Sustainable Electronics for Purchasers

Joy Scrogum, October 21, 2014
Prairie Research Institute: Illinois-focused Resource Research and Service

Addressing societal challenges that impact Illinois and the global community
Sustainability and The Triple Bottom Line

*Actions must account for impact on planet and people as well as profit*

Environmental Performance

![Diagram of the Triple Bottom Line]

- PLANET
- PEOPLE
- PROFIT

Sustainability

Social Performance

Economic Performance

Triple Bottom Line
Sustainable Electronics Initiative (SEI)

- www.sustainelectronics.illinois.edu
- ISTC project
- Dedicated to the development and implementation of a more sustainable system for designing, producing, using, and managing electronic devices.
- Integrates principles of sustainability into curricula & educational experiences
- Occasionally sponsor research
- UI Sustainable Electronics Campus Consortium,
  http://www.sustainelectronics.illinois.edu/services/campusconsortium.cfm

Groups in audience today
- Sustainable Electronics Campus Consortium
- IL Green Governments Coordinating Council Procurement Subcommittee
  http://www2.illinois.gov/gov/green/Pages/GreenGovernmentsCoordinatingCouncil.aspx
- Great Lakes Regional Pollution Prevention Roundtable (GLRPPR)
  http://www.glrppr.org
Purchase Avoidance

*The most sustainable electronic is the one already owned by you or someone else.*

Electronics are everywhere & considered disposable

We estimate that in 2009:

- 438 million new electronic products were sold;
- 5 million short tons of electronic products were in storage;
- 2.37 million short tons of electronic products were ready for end-of-life management; and
- 25 percent of these tons were collected for recycling.

According to UN University’s StEP initiative it’s estimated an average of 7 kilograms of e-waste is generated per person per year globally
StEP’s E-waste World Map


“..the ancient Egyptians built great monuments to endure for countless generations, just about everything we produce in North America is made to break... Will America’s pyramids be pyramids of waste?”

–Gilles Slade, Made to Break: Technology and Obsolescence in America
Purchase Avoidance

*The most sustainable electronic is the one already owned by you or someone else.*

Avoid material & energy use for creation of a new device

- Impacts associated with mining
- Over 1,000 materials are used to make electronic products & their components
- Embodied energy outweighs energy use during consumption


Did you know...?

A United Nations study found that the manufacturing of one computer and its screen takes at least 530 pounds of fossil fuels, 48 pounds of chemicals and 1.47 tons of water. That's more than the weight of a rhinoceros or a car! *(Schwarzer, Bono, et al., 2005)*

http://ngm.nationalgeographic.com/2013/10/conflict-minerals/gettleman-text
Purchase Avoidance

The most sustainable electronic is the one already owned by you or someone else.

Consider leasing equipment instead of buying

• Leasing arrangements can include repair services
• If you don’t own it, you won’t dispose of it
• Ensure company leasing the equipment to you recycles equipment responsibly; ask pointed questions
• Can mean there’s no need to define refresh cycles
• Possible cons: loss of control, tax benefits

Office Depot “Buying or Leasing Equipment”
http://www.officedepot.com/a/businesstools/text/p01_5340/jsessionid=0000GhTLILVcEZR2xBkmzjk8DA3:17h4h7c4g

Purchase Avoidance

*The most sustainable electronic is the one already owned by you or someone else.*

**Before you replace a device, consider**

• Is the device still adequately meeting the needs of the user? If not, could the device meet the needs of another user in your organization? Can you obtain a “new” device from internal surplus?

  [https://www2.illinois.gov/cms/business/surplus/Pages/ComputerDonationProgram.aspx](https://www2.illinois.gov/cms/business/surplus/Pages/ComputerDonationProgram.aspx)

• Can maintenance of the device solve any problems you’re experiencing?
  
  • [http://www.techsoup.org/support/articles-and-how-tos/keeping-old-computers-alive](http://www.techsoup.org/support/articles-and-how-tos/keeping-old-computers-alive)
  
  • [http://www.telegraph.co.uk/technology/advice/10500034/Slow-computer-10-ways-to-make-it-run-faster.html](http://www.telegraph.co.uk/technology/advice/10500034/Slow-computer-10-ways-to-make-it-run-faster.html)
Purchase Avoidance

_The most sustainable electronic is the one already owned by you or someone else._

Before you replace a device, consider

• Can the device be upgraded given staff expertise and budget?  
  *Should You Upgrade or Replace Your Laptop?*  
  [http://www.pcmag.com/article2/0,2817,2407813,00.asp](http://www.pcmag.com/article2/0,2817,2407813,00.asp)

• Can the device be repaired?
  • Services like the “Geek Squad”
  • You can handle some things yourself
    • [www.ifixit.com](https://www.ifixit.com)
  • Be mindful of warranties
  • Safety first
  • Consider repairability at the time of purchase
    • [https://www.ifixit.com/smartphone_repairability](https://www.ifixit.com/smartphone_repairability)
    • [https://www.ifixit.com/Tablet_Repairability](https://www.ifixit.com/Tablet_Repairability)
    • [https://www.ifixit.com/Teardown](https://www.ifixit.com/Teardown)
iPhone 5 Display Assembly Replacement

Featured Guide
This guide has been found to be exceptionally cool by the iFixit staff.

Replace the screen on your iPhone 5.
Author: Andrew Optimus Goldberg  Difficulty: Moderate

Use this guide to replace your iPhone's cracked or otherwise damaged display assembly.

