Standard Eight: Physical and Technological Resources

Description
The physical resources of Eastern Connecticut State University include land, buildings, major equipment and infrastructure. The 182-acre campus encompasses more than 50 administrative, instructional and residential buildings containing 1,323,139 assignable square feet. The Office of Facilities Management and Planning and the Office of Information Technology Services oversee Eastern’s physical and technological resources, respectively.

Scope and Adequacy: Physical Resources
The campus has grown significantly in the last decade, from 1,205,391 GSF in 2001 to 2,003,742 GSF in 2009. Buildings added to the campus include the Administration Building, a 714-car parking garage, three residence halls, the Child and Family Development Resource Center, the Student Center Addition, the Science Building and the Public Safety Building. Eastern also teaches courses in a high school in Vernon, in a shared building in Groton, at the U.S. Navy’s Submarine Base in Groton, and in Jamaica. Facilities for these courses meet all applicable building codes and instructional needs. Management, maintenance and operation of facilities is conducted by Eastern employees. Staffing in the 12 areas comprising the Office of Facilities Management and Planning is currently 115 employees.

A classroom study completed in 2002 evaluated the existing condition of classrooms as well as the size and number of classrooms. Based on that study and input from faculty, a prioritized list of classroom improvements was created. Minor capital funds were identified over a period of time to bring the deficient classrooms up to standard. General-purpose classroom furniture for new and renovated classrooms across campus includes tables and chairs that are movable (rather than tablet arm chairs) to enable flexible seating arrangements to accommodate several teaching methods. Space that is specific to a given discipline is classified as a laboratory in the inventory and is assigned to a specific department rather than being available for all disciplines. Special allocations of this sort ensure that the space supports the teaching methods appropriate to each discipline.

In 2004, the Goddard 100 renovation was completed, and additional classrooms were created in Goddard and Winthrop Halls as space became available upon completion of the new Science Building. These developments notwithstanding, the Program for the campus Master Plan confirmed the need for additional classroom space.

Scope and Adequacy: Technological Resources
Information Technology Services hosts a robust network infrastructure to support the University’s academic and administrative missions. The network is defined by firewalls, packet-shapers, wireless access points, power generation equipment, and a large number of distribution closets. The University is designing and constructing new primary and backup data centers to support a growing demand for technology and to enhance security. A redundant fiber loop was installed in the Spring of 2010 to provide a backup connectivity to the Internet.

Classroom technology is impressive, with a minimally-equipped classroom featuring internet connectivity, an LCD projector, sound system, digital camera, VCR/DVD player, and lectern with controls. All of the University’s academic classrooms meet this standard. ITS provides training and posts instructions for use of equipment in multimedia classrooms. Nine computer classrooms allow instruction using specialized software requested by instructors. The ITS FAQ page provides guidance and answers questions on a range of topics.
Technological resource planning is based on a defined replacement cycle. Faculty and computer lab systems are replaced every 3-4 years, with replaced machines redeployed elsewhere on campus to fill less technologically demanding functions. Classroom technology is replaced every 4-6 years based on use and application changes. Infrastructure upgrades and changes are completed based on criteria from the System Office and the University’s long term Physical & Technology Master Plans.

As part of Eastern’s Information Technology Services department, Media Services provides a broad variety of media-related services to the Eastern community. These services are defined in two primary service areas: Media Technology Support and Multimedia Production. Media Services provides comprehensive technical support services to the ECSU community, including audio-visual equipment services, multimedia projection system support, systems design, and consultation. Media Services staff also design, develop, and distribute many types of media materials for ESCU administrative units, students, faculty, and University affiliates.

ITS provides support for and training on a range of administrative and instructional applications including Knowledgebase, eWeb, Online Courses and BlackBoard Vista, email, VPN, eBanner, eReports, Surveys, Web development, Adobe Connect. An ITS unit, the Center for Instructional Technology, supports the application and integration of technology across the curriculum and provides essential support services for the use of technology in teaching, learning and research. Support is available for research and implementation of emerging technologies, purchasing quotes, student IT orientation, website development, CD/DVD development software distribution, online courses, technology documentation, web development and surveys, online calendars, instructional computer classroom support, campus-wide IT training. Additional information is available for Banner and eWeb users.

