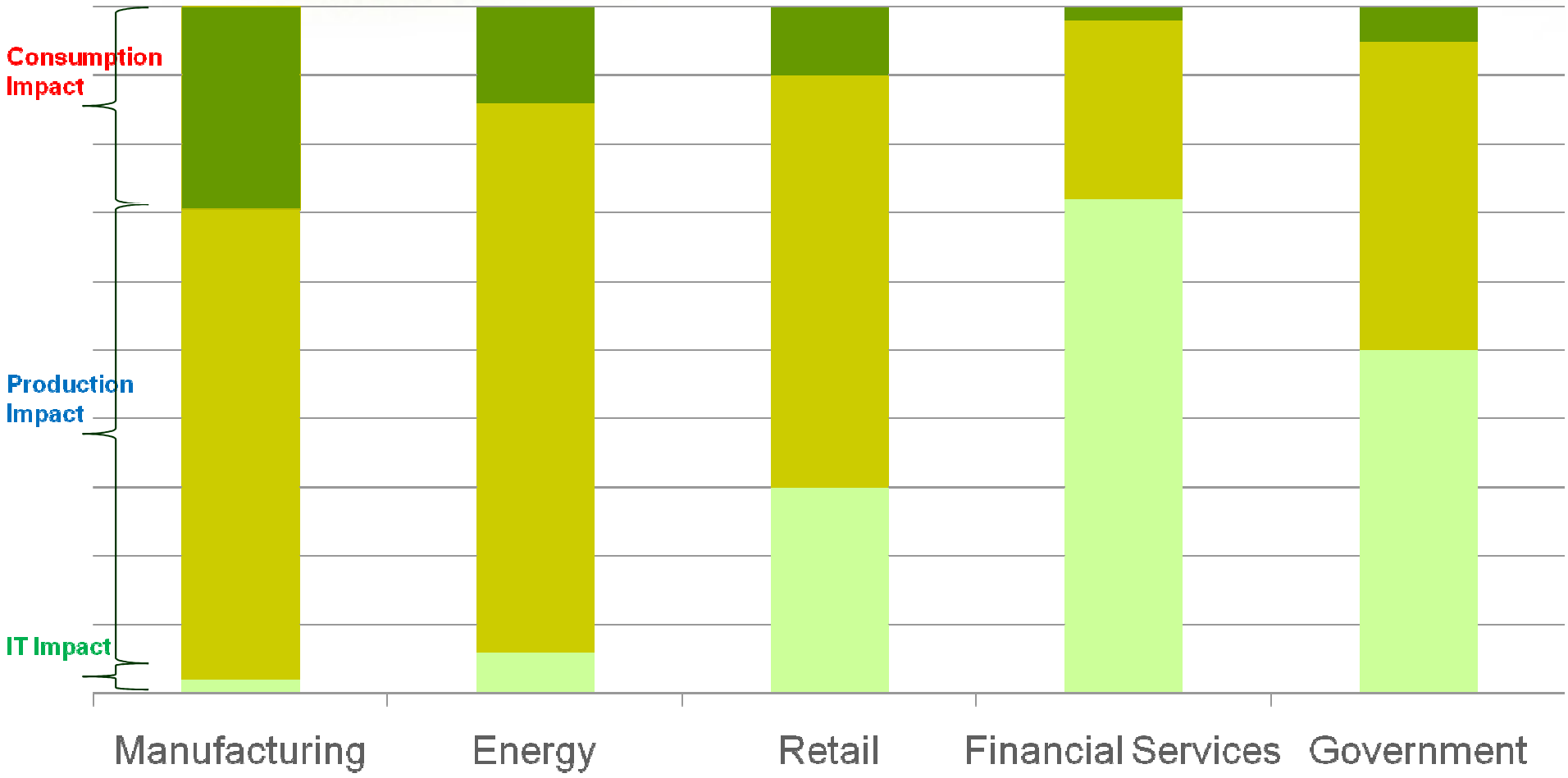


What Actions Can I Take?

