CAPITAL REQUESTS

Action Requested: Receive reports from the University of Iowa, Iowa State University and the University of Northern Iowa on their high priority capital requests for state funding.

Executive Summary: At its September 2005 meeting, the Property and Facilities Committee asked the University of Iowa to provide, at the November 2005 meeting, a report on its capital request for state funding for the College of Public Health Academic Building project. This project is the University’s top capital priority for state funding.

Iowa State University and the University of Northern Iowa were provided with an opportunity to provide reports to the Committee on their high priority capital requests. Both universities have asked to make reports - Iowa State University on the Chemistry Facilities: New Construction and Remodeling project and the University of Northern Iowa on the Electrical Distribution Loop System project.

The requested state funds for each project are as follows:

<table>
<thead>
<tr>
<th>Project</th>
<th>Total State Requested Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUI - College of Public Health Academic Building</td>
<td>$19.6 million</td>
</tr>
<tr>
<td>ISU - Chemistry Facilities: New Construction &amp; Remodeling</td>
<td>69.5 million*</td>
</tr>
<tr>
<td>UNI – Electrical Distribution Loop System</td>
<td>8.5 million</td>
</tr>
</tbody>
</table>

* Includes $53 million for new construction over 2 years and $16.5 million for renovation after completion of new construction.

Information on these projects, as provided by the universities, is attached to this memorandum as Attachments 1 - 3. Each university will also make a brief report to the Committee.
Proposed Action: Receive a report on the proposed capital project to construct an academic home for the College of Public Health.

College of Public Health – Background

The College of Public Health (COPH) was formally established by the Board of Regents, State of Iowa in 1999, the first new College established at the University of Iowa in over 50 years. Its faculty and activities are now housed in 16 different buildings on and off campus. Its students are taught in nine different buildings as the College has no dedicated classrooms. The College is in need of an academic home to house classrooms and conference rooms, student facilities, offices for primary faculty, and administrative functions.

The College of Public Health, along with the field of public health in general, has experienced dramatic growth and development. In the first six years of its official status as a College, the College of Public Health has grown remarkably as both an educational unit and research enterprise. Since its founding the College has more than doubled its student body and the faculty has grown to 82 members. In Fiscal Year 2005, the College was awarded more than $42 million in grants and contracts for which its faculty is responsible as principal investigators, and exceeded its five-year fundraising goal.

From the terrorist attacks that occurred on and after September 11, 2001, to outbreaks of new and emerging infectious diseases, events continue to highlight the interdependent nature of the modern world and the critical importance of protecting health at the community level. Through its teaching, research, and community service activities, the College of Public Health is helping students and society respond to new and emerging threats, as well as other longstanding public health concerns, such as air and water quality, aging, cancer, health care quality and services, disaster preparedness, obesity, tobacco, and substance abuse.

The construction of the College of Public Health Academic Building is necessary to provide appropriate educational facilities, accommodate planned additional growth and establish an official home for this important College in its service to Iowans and the nation. The project is ranked as the University’s highest priority single project and was similarly ranked one year ago by the Board in its 5-year Capital Plan and Request.

Proposed Facility

Originally, the Health Sciences Campus Master Plan called for the establishment of a combined College of Public Health home and Biomedical Research Facility. Permission to proceed for this joint project was granted by the Board of Regents in September 2002 and the program was approved in May 2003. Further analysis of programmatic needs and site selection options, along with a more intensive long range planning effort, demonstrated the significant advantages of separating laboratory needs from the non-lab functions of the COPH. Thus, in August of 2005 the University sought, and the Board approved a new “permission to proceed” for a separate and distinct project to construct an academic home for the College of Public Health.

The proposed facility will serve the organization’s mission and strategic plan by: 1) providing an academic home that brings faculty and students together, 2) encouraging interdisciplinary work and integration, 3) providing a gathering place for the public health community and a focus for
the College’s important community service mission to Iowa, 4) allowing for anticipated and planned departmental growth, and 5) creating a physical identity for the College.

It is anticipated that the facility will be located on the site that currently contains the outdated International Center building; other locations have been considered including Westlawn. (See attached map) Site issues and program needs will continue to be studied and developed in the planning process. At this time the facility is anticipated to be approximately 130,000 GSF.