Compliance and sustainability: Physical Resources
All Facilities are built and renovated in accordance with State Building and Fire Codes and in keeping with ADA regulations. The Connecticut Department of Public Works project manuals for self-administered projects requires a certificate of code compliance that must be signed by the designer and the contractor ensuring that the renovation or construction was done in compliance with all building codes. In addition, all projects completed with CSUS 2020 funds—regardless of the size or complexity—are inspected by the Office of the State Building Inspector and by the State Fire Marshal. Annual inspections are conducted by the State Fire Marshal’s office to ensure that buildings are brought up to current code. These annual inspections have typically identified only minor violations (e.g. fire doors propped open, or equipment stored in stairwells by building occupants); such violations have been addressed right away, either by simply informing occupants of the problems or through the work order system.

All buildings have electronic access and most classrooms have trilogy locks to ensure the security of the assets. Electronic access allows the University to track who is entering the building.

LEED certification for renovations and new construction ensures that the buildings are being designed in the most appropriate manner for a healthful environment. Three recently-constructed residence halls received LEED certification, and the validation process is underway for the Science Building, which was designed to LEED Silver standards. In 2007, the University instituted green cleaning, which provides a healthy environment for building occupants and protects custodians from harsh chemicals. Eastern’s Recycling Program is undergoing change to be consistent with single stream recycling. A map showing the locations of recycling containers is located on the facilities web page at http://www.easternct.edu/facilities/recycling.htm. Eastern hosts an Institute for Sustainable Energy that provides information on energy alternatives and sustainability to users and providers of energy. It has provided assistance to Eastern in implementation of strategies to conserve energy on campus.

Planning: Physical Resources
The University uses the Strategic Plan to drive funding and allocation of resources for facilities and technology in keeping with the institution’s mission and priorities. The Connecticut State University System (CSUS) periodically revises and updates the Comprehensive Campus Master Plans for the four universities. Eastern’s physical resources were evaluated in the development of the 2009 Master Plan. Phase I of the Master Plan includes the Program for the Master Plan, which estimates the square footage required for each space type by department, based on contact hours and projected program growth. The Master Plan creates a solution for the identified space needs. The plan took into account academic needs, building use, efficient use of program space, land use (such as vehicle circulation, parking, pedestrian circulation, and open space use), residential life (including student recreation), and administrative needs. Master Plan projects are prioritized based on need, and recommendations reflect an analysis of Eastern’s mission, priorities and objectives.

**Technological resources**

Various committees on campus review strategies for budget and resource allocation during normal planning and implementation cycles. In the Spring 2009, at the request of Eastern’s CIO and with the agreement of the Senate President, the Instructional Technology Advisory Committee (which was not a Senate committee) was replaced by the Instructional Technology Committee, which reports to the Senate and provides guidance to ITS on planning and resource allocation. An [Information Technology Plan](#) was one of the 18 initiatives in the 2008-2013 Strategic Plan; that Plan was approved in the Spring of 2009.

**Integrity and security: Technological resources**

ECSU takes seriously its legal and ethical obligations to protect its computer systems, its institutional data, and the personal information of its students and employees. ITS devotes significant resources to matters of reliability and security. Two full-time staff members hold GIAC Security Essentials Certification. ITS developed an [Incident Response Procedure](#) in 2002 that provides a framework for an orderly response to events that threaten the security or operation of our computer resources. Policies related to reliability, security, and integrity of systems and data are listed at the [ITS Policies](#) web page.

Physical access to critical computer systems, network components and data storage is tightly controlled. A review of employees with access to these secure areas is performed on a semi-annual basis and rights are modified accordingly. Power protection (UPS) systems are employed to minimize the effect of power fluctuations on our critical systems. To the extent our resources allow, redundant systems are installed to promote reliability in case of component failure. Two new and fully redundant data centers are under construction to improve security and network performance.

