

# Green Computing

## Rationale

As an academic institution, the College of Computer and Information Science has a duty to explore the horizon of new technologies and techniques for solving the pressing issues of our day. One such issue is the negative effect of human activities on both the local and global environment. It is now well-known that the growth of our population, wide-spread adoption of technology, and the consumption of resources supporting these activities involves adverse repercussions on the environment, but less certain is the extent to which damage is wrought and how it may be avoided or reduced. Given the focus of CCIS on the development and use of information technology, it seems fitting that it should understand the effect of IT on the environment.

The environmental impact of our institution's IT infrastructure at present poorly understood. The Green Computing Project seeks simultaneously to understand the environmental impact of this infrastructure while developing solutions to obvious, addressable problems of paper and energy waste.

## Initiatives

The Green Computing Project requests permission to take up the following three initiatives:

1. **Improve printing facilities** (particularly in the main CCIS lab) to reduce paper waste. We'd look at fixing the current PDF problem, improving printing of PDFs exported from PowerPoint (if possible), and look into either enforcing print quotas or displaying real-time data on the amount of paper individual users are consuming. Users often take poor care of their printouts, and modifying the wall-mounted print queue display to show the number of pages they've used or limiting printing to daily page or document counts might help improve this behavior.
2. **Improve power management** on CCIS lab machines and servers. Will Tome told us of a commercial product under development by an NEU alum that would allow CCIS both to reduce its power consumption, track the power consumption of machines, and calculate the amount of money saved as a result. This particular product's revenue model is designed to make installation and support "free," receiving payment from the College's electricity utility as a fraction of the money saved from using it. This product is currently only available for Windows and Cisco devices, but a successful pilot of it at CCIS may lead to its adoption throughout the University, so it has the potential to benefit the University as a whole. Rest assured, we'll investigate all feasible commercial and open-source solutions.
3. **Conduct a comprehensive analysis** of CCIS's use, disposal, design, of its IT infrastructure, as well as the decision-making process on infrastructure procurement. We'd like to take a holistic approach to environmental impact management by understanding the effects of all decisions affecting IT infrastructure. This effort would culminate in a Green Computing strategy document recommending both tactical solutions to fix discrete problems and changes to CCIS's decision-making that would reduce the college's environmental impact over larger time-scales.

## Deliverables

### By End of the Fall 2011 Term

- **Printing Initiative**
  - Deliverables: changes/updates to current print server configuration or drivers, possibly the enforcement of new printing policies, documentation of these efforts.
  - Environmental Benefits: fewer trees harvested, leading to healthier forests, soil, and water supplies.
  - CCIS Benefits: less money spent on paper, teaching students the value of a dollar and better respect for the environment.

### By End of the Spring 2012 Term

- **Power Management Initiative**
  - Deliverables: new power management tools installed on all lab machines, possibly such tools on servers and network equipment, plus policy documents for their configuration and use.
  - Environmental Benefits: fewer non-renewables expended producing electricity, fewer pollutants and climate-changing chemicals released into the environment.
  - CCIS Benefits: less money spent on electricity, knowledge of electricity use patterns.
- **Infrastructure Impact Analysis**
  - Deliverables: a document describing the environmental impact of CCIS IT infrastructure through its life-cycle, along with recommendations for reducing said impact.
  - Environmental Benefits: long-term reduction of the College's environmental impact.
  - CCIS Benefits: the means by which to make more efficient use of existing and future resources, make its behavior more environmentally-friendly, and improve the results of these efforts in the future.

## Required Systems Resources

In order to pursue these goals, we'll need access to the following CCIS resources:

- Current policy documents regarding equipment purchasing, deployment, use, decommissioning and disposal.
- A list of all IT assets owned or operated by CCIS, or permission and resources to construct such a list.
- A list of all services running on CCIS IT assets, along with availability and performance requirements for these services.
- Access to data regarding the usage patterns of IT assets, or permission to and resources to record and analyze such data.
- Reasonable access to CCIS facilities for testing proposed solutions to the problems we uncover, and the ability to collect data on such tests.

# Membership

Students
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