Preliminary Estimate of Project Cost, Source of Funds and Schedule

Providing a new home for the College of Public Health was the University’s highest priority for state capital support for a single, specified project in the Regents’ Five Year Capital Request, 2006-2010. In September 2004, the Board approved a state request in the amount of $18.9 million in FY 2008 (see Agenda Item 5, September 2004).

In the summer of 2005, the University submitted a request for state support for this project in the amount of $19.6 million in FY 2007, for the 2007-2011 five-year period. Based upon this request, the following is the estimated cost of the project:

- Design, Inspection and Administration $ 4,680,000
- Construction $31,200,000
- Contingencies $ 3,120,000
- Estimated Project Cost $39,000,000

The remaining $19.4 million would be raised from gifts (~$5 million), bond proceed and earnings (including indirect cost recoveries).

A three year construction schedule is anticipated following a 12 to 14 month period for planning and bidding.

An updated evaluation criteria for this project is attached.
Responses to Board Evaluation Criteria for Major Capital Projects:

1. **How does this project help fulfill the institution’s mission and strategic plan?**

   The College of Public Health was formally established by the Board of Regents, State of Iowa in 1999. This was the first new College at the University of Iowa in over 50 years. Its faculty and activities are now housed in 16 different sites on and off campus. The College is in need of an academic home that includes classrooms and conference rooms, student facilities, offices for primary faculty, and administrative functions.

   The proposed facility will serve the organizations mission and strategic plan by: 1) providing an academic home that brings faculty and students together, 2) encouraging interdisciplinary work and integration, 3) providing a gathering place for the Public Health community and a focus for the College’s important service mission to Iowa, 4) allowing for anticipated and planned departmental growth, and 5) creating a physical identity for the College.

2. **What other alternatives were explored to meet the needs identified in number 1 above?**

   Originally, the Health Sciences Campus Master Plan called for the establishment of a combined College of Public Health home and Biomedical Research facility. Further analysis of programmatic needs and site selection options, along with a more intensive long range planning effort, has demonstrated the significant advantages of establishing a free-standing permanent home for the College of Public Health. A separate research facility will be constructed at a time when the needs and the internal financing opportunities make that possible.

   In August 2004 the University apprised the Board in the five-year capital planning process that this re-thinking was underway and that a more flexible concept would be brought to the Board for its consideration.

3. **When this project is completed, what facilities and total square footage will be abandoned, transferred, or demolished and how does this compare to the new or renovated square footage?**

   The University will identify the optimal site for the new facility. The site currently being considered and evaluated is the area containing the International Center Building. Older facilities on this site may be demolished and functions transferred should the site prove to be the best option. The study will identify spaces to house displaced functions subsequent to the College of Public Health’s relocation.
4. What financial resources are available to build/remodel/renovate the proposed capital project?

A combination of state appropriations and revenue bonds supported by gifts and earnings is proposed. The state appropriations request is $19.6 million in FY 2007. The total cost of the project is expected to be about $39 million.

5. What resources are available to operate and maintain the proposed capital project without compromising current programs and operations?

State funding, tuition revenue, indirect cost recoveries (research component) and reallocations with the General Education Fund will be used to support the operation and maintenance of the building.

6. Identification of any compelling external forces that justify approval of this capital project.

This is a time of dramatic growth and development, not only for the College of Public Health, but also for the field of public health in general. From the terrorist attacks that occurred on and after September 11, 2001, to outbreaks of new and emerging infectious diseases, events continue to highlight the interdependent nature of the modern world and the critical importance of protecting health at the community level. Through its teaching, research, and practice activities, the College of Public Health is helping students and society respond to new and emerging threats, as well as other longstanding public health concerns such as air and water quality, aging, cancer, health care quality and services, obesity, tobacco, and substance abuse.
History of the Board of Regents, State of Iowa Actions Regarding the College of Public Health

1998
Approved $2.75 million Public Health Initiative funding request for the first two years (FY 2000 and FY 2001).

1999
Approved creation of the College of Public Health effective July 1, 1999.

Approved continued funding request for Public Health Initiative in FY 2001.

2001
Approved additional $3.0 million Public Health Initiative funding request for FY 2003 (College received $2.0 million in state funding from original request; just over $1.0 million in FY 2000 and additional $1.0 million which was allocated from FY 2001 University appropriations).