ITS maintains three hardware firewalls on the Local Area Network, as well as software-based firewalls on desktop computers. A perimeter firewall between the ECSU LAN and the CSU WAN/Internet protect internal computers from external threats. The perimeter firewall is a Juniper product purchased under the direction of the System Office in Hartford. A pair of Sonic Wall anti-spam filtering systems weeds out a majority of the incoming email spam. Internally, access to network resources is protected by access control lists, group membership assignment, and other methods. ITS maintains a two-layered defense against rogue systems and users by using Access Control Lists and the Reject_Anonymous registry setting. Strong password policies help to protect our technology accounts and the resources they use.

Access to Banner systems and our enterprise data store is controlled by role assignments and a strict approval process; access is reviewed semi-annually. Instances of direct access to the data store are logged and monitored. Banner users are required to sign a confidentiality agreement that stresses the importance of protecting institutional data. A Banner access audit is performed annually for full-time staff and semi-annually for part-time and student employees. Training on our legal obligations under FERPA, GLB and other such legislation is provided to employees with access to protected information. All ITS employees must sign an employee confidentiality agreement.
ITS uses Windows Active Directory to force all desktop firewalls to be active, using a common configuration. Anti-virus software is installed on all servers and desktop computers on the campus domains; this software is automatically updated on a regular basis. The release of software security patches is closely monitored, tested, and distributed on a timely basis. The University employs a comprehensive data security policy for portable media devices and standard protocols for acceptable use of technology equipment. Staff and faculty are trained on information security through hour-long briefings, held at the department level by ITS security officers.

Appraisal

Scope and Adequacy: Physical Resources

Construction projects undertaken between 2001 and 2008 addressed shortages of classroom space, science laboratory facilities, residence capacity, and parking, and created significant new amenities for the entire community in the Student Center. The second garage project currently underway will further alleviate parking shortages. A new softball facility to replace the softball field that was formerly at the site of the second parking garage will be completed when approved bond funds are released.

The adequacy of Eastern’s physical resources was recently evaluated in the 2009 Master Plan. Several of the remaining inadequacies identified in that plan will be addressed through the CSUS 2020 program. In addition to the renovation of Goddard Hall and the Communications building and additions and renovations to the Sports Center, the CSUS 2020 program will fund the construction of additional residence halls and a new Fine Arts Instructional Center. Current facilities for the Visual and Performing Arts Departments are inadequate in terms of square footage, ventilation, and lighting which adversely affects program offerings.

CSU BOT resolutions 01-53 and 04-54 require that Eastern’s construction projects comply with design guidelines and are reviewed by a design committee. These resolutions have contributed to an effective and coordinated development of the physical campus. Eastern’s facilities are well maintained, with preventive maintenance done during the summer in residence halls and at the change of season for all buildings. While facilities continue to be well-maintained, the operating budget for the physical plant has dropped from $2.06 per square foot in 2001 to $1.29 per square foot in 2009.

Scope and Adequacy: Technological Resources

Eastern’s network has seen important improvements recently with newly-installed firewalls and the deployment of a redundant fiber optic loop to ensure Internet connectivity. Eastern is being used as the pilot campus for a VoIP system that the CSU System is developing. Planning for this new system drew attention to shortcomings with a number of telecommunications closets across campus: currently, a number of nodes on the network do not have the power generation, UPS, and cooling capabilities necessary to support the proposed system. Those capacities will be added prior to the deployment of the VoIP technology.

Campus classrooms provide a strong technology footprint for learning and communicating academic programs to students. The campus has been slow in deploying wireless technology, but the wireless project has gained momentum recently with a footprint of access points throughout the academic and administrative core; the University has begun deploying wireless to the residence halls, as well. The University has increased its bandwidth by 50% to support student recreational and academic uses on campus. This is typical of most institutions today, where students use massive amounts of bandwidth for recreational purposes.

Compliance and Sustainability: Physical Resources
Existing policies and practices ensure that Eastern’s facilities are safe and secure and that the campus environment is healthful. A recent audit of campus security conducted by the CSU System Office was positive and annual inspections by the State Fire Marshal have resulted in only minor findings. Both the practice of using green cleaning materials and the development of energy efficient buildings contribute to the sustainability of the campus.