Step 6
- Make sure the suction cup is firmly attached to the front panel assembly.
- While holding the iPhone down with one hand, pull up on the suction cup to slightly separate the front panel assembly from the rear case.
- Take your time and apply firm, constant force. The display assembly is a much tighter fit than most devices.
- With a plastic opening tool, begin to gently pry the rear case down, away from the display assembly, while you pull up with the suction cup.

Step 7
- Continue to pry up around the sides of the front panel assembly, clearing the clips along the left and right sides.

Step 23
- That’s all folks. The iPhone 6 earned a respectable seven out of ten. Here’s why:
  - Continuing the trend from the iPhone 5 series, the display assembly comes out of the phone first, simplifying screen repairs.
  - The battery is straightforward to access. Removing it requires a proprietary pentalobe screwdriver and knowledge of the adhesive removal technique, but is not difficult.
  - The fingerprint sensor cable has been re-routed, fixing a significant repairability issue with the iPhone 5s and making the phone much safer to open. (On the 5s, the cable is easily torn if a user is not careful while opening the phone.)
  - The iPhone 6 still uses proprietary Pentalobe screws on the exterior, requiring a specialty screwdriver to remove.
  - Apple does not share repair information for the iPhone 6 with independent repair shops or consumers.

Example images from guides & teardowns from www.ifixit.com
Making better choices

*Tools & Resources for choosing more sustainable electronics*

- **Consider refurbished devices**
  - Extend product life cycles
  - Save money
  - Listed on retail sites (e.g. Best Buy); search for “certified refurbished”
  - Electronics recyclers may be “Microsoft Authorized Refurbishers”

  - For public entities
  - Free, voluntary
  - Technical assistance, reports, recognition program
  - Purchasing, use, & end-of-life management
  - Great resources on web site, partners only webinars
  - [http://www.stateelectronicschallenge.net/epa_regions.html#il](http://www.stateelectronicschallenge.net/epa_regions.html#il)

- **ENERGY Star**
Making better choices

*Tools & Resources for choosing more sustainable electronics*

- **EPEAT** [http://www.epeat.net/](http://www.epeat.net/)
  - Product registry, multi-stakeholder standards development
  - Green Electronics Council
  - Bronze, silver, gold
  - Currently covers PCs & displays, imaging equipment, & televisions
  - New products will be added over time
  - State of IL required to purchase or lease Bronze or higher
  - Criteria: [http://www.epeat.net/resources/criteria/#tabs-1=overview](http://www.epeat.net/resources/criteria/#tabs-1=overview)
  - ENERGY Star is part of the criteria
  - Full life cycle considerations; some social aspects (corporate responsibility)
  - Sample policy & contract language: [http://www.epeat.net/resources/for-purchasers/](http://www.epeat.net/resources/for-purchasers/)
  - SEC webinar on how to navigate: [http://www.stateelectronicschallenge.net/teleconferences.html](http://www.stateelectronicschallenge.net/teleconferences.html)
  - EPEAT web site also offers training videos; can request a live training: [http://www.epeat.net/resources/training/](http://www.epeat.net/resources/training/)
Making better choices

*Tools & Resources for choosing more sustainable electronics*

- ENERGY Star
- **UL Environment Sustainable Product Guide, Electronics**
  - battery chargers, computers, imaging equipment, **mobile phones**, monitors, office machines, televisions
  - categories for equipment with electronic components (appliances) and products related to electronics (remanufactured printer cartridges & printer ink)
  - All products that have achieved certification/validation from UL Environment, including GREENGUARD and ECOLOGO Certified products
  - UL Environment does 3rd party verification for ENERGY Star claims
  - Cellphones & lighting products
- **Responsible Purchasing Network** [http://www.responsiblepurchasing.org](http://www.responsiblepurchasing.org)
Making better choices

Tools & Resources for choosing more sustainable electronics

- Greenpeace
  http://www.greenpeace.org/international/en/campaigns/toxics/electronics/

- Electronics Takeback Coalition Retailer Report Card
  http://www.electronicstakeback.com/hold-manufacturers-accountable/retailers-recycling-report-card/

- SMM Electronics Challenge Champion Awards:
  http://www.epa.gov/smm/electronics/publc_recog_awrds.htm
Making better choices

Tools & Resources for choosing more sustainable electronics

Conflict Minerals

- Conflict Minerals 101: [http://www.youtube.com/watch?v=aF-sJgcoY20](http://www.youtube.com/watch?v=aF-sJgcoY20)
- Tin, tantalum, tungsten, & gold (3Ts & G)
- Used in virtually all electronics
- The Democratic Republic of Congo is a rich source of these minerals
- Control of mines → profit → fueling civil war
- Control exerted through violence, particularly rape
- **Section 1502 of the Dodd-Frank Wall Street Reform Act**
  - US companies that report to the Securities & Exchange Commission must publicly report whether or not the conflict minerals they use come from DRC or surrounding countries.
  - No penalties
  - 1st reports in May 2014

- **Enough Project/Raise Hope for Congo Conflict Minerals Company Rankings**: [http://www.raiselhopeforcongo.org/content/conflict-minerals-company-rankings](http://www.raiselhopeforcongo.org/content/conflict-minerals-company-rankings).

Photos:
[www.conflictmineralsconsortium.com](http://www.conflictmineralsconsortium.com)
THANK YOU

Joy Scrogum
jscrogum@illinois.edu; 217-333-8948

© 2014 University of Illinois Board of Trustees. All rights reserved. For more permission information, contact the Illinois Sustainable Technology Center, a Division of the Prairie Research Institute.

istc.illinois.edu