2002
Approved project planning and architect selection for Health Sciences Building C for the College of Public Health and Biomedical Research.

2003
Approved continued design of Building C.

Approved creation of Program in Public Health Genetics.

2004
Approved change in plan to abandon Building C as joint use facility, but retain College of Public Health as #1 BOR capital project.

2005
Approved proceeding to plan College of Public Health Academic Building.

Some Forces Behind Growing Interest in Public Health

- Pervasive media coverage of major health issues.
- Rise of integrated health care delivery systems.
- Emergence of global infectious diseases - AIDS, SARS and avian influenza.
- Concern about health care access, cost, and quality.
- Public health preparedness - terror attacks of September 11, 2001, anthrax attacks, Hurricane Katrina.

- Over the past decade:
  - 8 new schools of public health have been accredited by the Council on Education for Public Health (CEPH).
  - 32.6% growth in school of public health students nationwide.
  - 6 new schools in applicant status with CEPH.
  - 11 other new schools being developed.
History of The College of Public Health

- Established in 1999, the centerpiece of the UI Public Health Initiative.
- Built upon the College of Medicine’s Department of Preventive Medicine and Environmental Health and the Graduate Program in Hospital and Health Administration.
- The first new college at The University of Iowa in 50 years.
- College’s Vision Statement: “To serve Iowa and the Midwest as one of the nation’s premier state-assisted schools of public health and lead the global community in rural public health education and training, research, and practice.”

Organizational Structure

- One of 11 colleges at the UI
- Six departmental units
  - Biostatistics
  - Community and Behavioral Health
  - Epidemiology
  - Health Management and Policy
  - Occupational and Environmental Health
  - Program in Public Health Genetics
- 29 centers and institutes that conduct research and provide public service
- 7 masters and 8 doctoral degree programs

Faculty Recruiting (As of June 30 of each year)

<table>
<thead>
<tr>
<th>Year</th>
<th>Primary Faculty</th>
<th>Secondary Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>53</td>
<td>45</td>
</tr>
<tr>
<td>2000</td>
<td>55</td>
<td>51</td>
</tr>
<tr>
<td>2001</td>
<td>59</td>
<td>54</td>
</tr>
<tr>
<td>2002</td>
<td>64</td>
<td>60</td>
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<tr>
<td>2003</td>
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<td>65</td>
</tr>
<tr>
<td>2004</td>
<td>78</td>
<td>72</td>
</tr>
<tr>
<td>2005</td>
<td>83</td>
<td>80</td>
</tr>
<tr>
<td>2006</td>
<td>88</td>
<td>90</td>
</tr>
</tbody>
</table>

Goal

- 1999: 55
- 2000: 60
- 2001: 65
- 2002: 70
- 2003: 75
- 2004: 80
- 2005: 85
- 2006: 90
### Students and Degree Programs

#### Student Enrollment

Spring, Summer, Fall 2005

- CPH graduate students: 388
- Other graduate and professional students: 316
- Undergraduate students: 191
- Certificate in Public Health students: 45
- Total: 940

### Research Award

Productivity, FY 2005

- $42.6 million where PI is based in CPH
- $22.3 million where PI is outside CPH with CPH co-investigator

#### Research F&A Award Productivity, FY 2005

<table>
<thead>
<tr>
<th>FY00</th>
<th>FY01</th>
<th>FY02</th>
<th>FY03</th>
<th>FY04</th>
<th>FY05</th>
</tr>
</thead>
<tbody>
<tr>
<td>$4 M</td>
<td>$8 M</td>
<td>$10 M</td>
<td>$12 M</td>
<td>$14 M</td>
<td>$16 M</td>
</tr>
</tbody>
</table>

- PI in College of Public Health
- PI outside College of Public Health with CPH co-investigator
### Policy Development & Evaluation 1999-2005

- Aging and long-term care
- Public health preparedness
- Public health capacity building
- Patient safety
- Health care quality
- Firearm safety
- Bicycle and motorcycle safety
- Farm injury prevention
- Child passenger safety legislation
- Blood alcohol legislation
- Rural health care
- Speed limit legislation
- Workplace violence
- Domestic violence
- Developmental disabilities
- Cancer prevention
- Substance abuse
- Tobacco control
- Bioterrorism
- Rural air quality
- Medicaid policy
- Mental health
- Avian flu