- Define a strategy and policy for 1st Degree Effects
- Start Measuring and Analyzing
- Challenge 24X7 Availability Assumptions
- Turn Off Clients when Not In Use
- Reduce IT, Power and Cooling Requirements in datacenters
- Green Printers and Printing
- Establish Asset Disposition Policy
- Green The Staff
- Start Working on The 2nd and 3rd Degree Impacts

Define a Policy and Strategy

- Identify Regulatory and Political Requirements
- Conduct a risk assessment of doing nothing
- Understand where IT fits in the environmental ecosystem
- Create an environmental assessment process for all IT related investments

Start Measuring

- Consider an environmental assessment
- Take control of the electric bill for IT and Telecom.
- Start measuring and reporting power consumption and CO2 emissions-For the data center-For the network-For the offices, during and after hours,by floor and so on
- Set targets for power consumption and CO2 emissions
- Start analyzing IT and Telecom-related waste and dispositions in the enterprise
- Create a power and carbon dashboard

Challenge 24X7 Availability

The Availability Problem

- **PCs, monitors account for more than a third of ICT power consumption and CO2 emissions**

The Opportunity

- **9 to 15% of office power is consumed by office equipment (PCs and monitors)**
- **60% of PCs are left on after hours**

The Fix (mostly behavioral)

- **Measure and report office power consumption —get granular**
- **Ditch the active screen savers**
- **Educate staff**
- **Use and enforce power management**
- **Use a low-power state, such as standby, for PCs and monitors after hours and automate**

Turn IT Off!

The Data Center Problem

- **Everyone is working on power efficiency, but a technology "fix" is more than three years away for most enterprises**
- **"If it isn't broke don't touch it" —Well, it's broke now**

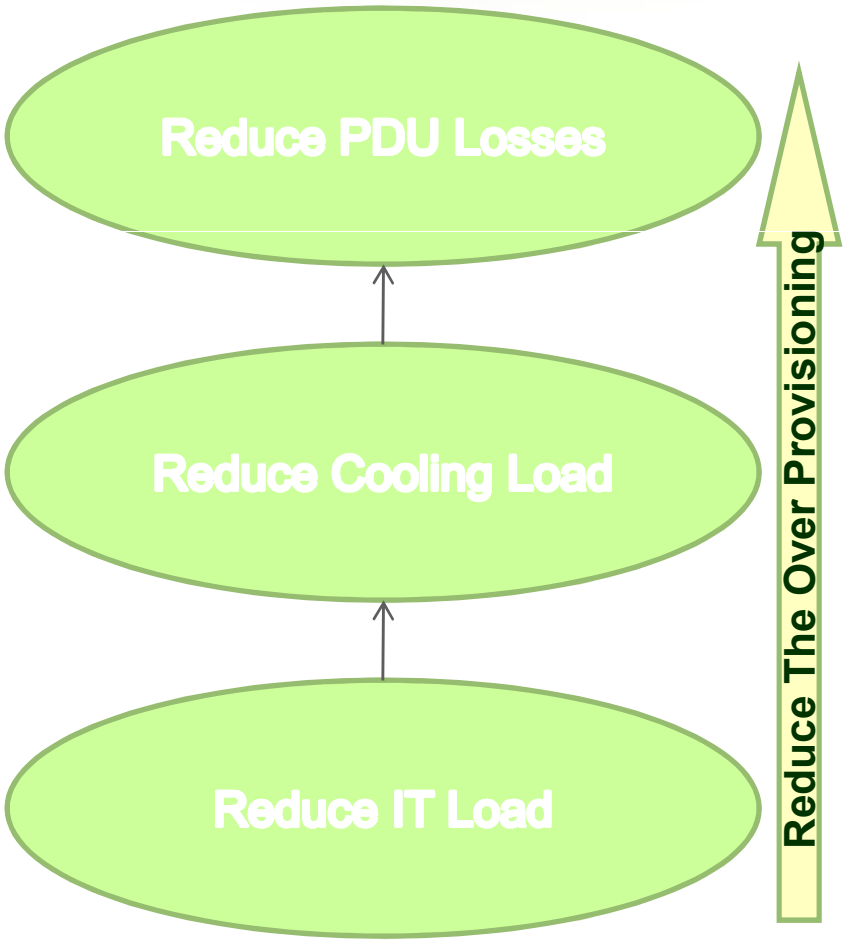
The Opportunity

- **Low server utilization**
- **Technology exists to reduce power consumption**

The Fix (mostly behavioral)

- **Stop over-provisioning (servers, UPS and cooling)**
- **Use power management features to throttle power back**
- **Use a low power state or shut servers down when not in use**
- **Use management software to automate shutdown and restart**

Green The Datacenter!



