

University of Illinois

BUDGET REQUEST FOR OPERATING AND CAPITAL FUNDS

Fiscal Year 1990



PREPARED FOR PRESENTATION TO THE
BOARD OF TRUSTEES
SEPTEMBER 8, 1988

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PREFACE

Just as we are nearing the end of a decade, America senses we are nearing the end of an era. Both in a geographic sense and in human terms, Illinois finds itself in the center of these changes. The economy is changing; international competition is changing; the stress facing our families, farms and cities is changing; and the importance of quality education in helping our society cope with these new demands has grown dramatically. "A Nation at Risk" we call ourselves. And so we are.

Illinois is struggling to respond. Illinois citizens generally know the importance of quality education to their families, to the economy and to our democratic way of life. When asked by the polls what priority they assign to education, they rank it at the top. When asked if they think schools and colleges need increased support, even to the extent of enacting new taxes if necessary, Illinois citizens have said yes--two to one. When asked about the need for reform in the quality of education provided--especially in the public schools serving Chicago--they urge us to move forward. These are signs of change; and they are encouraging.

On the other hand, Illinois is a state without a blueprint; a state without a plan for its future; and a state without a clear consensus or commitment to defining and supporting quality education. This must change, or more than the future of the University of Illinois is threatened. The future of our state and its people are at risk.

As school doors open this fall, the University of Illinois is under fiscal strain. Last year, State support to the University was cut by \$18 million. This year those dollars were returned, leaving the University with 1986 levels of State support in 1988. The loss to inflation and purchasing power is roughly \$40 million. It is not a theoretical loss, but a real loss felt in higher tuition, lower salaries and a weakened capacity to provide academic programs of quality.

While every segment of the University's operations has been affected, none is more crucial than our ability to attract and retain the top-quality faculty who for a generation have given Illinois students an education second to none. I speak here not just of the loss of competitiveness in salaries, but also of the inability to provide the equipment and renovation funds needed to ensure the laboratories and classrooms are of a caliber which permits students to receive state-of-the-art education from faculty doing cutting-edge research.

We have therefore experienced a painful and excessive loss of faculty members at rates double the normal level. Recruitment of new faculty and staff members has been difficult. Budgets have been cut, class offerings reduced, and students and their parents now carry a heavier burden as well, with sizable tuition increases last January and again this fall.

As we have developed this budget request, we have tried to look beyond the frustrations of the moment. The strength of one of the world's greatest universities can not be squandered. We are encouraged that the people of Illinois understand not only our needs but our strengths better than ever before. They know the crucial role the University must play in the years to come. We are encouraged that the State's major business and industrial leaders know us better and are prepared to work on our behalf, along with agricultural leaders, and citizen groups. If the people of Illinois rally to the defense of the University and quality education for their children, we will in the long term remain a great university.

As we present our needs for Fiscal Year 1990, our priorities have never been more clearly defined. Our paramount objective is to strengthen our competitive position in the struggle to attract and retain top-quality faculty and staff members. For the last two years, we have lost ground. The gap between salary levels at the University of Illinois and the other leading universities in our Nation must be closed; quickly.

We must return to an agenda that stresses the strengthening of a common core of educational experience for undergraduate students. Whatever the field of employment, all University of Illinois graduates must have the

ability to think analytically; to read with understanding; to write clearly, cogently and concisely; and to have the academic foundation required to become well educated men and women.

Our priorities also recognize that the economy of Illinois and the Nation is under stress from competitors around the world. Ideas, new products and processes, and the wise use of science and technology are essential to any realistic response. The University of Illinois needs to continue to strengthen its research and development capacity, targeting areas of special significance to the future of our State and Nation. Linkages with Illinois industry must be enhanced, and we must expand efforts to serve smaller businesses as well.

Finally, we must begin to recognize that strong academic programs require adequate space. Providing essential physical facilities in which to conduct the teaching and research programs of the University remains one of our greatest challenges. The life sciences, chemistry, and many other fields now conduct programs ranked among the best in the Nation in facilities designed for an earlier era. This too must change.

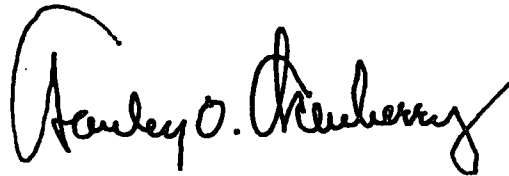
These, then, are the priorities of the University of Illinois:

- To improve the ability of the University to attract and retain top-quality faculty and staff members.
- To strengthen academic experiences for students at all levels.
- To move forward with highly targeted research and development initiatives of special importance to the University and the economy.
- To increase substantially the investment in modernization of facilities and equipment.

Most every state wants a stronger flagship university, but few begin from the position of strength found in Illinois. In fields as diverse as linguistics and computer science; from music to chemistry; from microbiology to engineering; and from physics to psychology to philosophy; the University of Illinois is ranked among a small handful of top quality universities. Illinois, Berkeley, Michigan and Wisconsin are carried on

every list of leading public universities. In accounting, agriculture, education, communications, the humanities and in many other fields on both campuses, Illinois is recognized as a leading university. University graduates, more than 300,000 strong, serve mankind in countless ways. Through teaching, research and productive public service, the University has been in partnership with Illinois and the Nation for generations.

The University's commitment is to excellence. We strive to be the best public university in America. The priorities contained in this FY 1990 Budget Request are designed to sustain and advance that cause.

A handwritten signature in black ink, reading "Stanley O. Ikenberry". The signature is fluid and cursive, with a large initial "S" and "I".

Stanley O. Ikenberry, President
September 8, 1988

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**INTRODUCTION TO THE
FISCAL YEAR 1990 BUDGET REQUEST**

GENERAL PERSPECTIVES FOR THE DEVELOPMENT OF THE FY 1990 OPERATING BUDGET REQUEST

In his Preface to this document, President Ikenberry reviews the turbulent nature of the budget process for all educational, social, and human services which the State of Illinois provides to its citizens. Three times in the past five years Illinois public policy makers have confronted a budget dilemma of major proportions: when clearly inadequate revenues are available to support educational and social services, either new revenue generating measures--tax increases--must be enacted, or reductions in already limited support in one area must be made to cover the costs of new developments in another. Five years ago, new revenue was secured, albeit on a temporary basis, via a tax increase. Last year, cuts in many programs were implemented, with education cut most deeply. For the current year no new revenue measures were implemented, despite dramatic demonstrations of the impact of earlier budget reductions and the likelihood of further damage without adequate fiscal support. Instead, a limited amount of new funds were spread among all programs, leaving most services with serious unmet needs.

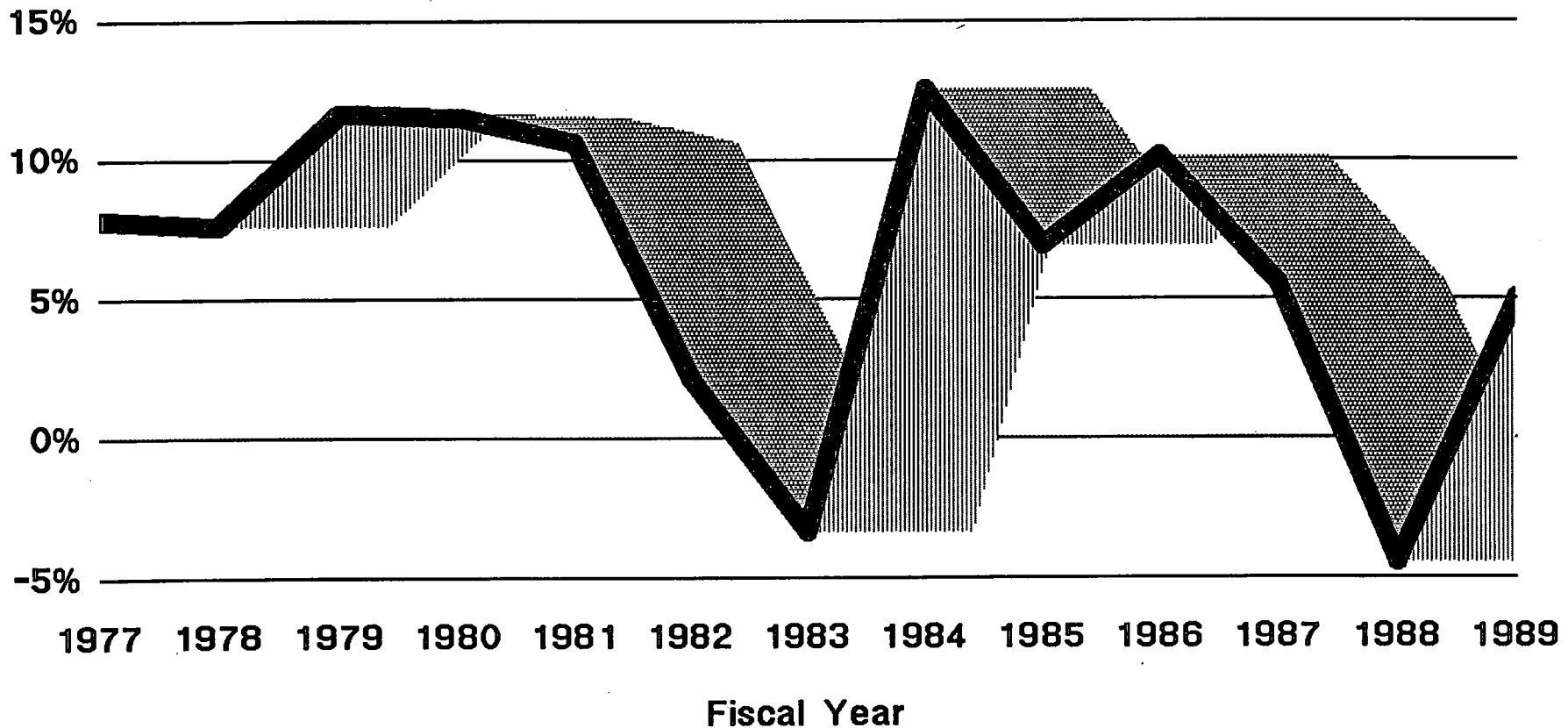
While the past two years have seen especially sharp fluctuations in the level of State funding for the University of Illinois, a pattern of uneven support has persisted for more than a decade. Figure 1 provides a graphic illustration of the unsteady nature of State tax support for the University between Fiscal Years 1978 and 1989 (including Retirement). The steep declines in FY 1982 and FY 1983 were offset--temporarily--by an even steeper increase in FY 1984, the result of the temporary tax increase. General Revenue Fund increases declined again in FY 1985 and FY 1987 and were followed by a deep plunge in FY 1988, when the University's total GRF appropriation was cut \$18 million below FY 1987 levels. This pattern of instability makes effective long term planning nearly impossible and contributes to an overall climate of uncertainty about the State's long-term commitment to educational quality.

For Fiscal Year 1989, the University of Illinois received \$438.7 million in General Revenue Fund appropriations for operating budget support (excluding Retirement). As can be seen from the data which follows, this amount is nearly identical to what the University received in FY 1987:

FIGURE 1

UNIVERSITY OF ILLINOIS General Revenue Fund Appropriations

Percent Growth FY 1977 - FY 1989



University of Illinois Operating Appropriations*
(\$ in Millions)

| | <u>FY 1987</u> | <u>FY 1988</u> | <u>Gov. Budget FY 1989</u> | <u>Final FY 1989</u> |
|-----------------|----------------|----------------|--------------------------------|--------------------------|
| General Revenue | \$438.9 | \$422.2 | \$416.5 | \$438.7 |
| Income Fund | 87.6 | 100.4 | 106.4 | 106.4 |
| Other Funds | <u>11.1</u> | <u>11.6</u> | <u>12.1</u> | <u>12.4</u> |
| Total | \$537.6 | \$534.2 | \$535.0 | \$557.5 |

*Excludes reappropriations. Excludes additional FY 1989 tuition revenue not yet appropriated.

Clearly, the final outcome of the FY 1989 appropriations process moved the University ahead of where it would have been had the Governor's "no tax increase" budget been implemented. The additional \$22.5 million the University received was dedicated entirely to faculty and staff salary increases, and was sufficient to match the average salary increases anticipated among Big Ten universities.

What these data do not reveal is that for FY 1988 and FY 1989 the University of Illinois has absorbed nearly \$22 million in base budget cuts--a 5% reduction--to help cover the costs of essential initiatives for which no incremental funds were available. Those reductions have made it necessary to eliminate all funds available for special remodeling and renovation projects and for equipment purchases, and the operating budgets of every academic and administrative unit have been reduced.

Despite these significant budget reductions, it has been necessary to turn to additional tuition increases to cover a portion of the University's unavoidable budget requirements. For FY 1988 a mid-year increase of \$150 was implemented. For FY 1989, increases of \$300 at the Urbana campus and \$165 at the Chicago campus were implemented effective with the fall semester/quarter in addition to increases approved earlier. As demonstrated by the appropriations data above, it is largely the Income Fund--made up primarily of tuition revenue--which has provided new funds for the University for the past two years. These additional revenues, combined

with significant base budget cuts, have made it possible to address some of the most critical budget requirements which the University has faced.

Another way of viewing the University's budget dilemma over the past two years in a somewhat broader context is depicted in Figure 2. This graph displays the University's budget increments in appropriated funds from FY 1979 to FY 1989, and shows how those increments were apportioned among salary increases, other continuing component increases (i.e., cost increases, operations and maintenance needs, etc.), and academic program initiatives. The chart reveals some very distinctive characteristics of the University's budget progress during the past decade. From FY 1979 through FY 1982, for example, a large fraction of the University's total increment was required to cover essential salary and cost increases, leaving little for program initiatives. FY 1983 was the first of the seriously disruptive budget years, and it included a midyear budget recision which delayed the implementation of already modest salary increases as a cash control technique.