### College of Public Health Facilities 2005

<table>
<thead>
<tr>
<th>Facility</th>
<th>Current Location</th>
<th>Net Sq Ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inst. for Rural &amp; Environ. Health</td>
<td>OC</td>
<td>27,006</td>
</tr>
<tr>
<td>Oakdale Hall</td>
<td>OC</td>
<td>13,326</td>
</tr>
<tr>
<td>Multi-Tenant Facility</td>
<td>OC</td>
<td>3,158</td>
</tr>
<tr>
<td>Jefferson Building</td>
<td>DTIC</td>
<td>915</td>
</tr>
<tr>
<td>US Bank Building</td>
<td>DTIC</td>
<td>5,922</td>
</tr>
<tr>
<td>General Hospital</td>
<td>HSC</td>
<td>22,910</td>
</tr>
<tr>
<td>Medical Research Center</td>
<td>HSC</td>
<td>906</td>
</tr>
<tr>
<td>Medical Research Facility</td>
<td>HSC</td>
<td>180</td>
</tr>
<tr>
<td>Westlawn</td>
<td>HSC</td>
<td>23,348</td>
</tr>
<tr>
<td>Towncrest</td>
<td>Iowa City</td>
<td>9,000</td>
</tr>
<tr>
<td>Inst. for Public Health Practice</td>
<td>Des Moines</td>
<td>285</td>
</tr>
<tr>
<td>Clinical Trial Clinic</td>
<td>Des Moines</td>
<td>930</td>
</tr>
<tr>
<td>Clinical Trial Clinic</td>
<td>Davenport</td>
<td>1,877</td>
</tr>
<tr>
<td>Prevention Research Center</td>
<td>Sigourney</td>
<td>350</td>
</tr>
<tr>
<td>Keokuk Cty. Rural Health Study</td>
<td>Sigourney</td>
<td>1,009</td>
</tr>
<tr>
<td>Burlington DOE Study</td>
<td>Burlington</td>
<td>200</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>108,942</td>
</tr>
</tbody>
</table>

HSC=Health Science Campus; OC=Oakdale Campus; DTIC=Downtown Iowa City
New Academic Facility for The College of Public Health

Programmatic Goals
- Provide an Academic Home for the CPH
- Create a Physical Identity for the CPH
- Foster Interdisciplinary Work and Integration
- Provide Opportunities for Departments to Grow
- Bring Students and Faculty Together
- Provide a Gathering Place for the Public Health Community

New Facility for The College of Public Health

Site Selection

Some Design Considerations
- Site meeting program needs
- Sensitivity to neighborhood
- Site access for public
- Parking
- LEED certification
- Construction access
New Academic Facility for The College of Public Health

- BOR Approval: August 05, November 05, February 06, and as needed
- Consultant Selection: October 05
- Commence Design: February 06
- Concept and Schematic Design: September/October 06
- Begin Construction: October 07
- Move In and Start Up: June 2010

Conclusions
Policy Considerations

- Approve $19.6 million capital appropriations request for FY 2007
- Proceed with fund-raising, FY 2006-2009
- Develop schematic design and detailed facility programs
Iowa State University
Chemistry Facilities

Proposed Action: Receive a report on the proposed capital project to construct and remodel Chemistry Facilities.

Transforming Chemical Research and Education at Iowa State University

Science is a continuing evolution and today’s complex problems require high caliber faculty and inquisitive students who will push scientific boundaries. The Iowa State University Department of Chemistry has both. First, it has in place a renowned faculty group, including the division of analytical chemistry, which is among the five best in the nation (US News and World Report). It also has an outstanding undergraduate program known for its emphasis on chemical education and research preparation and a large, prestigious graduate program. The department of chemistry consistently is ranked among the nation’s top-tier programs and has earned the highest ranking among all departments at Iowa State (National Research Council).