Power Distribution

- Power supplies
- Meters

Cooling is the biggest Opportunity!

- Use cold-isle/hot-isle rack configuration
- Plumb new builds for water cooling

Virtualize Everything!

- Servers
- Storage

Green Printers & Printing

The Paper Problem

- **Paper itself consumes 10x the energy of printing on it.**
- **Too many printers on desks; too many models.**

The Opportunity

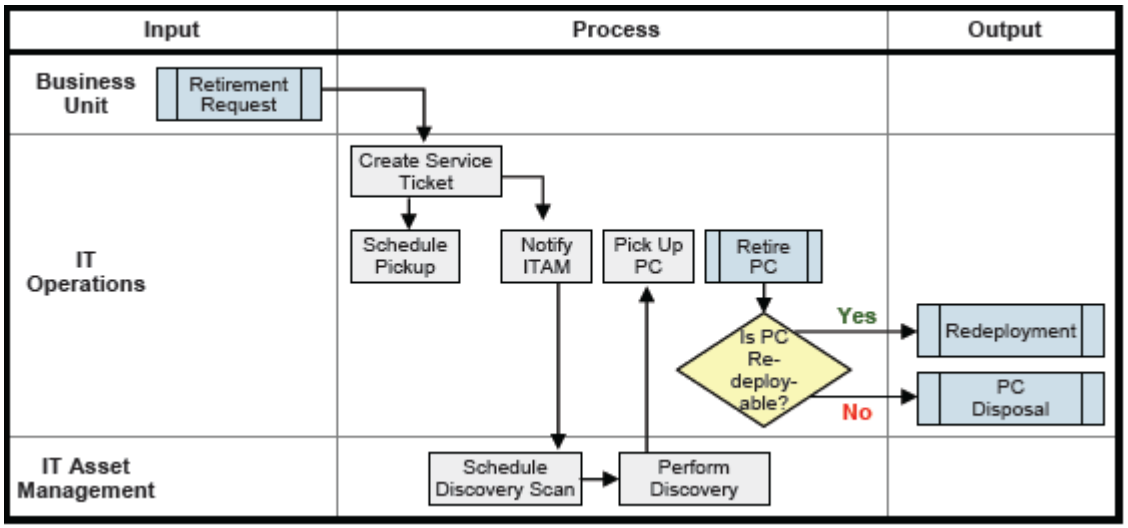
- **178 million printers, copiers and MFDs shipped in 2007**
- **Average office worker prints 1,000 pages/month, 40 lbs/month.**

The Fix (mostly behavioral)

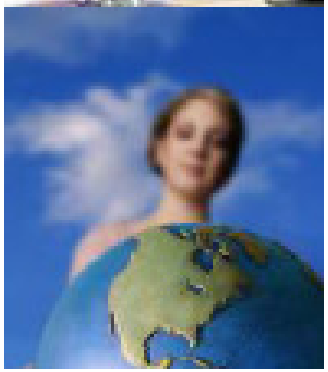
- **Print less —measure and Analyze document flows**
- **Educate staff and Enforce duplex printing and drop the banner page.**
- **Consolidate printers into fewer, standard, low -impact, better Energy Star MFDs that share the same consumables.**
- **Recycle —paper, toner cartridges.**

Green Asset Disposition

- Develop a disposition program
- Develop an audit program to make sure the processes are being followed.



Green The Staff



- Employee Charter
- Communicate Successes
- Change the Culture
- Reward the Right Behavior

- BE LEADERS!

Recommendations

- Reduce
  - **Servers, printers**
  - **Turn IT off!**
- Reuse
  - **Use recycled paper and other materials**
- Recycle
  - **Disposition processes**
  - **By recycled products**
- Remember
  - **Its not just about the 1st Degree**

Questions?

Thank You!