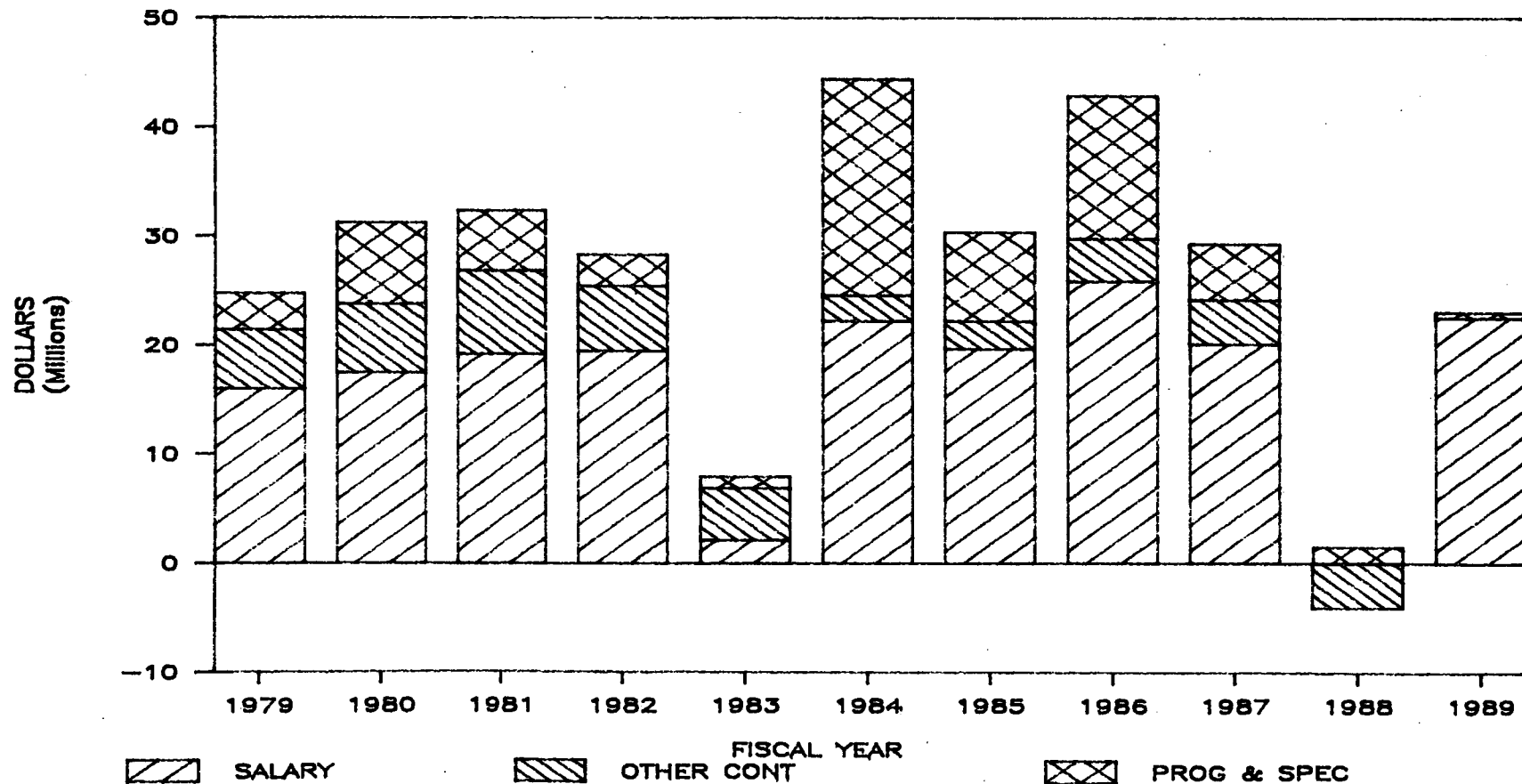
In contrast, FY 1984 through FY 1987 saw a period in which progress on salary competitiveness was made while at the same time inaugurating the first significant advances in program initiatives in more than a decade. Improvements in undergraduate education and expansion of minority recruitment initiatives were begun, along with science and technology initiatives with strong links to economic development such as engineering revitalization and biotechnology advances.

FY 1988 brought not only an abrupt halt to all programmatic progress, but wiped out all of the salary competitiveness gains achieved in the prior decade. These dramatic losses placed special emphasis on the need for immediate recovery in FY 1989. While the appropriation action taken by the General Assembly and approved by the Governor represents a more positive step than was achieved in FY 1988, that step is insufficient to meet even the most critical of the budget requirements which confront the University. Although that action will permit salary increases to match the average among the Big Ten, some recovery of ground lost last year must also be achieved. Significant requirements to operate and maintain new facilities must be met. Essential cost increases must be covered. A limited number of top-priority program initiatives must be carried out. In total, a series of unavoidable budget requirements requiring an additional \$20 million must be addressed for FY 1989.

FIGURE 2
FY 1979 - FY 1989 STATE INCREMENTAL FUNDS RECEIVED BY THE UNIVERSITY OF ILLINOIS

(Dollars in Thousands)

| COMPONENT | FY 1979 | FY 1980 | FY 1981 | FY 1982 | FY 1983 | FY 1984 | FY 1985 | FY 1986 | FY 1987 | FY 1988 | FY 1989 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| PREVIOUS YEAR'S BASE | \$265,925.8 | \$290,681.4 | \$321,158.3 | \$353,550.3 | \$381,884.9 | \$389,861.2 | \$434,289.0 | \$464,718.2 | \$507,575.5 | \$536,867.7 | \$535,453.4 |
| NET INCREMENT | 24,755.6 | 31,279.3 | 32,391.9 | 28,334.6 | 7,976.3 | 44,427.8 | 30,429.3 | 42,857.3 | 29,292.1 | (2,614.3) | 23,038.8 |
| NET INCREMENT AS A % OF PRIOR YEAR'S BASE | 9.3% | 10.8% | 10.1% | 8.0% | 2.1% | 11.4% | 7.0% | 9.2% | 5.8% | -0.5% | 4.3% |
| SALARY INCREASE | 15,984.6 | 17,505.3 | 19,208.5 | 19,511.2 | 2,125.9 | 22,263.4 | 19,660.2 | 25,853.3 | 20,103.9 | 0.0 | 22,519.1 |
| % OF TOTAL INCREMENT | 64.6% | 56.0% | 59.3% | 68.9% | 26.7% | 50.1% | 64.6% | 60.3% | 68.6% | 0.0% | 97.7% |
| OTHER CONT. COMPONENTS | 5,438.3 | 6,298.1 | 7,631.6 | 5,949.8 | 4,787.1 | 2,315.7 | 2,588.5 | 3,929.0 | 4,057.3 | (4,078.6) | 0.0 |
| % OF TOTAL INCREMENT | 22.0% | 20.1% | 23.6% | 21.0% | 60.0% | 5.2% | 8.5% | 9.2% | 13.9% | 156.0% | 0.0% |
| PROGRAMS/SPEC. COMPONENTS | 3,332.7 | 7,475.9 | 5,551.8 | 2,873.6 | 1,063.3 | 19,848.7 | 8,180.6 | 13,075.0 | 5,130.9 | 1,464.3 | 519.7 |
| % OF TOTAL INCREMENT | 13.5% | 23.9% | 17.1% | 10.1% | 13.3% | 44.7% | 26.9% | 30.5% | 17.5% | -56.0% | 2.3% |



As noted earlier, a series of budget reductions and reallocations have already been implemented. Together these will cover approximately 60% of the unavoidable costs for FY 1989. The balance will be met through an additional tuition increase effective at the beginning of the academic year. This combination of budget reductions and supplemental tuition income will make it possible to take the first steps toward recovery from FY 1988's appropriation reductions.

FY 1990 Budget Emphases

The impacts of the budget difficulties which the University faces are generally well known. The areas of emphasis toward which new resources must be targeted can be clearly defined, and the major thrusts which must be addressed are outlined in the Preface. Those thrusts focus on four basic themes:

- Strengthening the University's competitive ability to attract and retain top-quality faculty and staff. For the coming year this objective is defined first by the paramount need to improve competitiveness in faculty and staff salaries and benefits. Compensation cannot be viewed as the sole need, however. Further losses to inflation in library acquisitions and other more general goods and services must be stopped, to avoid further erosion in the support base for teaching and research programs. Adequate funds to operate and maintain new facilities coming online must be achieved. At least a portion of the renovation and equipment funds lost through mandated budget reductions over the past two years must be restored.
- Strengthening core academic experiences for students at all levels of education. For FY 1990 this objective is addressed by program initiatives to improve undergraduate education, expand minority student access and retention, and extend the University's linkages with elementary and secondary schools, particularly in Chicago. Ways must also be found to make current University of Illinois programs adequately available to students. The demand for these programs far exceeds the University's ability to respond, and this inability has been greatly exacerbated by the budget reductions required for the past two years.
- Strengthening research and development initiatives to enhance the Illinois economy. The linkages between investments in research and development and enhanced economic growth potential are becoming clearer and clearer. Engineering, the life sciences, biotechnology, computing, and agriculture represent special strengths at both campuses of the University of Illinois as well as key areas with great potential for economic development in Illinois. The

FY 1990 budget request continues development of these areas of science and technology along with related professional education and technology transfer programs geared to speed the application of new research to the marketplace. The request also reemphasizes the need to honor commitments for additional State support for activities funded primarily from Federal and private initiatives.

- Strengthening the State's investment in the physical facilities which support teaching and research programs. This objective spans virtually every program now operating at the University of Illinois at every location. For FY 1990 this objective focuses on the need for funds to open a number of new or significantly remodeled facilities. It includes funds to address a backlog of operations and maintenance deficiencies which have accumulated over the past two decades. It also includes the broader need to incorporate a repair and renovation program of \$10 million (\$5 million for FY 1990 and the balance for FY 1991) within the University's annual operating budget. For the longer term, meeting this objective will require development of new ways to finance the University's unmet needs for constructing new and replacement facilities.

FY 1990 Operating Budget Request

These overall objectives underlie the specific budget request elements summarized in Table 1 and described in detail in later sections of this document. Table 2 presents a summary of the individual themes around which academic program requests are organized. The FY 1990 operating request is highlighted by the following specific elements:

- Compensation Improvements for faculty and staff which total 11%, comprised of salary increases of 9% plus an additional 2% for improvements in fringe benefits. Salary increases of this magnitude are required both to match inflation projections for FY 1990 and to continue closing the gap between the University of Illinois and its peers. Additional funds are also required for FY 1990 to cover Medicare cost increases.
- General Cost Increases of 6% for most goods and services. Those will offset the projected impact of inflation for FY 1990 and may permit a very modest recovery of some of the major losses to inflation suffered for a decade and a half.
- Utilities Increases of 7.8% required to meet projected fuel and consumption increases for FY 1990.
- Library Acquisition Increases of 25% necessary to stem the significant losses to inflation experienced over the past several years and restore a portion of lost purchasing power.

TABLE 1
FY 1990 OPERATING BUDGET REQUEST
(Dollars in Thousands)

| | | | |
|------|---|------------|------------|
| I. | Continuing Components | | |
| A. | Compensation Improvement | | \$46,203.9 |
| 1. | FY 1990 Salary Increase (9%) | \$37,461.7 | |
| 2. | Fringe Benefits Improvement (2%) | 8,324.8 | |
| 3. | Medicare Costs | 417.4 | |
| B. | Price Increases | | 9,730.9 |
| 1. | General Price Increase (6%) | 4,647.1 | |
| 2. | Utilities Price Increase | 2,870.0 | |
| 3. | Library Price Increase (25%) | 2,003.8 | |
| 4. | Worker's Compensation Costs | 210.0 | |
| C. | O & M Requirements | | 14,081.8 |
| 1. | FY 1990 New Areas | 5,706.8 | |
| 2. | Preventative Maintenance Deficiency | 3,375.0 | |
| 3. | R & R Program | 5,000.0 | |
| | Subtotal, Continuing Components | | \$70,016.6 |
| | % of FY 1989 Base * | | 12.29% |
| II. | Programmatic Components | | |
| A. | Chicago | | 10,000.0 |
| B. | Urbana-Champaign | | 11,700.0 |
| C. | Central Administration | | 1,000.0 |
| | Subtotal, Programmatic Components | | \$22,700.0 |
| | % of FY 1989 Base * | | 3.98% |
| III. | Special Services/Funding | | |
| A. | County Board Matching | | 250.0 |
| B. | Fire Services Institute | | 173.4 |
| C. | Division of Services to Crippled Children | | 250.0 |
| | Subtotal, Special Services/Funding | | \$673.4 |
| IV. | Grand Total, Sections I - III | | \$93,390.0 |
| | % of FY 1989 Base * | | 16.39% |

*FY 1989 Base = \$569,720.8 (includes supplemental Income Fund)

TABLE 2
FY 1990 PROGRAM BUDGET REQUEST
(Dollars in Thousands)

| | Chicago | Urbana-Champaign | Central Administration | Total University |
|--|-------------------|-------------------|---------------------------|---------------------|
| I. Promoting Instructional Excellence | \$1,700.0 | \$3,500.0 | | \$5,200.0 |
| II. Scientific and Technological Advances | 1,000.0 | 5,150.0 | \$1,000.0 | 7,150.0 |
| III. Minority Access | 400.0 | 500.0 | | 900.0 |
| IV. Engineering Revitalization | 500.0 | 750.0 | | 1,250.0 |
| V. Library Improvements | 500.0 | 800.0 | | 1,300.0 |
| VI. Academic and Institutional Support Services | 900.0 | 1,000.0 | | 1,900.0 |
| VII. University Hospital | 5,000.0 | | | 5,000.0 |
| | <u>\$10,000.0</u> | <u>\$11,700.0</u> | <u>\$1,000.0</u> | <u>\$22,700.0</u> |

- Operations and Maintenance funding totaling \$14.1 million to cover three areas: opening of major new facilities at both campuses as well as remodeled space reconverted to new uses (\$5.7 million); beginning a preventive maintenance program to ensure adequate care for new and existing facilities (\$3.4 million); and beginning a repair and renovation program to cover larger deferred maintenance requirements as well as program-driven requirements to reconfigure space to meet the changing nature of teaching and research programs (\$5.0 million).
- Academic Program Initiatives totaling \$22.7 million built around the themes of promoting instructional excellence; scientific and technological advances; minority access; engineering revitalization; library improvements; academic and institutional support services; and special assistance to the University of Illinois Hospital.

Together, these individual elements require a total increment of \$93,390,000 for FY 1990--a 16.4% in the University's FY 1989 operating budget (including the supplemental income from tuition increases approved in July). Given the budget reductions imposed in FY 1988 and the action for the current year which restores the University only to FY 1987 levels for General Revenue Fund appropriations, the FY 1990 operating budget request must be viewed in a three-year context. In that context the request outlines the elements of recovery required to help restore the University of Illinois to a position of competitiveness while focussing attention on ways in which the University can expand its role in economic development for the entire State of Illinois.

The Enrollment Picture

It is customary to include a brief review of enrollment projections within the annual budget request document. The University of Illinois is presently engaged in a broad review of its overall level of operation in the face of two consecutive years of seriously inadequate State support. That review will include an examination of actions which might be taken to reduce enrollments to levels more in line with available revenues. Such reductions could be targeted to specific programs or they could be targeted more broadly by level--undergraduate, graduate, or professional. At the time this budget request document was completed, these program reviews were in their early stages, and, with one exception, no adjustments to any enrollment projections had been suggested or acted upon. Enrollment

reductions of 10% beginning in academic year 1989-90 in Medicine have been identified and are incorporated into the enrollment projections displayed in Table 3.

Present projections forecast very slight changes in enrollment levels at the Urbana-Champaign campus, again pending the outcome of reviews during the coming year. Minor fluctuations at the undergraduate and graduate level are forecast, with a very small downward change projected for total enrollment. Demand for admission to the Urbana campus continues to be extremely high, and if adequate fiscal support can be achieved, enrollment is projected to be stable over the next five years.

At the Chicago campus, enrollment levels are currently projected to remain at present levels, after three years of declines at the undergraduate level. In general, enrollment patterns at the Chicago campus have been subject to somewhat more change than those at Urbana-Champaign. For example, as graduate programs at UIC have matured and become better known, enrollments have climbed. At the undergraduate level, declines in the population of high school graduates within the City of Chicago--the group from which UIC has traditionally drawn a majority of its students--have produced a corresponding drop in applicants and admissions at UIC. The Chicago campus continues to attract a number of students outside the traditional 18-22 year-old group, most of whom are employed. This group broadens the potential base of students for UIC, but also represents a group more likely to pursue academic work over a longer period of time and at somewhat reduced course loads than the traditional 18-22 year-old population.

It remains to be seen what impact current program planning reviews will have on future enrollment levels at both University of Illinois campuses. In the meantime, the projections in Table 3 reflect relative stability at both campuses, and they are based on the assumption that adequate funds will be available to support an instructional program of this size.