Chemistry is a foundation for many academic degrees, and the department provides advanced laboratories and high tech classrooms to serve more than 4,000 undergraduates each semester. Chemistry also is integral to groundbreaking research and plays a central role in many scientific fields. Iowa State believes that interdisciplinary collaborations involving chemistry will lead to innovations that improve the welfare, health, and security of people in Iowa and around the globe. Department of chemistry researchers are working at the interface of life and chemical sciences, technology and engineering to unleash novel avenues of scientific discovery. These include:

- **Polymer and biomolecular chemistry** applications that lead to improved materials. It enables the production of recyclable plastics and biocompatible implants.
- **Chemical analyses** needed to address air and water purity and to provide high-speed gene sequencing. This work has significant implications in the areas of forensic science and homeland security.
- **Nanotechnology and combinatorial discovery** that involve several techniques and processes that can lead to the discovery of new drugs or materials, and to the development of microscopic machines.
- **Biorenewables and catalysis** also known as green chemistry that target environmentally safe practices and products and establish alternative energy sources.
- **Computational chemistry**, which includes high-speed computation techniques that will help researchers understand molecular behavior and design new materials.
- **Emerging fields** in which chemistry provides scientific underpinnings include biotechnology, such as proteomics, DNA sequencing, and genetic engineering, which will help to produce healthier foods, high-yield crops, and new and safer pharmaceuticals.
- **Chemical education**, developing new methods to instruct future generations of scientists.
Current Facilities:

Gilman Hall, home to the department of chemistry, was built in 1914 and an annex was added in 1965. The academic excellence and stature of the faculty researchers and their programs cannot be maintained adequately in a building of this age during a time of rapid scientific evolutions.

Most of the safety considerations and infrastructure essential to support general operations of modern chemical science laboratory and teaching facilities were not standard – or even considered – when Gilman Hall was constructed. The facilities have become increasingly inadequate for new trends in research and instruction, and barely meet the minimum requirements for proper chemical hygiene and safety. While there have been some phased renovations to the structure, the building simply does not have the capacity to support the amount of activity and level of service needed to create a modern day chemical sciences facility. Gilman Hall will not support the university’s ambition to bolster its national and international contributions through interdisciplinary efforts. A state-of-the-art building is needed to maintain and advance research and learning throughout the department and across the university.

An April 2005 feasibility study provided an overview and prioritization of the department’s needs and explored site considerations. The September 2005 five-year program review of the Department of Chemistry confirmed the priority that ISU has placed on this department and this project. According to preliminary comments from the review team, the department must have better facilities to continue to attract the highest caliber faculty and students and to move up in the national rankings.

Plans for the Future:

Iowa State plans to build a new 100,000 net-square-foot chemical sciences building to meet current needs and expand the university’s potential for growth in the sciences. It will be erected adjacent to Gilman Hall and connected to it in order to maximize collaboration and interaction between students and faculty. Gilman Hall will be retained and upgraded to enhance services such as open computer laboratories, general classrooms, and some faculty and graduate student assistant offices. The current project budget is approximately $87 million, a portion of which is expected to be funded from private gift support.

The new building has the potential to transform chemical science education. It will give Iowa State students and faculty access to state-of-the-art synthesis, analysis and computation facilities. These provide the critical infrastructure necessary to pursue significant and creative chemical research. The advanced laboratories also will enable researchers to delve into current trends in atomic microscopy, research that probes chemical substances at the molecular and atomic level.

This leading-edge chemical sciences facility will become a hub of learning, research and technology transfer to attract external funding, renowned scholars and scientists and the nation’s brightest students. This inspirational and challenging environment will establish Iowa State and the department of chemistry as the nation’s top environment for visionary research.
Responses to Board Evaluation Criteria for Major Capital Projects:

1. How does this project help fulfill the institution’s mission and strategic plan?

The Department of Chemistry plays an important part in helping the university achieve its mission and strategic plan. This nationally and internationally recognized department supports the university’s goals of learning, discovery and engagement. Nearly every student at Iowa State University has experiences in chemistry laboratories in support of the Learning goal of the strategic plan. These students participate in the “Science with Practice” that is an important part of the university’s land-grant heritage. The department also excels in the Discovery goal by supporting visionary faculty and graduate students with programs in basic and applied science. The Engagement goal strategy is illustrated by the department’s long-time association with the Ames Laboratory of the Department of Energy, as well as interactions with community colleges and high schools in the state of Iowa.