**Planning: Physical Resources**
Eastern is effective at evaluating its physical resources and planning for their best use and future growth. The Master Plan and Strategic Plan processes serve to lay out a guiding vision for the campus. Ongoing monitoring of classroom use and assessment of the adequacy of residential space both help the University to meet its enrollment goals. The newly created Space Committee ensures that the assignment of space on campus is informed by input from all constituencies and responds to the needs and priorities of the University as a whole. The committee considers the space needs identified in the Program for the Master Plan when evaluating space requests.

Deferred maintenance of Eastern’s facilities is minimized through the annual minor capital program which allows the University to address routine maintenance of buildings that extends the useful life and effectiveness of the building systems. The use of dedicated funds to address larger needs—such as that for a new Fine Arts Instructional Center—can be sporadic due to shortfalls in state appropriation from the Bond Commission.

**Planning: Technological Resources**
The Information Technology Plan requires ongoing monitoring for the adequacy of technological resources to ensure that academic and administrative needs are met. CSU Trustees have designated a set funding level for classroom technology for refreshing faculty and computer lab machines. In years when the funding has been cut due to shortfalls in state revenue, schedules for updating machines are modified. Still, most faculty and staff enjoy an appropriate and capable suite of hardware and software in their offices and classrooms.

**Integrity and Security: Technological Resources**
The University is constantly enhancing policies and adding equipment to protect sensitive data and critical applications. The University restructured ITS to create an Information Security Officer to monitor the security of the institution’s technologies. Network access is reviewed semi-annually, and security briefings are conducted around campus to keep staff up to date on the latest threats and security measures.

At the end of each calendar year, ITS produces a summary incident report that assesses the impact of events related to network security and identifies vulnerabilities to be addressed. A number of complex vulnerabilities that have been areas of concern are being addressed aggressively by the construction of the new data centers, with their redundant cooling, UPS, and power generation capacities; the upgrades that will take place as part of the VoIP pilot program will similarly improve the capacity of data across campus. The deployment of new, more powerful firewalls has allowed the University to increase bandwidth for students in the residence halls and academic buildings. Funding has been adequate to maintain core IT services, both hardware and software for staff and students.

**Projection**

**Scope and Adequacy: Physical Resources**
Classroom space will continue to improve over time through the University’s physical and technology planning efforts. All new classrooms are designed in compliance with the classroom design standards established following the 2002 evaluation of classroom space and include a standard technology package as well as flexible furniture. As space and funding become available, the University will expand available
classroom space in an effort to achieve optimum levels. Renovations of Goddard Hall and the Communication Building scheduled for 2014 will help to address the need for additional classroom space. The Fine Arts Instructional Facility will provide a badly-needed upgrade to the classroom, studio, and performance space needs in the Visual and Performing Arts, and will also make way for new uses of Shafer Hall. Design work on the Fine Arts Instructional Facility was scheduled to begin in the summer of 2010, but has been delayed while awaiting the arrival of CSUS 2020 funding. If that funding is not delayed for too long, construction could start as early as Fall 2012. The Master Plan update includes provisions for a Technology/Classroom building that will allow the University to close any gap between the amount of available classroom space and the levels called for in the Program for the Master Plan; this building is estimated to be constructed in 2021.

Scope and Adequacy: Technological Resources
Although the University’s Master Plan does not directly address some of the shortfalls in the technological infrastructure, the Facilities Department, System Office and ITS are working through various avenues to correct shortfalls in the technology base. Through CSUS 2020, bond funding is available to close the internet loop on campus and provide a second entry point for internet services. The System Office has released additional funding for firewall upgrades through a collaborative distributive model, where ITS staff at the four CSU campuses collaborate on a solution and the System Office provides funding and contract guidance.

As buildings are built and renovated on campus, the Master Plan and Minor Capitol Funds will provide some relief for infrastructure shortfalls in data closets, power generation, and wireless technology. This process has begun with the assessment of the data closets in preparation for deploying VoIP system. The Communication Building data center replacement project has been designed and funded and is under construction. This has been a priority project for Facilities, ITS, and the University. The data center will consist of two separate centers, one housed on the fifth floor of the Science Building will be funded with the remaining project money from the building telecom fund. This center will act as the primary data center, while the current data center in the Communication Building will act as the backup.