TABLE 3
FALL TERM ON-CAMPUS HEADCOUNT ENROLLMENT
UNIVERSITY OF ILLINOIS

| | Actual | | | Projected** | | | | |
|--|---------|---------|---------|-------------|---------|---------|---------|---------|
| | FY 1986 | FY 1987 | FY 1988 | FY 1989 | FY 1990 | FY 1991 | FY 1992 | FY 1993 |
| Chicago | | | | | | | | |
| Lower Division | 8,036 | 7,308 | 7,107 | 6,978 | 6,978 | 6,978 | 6,978 | 6,978 |
| Upper Division* | 8,993 | 8,819 | 8,701 | 8,481 | 8,484 | 8,484 | 8,484 | 8,484 |
| Total Undergraduate | 17,029 | 16,127 | 15,808 | 15,459 | 15,462 | 15,462 | 15,462 | 15,462 |
| Medicine | 1,304 | 1,314 | 1,302 | 1,300 | 1,270 | 1,240 | 1,210 | 1,180 |
| Dentistry | 489 | 486 | 438 | 397 | 397 | 397 | 397 | 397 |
| Dental Post Graduates | 45 | 39 | 35 | 34 | 34 | 34 | 34 | 34 |
| Pharm.D. | | | | | | | | |
| Undergraduate Professional | 244 | 342 | 433 | 484 | 484 | 484 | 484 | 484 |
| Post-Graduate | 18 | 89 | 61 | 86 | 86 | 86 | 86 | 86 |
| Total Professional | 2,100 | 2,270 | 2,269 | 2,301 | 2,271 | 2,241 | 2,211 | 2,181 |
| GI* | 3,462 | 3,745 | 3,502 | 3,616 | 3,616 | 3,616 | 3,616 | 3,616 |
| GII | 1,453 | 1,564 | 1,449 | 1,496 | 1,496 | 1,496 | 1,496 | 1,496 |
| Total Graduate | 4,915 | 5,309 | 4,951 | 5,112 | 5,112 | 5,112 | 5,112 | 5,112 |
| Total (Excl. residents & interns) | 24,044 | 23,706 | 23,028 | 22,872 | 22,845 | 22,815 | 22,785 | 22,755 |
| Residents and Interns | 723 | 741 | 739 | 744 | 744 | 744 | 744 | 744 |
| TOTAL - Chicago | 24,767 | 24,447 | 23,767 | 23,616 | 23,589 | 23,559 | 23,529 | 23,499 |
| Urbana-Champaign | | | | | | | | |
| Lower Division | 13,527 | 13,482 | 12,974 | 12,500 | 12,500 | 12,500 | 12,500 | 12,400 |
| Upper Division | 13,705 | 13,717 | 14,091 | 14,300 | 14,200 | 14,200 | 14,100 | 14,000 |
| Total Undergraduate | 27,232 | 27,199 | 27,065 | 26,800 | 26,700 | 26,700 | 26,600 | 26,400 |
| Law | 626 | 629 | 608 | 620 | 623 | 623 | 623 | 623 |
| Veterinary Medicine | 300 | 316 | 314 | 315 | 317 | 317 | 317 | 317 |
| Total Professional | 926 | 945 | 922 | 935 | 940 | 940 | 940 | 940 |
| GI | 3,582 | 3,876 | 3,811 | 3,875 | 3,900 | 3,900 | 3,900 | 3,900 |
| GII | 4,257 | 4,310 | 4,542 | 5,025 | 5,100 | 5,100 | 5,100 | 5,100 |
| Total Graduate | 7,839 | 8,186 | 8,353 | 8,900 | 9,000 | 9,000 | 9,000 | 9,000 |
| TOTAL - Urbana-Champaign | 35,997 | 36,330 | 36,340 | 36,635 | 36,640 | 36,640 | 36,540 | 36,340 |
| GRAND TOTAL - University of Illinois (Excludes residents and interns) | 60,041 | 60,036 | 59,368 | 59,507 | 59,485 | 59,455 | 59,325 | 59,095 |
| GRAND TOTAL - University of Illinois | 60,764 | 60,777 | 60,107 | 60,251 | 60,229 | 60,199 | 60,069 | 59,839 |

*Excludes regional nursing students.

**Pending further review of program options during FY 1989.

GENERAL BACKGROUND FOR THE DEVELOPMENT OF THE
FY 1990 CAPITAL BUDGET REQUEST

The FY 1989 capital budget process resulted in an outcome fully as disappointing as that for the operating budget. Only one major regular capital project was approved for the University. To be sure, that project is of extreme significance: the long-deferred remodeling of the Clinical Sciences Building at the Chicago campus will provide a major boost to the research capacity of the entire campus. Nevertheless, the omission of all other critical projects at both campuses is a serious blow to an already strained capital budget.

A second blow of equally damaging proportions was received when the \$20 million appropriation of Build Illinois funds for higher education's repair and renovation program was not funded in FY 1989. This year's funding was to have been the fourth in a five year effort to reduce the backlog of deferred maintenance projects and to provide desperately needed funds for remodeling projects crucial to the support of state-of-the-art teaching and research programs. Coming at a time when remodeling and renovation funds in the operating budget have been crippled by base budget cuts, the loss of the Build Illinois R&R program is doubly severe.

After two years of success in securing expanded appropriations for capital projects (\$74 million in total), the FY 1988 capital budget was greatly diminished and included only \$4.8 million in projects tied directly to facilities construction already underway. The added constraint of a diminished budget for FY 1989 means that the University's ability to provide adequate facilities to house current instructional and research programs will be severely stressed, and the ability to expand and enhance existing programs will be greatly reduced.

The University faces an absolute necessity to continue facilities support on a scale similar to that achieved in FY 1986 and FY 1987 to meet serious remodeling and replacement needs and to maintain the momentum of academic growth which operating budget advances have produced. The inadequacy of existing facilities to support academic programs remains a serious threat to the quality of current programs, and the primary inhibitor to

successful program growth in areas most central to improvements in the Illinois economy.

The nature and scope of the University's facilities problems derive principally from two separate but related areas. On the one hand, the structural integrity of existing facilities, and of the campus-wide utilities systems which support them, must be assured. On the other hand, the capacity and configuration of academic facilities must be adequate to support a changing mix of academic programs as well as constantly changing emphases within programs. New knowledge and technology is evolving at an accelerating pace, particularly in the laboratory sciences and engineering. To remain current with instructional and research activities, let alone to work at the forefront of knowledge development, often requires modifications or upgrading of facilities and of support systems. The use of sophisticated equipment for teaching and research, frequently requiring specialized environmental controls, also demands renovation of the space which houses the equipment. And those programs which are not faced with rapid changes in the state-of-the-art technology are confronted with the inevitable need for refurbishing aging facilities in which the cumulative effects of nearly two decades of operating budget deficiencies have produced a monumental backlog of deferred maintenance projects.

It is important to understand the University's capital needs in a long-term, multiyear context. The new construction funds appropriated for FY 1987 will provide vitally necessary space additions to support long-identified requirements in engineering, computer science, and animal/dairy science programs. Equally pressing needs for additional space remain unmet in other areas of the sciences and other disciplines. Major renovation requirements must be addressed immediately in the life sciences and chemical sciences, in environmental sciences, and in the consolidation of campus support services. From the perspective of the University's overall capital budget requirements, perhaps the most crucial need is to secure funding for a mix of construction, remodeling, and planning projects, so that reasonable progress can be made on a multiyear basis.

Meeting the full range of University capital needs identified by recent efforts such as the building condition audit and campus master planning initiatives will require sustained support for perhaps a decade.

It is in that context that the University's FY 1990 capital budget request has been prepared. Recognizing that capital funding at the State level may well be constrained for another year, the University has separated those projects which will fund the planning of new facilities from those other remodeling, equipment, land and utilities projects which must also be pursued. Separation of the planning projects will help to emphasize the special needs for these initiatives without detracting from the critical importance of other facilities needs. Should it be possible, later in the process, to integrate planning projects into the list of projects to receive State support, the University will do so.

Table 4 presents a project-by-project list of the University's FY 1990 capital budget request, exclusive of planning projects. Those projects are separately identified, by campus, in Table 4A. Each of these projects is described in detail in the Capital Budget Request section of this document, as are the University's requests for repair and renovation and energy conservation projects.

TABLE 4
UNIVERSITY OF ILLINOIS
FY 1990 CAPITAL BUDGET REQUEST
PRIORITY LIST
(Dollars in Thousands)

| Priority | Campus | Project | Budget Category | FY 1990 Request | Cumulative Cost | | |
|----------|--------|--|--------------------|--------------------|-----------------|------------|------------|
| | | | | | University | Chicago | Urbana |
| 1 | C/U | University Critical Equipment | EQUIP | \$10,487.0 | \$10,487.0 | \$ 6,122.5 | \$ 4,364.5 |
| 2 | U | English Building Remodeling - Phase 3 | REMD | 3,760.0 | 14,247.0 | | 8,124.5 |
| 3 | C | Alumni Hall Remodeling - Phase 2 | REMD | 4,597.0 | 18,844.0 | 10,719.5 | |
| 4 | U | Util. Infrastruct. Upgrade/Water System Improve. | UTIL | 4,030.0 | 22,874.0 | | 12,154.5 |
| 5 | U | Noyes Laboratory Remodeling | REMD | 2,233.0 | 25,107.0 | | 14,387.5 |
| 6 | C/U | University Land Acquisition & Development | LAND/SITE | 4,800.0 | 29,907.0 | 13,919.5 | 15,987.5 |
| 7 | * | Administrative Computing Electrical Improve. | UTIL | 2,107.0 | 32,014.0 | 16,026.5 | |
| 8 | C | Assoc. Health Professions Bldg. Remd. - Phase 1 | REMD | 6,868.0 | 38,882.0 | 22,894.5 | |
| 9 | U | Campus Site Improvements | SITE | 2,690.0 | 41,572.0 | | 18,677.5 |
| 10 | U | Mechanical Engineering Laboratory Remodeling | REMD | 3,958.5 | 45,530.5 | | 22,636.0 |
| 11 | U | Campus Police Station | BLDG/UTIL | 2,064.0 | 47,594.5 | | 24,700.0 |
| 12 | C | College of Medicine West Tower Remd. - Phase 1 | REMD | 9,445.5 | 57,040.0 | 32,340.0 | |
| 13 | U | Engineering Hall Remodeling | PLAN | 233.5 | 57,273.5 | | 24,933.5 |
| 14 | U | Plant & Animal Biotechnology Laboratory | EQUIP | 1,522.5 | 58,796.0 | | 26,456.0 |
| 15 | C | Pharmacy Building Remodeling - Phase 2 | REMD | 1,847.0 | 60,643.0 | 34,187.0 | |
| 16 | U | Storm & Sanitary Sewer System Improvements | UTIL | 447.0 | 61,090.0 | | 26,903.0 |

*Because this project serves the needs of both the Chicago and Urbana-Champaign campuses, the cost may be applied on an equal basis to both. For the purpose of this table, the entire project cost will be included under Chicago.

TABLE 4A
UNIVERSITY OF ILLINOIS
FY 1990 PLANNING FOR NEW BUILDINGS
(Dollars in Thousands)

| <u>Campus</u> | <u>Project*</u> | <u>FY 1990 PLAN</u> | <u>Costs for FY 1991 & Beyond</u> | |
|------------------|---|-------------------------|---------------------------------------|----------------|
| Chicago | | | <u>BLDG/UTIL</u> | <u>EQUIP</u> |
| | Architecture and Art Building Additions | \$ 785.5 | \$ 14,242.0 | \$ 1,250.0 |
| | College of Business Administration Building | 1,147.0 | 21,324.0 | 1,250.0 |
| | Molecular Biology Research Laboratory | <u>1,966.0</u> | <u>39,167.0</u> | <u>2,500.0</u> |
| | TOTAL, Chicago | \$3,898.5 | \$ 74,733.0 | \$ 5,000.0 |
| Urbana-Champaign | | | | |
| | Chemical Sciences Research Laboratory | \$1,851.0 | \$ 35,983.0 | \$ 3,000.0 |
| | Electrical Engineering Research Laboratory | 1,726.0 | 33,318.0 | 1,500.0 |
| | Life Sciences Research Laboratory | <u>1,680.0</u> | <u>32,701.0</u> | <u>2,500.0</u> |
| | TOTAL, Urbana-Champaign | \$5,257.0 | \$102,002.0 | \$ 7,000.0 |
| | TOTAL, University of Illinois | \$9,155.5 | \$176,735.0 | \$12,000.0 |

*Projects are arranged alphabetically, by campus. Priority assignments will be made as the opportunity to include planning projects within the State's capital budget program becomes available.

FY 1990 FINAL OPERATING BUDGET REQUEST

CONTINUING COMPONENTS

SALARY AND BENEFIT INCREASES
(\$46,203,900)

The overall quality of the University's academic programs, as measured by several national assessments, places it among the top institutions of higher education in the country, and among the top three Big Ten universities. For a number of years the University has established the latter benchmark as a minimum objective for its faculty compensation program. To compete successfully in the markets for academic and nonacademic employees, the University must enhance the quality of its academic programs, as well as ensure that it maintains a competitive position relative to peer institutions who seek equally well qualified faculty and staff. Erosion in the competitiveness of salaries, or of fringe benefits, increases the number of talented employees who accept more attractive offers at other institutions or in the private sector; it reduces the ability of the University to attract the best qualified candidates to new or vacant positions; and it undermines the productivity and morale of current staff.

The University of Illinois has just completed a particularly troublesome year in the area of salary and compensation competitiveness, resulting from the budget shortfalls experienced in FY 1988. Although the University has received a salary increase appropriation for FY 1989, the funding level provided by the State will not be sufficient to recoup the competitive position lost in FY 1988. It will take several years to recover from the long-term consequences of the FY 1988 budget reductions, including the replacement of faculty who have accepted more attractive offers of employment elsewhere. Additionally, the University of Illinois must regain the ground lost to its peers in salary and compensation competitiveness, and continue to push for a third place ranking among the Big Ten institutions.

Although the Governor's FY 1988 Budget included incremental funds for salary increases of 6.0% for higher education faculty and staff, the allocation of these funds was contingent upon passage of a tax increase which failed to meet with legislative approval. The FY 1988 budget, as approved by the General Assembly, provided for no additional revenues, holding higher education budgets constant at FY 1987 levels. Faced with FY 1987 borrowing commitments and other unavoidable funding requirements, the Governor reduced the overall level of the FY 1988 General Revenue Fund

by almost 4.0% below the level passed by the General Assembly, requiring institutions of higher education to reduce base operating budgets and to operate under reduced funding levels.

Confronted with these reductions, the University of Illinois implemented a "no general salary increase" policy for FY 1988, affecting both academic and nonacademic personnel. The policy eliminated general salary increases for FY 1988 regardless of employee classification or appointment type. Exceptions to this policy were allowed only in cases where an employee received a promotion during the FY 1988 fiscal year. Additionally, individual units were given the option of responding to outside offers of employment, although no incremental funds were made available for this purpose. In these cases, the use of departmental funds to provide salary increases was allowed, subject to the approval of the appropriate department and campus officers. The University remained committed to this policy throughout FY 1988 and did not implement any mid-year salary increase program.

The "no general salary increase" policy implemented in FY 1988 drastically altered the University of Illinois' competitive rankings in both average salaries and total compensation compared to the other Big Ten institutions. The University's standing in average cash salaries dropped from a fourth place ranking in FY 1987 to sixth place in FY 1988 and now lags behind the third place institution by 7.8%--triple the FY 1987 gap. Even greater damage occurred to the University of Illinois' competitive position in terms of total compensation. The University's ranking fell from seventh position in total compensation to last, lagging the third place institution by 15.9%. While the University of Illinois' total compensation package has long been deficient, many faculty and staff have chosen to remain because of a strong commitment to our educational enterprise. However, in light of the FY 1988 budget reductions and the uncertainty of what lies ahead, many who have in the past rejected other offers out of hand are now choosing to pursue better opportunities elsewhere at considerably increased salary and compensation levels.

