The Ohio State University
Facilities and Technology Infrastructure Report

For the Ohio Board of Regents
Second Report on the Condition
of Higher Education in Ohio
Introduction.

As Ohio’s national research university, Ohio State serves the needs of our state in all matters of post-secondary education, including traditional higher education, continuing education, and workforce development. Accordingly, Ohio State is committed to leading the changes necessary to accomplishing the goals in the Board of Regents’ Strategic Plan for Higher Education. As is the case for every college and university in Ohio, opportunities for and challenges to our contributions to the strategic plan are conditioned by a growing number of factors, including the need for facilities enhancement, the budgetary implications of facilities upgrades, and the expansion of our technology infrastructure. Our local conditions are a microcosm of State of Ohio conditions. Based upon our comprehensiveness and land grant mission, however, Ohio State may require the largest investment in these three areas to fulfill the Regents’ objectives.

This report highlights these areas of opportunity and challenge at The Ohio State University.

1. Condition of Facilities.

The Columbus campus and four regional campuses collectively house 864 buildings. The replacement cost of these facilities’ 33 million gross square feet is estimated to be $6.7 billion. The average age of Education and General buildings (as defined by POM and the State of Ohio) is nearly 38 years. From experience, Ohio State expects its facilities to have a 67-year life cycle. (See Figures 1 and 2 for data on facilities usage.)

Based on data in the OBR Higher Ed Information system, as of fall 2006 Ohio State’s Education and General space in satisfactory condition or needing only minor rehabilitation was 71 percent. This baseline number is based on informal building evaluations and information on recent renovation projects in specific facilities. Ohio State is currently engaged in an Academic Facilities Plan initiative that will provide data-driven building information that is more accurate than both our earlier assessments and the State of Ohio’s estimates. This initiative provides for a condition assessment and a building functionality/utility assessment of every building. Based on preliminary data, Ohio State anticipates that its baseline percentage for facilities in satisfactory condition or needing only minor rehabilitation will decrease, thus indicating that more of our buildings need major repairs than suggested by the baseline. When this study is concluded in 2009, we will have far more precise knowledge of the condition of our facilities. For now, however, we are assuming that Ohio State’s existing facilities condition baseline is no better than the University System of Ohio average of 64 percent.

These statistics reveal that, today, our facilities do not optimally support Ohio’s higher education objectives. This is critical to an institution that produced more than 4,700 STEM graduates in 2006-07, a number that is projected to rise to 5,500 by 2013-14. Our unique role as the state’s national research university calls on us to enhance STEM education for leadership in these crucial disciplines. Accordingly, Ohio State is focusing not only on undergraduate, but on Master’s, PhD, and professional education. We are training the faculty of the future, just as we are training Ohio’s future scientists. Nearly 700 of our PhD graduates from the past ten years are faculty or postdoctoral researchers at an Ohio institution of higher education.
Indeed, Ohio State is not planning to increase its Columbus campus undergraduate student enrollments substantially. Demographic realities underlie that decision: while the number of high school graduates increased by 9 percent from 2006-2009, that number is projected to fall by 10 percent over the next decade. This calls on all higher education institutions in Ohio—including Ohio State—to optimize the graduation success of their students.

The increase in the total number of enrollees and the largest improvement in Ohio State's graduation rates will come from our regional campuses, especially in light of the regionals’ opportunities for workforce development and their focus on degree completion. Approximately 55 percent of students who start at our regional campuses complete a degree in the state. Efforts are under way to boost that percentage substantially.

It is also important to note that Ohio State is already contributing to the Board of Regents objectives with improved graduation and retention rates.

- Over the past ten years, the percentage of Ohio State freshmen who were retained to their sophomore year increased from 83 percent to 93 percent.

- Over the past five years, the percentage of Ohio State students who graduated within six years increased from 62 percent to 73 percent, and we are focused on further improving this graduation rate to 95 percent.

We would also like to point out that more Ohio State faculty are recognized by the nation’s most prestigious scientific associations than any other university in Ohio. Some 130 current faculty members are members of the Association for the Advancement of Science (AAAS), while 23 are members of the National Academy of Science, the National Academy of Engineering, or the Institute of Medicine.

Our increasingly well-retained undergraduates, our graduate and professional students, and our eminent faculty are often not well served by Ohio State facilities. To ensure that our teaching and research spaces are appropriate to all these users, such spaces must be maintained at a high level. We therefore do not anticipate a need for additional facilities, though there is demonstrated need for better facilities. The state’s investment in capital facilities has eroded significantly over the past five biennia. The result is that our facilities are in less than optimal condition, despite a considerable investment of our own resources. Improving the quality of our teaching and research space will require still more significant capital investment.

