

Biennial Report on ITS Contributions to UNCG Sustainability Efforts, 2011-13

Information technology is an essential resource for UNCG's sustainability efforts. ITS incorporates environmentally friendly practices into its daily operations, as well as promoting such practices across the University. Ways in which ITS practices and encourages environmental sustainability include:

- **Reducing energy consumption**

- University data centers
 - The University's enterprise server and network architecture is located in two campus data centers, McNutt and Bryan. The amount of power and cooling required to sustain the current architecture place the campus data centers as the second largest consumers of electricity at the University. Minus major architectural changes and assuming continuation of current rates of growth in computing utilization, ITS has projected that the campus will be out of data center capacity in 2014-15 +/- 12 months. We are currently executing several projects that we hope will allow us to converge our server and storage platforms into a single unified architecture. We expect these changes to dramatically decrease the footprint of the infrastructure in the campus data centers (substantially reducing cooling requirements, power consumption, and switching costs), and extend the useful life of these critical facilities.
 - The McNutt Building, which is solely occupied by ITS staff and the University's largest data center, participates in the University's "Standards of Comfort" program. This program sets heating and cooling temperature standards with the goal of reducing overall electricity consumption. From June, 2012, through February, 2013, the year-to-date cost avoidance due to reduced electrical consumption in McNutt was approximately \$6,845, a 5% reduction compared to the same time period in the prior fiscal year.
- Use of Windows OS power settings in desktop workstations
 - With the move to Active Directory, ITS is able to **centrally manage power settings to reduce energy consumption in offices across the campus**. ITS has implemented settings to turn off office computer monitors after inactivity in the labs, and will be able to implement more aggressive power settings in the future, as experiences allow.
- Use of VoIP phone system power settings
 - ITS uses power settings in the configuration of Cisco IP phones to reduce energy consumption. Between 6 pm and 7:30 am each weekday, IP phones enter a "power save" mode, and the phone displays are turned off. IP phones are configured to run in "power save" mode all day Saturday and Sunday. Phones will stay in "power save" mode unless a call received or a key is pressed; in these cases, the phones will re-enter "power save" mode after one hour of inactivity.
- Hosting by outside vendors allows UNCG to purchase less electricity
 - Google leverages economies of scale and green sources in powering their data centers (<http://google.com/green>)
 - ITS is currently piloting box.net as a potential alternative for faculty, staff and student home and department directory storage. If successful, we may be able to cloudsource approximately 10% of the data currently stored within our campus data centers, which

would allow us to reduce our energy consumption and extend the useful life of our campus data centers.

- **Reducing paper waste**

- Operation of the Pharos “Pay for Print” system within ITS labs and for departments that choose to adopt it
 - Since implementing the P4P system in 2003, ITS has seen an approximate **75-80% paper waste reduction** in its centrally-managed computer labs, while allocating all students 75 free copies/semester. The number of pages printed in the ITS computer labs was reduced from approximately 7,500,000 in the 2002-03 fiscal year, prior to implementing P4P, to 1,218,711 for the 2010-11 fiscal year and 903,508 for the 2011-12 fiscal year. These printing reductions have been realized despite growth in the size of the UNCG student population since 2003. The volume of paper deposited in lab recycling bins has also dropped substantially. ITS continues to support the implementation and operation of the Pharos system in several departmental labs, allowing those departments to reduce paper waste as well.
 - ITS and Business Affairs have engaged in studies with two vendors to help quantify the potential cost savings and environmental benefits of moving to a campus-wide “managed print” service. In the proposed model, a single vendor would be selected to supply, support, and repair campus enterprise printers and multi-function print devices. Print devices would be consolidated by replacing multiple “desktop” printers with larger-volume, shared devices for which use is charged on a per page (“click”) model. Cost savings and sustainability gains would be realized through:
 - reduced power consumption due to having fewer overall devices
 - reduction in e-waste due to having fewer overall devices that need replacement of component parts or complete replacement at “end of life”
 - reduction in toner waste that sometimes occurs when “stockpiles” of device-specific toner remain after a device reaches end-of-life
 - reduction in paper and toner consumption due to overall lower print volume, as “per click” costing model leads to more “mindful” print practices (“think before you print”)
 - potentially, reduced paper waste due to forcing submitted print jobs to be released at the device, providing a “second chance” to determine whether a specific print job is unnecessary or redundant (e.g., in cases of accidental double submission of print jobs)
 - EPRINT
 - UNCG utilizes the Banner Eprint Product to electronically capture standard reports from Finance and Human Resources which are produced on daily, weekly and monthly schedules.
 - These reports are viewable by campus users and retained according to retention regulations.
 - Use of Eprint precludes the need for thousands of pages of reports to be printed each week, along with the incumbent labor associated with campus distribution and storage.