To assess the University's competitive standing, numerous salary and compensation analyses are performed annually to determine the University's overall ranking among its peers. Due to the varied nature of the University workforce, separate analyses are performed for academic and nonacademic employees. Cash salary and employer contributions to fringe benefits for academic employees are assessed through comparisons with Big Ten and other peer institutions, while nonacademic salary and benefits comparisons are made with appropriate employee groups outside the University. Compensation analyses are conducted for the cash salary component of the compensation package as well as for overall compensation.

The discussion which follows provides background information concerning the University's competitive position in FY 1988 and prior years, as well as projections for FY 1989. All projections are based upon FY 1988 base data and tentative information concerning FY 1989 salary and benefit increases at other Big Ten institutions. Because of the tentative nature of FY 1989 data, care should be taken in making precise interpretations about FY 1989 salary rankings.

Faculty Salaries

FY 1988 budget reductions had a critical impact on the University of Illinois' competitive ranking in average cash salary. University faculty salaries lost a substantial amount of ground compared to the salaries at other Big Ten institutions; and the University's progress toward achieving a third place ranking in the Big Ten was halted. The following table displays the University's average cash salary relative to third place in the Big Ten for FY 1979 through FY 1988. Salaries displayed represent nine-month salaries for full-time budgeted faculty, and are for all academic ranks combined, weighted to the University of Illinois' distribution of faculty by rank and term of appointment.

University Average Salary Relative
To Third Place In The Big Ten

| <u>Fiscal Year</u> | <u>Illinois</u> | <u>Third Place</u> | <u>Dollar Difference</u> | <u>Percent Difference</u> |
|------------------------|-----------------|--------------------|------------------------------|-------------------------------|
| FY 1979 | \$23,249 | \$23,676 | \$ 427 | 1.8% |
| FY 1980 | 25,187 | 25,485 | 298 | 1.2 |
| FY 1981 | 27,592 | 28,018 | 426 | 1.5 |
| FY 1982 | 30,171 | 31,021 | 850 | 2.8 |
| FY 1983 | 31,640 | 33,733 | 2,093 | 6.6 |
| FY 1984 | 34,563 | 36,048 | 1,485 | 4.3 |
| FY 1985 | 37,050 | 38,654 | 1,604 | 4.3 |
| FY 1986 | 40,235 | 41,262 | 1,027 | 2.6 |
| FY 1987 | 42,448 | 43,481 | 1,033 | 2.4 |
| FY 1988 | 42,572 | 45,878 | 3,306 | 7.8 |

The impact of the FY 1988 budget reductions caused the University's distance to third place to increase substantially in FY 1988, more than tripling from 2.4% behind in FY 1987 to 7.8% in FY 1988. The University of Illinois now finds itself further from reaching its goal of third place than at any other time in the past ten years.

Table 5 displays average faculty salaries for the Big Ten institutions for FY 1987 and FY 1988. All salaries are reported on a nine-month basis for all ranks combined and are weighted to the distribution of faculty rank and term of appointment at the University of Illinois. Additionally, the relative ranking of each Big Ten institution is provided, as well as the percent increase in weighted average cash salary. As the table indicates, the average salary at the University of Illinois increased by only .3% in FY 1988 compared to an average increase of 7.0% at the other Big Ten institutions. The University now ranks in sixth place in average cash salaries and lags behind the third place institution by 7.8%.

Figure 3 displays the FY 1988 ranking of Big Ten faculty average salaries graphically. Note that the University of Illinois has not only slipped from a fourth place ranking to sixth place, but that the University is now closely clustered with five other institutions well behind the top three Big Ten institutions, severely reducing its competitiveness. It is critically important for the University to close the salary gap to the top institutions, as well as to achieve a specific ranking within the Big Ten. The FY 1988 funding situation has weakened the University's competitive

TABLE 5
AVERAGE SALARIES FY 1987 - FY 1988
BIG TEN INSTITUTIONS

(9-month basis)

| <u>Institution</u> | <u>FY 1987 Weighted Average Salary</u> | <u>Rank</u> | <u>FY 1988 Weighted Average Salary</u> | <u>Rank</u> | <u>Percent Increase</u> |
|--------------------|--|-------------|--|-------------|-----------------------------|
| ILLINOIS | \$42,448 | 4 | \$42,572 | 6 | 0.3% |
| I | 37,324 | 10 | 39,393 | 10 | 5.5 |
| C | 38,712 | 8 | 42,621 | 4 | 10.1 |
| F | 44,345 | 2 | 47,257 | 2 | 6.6 |
| H | 38,107 | 9 | 42,088 | 8 | 10.4 |
| A | 40,257 | 5 | 42,356 | 7 | 5.2 |
| X | 44,719 | 1 | 48,352 | 1 | 8.1 |
| E | 43,481 | 3 | 45,878 | 3 | 5.5 |
| B | 40,158 | 6 | 42,586 | 5 | 6.0 |
| J | 39,634 | 7 | 41,747 | 9 | 5.3 |
| MEAN | \$40,919 | | \$43,485 | | 6.3% |
| MEAN LESS ILLINOIS | \$40,749 | | \$43,586 | | 7.0% |

Source: University of Minnesota Comparison of Average Salaries and Fringe Benefits.

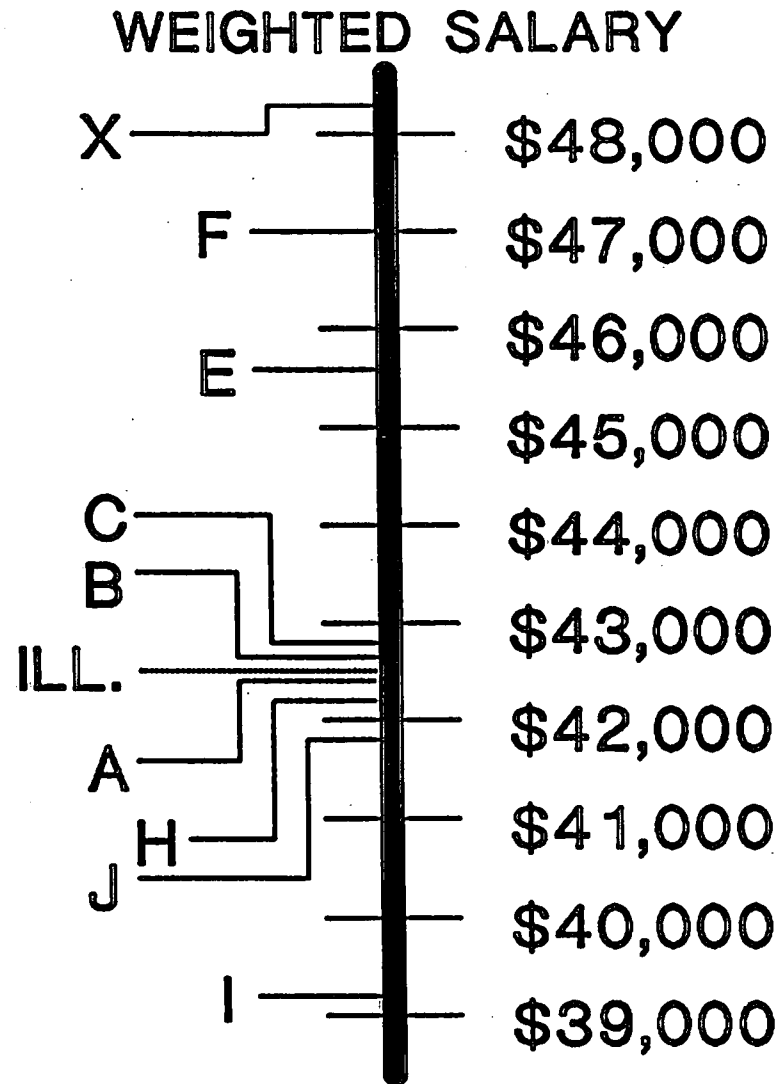
Data represents total institutions' full-time faculty, excluding clinical departments, whose primary responsibilities are teaching, research or public service. Weighted to the distribution of faculty rank and term of appointment at the University of Illinois.

Distances to 3rd Place--Average Salaries

| | <u>FY 1987</u> | <u>FY 1988</u> |
|---------------|----------------|----------------|
| ILLINOIS | \$42,448 | \$42,572 |
| 3rd Place | 43,481 | 45,878 |
| \$ Difference | 1,033 | 3,306 |
| % Difference | 2.4% | 7.8% |

FIGURE 3

FY 1988 AVERAGE SALARY AMONG BIG TEN UNIVERSITIES



position; and unless the University succeeds in efforts to regain the ground loss in FY 1988, as well as to keep pace with the other Big Ten institutions, its competitive position will decline even further.

The University of Illinois will receive an FY 1989 appropriation of 5.5% in incremental funding to apply toward salary and benefit increases. The University plans to supplement this level of funding with an additional 1.5% to be secured by internal reallocation of University monies generated through base budget reductions. However, even a 7.0% salary increase in FY 1989 will not be sufficient to restore the University of Illinois to the fourth place ranking it held among the Big Ten peer institutions in FY 1987. Current estimates predict FY 1989 salary increases at the other Big Ten institutions to average approximately 5.2%, as displayed in the table which follows:

Estimated FY 1989 Salary Increases At
Big Ten Institutions

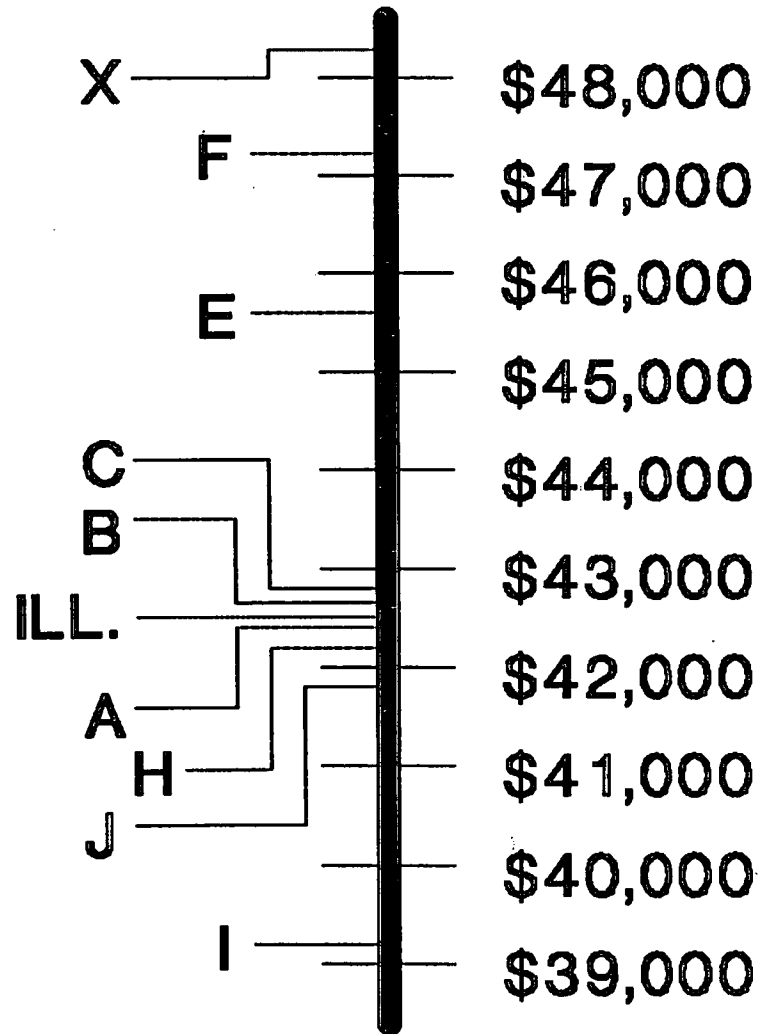
| <u>Institutions</u> | <u>Estimated FY 1989 Salary Increase</u> |
|---------------------|--|
| Illinois | 7.0% |
| I | 4.0 |
| C | 10.0 |
| F | 5.0 |
| H | 5.0 |
| A | 4.3 |
| X | 6.0 |
| E | 5.0 |
| B | 5.5 |
| J | 2.0 |
| MEAN | 5.4% |
| MEAN LESS ILLINOIS | 5.2% |

Based upon preliminary data, the University's FY 1989 salary ranking is expected to move up only one notch to fifth place. Figure 4 displays the actual FY 1988 and projected FY 1989 ranking of Big Ten faculty salaries graphically. Note that while the University can be expected to overtake fifth position, it will still rank well below the top three Big Ten institutions and will lag the fourth place institution by approximately \$1,300.

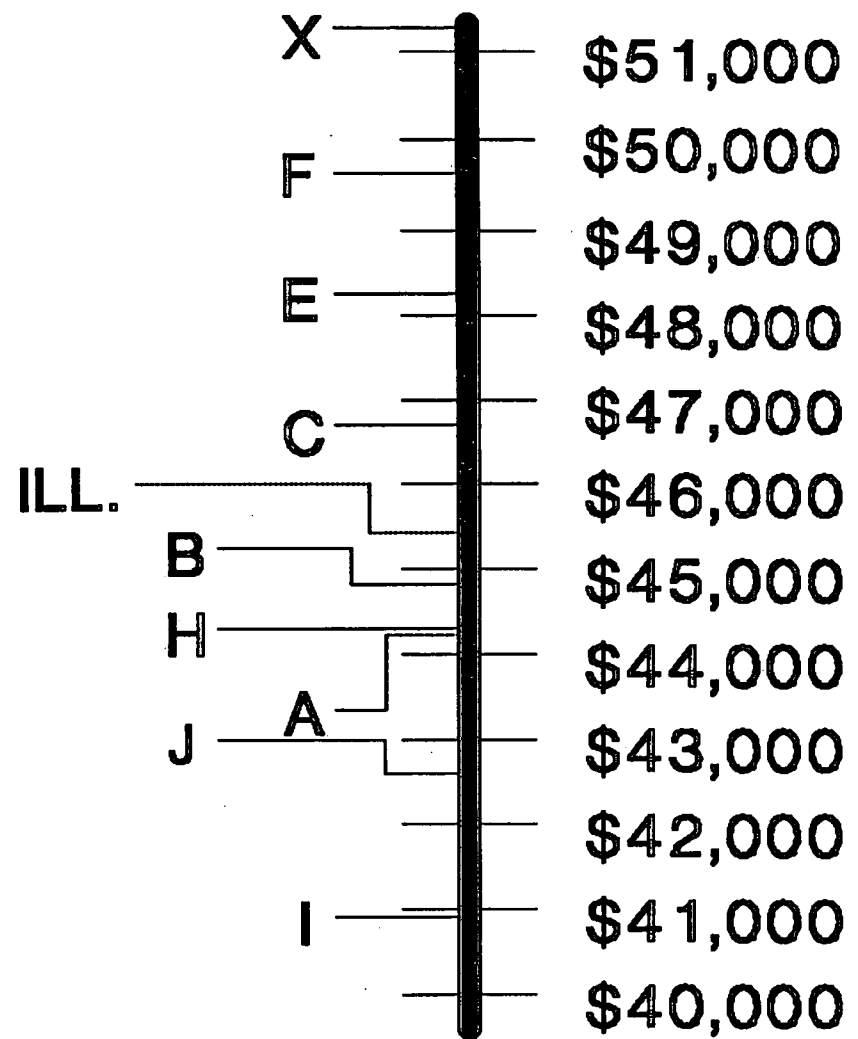
FIGURE 4

TENTATIVE WEIGHTED AVERAGE SALARY AMONG BIG TEN UNIVERSITIES

FY 1988



FY 1989 PROJECTED



Although the precise size of the FY 1989 gap to third place in average faculty salary cannot be calculated until final information on FY 1989 salaries is obtained from peer institutions, the gap can be expected to decrease by approximately two percentage points to 5.8%. Still, with the exception of FY 1983, the University of Illinois will continue to lag further behind the third ranked institution than at any other time in the past ten year period as illustrated in Figure 5.