2. Financing Facilities.

The State of Ohio capital decisions are biennia-based. Over the past two biennia we have begun planning in six-year cycles. The academic facilities studies that we have undertaken will enable us to develop scenarios for 15 to 20 years. While we will continue to project on a six-year cycle, such scenarios will provide sufficient long-term perspective to allow us to be responsive to changing conditions and priorities.
Due to years of decline in state funding, Ohio State now self-funds 80 percent of its capital construction, with some 20 percent of our capital funding provided by the state. To meet Ohio’s goals of educating more students and increasing research and workforce development, Ohio State’s rate of spending for new construction (building replacements and total building renovations) over the next 20 years is estimated to be at least $130 million per year. The rate of spending for facility renovation (not including total building renovations) over the next 20 years is estimated to be $92 million per year.

We are presently funded at a level of about $43 million per year for custodial, maintenance, and renovation and repair of facilities. Funding for roads and grounds is not included. Our rate of spending is approximately 20 percent higher than FY09 funding. As a result, Ohio State’s rate needs to increase to $52 million per year and to be adjusted for inflation annually.

Utilities spending at present is approximately $66 million per year for purchased utilities. This rate must be adjusted annually to cover fuel cost increases for inflation. In addition, the Medical Center expansion and our plans to house increasing numbers of students on campus will increase the amount of conditioned building space on campus. A corresponding increase in purchased utilities is to be expected. All new construction and renovation will meet campus and state goals for energy efficiency and sustainability and will exceed HB 251 requirements.

As noted above, undergraduate enrollments on the Columbus campus are not expected to increase substantially. Therefore, the existing educational and general component of the physical plant will remain relatively constant in size. As facilities efficiencies increase with building renovations or replacements, energy usage is anticipated to diminish.

To reach the goal of “greener” buildings, Ohio State has committed to spending an additional 5 percent for new building and building renovation projects to ensure that energy and sustainability enhancements are included. This additional 5 percent is built into the estimated annual rate of spending for new buildings and renovations. Moreover, all future construction projects exceeding $4 million will be eligible for and will secure LEED Silver certification.

Primary challenges to Ohio State’s capital planning efforts include:

- a lack of facilities assessments and deferred maintenance metrics that are verifiable and consistent with general industry standards; this challenge is particularly important because deferred maintenance liabilities may range upwards of $3 billion—this as a result of inconsistencies in standardized state metrics; and

- the Ohio requirement for constructing facilities using a multi-prime model, which costs taxpayers an additional 10 to 20 percent premium in construction costs.

Ohio State’s current facilities focus must be on the elimination of deferred maintenance and on renewal and/or reuse to improve the quality of the university’s teaching/learning and working environments. A major step in that direction would be the elimination of the multiple primes inefficiency. Allowing the university to choose the most cost-effective project delivery model
would accelerate our effort to reduce the university’s deferred maintenance backlog and provide facilities appropriate to the teaching/learning and research needs of our students and faculty members.

Still another solution to providing facilities that meet the state’s goals of educating more students and increasing research and workforce development would be the selective allocation of state capital dollars to only those universities with demonstrated and validated plans to optimize the use of their current facilities. Such plans would be based on academic facilities analysis and strategic planning principles, including:

- prioritizing adaptive reuse
- addressing renewal and deferred maintenance liabilities
- address energy and sustainability issues
- enhancing trans-disciplinary collaboration
- promoting innovative teaching supported by the creative use of facilities
- ensuring academic and social integration

3. Technology.

Technology is relevant to Ohio’s educational, workforce development, and research goals in numerous ways. For example:

- Webinars, webconferencing, video and voice annotation, and media-rich, socially-networked messaging will increasingly provide alternatives to face-to-face communication while creating archivable records of events.
- eLearning can enable educational goals—whether it is just-in-time training for technicians in the field or a degree program, training course, or professional certification program for adult learners extending their credentials.
- Recent advances in remote lab experimentation and telemedicine expand the availability of expertise that was formerly location-bound.
- Broadband technologies leverage economies of scale and help address economic divides by providing access where none previously existed.
- Expert systems can help learners plan their educational paths by providing means to simplify degree audits, course credit transfers, and matriculation agreements across state institutions. Similar systems can support career planning, referral, and placement.
- Advances in data analytics technologies can improve workforce trend analysis and forecasting at the state level.
- Social networking enables individuals to look for work, enhances recruiting, expedites reference checks, and enables the sharing of information across organizations.
Virtual classrooms, in combination with public spaces such as libraries, could be a powerful tool for expanding the education and skills of Ohioans. For example, virtual classes on household financial and records management, infection control, or even such routine information as how to properly read a prescription bottle could help build a more educated Ohio. Course management systems, learning outcomes assessment-related portfolios systems, inter-state university/college broad-band connectivity, and the World Wide Web can all support educating more Ohioans and expanding workforce development and research.

The Ohio State University has aggressively pursued technology-enhanced education as a way of extending its expertise to learners throughout the state. To cite but one example, the Fisher College of Business offers a technology-supported general business degree to the four regional campuses.