- Facilitation of electronic assignment submission
 - ITS support for network file space and collaboration/online learning systems, especially Blackboard, enables the electronic submission of student assignments. The number of pages printed in ITS labs in 2010-11 was approximately 109,000 less than in 2009-10. The number of pages printed in ITS labs in 2011-12 was approximately 315,000 less than in 2010-11. Increasing use of electronic assignment submission is a likely factor in the reduction.
- **Collaboration tools**
 - Google Apps for Education
 - Provides the ability to collaboratively share/edit documents. This helps conserve paper, as well as reduce the number of copies of electronic documents stored on UNCG computers.
 - Google video and voice chat are available as a part of Google Apps for Education, supporting ad hoc video and voice communication between UNCG faculty, staff, and students regardless of their location. Sharing a common collaborative environment makes it simple to communicate with video and voice. Also, Google Hangout technology enables up to 15 people to simultaneously participate in an online video conference. This allows for greater flexibility in teleworking for staff which will reduce power consumption as well as the individual's carbon footprint by not having to drive a vehicle into the office. This technology also lessens the need for on premise conference facilities for small meetings.
 - Blackboard Collaborate
 - Provides a virtual classroom/"teamroom" environment where both academic and administrative groups can communicate with voice, video, and instant message, as well as share whiteboard/text tools and desktop application screens. This provides the same benefits as the Hangout technology discussed above, in that it will allow for greater flexibility in teleworking for staff which will reduce power consumption as well as the individual's carbon footprint by not having to drive a vehicle into the office. This technology also lessens the need for on premise conference facilities for small meetings.
- **ITS services available remotely reduce trips to campus**
 - Collaboration tools provide the ability to productively work with on-campus and off-campus participants.
 - For a full "campus equivalent" experience, ITS offers Teleworking bundles that provide a connectivity and software experience that is identical to being located on campus. This connectivity to the General Computing Network can be leveraged for ad hoc "work from home" or formal Teleworking. For casual use, ITS offers VPN connectivity to afford some of the benefits of the hardware-assisted Teleworking bundle.
 - ITS offers student connectivity to a virtual computer lab (VCL), where students can access specialized software from home.
 - ITS has launched a multi-year client computing virtualization effort, "MyCloud", to provide mobile, remotely accessible computer services to UNCG faculty and staff. This program will further reduce the need for travel to campus to access technology services.
- **Promotion of sustainable hardware purchases**

- The UNC System’s Combined Pricing Initiative (CPI) requires participating vendors to include models that are ***certified EPEAT Gold and Energy Star compliant***. These environmentally friendly criteria are preferred for all models in the program. Computer models available for purchase through UNCG’s Campus-wide Hardware Procurement (CHP) program must adhere to CPI standards. Any desktop/laptop/workstation not purchased through the CHP program must include a non-standard justification form that requires the requester to specify the computer’s EPEAT rating and to indicate whether it is Energy Star compliant. A recent (January 2013) internal check of 91 PO’s, for a total of 360 monitors, showed 312 of the monitors as EPEAT Gold certified. Four of the PO’s did not indicate the model number, so the EPEAT status is unknown. ITS is working with the vendor of those 4 orders to obtain better reporting detail in the future.
 - As part of the “MyCloud” initiative, ITS has implemented a pilot streaming desktop service within a managed computer lab environment. The ultimate goal is to deploy this technology, where appropriate, to managed workstations across the campus. Using this technology will reduce the need for compressed hardware refresh cycles and could also enable the use of more cost effective thin or zero client computer models. The back-end architecture used to support this delivery model is also being re-designed to collapse and consolidate server hardware and software into a more refined and streamlined system that requires less energy, cooling and physical space.
- **Scheduled videoconference support**
 - The ITS Telelearning Center in the Stone building supports both classroom meetings (up to 40 participants) as well as smaller teleconferences (in a room with up to 5 participants). These facilities support a diverse set of communication options for connectivity with NCREN (North Carolina Research & Education Network) participants as well as other institutions and businesses around the globe. In addition to support of “traditional” interactive video sessions, the Center has facilitated increasing use of “desktop” software tools such as Blackboard Collaborate and Skype. From July 1, 2012, through May 6, 2013, the Center has supported:
 - 455 hours of interactive video sessions for 1,005 (non-unique) UNCG participants
 - 114.75 hours of Blackboard Collaborate sessions for 230 (non-unique) participants
 - 76.25 hours of Skype sessions for 518 (non-unique) participants
 - Additional Center activities have included phone or webinar sessions that otherwise may have required travel.
- **Teleworking initiative/Flexible work schedules**
 - ITS has a telework initiative enabling staff members whose jobs allow them to work remotely to spend regularly scheduled days outside the office. This initiative uses “campus equivalent” connectivity or VPN connectivity and various collaboration tools to support remote workers as if they were simply in another building on campus. For example, 13 Administrative Systems staff regularly telework from 2 to 4 days a week, with some occasional telework from 5 others as work demands permit. In 2012, we calculated that scheduled telework avoided approximately 1,700 round trips to campus, for a savings of over 55,000 miles (and thus over 2,200 gallons of gas, at an average of 25/mpg). This saves 1,700 "campus parking" days, thus reducing the demand on campus parking resources. Significant additional commute and productivity savings accrue from

the ability to work evenings and weekends without driving to campus. Two temporary employees live at some distance from campus. Telework allows us to leverage their special skills which would otherwise not be practical, as one lives 50 miles from campus, and one lives 220 miles from campus.

- Providing flexibility in work scheduling facilitates the ability to use PART and other alternative transportation, saving 21,120 miles driven by just two ITS staff members, one of whom lives just 8 miles from campus and currently only rides the bus approximately 5% of his overall annual commute cycle.

- **Records management**

- ITS provides records management information to the University helping departments and individuals understand when records can be destroyed. This eliminates physical and electronic storage. Annually, ITS participates in a Shred-a-Thon with the Office of Waste Reduction and Recycling to promote disposition of materials no longer needed for reference or required by law for archival storage.

5/8/13