Salary increases tied to inflation projections of 6% represent the best current estimate of FY 1990 salary increases at the other Big Ten institutions. An increment of this magnitude plus an additional 3% to reduce the gap to third place represents the University of Illinois' assessment of salary increase funding needs for FY 1990. An FY 1990 salary increase of this magnitude is necessary to continue to restore the University to its former competitive position of FY 1987. Even with an increase of this magnitude, the University will not completely regain the competitive standing it had achieved through FY 1987. Additional funds for continued recovery of competitiveness will be required beyond FY 1990.

Faculty Fringe Benefits

The budget reductions imposed in FY 1988 also hindered the University's progress toward achieving a competitive ranking in total compensation. The deficiencies in the University's fringe benefits program coupled with the lack of salary increase funding crippled efforts to achieve a third place ranking in total compensation. Table 6 compares the University's ranking among Big Ten institutions for FY 1988 based on weighted average salary and weighted average compensation. Weighted average compensation is calculated by adding the dollar value of the employer's contribution to fringe benefits to weighted average cash salary. The employer's contribution to fringe benefits is also provided as a percent of average cash salary. While the University of Illinois dropped two places in the average salary ranking among Big Ten institutions in FY 1988, it fell to last place in the average compensation ranking. The University now lags the third place institution by 15.9% in total compensation.

FIGURE 5

U of I AVERAGE FACULTY SALARIES vs. THIRD PLACE BIG TEN AVERAGE

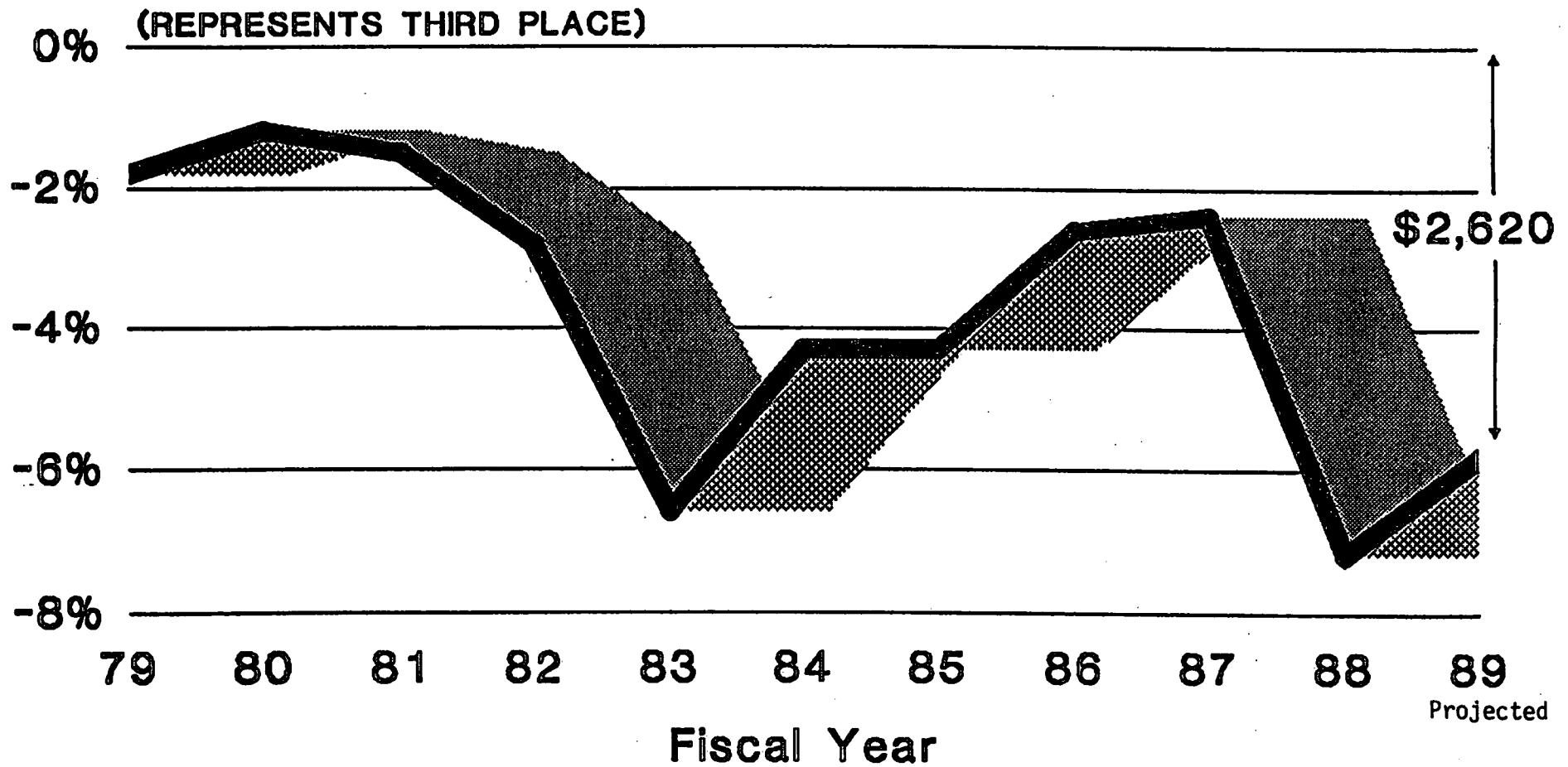


TABLE 6
AVERAGE COMPENSATIONS FY 1988
BIG TEN INSTITUTIONS

| (9-month basis) | | | | |
|--------------------|---------------------------------------|------|---|---|
| Institution | FY 1988 Weighted Average Salary | Rank | FY 1988 Weighted Average Compensation | Rank |
| ILLINOIS | \$42,572 | 6 | \$47,046 | 10 |
| I | 39,393 | 10 | 49,601 | 9 |
| C | 42,621 | 4 | 52,499 | 6 |
| F | 47,257 | 2 | 57,865 | 2 |
| H | 42,088 | 8 | 52,026 | 8 |
| A | 42,356 | 7 | 53,058 | 5 |
| X | 48,352 | 1 | 58,152 | 1 |
| E | 45,878 | 3 | 54,534 | 3 |
| B | 42,586 | 5 | 53,720 | 4 |
| J | 41,747 | 9 | 52,487 | 7 |
| MEAN | \$43,485 | | \$53,099 | |
| MEAN LESS ILLINOIS | \$43,586 | | \$53,771 | |
| | | | | Benefits as a Percent of Average Salary |
| | | | | 10.5% |
| | | | | 25.9 |
| | | | | 23.2 |
| | | | | 22.4 |
| | | | | 23.6 |
| | | | | 25.3 |
| | | | | 20.3 |
| | | | | 18.9 |
| | | | | 26.1 |
| | | | | 25.7 |
| | | | | 22.1% |
| | | | | 23.4% |

Source: University of Minnesota Comparison of Average Salaries and Fringe Benefits.

Data represents total institutions' full-time faculty, excluding clinical departments, whose primary responsibilities are teaching, research, and public service. Weighted to the distribution of faculty rank and term of appointment at the University of Illinois.

Distances to 3rd Place--Average Compensation

| | FY 1987 | FY 1988 |
|---------------|----------|----------|
| ILLINOIS | \$47,670 | \$47,046 |
| 3rd Place | 51,787 | 54,534 |
| \$ Difference | 4,117 | 7,488 |
| % Difference | 8.6% | 15.9% |

Historically, the University of Illinois has continually ranked poorly compared to the other Big Ten institutions, ranking no higher than seventh place in total compensation in the years from FY 1979 through FY 1988. During the State's fiscal crisis in FY 1983, the University's ranking fell to fifth place in average cash salary and tenth place in total compensation. Successful efforts in the years from FY 1984 to FY 1987 to improve faculty salaries also helped to improve the University's total compensation position; however, the ground lost in the competitiveness of the University's cash salaries in FY 1988 also damaged its compensation ranking, causing it to fall back again to last in the Big Ten.

Figure 6 displays the University's relative position in both average cash salary and total compensation for FY 1988. Note that while most other institutions retain the same relative competitive position in the total compensation comparisons as in the salary comparisons, the University of Illinois' position drops dramatically. In the compensation comparisons, it is clear that the University falls to tenth place, significantly behind even the next lowest ranked institution. The University's low ranking in the amount of its employer contribution toward fringe benefits undermines its efforts to achieve a third place ranking and seriously weakens its competitive standing in terms of total compensation.

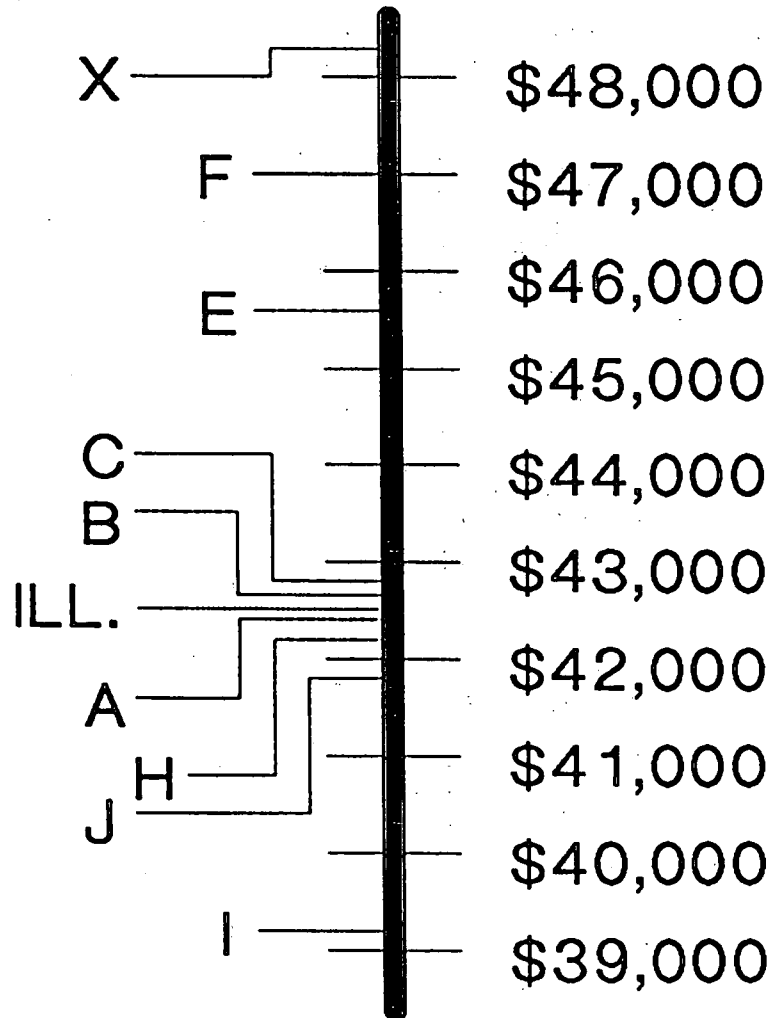
Figure 7 displays the actual FY 1988 and projected FY 1989 ranking of Big Ten weighted average compensation graphically. Although the University of Illinois is expected to retain last place, some progress should be made in closing the distance to the next lowest ranked institution in average compensation. However, the University still has far to go before it can recapture the seventh place ranking it held in FY 1987 and eventually progress to a third place ranking among the Big Ten institutions.

Again, the total compensation figures in Table 6 and Figure 6 represent the combination of average cash salaries and employer contributions to a set of common fringe benefits. When the latter category is separated from salaries, and fringe benefits contributions are reviewed as a separate entity, the University of Illinois data are even more dismal. For FY 1988, the University ranked last in the percent of average salary contributed toward fringe benefits, contributing only 10.5% compared to employer contributions averaging 23.4% for other Big Ten institutions. While some

FIGURE 6

FY 1988 AVERAGE SALARY & COMPENSATION AMONG BIG TEN UNIVERSITIES

WEIGHTED SALARY



WEIGHTED COMPENSATION

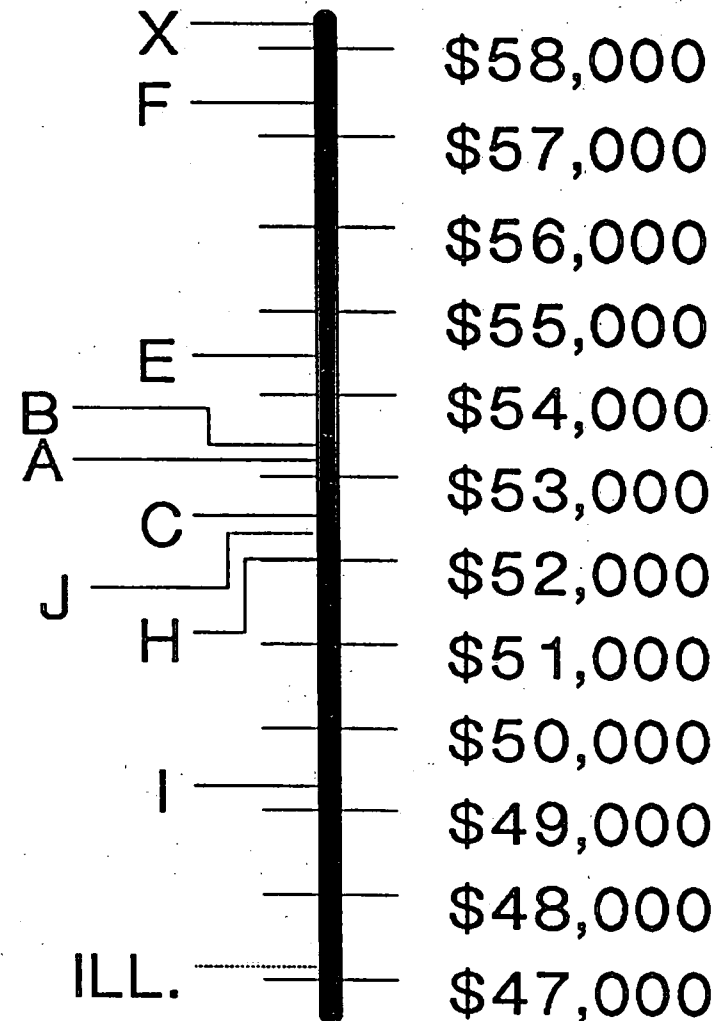
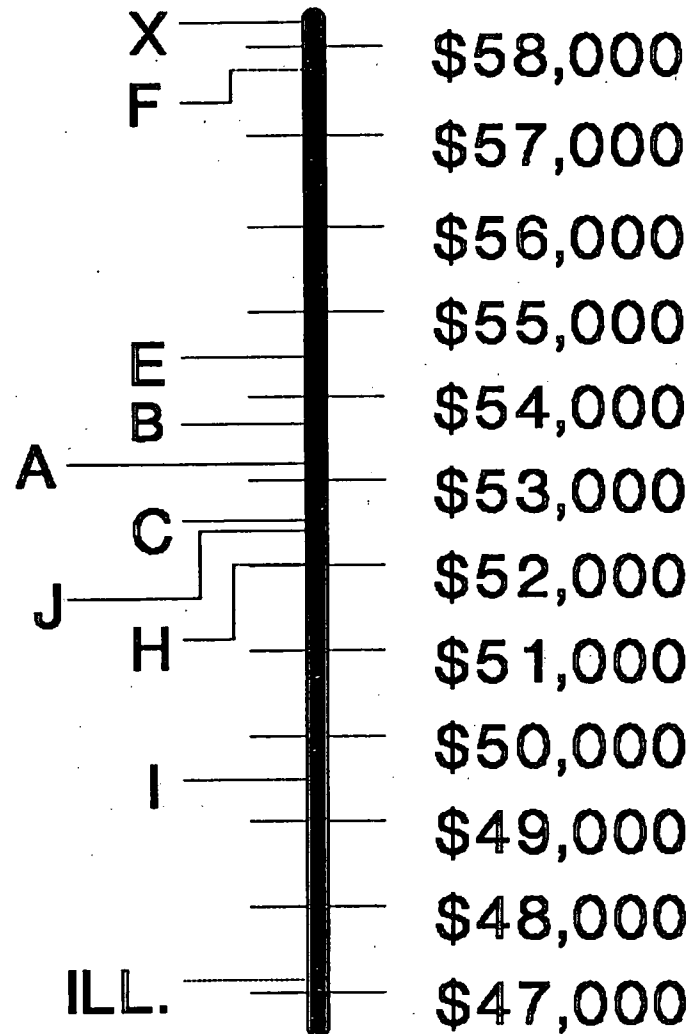