Classroom technology is generously funded per the CSU Bond Fund at $139,500 annually. The University has adequate technology fees to augment this fund if necessary to maintain current classroom technology to ensure the core teaching mission. ITS is working with Fiscal Affairs to allocate more of the technology fee to the acquisition and maintenance of student and academic related technologies. This is the result of a collaborative and well planned technology effort by the two offices. In addition, CSUS 2020 will provide consistent funding for the University. From CSU 2020 funds the University has leveraged its investment and used infrastructure Bond Funds to correct the deficiencies in the Data Center, telecommunications closets, and student network.

Compliance and Sustainability: Physical Resources
Eastern will continue its policy of strict compliance with applicable codes and guidelines and will maintain its emphasis on conservation and sustainability. LEED certification and other green building methods will continue to be used and will result in environmentally appropriate buildings. While LEED certification (and other alternative certifications like it) continues to cost approximately one million dollars for major construction projects, verifying that the University’s buildings meet these high standards supports Eastern’s core values and mission.

Planning: Physical Resources
Together, Eastern’s 2009 Master Plan, the 2008-13 Strategic Plan, and CSUS 2020 provide a framework for planning enhancements to the campus. Circumstances may at times dictate some temporary departures from the timelines identified in those plans: some projects contingent upon CSUS 2020 funding may have to be delayed, while others may be moved ahead. Construction of residence halls, for instance, is funded
through CHEFA Bonds that do not require Bond Commission action, meaning that some residence hall projects may begin earlier than anticipated.

Planning: Technological Resources
The planning and resource allocation process and the Strategic Plan provide sound guidance to the CIO and ITS staff in the prioritization of projects, funding, and use of equipment. Though there are shortfalls in identifying specific ITS infrastructure requirements in the Physical Master Plan, the Director of Facilities is working to add critical infrastructure requirements into ongoing Facilities Plans and future expansion. A prime example of this is the design and development of a new Data Center to support the campus infrastructure. The ITS components of the University’s Strategic Plan clearly outline the directions that technology will take on Eastern’s campus over the next 5 years. The creation of a Senate committee on ITS matters will ensure that important steps and investments are thoroughly vetted, increasing the transparency of technological decision-making and helping ITS managers to determine priorities for resource allocation. Recent increases in enrollment have increased funding generated by the student technology fee. These funds will ensure that technological resources at Eastern are adequate and modern even if state funding for higher education decreases.

Integrity and Security: Technological Resources
Based on its assessments each calendar year, ITS makes operational and procedural changes to increase the effectiveness of policies and procedures designed to ensure the integrity of systems and data. An example of this process is the University’s policy on securing sensitive data and software controls. ITS provides continuous improvement of services to ensure system availability and data integrity. The CSU System has selected products from Juniper Networks to replace systems from Check Point Software Technologies, and new Juniper border firewalls were purchased in FY 2009. These new firewalls have sufficient capacity to support higher Internet connection speeds and have dedicated Intrusion Detection Service solutions built in.

Eastern is currently building new server rooms with backup power generation, suitable UPS, and proper cooling. This project began during FY 2010 with funding from the state bond commission. Eastern ITS is, moreover, in the middle of a server virtualization project that will reduce server room environmental needs and decrease server replacement costs. ITS is working on a project to enable software-based firewalls on all servers as well as desktop computers. ITS hopes to add to this remote functionality for all members of the campus community by deploying Luminis as a communications portal. This web based tool will complement the existing services universally available to the institution.

Institutional Effectiveness
Eastern’s physical resources have been evaluated through the Master Plan and Strategic Plan processes and have improved significantly over the last ten years through construction and renovation. Though there are deficiencies in instructional facilities for the arts and in the Sports Center and shortages of student housing, the campus otherwise offers students and faculty member’s physical and technological resources commensurate with the University’s mission. The operating budget for the physical plant has not kept pace with the physical growth of the campus, however, dropping from $2.06 per square foot in 2001 to $1.29 per square foot in 2009.

Technological resources available to students, faculty, and administration support their needs. ITS offers high levels of service, training, and support for administrative and instructional functions. ITS is implementing a set of assessment strategies based on the Information Technology plan that was developed as part of the 2008-2013 Strategic Plan. Deficiencies related to desirable redundancies and back-up systems are being addressed.