The Department of Chemistry is one of the strongest departments on campus, has a national and international reputation. It is currently ranked 26th by the National Research Council. The current state of the space that houses this renowned department (including one member of the National Academy of Sciences) has undergone a series of renovations to improve the infrastructure and the functionality of the space. But much remains to be done in order to meet health and safety codes and to allow the department to continue to attract the highest caliber faculty and graduate students. In addition, the quantity of space is insufficient to support the department’s teaching and research initiatives.

The vision of the Chemistry Department is to:
- Be among the top 5 departments nationally at public universities (the short-term goal is to be in the top 10).
- Raise the stature of Iowa State University through interdisciplinary efforts.
- Achieve the rank of #1 in analytical chemistry for graduate schools in the United States.

To accomplish this vision, the Chemistry Department plans to recruit the best young faculty in the field, make key hires in senior-level positions, retain established faculty, and provide exceptional training for students. The other issue that needs to be considered is providing space for new research initiatives and collaborative efforts. New or increased research initiatives are expected in the areas of polymers and new materials, combinatorial chemistry, forensics, biorenewable and green chemistry. These areas represent directions for growth and development of the Chemistry department that build on current strengths.

Chemistry facility needs as they relate to program goals:
- Research in chemical synthesis: State of the art air/gas handling facilities, chemical storage, electrical and plumbing systems that are required for equipment for combinatorial chemistry and chemical analysis.
- Analytical instrumentation: Electron microscopes and laser spectroscopic instrumentation demand rigid environmental standards.
• Electronic modernization: On-line libraries and computer-based resource areas for graduate and undergraduate students for data analysis, literature accessibility and contemporary course design are needed to support educational activities.
• Education: Electronically connected classrooms and student help areas are a critical need; the opportunity to connect lab and lecture spaces is important.
• Networking and outreach activities: The Department would like to be able to host workshops and conferences for industrial concerns, regional and small national meetings in the chemical sciences, as well as forensic workshops close to the Keck labs.

2. What other alternatives were explored to meet the needs identified in number 1 above?

The amount of additional space needed to support the Chemistry department is so large that there are no real options other than the addition of new space to supplement the existing space in Gilman Hall.

One early alternative was to relocate all groups but Chemistry from the building to make additional space available. If all of the other occupants, including general classrooms and support groups directly linked to Chemistry, were relocated from the building the available space would only meet about 40% of the total need. In addition to being very short of the total need, many of the current problems of inadequate infrastructure to support research laboratories would still need to be addressed. Some of the needs are impossible to meet because the building’s systems and architectural modules are not workable for some of the new spaces. The other important reason to reject this option was the loss of association with many of the groups that are very important to the department, especially Chemistry Stores. Moving all of these units to remote locations would cause irreparable harm to Chemistry.

An option to build a completely new Chemistry building was also considered. The scope and budget for such a building would exceed $150 million without accommodating the associated support centers and departments. As a consequence, this approach was quickly abandoned as an unrealistic alternative.

3. When this project is completed, what facilities and total square footage will be abandoned, transferred, or demolished and how does this compare to the new or renovated square footage?

To meet future program needs, the department needs an additional 100,000 net assignable square feet. Significant additional space is being proposed to support research activities, additional research labs and associated support space, as well as additional space for common instrumentation and shop functions are all critical needs to supporting the department and its vision. The new space will be an addition to Gilman Hall, or directly adjacent and connected, to allow frequent circulation of faculty/staff/students and equipment between new space and existing research laboratories and instrumentation centers in Gilman Hall.

Nearly all of the existing space will be retained by the department at the conclusion of the project. Teaching laboratories in Gilman Hall will be expanded to use vacated research laboratories that move to the new space. Other vacated space will be used to supplement
the currently crowded conditions of the chemistry related support centers now located in the building.

Gilman Hall has been through a number of major and minor remodeling projects since a masterplan for improvements was developed in 1981. There is still a section of the building that has not been remodeled and the relocation of other parts of the building when the department expands into additional space will allow completion of the original masterplan and conversion of some of the vacated space to other users. The Gilman Hall Phase IV project will combine the unfinished part of the masterplan with new project scope that converts old Chemistry department space for use by other departments. The conversion goal is to remodel wet chemistry laboratories into spaces that don’t require the utility infrastructure that is no longer sufficient in Gilman to support these high demand spaces.