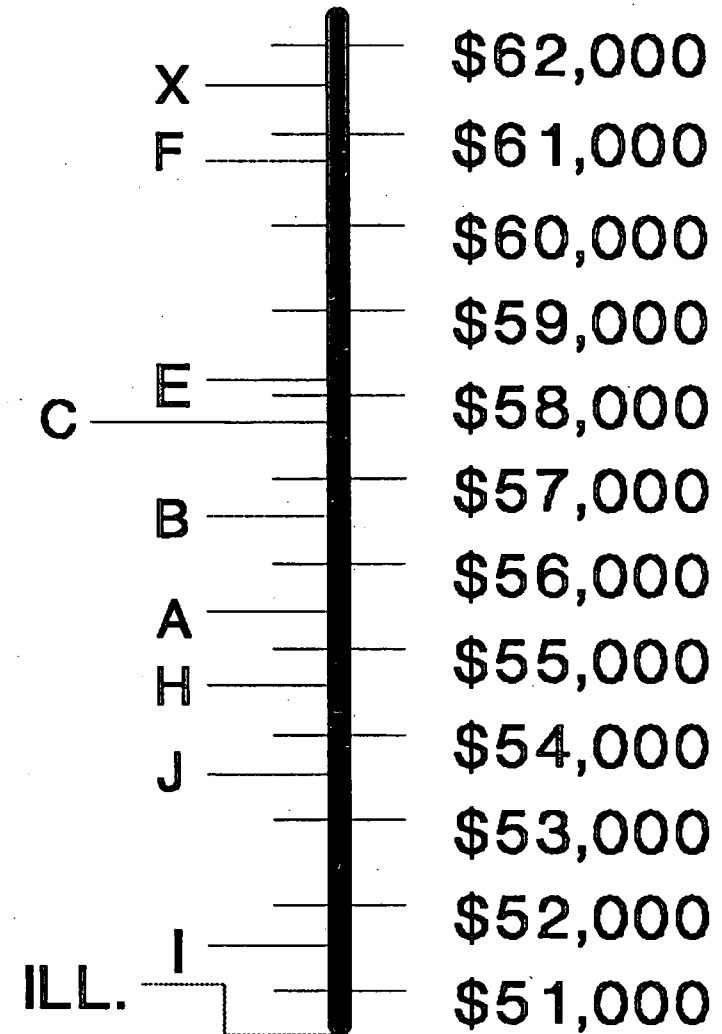
FIGURE 7

TENTATIVE WEIGHTED AVERAGE COMPENSATION AMONG BIG TEN UNIVERSITIES

FY 1988



FY 1989 PROJECTED



of this difference is attributable to the fact that the University does not participate in Social Security, the University also lags behind other Big Ten institutions in the amount paid for other elements of the fringe benefits package.

A recent comparison of FY 1988 employer contributions to fringe benefits in the Big Ten yielded the following information:

1. The University of Illinois ranks last in overall employer contributions to retirement.
2. The University of Illinois is competitive in regards to its employer contributions to employee health and dental insurance, but ranks last in employer contributions to dependent health insurance.
3. The University of Illinois ranks last in the amount of employer-paid life insurance.
4. The University of Illinois ranks last in the percent of salary ensured under the long term disability plan.
5. Five of the Big Ten institutions grant a partial reduction in tuition and fees to staff dependents. The University of Illinois offers no tuition waiver of any kind for dependents of employees.

The University's low ranking in the amount of its employer contribution to fringe benefits substantially weakens its competitive standing in terms of faculty compensation. To be competitive, the fringe benefits package offered by the University must not further detract from the salary component which, in light of the FY 1988 budget crisis, has become less attractive compared to peer institutions. A recent survey of University faculty and staff indicated that they do indeed recognize that the University's fringe benefits program is deficient, compared with the fringe benefits offered by peer institutions--a perception that is borne out by the comparative data just cited. It has become clear that the University must address the adequacy of its fringe benefits program if it is to continue to compete successfully for top faculty members.

Nonacademic Salary Comparisons

For nonacademic staff, annual salary comparisons are normally made with employers outside the University who are most competitive for the

services of that staff. In some cases, comparisons are made with local employers; in other cases, broader comparisons are made if the market for particular employee skills is statewide or greater. The composite survey of the market, which compares salary range midpoints for comparable employment levels, is incomplete at this time. However, preliminary market data show increases ranging from 2% to 5% depending upon the assumed markets for the wide range of employee groups.

The data in the table below compare selected University of Illinois grade midpoints with estimated market midpoints.

University of Illinois Grade Midpoints
Compared to Market Midpoints

| <u>Grade/ Location</u> | <u>UI FY 1988 Midpoint</u> | <u>Projected Market as of 9/1/88</u> | <u>UI FY 1989 Grade Midpoint*</u> | <u>% Behind Market</u> |
|----------------------------|--------------------------------|--|---|----------------------------|
| 5 Chicago | \$11,449 | \$13,424 | \$12,741 | 5.4% |
| 5 Urbana | 10,579 | 12,499 | 11,772 | 6.2 |
| 14 (both) | 16,999 | 20,495 | 18,914 | 8.4 |
| 19 (both) | 21,983 | 26,889 | 24,463 | 9.9 |
| 33 (both) | 45,452 | 56,247 | 50,581 | 11.2 |

*Based on 7% range adjustment (FY 1989-1990 4% rollover).
(Salaries displayed represent University and market midpoints for employees within each pay grade. Actual average salaries are substantially lower.)

In addition to market comparisons among competing employers, salary comparisons between nonacademic employees and State of Illinois Code Departments are reviewed annually to gain a general impression of relative equity among University of Illinois employees and their counterparts in State government. Based upon data compiled by the Board of Higher Education, the following comparison can be made.

Salary Deficiencies Between University of Illinois
Nonacademic Employees and State of Illinois
Code Department Employees, FY 1984 - FY 1988

| | <u>FY 1984</u> | <u>FY 1985</u> | <u>FY 1986</u> | <u>FY 1987</u> | <u>FY 1988</u> |
|------------------|----------------|----------------|----------------|----------------|----------------|
| Chicago Campus | -5.58% | -5.11% | -6.40% | -5.23% | -6.47% |
| Urbana-Champaign | -17.40% | -14.83% | -14.30% | -15.30% | -16.93% |

These comparisons make no attempt to adjust salaries for regional differences in the cost of living or for regional differences in market competition. Thus, they are most useful to gauge changes over time rather than absolute differences. Regardless of which measure is employed, it is clear that the University's nonacademic salary levels significantly lag behind those of other comparable employers.

Like academic employees, nonacademic staff received no general salary increases in FY 1988. The University's salary policy eliminated all "market movement" increases, as well as all step increases and superior performance raises. As a consequence of this policy, nonacademic employee salaries have slipped even further behind salaries of employees in the private sector and those in State government than in the past few years.

The FY 1989 market movement increase for nonacademic employees will average 7.0%. There will be no periodic increases in FY 1989; however, the superior performance program will be reinstated. While this level of funding will help to recoup some of the ground lost in FY 1988 salary competitiveness for nonacademic employees, it will not compensate entirely for the damage done as a result of the FY 1988 base budget reductions. Additional funding for FY 1990 is requested to continue this recovery process, as well as to keep pace with the projected level of inflation.

Nonacademic Fringe Benefits

The previous discussion of fringe benefits compared the University of Illinois' fringe benefits program to fringe benefits programs offered by other Big Ten institutions. However, the University recognizes that the fringe benefits offered to its nonacademic employees are more appropriately compared to the benefits provided to employees in the private sector. To assess its competitive standing in the market for nonacademic employees, the University participates in several benefit surveys of the local market. Results of these studies indicate that while benefits for University nonacademic staff are generally equal to or greater than other Big Ten and local employers for "time-off" related benefits (holidays, vacation, sick leave), University benefits are less competitive than other employers for employee life insurance, dependent health insurance, and retirement.

Due to the diverse nature of the University's nonacademic workforce, it is difficult to draw specific conclusions concerning nonacademic compensation. The competitiveness of the University's compensation program varies for the wide range of nonacademic employee classifications and salary levels. The University is more competitive in the markets for some employee classifications than for others. However, salary comparisons with both local and State markets indicate that the University of Illinois lags behind the market at all salary levels.

The University's fringe benefits program for nonacademic employees, while perhaps more competitive than that currently offered to academic employees, is still deficient in some areas of the package, particularly insurance-related benefits. When fringe benefits are combined with salaries for nonacademic employees, which are generally less competitive than those of academic employees, it is clear that the University's compensation program lacks competitiveness for nonacademic as well as academic employees. Further analyses are underway to attempt to determine more precisely the extent to which the University's fringe benefits program for nonacademic employees lags behind the benefit programs for appropriate comparison groups.

FY 1990 Benefits Improvement Request

As outlined in the comparative data cited above, the University of Illinois' compensation program continues to be seriously deficient in comparison to the compensation programs offered by peer competitors. The University's contributions to the cost of fringe benefits has been far less than the contributions made by other Big Ten institutions and have always fallen short of the level of competitiveness which the University has achieved in the cash salary component of the compensation program. Comparisons indicate a strong necessity to direct the University's efforts toward increasing its contributions to fringe benefits in addition to cash salary increases.

For the third consecutive year, the FY 1989 budget request proposed a multi-year phased program to be targeted toward the enhancement of fringe benefits. Along with the 9.5% in incremental funds requested for cash salary increases, the University sought an additional increment of

approximately 2.0% of the Personal Services Base to be used to finance benefits improvements. Although the University's total FY 1989 salary increase funding amounts to 7.0%, the University will be unable to allocate any funds to specifically target the improvement of fringe benefits. All compensation funding will be directed toward cash salary increases in an effort to overcome the lack of salary increase funding in FY 1988.

In order for the University of Illinois to recoup the ground lost in FY 1988 in terms of total compensation, the University will need to implement a multi-year phased program targeted toward the improvement of fringe benefits similar to that requested in the past--with the goal of first regaining a seventh place ranking in total compensation, and ultimately achieving a third place ranking amongst its peers. To address the needs of both academic and nonacademic employees, the FY 1990 budget request seeks an additional 2% in incremental funds to target its compensation improvement program toward resolving the most pressing deficiencies of each employee group. Without this funding, the University would require double digit salary increments over the next three or four years in order to make any progress in terms of its competitive ranking in total compensation.

Medicare Contributions

Public Law 99-272 which was signed by the President on April 7, 1986 requires mandatory participation in Medicare by all State and local government employees in positions not covered for Social Security beginning employment after March 31, 1986. These employees and their employers are liable for equal portions of the FICA Medicare Tax. The University's FY 1990 request includes an increment of \$417.4 thousand to provide for the University's liability for Medicare contributions.

State Universities Retirement System (SURS)

Among the benefit comparisons cited above, the health of the State Universities Retirement System (SURS), as well as the University's relative competitiveness among peer institutions with respect to retirement benefits, has been a matter of prime concern for several years for both individual employees and for leaders within higher education institutions and the SURS system. Any discussion of fringe benefits improvements for higher

education in Illinois must include a strong call for adequate funding of the SURS program to ensure that existing benefits will remain secure. Appendix I contains a more complete discussion of the SURS funding situation.

It should also be understood, however, that while achieving adequate funding for SURS remains a key concern for FY 1990 and for future years, funding improvements for SURS will not, in and of themselves, improve either the benefits available to University employees or the University's competitive position among peer institutions. It is urgent that the University move forward on both fronts. The adequacy of SURS fiscal support must be assured. So, too, must improvements in the University's competitive position in total compensation be achieved.

PRICE INCREASES
(\$9,730,900)

As with all sectors of the economy, higher education experiences inflationary pressures. These pressures act to reduce the strength of the financial base of the University and decrease its ability to maintain high quality programs and services. Though these pressures have diminished from the double digit inflation of the early 1980's to a more moderate level, inflation continues to erode the University's base budget support. It is important to recognize that inflation has only moderated, not dissipated, and must still be addressed budgetarily by the University and the State.

Increases in funding are requested annually by the University to finance expected price increases in the goods and services required for the basic operation of on-going academic and support programs, and are based upon a variety of inflation projections. Due to the unique characteristics of different areas of the budget, the University is submitting four separate price increase requests for FY 1990: (1) "general" price, (2) utilities, (3) library acquisitions, and (4) worker's compensation.

In determining its requirements for general price increase funding, the University analyzes a variety of economic indicators which measure inflationary trends and their impact on the price of goods and services purchased by the University. Due to the lack of any general price increase appropriations in four of the past seven years, the University has failed to keep pace with inflation in many areas of its operations. Furthermore, in FY 1988 there were reductions in the University's base operating budget, resulting from an overall reduction of 4% in GRF support. This has further exacerbated the differential between inflation and general price increase appropriations, reducing University funding levels in both real and nominal terms.

The University's utilities price increase request is formulated from expected levels of energy consumption and projected costs for the commodities and services of the utilities budget. Past experience with the high variability in the price of fossil fuels is a universal problem, and the State has recognized and supported a differential utilities price increase since FY 1975. Due to recent moderation in fossil fuel markets,

the utilities price increase is estimated at a level only slightly higher than the general price increase level for FY 1990.

State support of a differential price increase for library acquisitions has been intermittent, with the appropriation of special increases in FY 1979 and FY 1980 as well as FY 1985, FY 1986, and FY 1987. However, no special funding was provided in the intervening years, and no funding at all was available in FY 1988 and FY 1989. The University of Illinois Libraries, which house one of the largest collections in the world, are sufficiently different from other libraries in the State to warrant special recognition of the severe price increase pressures on acquisitions and periodical collections. Special recognition is critical if the University is to maintain the current quality of its collections, which are of value not only to the University, but to other libraries throughout the State.

Unlike other universities and State agencies which handle Worker's Compensation claims through the Illinois Department of Central Management Services, the University of Illinois receives a direct appropriation from the State for the payment of claims. In recent years, claims have held relatively constant and it has been unnecessary to request incremental appropriations. However, due to budget constraints in FY 1988 and FY 1989, increased claims are projected for FY 1990 requiring a requested increase in the appropriations level.