New technologies, of course, add new dimensions to the issue of academic space. First, the cost of classroom space has increased because today’s classrooms require connectivity and projectors, interactive whiteboards, configurable furniture, etc. Hybrid courses move a portion of course contact hours into an eLearning format, reducing the number of face-to-face class meetings per course. The institution may then reclaim classroom space for other course sections or purposes. However, implementing a hybrid course model may bring its own costs and floor space requirements, such as new media production and personnel space to support course creation. In addition, technology-based learning has enhanced the desire for collaboration among students. Much is done virtually, but students also want to work together in small groups. So, while basic needs for classroom space change little, demand for additional small group space increases. Moreover, each of these “breakout rooms” should be provisioned with technologies to foster file sharing and collaborative work.

Technology impacts space in still other ways:

- Library stack space may be reduced or consolidated as access and preference for digital resources increase;
- Office space may be recovered as records and resources move from paper to digital formats and high-fidelity communication platforms expedite telecommuting; and
- Space dedicated to housing servers may be reduced through virtualization, cloud computing, and centralizing server support into high performance data centers.

Consolidating common services, shared development, and joint purchasing can be a means of using funds effectively and efficiently. Current examples of combined IT systems at Ohio State, statewide, and in the CIC demonstrate the value of centralization. At Ohio State, negotiated purchasing agreements with key vendors, server and application hosting, virtualization, and an increasingly centralized application infrastructure have provided economies of scale to the institution. The Third Frontier Network, OhioLINK, the Ohio Supercomputer Center, and purchasing agreements brokered by IUC stand as examples of particularly effective state-wide I/T collaborations that have brought service and scale to all participating institutions. The shared
digital repository currently under development in the CIC demonstrates the value of regional cooperation.

**Conclusion.**

The condition of our facilities, the financing of those facilities, and the need to expand our technology infrastructure are critical issues, especially in today’s uncertain economic environment. The questions asked by the Regents for the *Second Report on the Condition of Higher Education in Ohio* are pertinent, and consistent with issues we are tackling at The Ohio State University.

Recognizing, for example, that our capital planning process was too narrowly focused and neither holistic nor visionary, we have made significant changes to that process. In the past, we traditionally renovated or constructed one building at a time in response to the needs of a particular college. We have now abandoned this college-centric approach because it leads to duplication, is inefficient, and reduces the impact we can have with today’s limited funds.

Our capital resources, already diminished by a 40 percent decline in state capital dollars over the last ten years, are being further stressed by staggering inflation in construction costs and the end of life expectancy for infrastructure and building systems. Such a fiscal climate calls on us as never before to leverage our state and local funds as well as our development opportunities. To ensure that we use these leveraged funds most effectively, we have developed a comprehensive capital planning strategy that simultaneously addresses our academic needs, deferred maintenance issues, and fiscal realities.

In this new planning process, our facilities and technologies needs must be aligned with our colleges’ strategic plan goals for programs, recruitment and enrollment targets, and cooperative initiatives. Those needs must also be aligned with our president’s objectives with those of the vice presidents. As a result, the new planning process will allow us to provide adjacencies that increase interdisciplinary opportunities and better utilize current space. Projects deemed to be critical will be those that have a high academic priority, address major facility conditions, and improve space functionality and use. It is important to note that Ohio State has implemented a performance enhancement strategy to assess and evaluate the success of university leadership in achieving their planning objectives.

Overall and in the long-term, these new approaches will redefine how Ohio State manages its resources and, so will promote sustainability. They will also lead to a more responsible stewardship of our resources, allowing us to provide our students, faculty, and staff with the most appropriate facilities in optimum condition, and with the technologies that will support the goals of educating more Ohioans and expanding workforce development and research.
Figure 1

<table>
<thead>
<tr>
<th>Space Type</th>
<th>Peak/Daytime Usage (8 AM-4 PM, Mon-Fri)</th>
<th>Non-Peak/Evening Usage (4 PM-12 AM, Mon-Fri)</th>
<th>Usage Goal (Peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom</td>
<td>65.5%</td>
<td>19.0%</td>
<td>70.0%</td>
</tr>
<tr>
<td>Teaching Lab</td>
<td>45.9%</td>
<td>20.9%</td>
<td>50.0%</td>
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Figure 2

<table>
<thead>
<tr>
<th>Year</th>
<th>Square Feet</th>
<th>Pct Change</th>
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<tbody>
<tr>
<td>1998</td>
<td>121,243</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>140,947</td>
<td>16.3%</td>
</tr>
<tr>
<td>2002</td>
<td>187,161</td>
<td>32.8%</td>
</tr>
<tr>
<td>2004</td>
<td>153,897</td>
<td>-17.8%</td>
</tr>
<tr>
<td>2006</td>
<td>273,814</td>
<td>77.9%</td>
</tr>
<tr>
<td>2008</td>
<td>267,059</td>
<td>-2.5%</td>
</tr>
</tbody>
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Average Annual Change 8.2%

Note - The bulk of the 2006 increase was due to three locations:
- Gateway Bldg C (OSU Human Resources)
- 1480 W Lane Ave (Univ Development Office)
- 2001 Polaris Pkwy (medical research)