4. **What financial resources are available to build/remodel/renovate the proposed capital project?**

Project funding of $87.15 million will be provided by state appropriations of $69,500,000 and private funds $17,650,000.

5. **What resources are available to operate and maintain the proposed capital project?**

   The estimated operations and maintenance costs of the additional space are:
   - Operations and Maintenance $420,000
   - Utilities $695,000
   - Repair and Replacement $872,000
   - Other (Grounds/Mail/EHS/DPS) $182,000

   Methods used to determine the costs:
   Estimates of the Operating Budget Impact are based on actual costs and metered utilities for existing space and correlation with similar building types.

   Proposed source of funds: General Fund

6. **Identification of any compelling external forces that justify approval of this capital project?**

   The vision of the Chemistry Department is to:
   - Be among the top 5 departments nationally at public universities (the short-term goal is to be in the top 10).
   - Raise the stature of Iowa State University through interdisciplinary efforts.
   - Achieve the rank of #1 in analytical chemistry for graduate schools in the United States.

   To achieve these goals the department will need to retain and recruit the very best faculty and graduate students. The interdisciplinary association that the department has with other university and federal programs is a critical part of the university’s goals and aspirations to “Become the Best”.
Transforming Chemical Education and Research

Need for a new Chemical Sciences Facility

Why Chemical Sciences?

- University of Science and Technology
- Chemistry is the central science
  - Molecular basis for biology, biotechnology
  - Material science, engineering and physics
  - Food and nutrition
  - Agricultural chemicals
  - Veterinary medicine
- 4000 undergraduates per semester
- 40 different university programs require chemistry
- Major role in Ames Laboratory

$10 million in annual research funding
Chemistry Department

- Highest ranking (National Research Council) among all ISU departments
- Analytical chemistry 5th in U.S.
- Most Distinguished Professors
- Highest level of research funding
- Largest PhD program
- >5 start-up companies

- Inductively-coupled plasma
- DNA sequencing device

Distinguished Professor is the highest faculty rank.

Chemical Education

- Major federal funding to develop new pedagogical approaches
- Train Iowa science teachers
- Outreach to K-12 schools
- Remote course offerings

Chemistry teaches the 3rd highest student credit hours at ISU (after English and Mathematics).

Successful Undergraduate Students

- James Gaylor – Cholesterol regulating drug
- Clifford Hach – Entrepreneur

41% enter professional or graduate schools
46% take jobs in industry
Successful Graduate Students

- Numerous college and university professors, scientific directors in industry
- Darlene Hoffman – National Medal of Science, American Chemical Society Priestly Medal
- Jim Mitchell – National Academy of Engineering
- Aikens, Zorn – Forum with Nobel Laureates

Distinguished Professors

- John Corbett – makes new compounds, National Academy of Sciences
- Mark Gordon – computational chemistry, one of the most cited chemists worldwide
- Ed Yeung – bioanalytical chemistry, >20 national and international awards
- Pat Thiel – materials chemistry, honorary degree from French university

Mei Hong

- Structure and dynamics of protein molecules
- ACS Award in Pure Chemistry
- Major funding for new instruments

Graduate education is a major mission of the department.

Key research groups not housed in Gilman Hall.

Co-PI for $1.8 M National Science Foundation and Keck Award for nuclear magnetic resonance instrument. American Chemical Society (ACS) Pure Chemistry Award is the highest honor for a chemist under the age of 35.
Victor Lin
- Nanoscale chemistry
- Catalysis, green chemistry, energy production
- Interface between chemistry and biology

Co-PI for $1.8 M USDA Biorenewable Energy Grant.

Nicola Pohl
- Synthesizes and studies carbohydrates
- Member of Plant Sciences Institute

2005 Alfred P. Sloan Research Fellow

Ethan Badman
- New technologies to study biomolecules
- Inadequate facilities

Dust and environmental problems in labs.
Hans Stauffer

- Chemical reactions and structures at the one-trillionth second time scale
- Nanoscale chemistry

Urgent Needs

- Accommodate modern research and teaching activities
- Increase competitiveness for attracting and retaining faculty and students
- Increase competitiveness for new initiatives and funding (Keck, Carver)
- Almost all peer institutions have new (<10 years) chemical sciences facilities
- Recommendation of external review team, September, 2005

1992 – Molecular Biology Building

200X – Chemical Sciences Facilities

Research labs located in Wilhelm Hall.
AGENDA ITEM 4c
ATTACHMENT 3
PAGE 24

University of Northern Iowa
Electrical Distribution Loop System/Load-Break Switches

Proposed Action: Receive a report on the proposed Electrical Distribution Loop System project.