Further discussions of these price increase requests are included in the following narrative sections.

General Price Increases - (\$4,647,100)

The University's requirements for general price increase funding are determined through a comparison of past funding levels with inflation, quantified using several economic indicators. In addition to using historical comparisons, which concentrate on cumulative gains and losses to inflation, economic forecasts are used to project the impact of inflation on prices during the budget year. The University analyzes a variety of common and specialized economic indicators which measure inflationary trends and their impact on business, government, and academia. These analyses yield a general price increase request which, if funded, would permit the University to regain some of its past losses to inflation and maintain purchasing power during the FY 1990 budget year.

The expanse of activities conducted by the University suggests that no single market measure can adequately predict the effect of price increases on the University. Accordingly, three inflationary measures are generally used to assess the impact of price increases on University activities. All are of the "market basket" variety which combine differentially weighted cost components into a single index. Holding the type and quantity of a commodity in the "market basket" constant over time provides an indicator of changes in the amount of resources required to maintain a constant level of consumption.

The first index, the Gross National Product Implicit Price Deflator, defines that portion of the overall GNP growth that is attributable to factors other than real growth in the production of goods and services in the economy. The second indicator, the Consumer Price Index (Less Energy) measures the change in prices paid by urban households for items such as food, housing, and transportation. Energy costs are excluded since a separate utilities cost increase request is defined. The third index, the Higher Education Price Index (HEPI), measures the changes in the level of general expenditures made by colleges and universities from current funds for items supporting instructional programs and departmental research activities. Sponsored research and auxiliary enterprise expenditures are excluded from the HEPI.

A graphic display of these three indices compared with the historical trend line for University appropriations is provided in Figure 8. Data for FY 1989 and FY 1990 are based upon projections from Wharton Econometrics.

The graph depicts the strong positive relationship among these inflation indices, and the considerable distance between the price increases defined by these indicators and University appropriations over the last ten year period. Specifically, the University has received no general price increase funding in four of the past seven years. Even though inflation has moderated in recent years, the University has received no incremental funds for the past two fiscal years.

A review of the gap between inflation and University appropriations is displayed in Figure 9. This graph confirms the wide disparity between actual appropriations to the University and inflation experience as estimated by the CPI, GNP, and HEPI indicators between FY 1979 and FY 1988.

For FY 1990 the general price increase segment of the budget request addresses the dual objectives of (1) obtaining funding sufficient to prevent further losses to inflation and (2) seeking at least partial recovery of past losses. FY 1990 projections of the GNP deflator and the CPI estimate an increase of greater than 5%. A general price increase of 6% is requested to avoid further losses to inflation in the coming year. This request does not provide for a recovery of the purchasing power lost over the past decade.

FIGURE 8

ANNUAL INFLATION INCREASES VERSUS UNIVERSITY APPROPRIATIONS

PERCENTAGE CHANGE

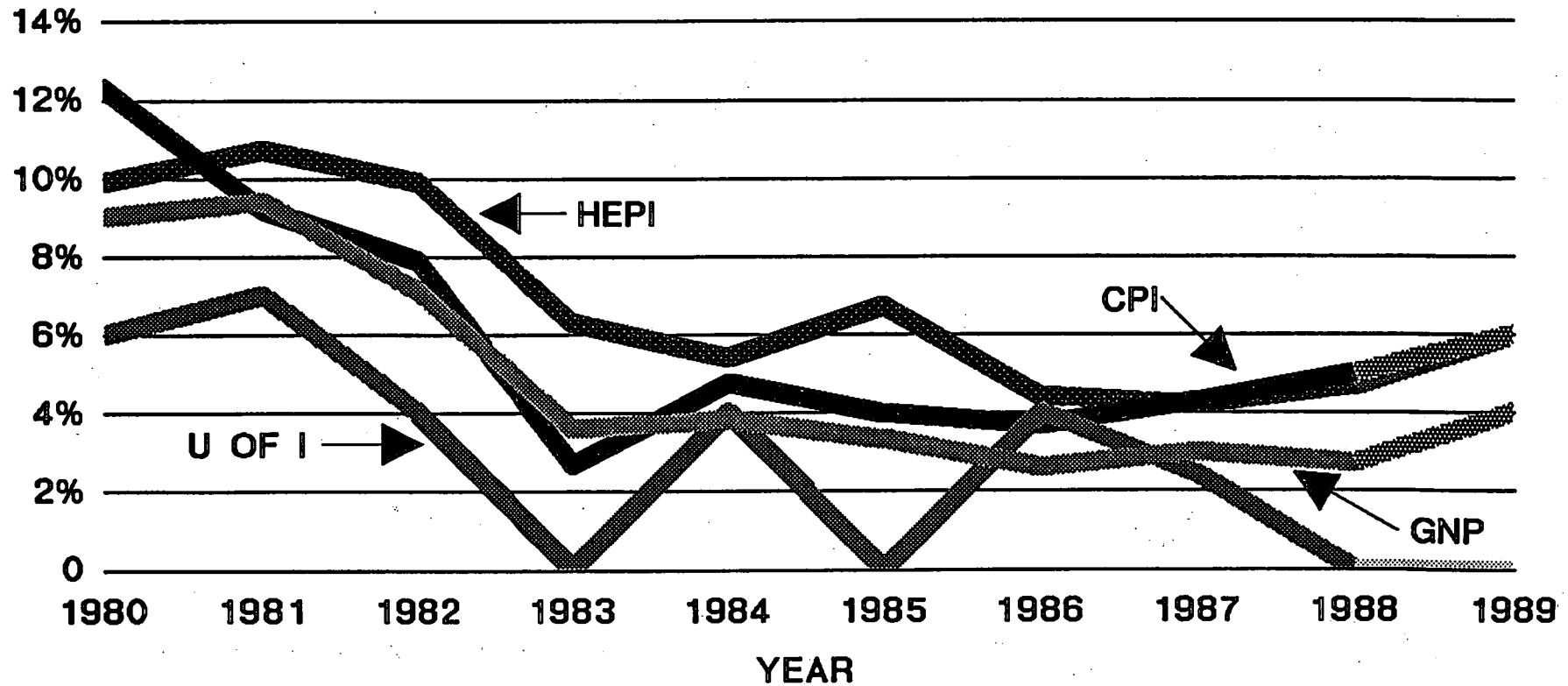
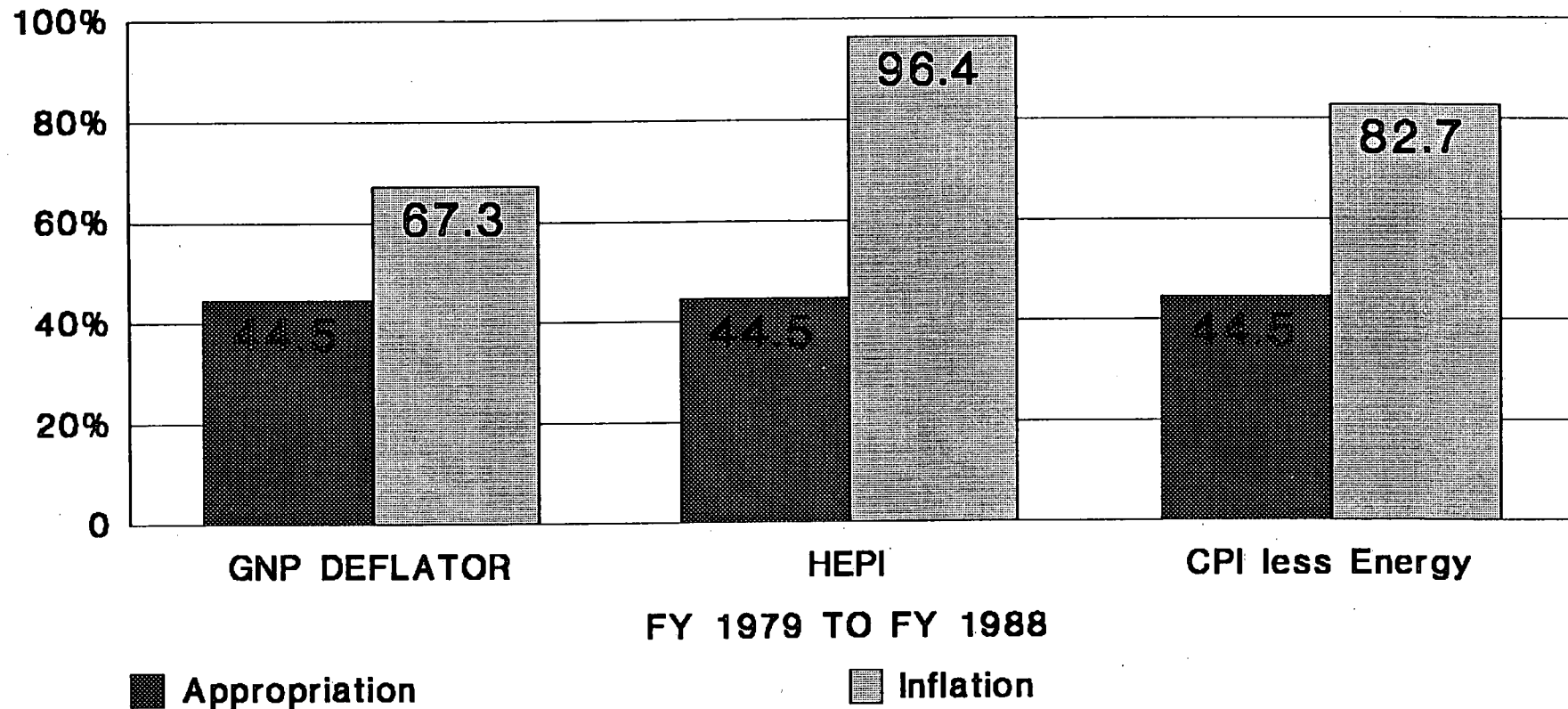


FIGURE 9

CUMULATIVE IMPACT OF INFLATION

APPROPRIATION vs. INFLATION

COMPOUND PERCENTAGE



Utilities Increment - (\$2,870,000)

The FY 1990 utilities increment request of \$2.87 million represents a 7.8% increase over the FY 1989 direct utilities base. This estimation is formulated from the expected levels of consumption and projected costs for the components which comprise the utilities budget of the University of Illinois. These expectations and projections are derived from market trend analyses of the commodities and services of the utilities budget, negotiated contracts, energy trade publications, projected price indices, and consultations with University Operation and Maintenance directors.

The incremental utilities budget request for FY 1990 is characterized by (1) an expectation for moderate electricity cost increases; (2) accelerated rates of increase for natural gas and fuel oil; and (3) continued increases in the consumption of electricity at both campuses. These components and their respective impacts upon the calculation of the FY 1990 utilities budget increment will be examined in the discussion which follows.

Commonwealth Edison Company (CECO), the utility which supplies purchased electric power to the Chicago campus, has suggested to the Illinois Commerce Commission (ICC) that action on the pending 27% rate increase be suspended. This rate increase request was filed in response to the ICC's denial of their prior rate request which would have imposed a 9.6% increase followed by a five year rate freeze. A recent ICC staff recommendation is that the 27% rate increase should be denied and presents a more modest proposal whereby the rate, as assessed to the University of Illinois, would increase 4.5% in January 1989 followed by a 4.5% increase in January 1990. CECO has affirmed that they will enter into negotiations on this proposal. A formal Commission decision on this proposal has a deadline of December 1, 1988. This proposal reverses an earlier staff recommendation that CECO be charged a 15% disallowance for Byron II and Braidwood I nuclear power production facilities.

Many pressures have been placed on the electric industry as a whole, and Commonwealth Edison in particular has been the object of much criticism. Consumer requests for rebates and rate reductions, due to increased revenues resulting from tax reform that lowered the corporate tax rate from 46% to 34%, have produced pressure to influence CECO's agreement to negotiate on this most recent proposal. Commonwealth Edison had publicly

acknowledged that the current rate increase request met substantial criticism and that the company would be willing to return to the prior rate increase request of 9.6%, or alternatively, would begin negotiations with a new proposal.

These pressures, the latest ICC staff recommendation and consumer calls for revenue reductions due to tax reform, have placed CECO in a defensive position. Within the FY 1990 utilities increment, the proposed cost increase of 4.5% has been incorporated into the budget requirements, with a noted caution that there is some prospect for a higher figure pending further ICC review.

Illinois Power Company (IPC), the electric utility which supplies purchased electric power to the Urbana-Champaign campus, also has a rate increase request currently being examined by the ICC. The proposed rate would be phased in over a period of eleven years. The second year increase, to be experienced in FY 1990, would not exceed 5.9%. However, similar to the situation of Commonwealth Edison, IPC is also facing criticism of the excess capacity presented by their nuclear power plant, the Clinton Nuclear Power Station. ICC staff have declared that the Clinton Nuclear Power Station is unnecessary and that its inclusion within the rate base is unfair to ratepayers, and have thus recommended a 9.1% reduction in IPC's electric rates.

It is uncertain at this time what the outcome of the IPC rate case decision will be. However, the potential for second year rate increases of 5.9% from IPC appears unlikely and has not been incorporated into the FY 1990 utilities increment request at this time. Industry analysts project that a more moderate increase of 3.5% is the most probable response from the ICC. For planning purposes, this percentage increase has been incorporated into the electricity component of the Urbana-Champaign campus' FY 1990 utility increment.

Natural gas is the primary boiler fuel at the University of Illinois. Since FY 1985, natural gas unit cost declines of between 30% and 40% have been experienced. Market supplies have been plentiful and the ability to make direct purchase and transportation of gas first for the Urbana-Champaign campus and then for the Chicago campus are the prime contributors to these price declines. Forecasts for FY 1990 point to some firming of prices due to (1) reduced exploration and production; (2) increased demand

focusing on cogeneration projects; and (3) the withholding of certain gas supplies from the market due to the regulatory impacts of Federal Order 500.

Order 500 issued by the Federal Energy Regulatory Commission (FERC) and placed into effect on January 1, 1988, seeks to address the disputes between gas producers and pipelines regarding "take-or-pay" contract provisions. Take-or-pay contract provisions relate to gas supplies with higher drilling and recovery costs which at the time of discovery were deemed reasonable because of high gas demand. The purchase of these supplies was eagerly contracted for by pipeline companies wishing to ensure supply. The pipeline companies would "take", i.e., transport this gas for sale, or "pay" for it in the eventuality there was not a re-sale market.

The intent of Order 500 is to allow pipeline companies to receive credits from producers against the more expensive gas supplies by providing transportation of direct purchase gas to third parties. Open access is confirmed; end users are able to purchase and receive market competitive gas; producers are able to sell gas and receive transportation; and pipeline companies are able to reduce their liabilities for purchasing "take-or-pay" gas on a one-to-one ratio for every cubic foot of gas that is shipped from a producer to a third party.

After the implementation of Order 500, spot market reactions resulted in price spikes of 10% to 30% during the remaining portion of the FY 1988 heating season. Driving the increased prices were producer reactions to keep less expensive supplies off the market, thereby not allowing pipelines to receive credits. Direct purchase gas supplies tightened and some users were required to purchase system or storage gas from local distribution companies. While the immediate reaction to Order 500 has abated somewhat, price increases associated with "normal" periods of high demand and low supply are likely to be exacerbated by the existence of Order 500.