Statement of the Problem: The electrical distribution system for portions of campus has become unreliable and is in need of replacement. Sections of the system have been converted to 12,470 volts; however a significant portion of the distribution system is handled by the old 4,160 volt system. Most of the 4,160 volt system is between 27 and 41 years old. Switches and equipment have become hazardous, and several failures have occurred in the cabling.

Description of the Project: A new 12,470 volt electrical distribution system will be installed to replace the existing 4,160 volt system. The 4,160 volt system is old and becoming unreliable as the lines are mostly between 27 and 41 years old, with some in excess of 41 years old. The 12,470 volt system is more efficient and will provide a more reliable and safe electrical system on campus.

Justification for the Project: Purpose: The 4,160 volt electrical distribution system being used by portions of campus was installed between 27 and 41 years ago. The equipment and materials have become inefficient, hazardous and obsolete. Failures within this portion of the campus electrical distribution system have become more frequent. Conversion to the 12,470 volt system is necessary to provide a safe and reliable electrical distribution system on campus. The project, first introduced in the 1990 UNI capital plan, has been the highest priority request since FY 2002.

Relation to Plans/Mission: This project supports the institution’s mission and strategic plan by supporting the majority of facilities on campus with efficient and reliable electricity. This electrical distribution loop will replace significant portions of the University’s 4,160 volt system with a 12,470 volt system. This project will reduce outage time, accommodate increasing loads, and eliminate potential hazards to personnel.

This project is also consistent with UNI’s Strategic Plan Goal 5, “Provide and maintain appropriate resources including staffing for effective and efficient University operations.”

Summary of Alternatives Considered: The 2003 Electrical Distribution Loop System Phase II Master Plan outlined options for upgrading the system, with a new 12,470 volt system being most reliable and compatible with other utilities.

Projected Cost and Source of Funds:

a. Cost:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Cost</td>
<td>$6,789,000</td>
</tr>
<tr>
<td>Design and Supervision</td>
<td>1,225,000</td>
</tr>
<tr>
<td>Contingency</td>
<td>486,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$8,500,000</td>
</tr>
</tbody>
</table>

b. Funds: Legislative Appropriations

Operating Expenses: N/A
Electrical Distribution Loop System/Load-Break Switches

Responses to Board Evaluation Criteria for Major Capital Projects:

1. **How does this project help fulfill the institution’s mission and strategic plan?**

   This project supports the institution’s mission and strategic plan by supporting the majority of facilities on campus with efficient and reliable electricity. This electrical distribution loop will replace significant portions of the University’s 4,160 volt system with a 12,470 volt system. This project will reduce outage time, accommodate increasing loads, and eliminate potential hazards to personnel.

   This project is also consistent with UNI’s Strategic Plan Goal 5, “Provide and maintain appropriate resources including staffing for effective and efficient University operations.”

2. **What other alternatives were explored to meet the needs identified in number 1 above?**

   A study of the University-owned electrical distribution system was completed by University staff in 1991, and updated by a consultant in 2003. This study recommended the phasing out of the 4,160 volt electrical system and replacement of many of the old cabling that is well in excess of its original life expectancy. Failure to upgrade the current electrical distribution system will result in more frequent power outages, increased exposure to hazards, and inefficiencies in the system.

3. **When this project is completed, what facilities and total square footage will be abandoned, transferred, or demolished and how does this compare to the new or renovated square footage?**

   This project will not result in the abandonment, transfer, or demolition of existing facilities.

4. **What financial resources are available to build/remodel/renovate the proposed capital project?**

   This project has been included in the University’s 5-year Capital Plan in FY 2007 for State Appropriation funds.

5. **What resources are available to operate and maintain the proposed capital project without compromising current programs and operations?**

   The source of funds used to support the operations and maintenance of the electrical distribution system will be the general education fund.

6. **Identification of any compelling external forces that justify approval of this capital project.**

   None to our knowledge.