General forecasts for FY 1990 gas cost and supply indicate that this period will be marked by a combination of forces driving available supply down and price up. These forces are (1) the conflict over "take-or-pay" crediting will continue to spur lowered supply induced price run ups, i.e., during the heating season, the period of highest usage for the University; (2) any firming of world oil prices will reduce the transferability between the use of fuel oil and natural gas, a factor which serves as a check on

the cost of both fuels; (3) the slowing of drilling activity brought about by past low costs will contribute to the declining supply of available gas; and (4) implementation of "open season", a concept to be promulgated by FERC to encourage increased transportation and consumption of gas in the Northeast, will contribute to decreased supply and increased demand. Industry analysts state that the combination of these factors will serve to deflate the gas supply "bubble" and increase gas prices by as much as 12%. A moderation of this prediction to 10% has been incorporated within the FY 1990 University of Illinois utilities budget.

Mentioned above as a contributing factor to the increased costs for natural gas forecast for FY 1990, the price of fuel oil requires expanded analysis as a separate component of the University utilities budget. Tracking the price path of crude oil through 1987 and the first third of 1988, the price began at approximately \$18 per barrel, reached a mid year peak of \$22 and fell to \$15.50 in March. In April 1988, the cost returned to an \$18 per barrel level.

Persian Gulf hostilities, declines in U.S. production, the corresponding increase of imports, and fears of cooperation between Organization of Petroleum Exporting Countries (OPEC) and non-OPEC nations to cut output are factors which contribute to the expectation of increased costs for crude oil. However, the inability of OPEC to control supply quotas among member nations and the apparent difficulty of reaching a standing consensus among non-OPEC oil exporting countries as divergent as Mexico and China tempers predictions for severe increases. Additionally, as noted above, the ability of a portion of the industrial sector to switch fuels permits some increase in the cost of fuel oil when there is upward pressure on the cost of natural gas. These factors have combined to form an estimate of a 5% increase in the cost for fuel oil which has been incorporated into the University's FY 1990 utilities increment request. This percentage increase reflects an approximate one dollar increase per barrel of crude oil.

Finally, this review of the FY 1990 costs of heating fuels which will support the campuses of the University of Illinois is not complete without noting the status of the coal reconversion project at Urbana-Champaign. It is estimated that during FY 1990, dependent upon a successful reconversion, two reconverted boilers will be operational. It is estimated that the unit

price of coal will experience an inflationary increase of 5% over the FY 1989 cost.

Significant increases in the cost of water and sewer service have been experienced at both campuses within the last two years. In FY 1988 at Urbana-Champaign, a 15% increase in the cost of water was realized. The expense for sewer service during FY 1989 will increase by 48%. At Chicago, increases of 13% and 75%, respectively, for Metropolitan Sanitary District (MSD) service and municipal sewer service are to be experienced in FY 1989.

No increases in the costs of water and sewer service at Urbana-Champaign during FY 1990 are projected. However, Chicago will experience a small increase in the MSD user charge, and an estimated 5% increase in the cost of water at that campus will be realized during FY 1990.

At both campuses, utilities consumption increases have largely been led by the increasing needs for electricity due to the expanded computing needs of academic and administrative units and increased air-conditioning requirements of renovated space not supported by operation and maintenance new areas funds. The Build Illinois repair and renovation program and University efforts toward remodeling unsuitable space have particularly increased the demands upon cooling and electrical systems which support these improved areas.

Examples of projects which will increase the utilities demands of the Chicago campus are continued remodeling of the Chemistry Laboratory, electrical upgrade of the Academic Computer Room, creation of instrumented teaching labs within the College of Medicine West, and remodeling of the computer facilities within the Art and Architecture Building. The majority of the utilities needs of these and other repair and renovation (R&R) projects are air-conditioning, lighting, and general electrical needs for computers and laboratory equipment.

At the Urbana-Champaign campus, a proposed project which will increase the utilities demands during FY 1990 is the remodeling and renovation of David Kinley Hall. These efforts will provide space for additional computer equipment to be used by the "Managing Information for a Competitive Advantage" program, an International Business Machine (IBM) company sponsored project. Additionally, ventilation and air-conditioning improvements within the Armory will upgrade the cooling and ventilation capabilities of 25 classrooms to more comfortable levels.

The combined effects of these estimated consumption needs and the projected commodities and utility rate increases described above yields a composite increase of 7.8% for FY 1990, a \$2.87 million increment above the University's FY 1989 direct utilities base. The various elements of the utilities budget, particularly the electrical cost components, will receive careful monitoring throughout the FY 1990 budget development process. Unpredictability of ICC rate case decisions and the volatility of the oil and natural gas markets demand continual attention to potential cost changes, changes which could require adjustments to the projections upon which the current incremental request is constructed.

Library Price Increase - (\$2,003,800)

The Libraries of the University of Illinois are central to the support of academic programs and research activities throughout the University. In addition to serving the immediate needs of the local constituencies, the Libraries act as a State-wide resource for both on-site visitors and remote users of the vast interlibrary loan system in which the Libraries participate. For the Libraries to meet their continuing obligation, it is essential that adequate funding be provided to maintain an appropriate level and quality of acquisitions. This funding must be maintained to meet annual price increase needs as well as growing demands on the libraries' budgets from increased State-wide usage of the collection, the explosion of information and knowledge being published in traditional and new formats, and new and expanded campus programs requiring additional library resources.

Price increase funding for FY 1990 will be the most critical in the history of the libraries due to the spectacular drop in the value of the dollar against Japanese and Western European currencies in the last three years (45%), and the inadequate price increase funding provided by the State in the past, particularly as provided in FY 1987 (2.5%), FY 1988 (0%), and FY 1989 (0%). A price increase of 25% will be necessary in FY 1990 to help offset past losses and to cope with present materials price increases. There will be a devastating effect upon the research capabilities of all University faculty and students and reduced effectiveness in the University's instructional programs if a substantial price increase is not approved for FY 1990.

The Library at UIC, which serves the largest university in the Chicago area, holds over 1.5 million volumes, including 15,000 periodicals. UIC's Library houses many special collections with historical significance to the Chicago area including: the archives of the Chicago Board of Trade; papers of the Chicago Urban League and Chicago Humane Society; the Lawrence J. Gutter collection of "Chicagoana"; and the personal libraries and papers of Jane Addams and Ellen Gates Starr, pioneer social workers. The Library of the Health Sciences, one of the largest such units in the nation, is the Regional Medical Library for 2,700 medical libraries in 10 states from North Dakota to Ohio.

As the third largest academic research library in the country, the UIUC Library serves a campus which grants the third largest number of doctoral degrees in the nation and has an outstanding record of academic achievement and public service. With more than 7 million volumes in its collection, it is a State-wide resource which reaches out through an advanced computerized network of 30 academic libraries, the Library Computer System (LCS), and through 18 State and regional library networks to serve every citizen in Illinois. In FY 1987 by lending 131,498 volumes through interlibrary loans, primarily to the State-wide networks, the UIUC Library was second in lending among all members of the Association of Research Libraries (ARL). This volume of lending represented a 68% increase over the FY 1980 rate and demonstrates leadership which is nationally recognized by the nation's 100 largest research libraries which comprise ARL. In spite of its leadership in State-wide resource sharing, from FY 1980 to FY 1987 the UIUC library dropped from number nine to number seventeen among ARL libraries in binding and materials expenditures--a fundamental measure of the degree to which existing collection quality and size are maintained. It is significant that the third largest collection, lending the second highest number of titles in FY 1987, currently ranks only seventeenth nationally in binding and materials expenditures.

One of the problems in securing adequate annual price increases has been that, with few exceptions, the funds available for library materials have been based on inflationary factors much more in line with the Consumer Price Index and other general price indexes. Such indexes do not reflect the actual cost of acquiring research materials from within the United States and throughout the world. Library materials increases regularly outstrip general price increases, sometimes by more than 200%. This has been harmful to the Libraries and their users, especially in the last ten years, when the costs of published materials have escalated dramatically, particularly in the areas of science and technology. During the period from 1977 to 1986, the price of U. S. scientific books increased by 124%, and prices for U. S. books in engineering and technology increased by 133%. Equally serious in its impact upon the libraries' budget was the increase in the price of U.S. technology and science serial titles--an average of 11.6% per year from 1978 to 1987.

Since many of the new and expanded programs recently initiated at both campuses are in highly technical fields which are highly dependent upon serials literature (e.g., supercomputing, genetics, biotechnology, artificial intelligence, etc.) the cost of providing and maintaining current materials has grown far more rapidly than have funds available for acquisitions in these areas. This has focussed tremendous pressures on the Libraries to support the rapidly expanding research activities of the heavy influx of new faculty who require continued expansion of the Libraries' collections in these new and expanding fields which are the most expensive areas for library acquisitions.

At the same time that the Libraries have been forced to allocate for this purpose, the effect on the Libraries' current allocation caused by the impact of a drastic depreciation of the U.S. dollar has been traumatic. Also, differential pricing employed by foreign publishers for books and journals supplied to North American libraries has had a very serious negative impact on the libraries materials budgets. The University regularly monitors the prices of foreign materials and the disturbing impact that increases in this area are having on the Libraries' budget. Based on samples of actual UIUC library unit costs for FY 1987, as compared to the unit costs for FY 1985, the cost of Western European monographs increased by 58% and foreign journal subscriptions increased by 38%.

According to Faxon, the nation's leading serial subscription agency, the rise in the cost of journals and other serials for 1987 was 9.9% for American serials and 17% for foreign serials. This heavy increase continued into FY 1988, when foreign serials increased by an average of 22% for materials supplied by Faxon, and by 33% and 39%, respectively, for those supplied by vendors in Germany and Japan. In FY 1989 price increases for foreign serials can be expected to rise by 10%, if there is no further decline in the dollar, and domestic serials are expected to increase by 12%. The University of Illinois Libraries expend more than half of their library materials budgets on serials, of which approximately 47% at UIC and 45% at UIUC are for foreign journals. Equally disturbing is a larger than normal 10% increase in domestic book prices which is predicted for FY 1990.

The percentage of a major research library's acquisition budget which is required for foreign materials is excessive when compared to the amount required at smaller institutions. For example, the UIUC's Engineering

Library expends one-half of its periodicals budget on foreign materials, and the Physics Library expends over 60%. This is in addition to the requirement to purchase foreign materials to support, in past and present years, federally funded centers at UIUC for African, East Asian, Latin American, and Russian and East European area studies programs as well as special programs in International Agriculture, International Arms Control, and a full range of foreign and exotic languages which are taught at advance levels. Both faculty and students at UIC are requesting publications relating to minority and third world cultures including those from Latin America, Cuba, the Caribbean, Africa, and Asia.

The Libraries' prolonged inability to keep pace with the dramatic, upward spiralling cost of serials and monographs has been further compounded by the zero price increases in FY 1988 and FY 1989 brought about by the State's budget constraints. Special considerations will be required in FY 1990 to help reestablish basic purchasing power lost to inflation in the Libraries' FY 1989 materials base and to offset the woefully inadequate price increases provided by the State of 2.5% in FY 1987 and 0% in FY 1988 and FY 1989.

The University of Illinois Libraries have already been forced to shift their budgets away from a desirable split between monographs and serials to a current allocation of 55% at UIC and 61% at UIUC for serials. Present expenditure patterns suggest this proportion will rise to even more dangerous peaks without additional funds. Correction of the imbalance without additional funds would require the continued reduction in monograph acquisitions and further extensive and intolerable cancellation of journals--a process which already has damaged the integrity of the Libraries' collections. From June 1986 to April 1987, UIUC alone has cancelled 2,277 serial titles with annual subscription worth \$271,267. In FY 1988 the UIC Library cancelled 131 serial titles and was unable to order 280 newly requested titles.

The impact of such cancellations on the faculty at UIUC was so severe that protests from departments and individual faculty members caused the campus administration to order a halt on serials cancellations. The Library reinstated key titles, and has been forced to fund periodicals again at the expense of books. The Library's inability to reinstate more periodicals, many of which are unique to the UIUC and the State, and the

serious under-purchasing of books which directly resulted, has had a serious impact on other institutions and patrons throughout the State who have come to rely on this Library as the sole source in the State where these unique and highly specialized materials should be made available.

The General Assembly's final action on the FY 1989 operating appropriations to higher education included GRF funds for salary increases only. All other objects of expenditures, including library price increases, remained at the Governor's "no tax increase" level, requiring the University to fund unavoidable cost increases through internal reallocations resulting from base budget reductions and additional tuition revenues.

Table 7 shows that an overall 25% increase in the libraries materials base is required for FY 1990 to cover projected inflation, alleviate some budget constraints caused by the continuing decline of the dollar over the past several years, and recover approximately one-half of the Libraries' purchasing power lost to inflation. It must be emphasized that this increase will not correct other deficiencies which have steadily accumulated over the past decade nor provide the resources required to respond to library needs related to new and rapidly expanding areas of academic interest: biotechnology, robotics, artificial intelligence/cognitive science, microelectronics, materials science, biomedical pharmaceutical engineering, genetics, magnetic resonance imaging, etc. These and other needs are addressed in the programmatic section of the budget request.

TABLE 7
UNIVERSITY OF ILLINOIS LIBRARIES
PRICE INCREASE FOR INFLATION AND DOLLAR DECLINE
FY 1990

| | Chicago | | | | Urbana-Champaign | | | | Total | | | |
|--|--------------------|--------------------------------|-------------------|-----------------------------|--------------------|--------------------------------|-------------------|-----------------------------|--------------------|--------------------------------|-------------------|---------------------------------|
| Total FY 1989 State Acquisitions Base | \$3,177,000 | | | | \$4,838,300 | | | | \$8,015,300 | | | |
| | Base Components | Projected Price Increase | Dollar Decline | Total Campus Increase | Base Components | Projected Price Increase | Dollar Decline | Total Campus Increase | Base Components | Projected Price Increase | Dollar Decline | Total University Increase |
| Serials | \$1,747,350 | | | | \$2,951,363 | | | | \$4,698,713 | | | |
| Foreign Serials | 828,244 | | | | 1,328,113 | | | | 2,156,357 | | | |
| Price Increase(10%) | | 82,824 | | | | 132,811 | | | | 215,635 | | |
| Dollar Decline(10%) | | | 82,824 | 165,648 | | | 132,811 | 265,622 | | | 215,635 | 431,270 |
| Domestic Serials | 919,106 | | | | 1,623,250 | | | | 2,542,356 | | | |
| Price Increase(12%) | | 110,293 | | 110,293 | | 194,790 | | 194,790 | | 305,083 | | 305,083 |
| Monographs | 1,429,650 | | | | 1,886,937 | | | | 3,316,587 | | | |
| Foreign Monographs | 513,244 | | | | 660,428 | | | | 1,173,672 | | | |
| Price Increase(7%) | | 35,927 | | | | 46,230 | | | | 82,157 | | |
| Dollar Decline(10%) | | | 51,324 | 87,251 | | | 66,043 | 112,273 | | | 117,367 | 199,524 |
| Domestic Monographs | 916,406 | | | | 1,226,509 | | | | 2,142,915 | | | |
| Price Increase(10%) | | 91,641 | | 91,641 | | 122,651 | | 122,651 | | 214,292 | | 214,292 |
| Subtotal | | \$320,685 | \$134,148 | \$454,833 | | \$496,482 | \$198,854 | \$695,336 | | \$817,167 | \$333,002 | \$1,150,169 |
| Restoration (20%) | | | | 635,400 | | | | 967,660 | | | | 1,603,060 |
| TOTAL LIBRARY PRICE INCREASE | | | | \$1,090,233 | | | | \$1,662,996 | | | | \$2,753,229 |
| | | | | ===== | | | | ===== | | | | ===== |

Worker's Compensation - (\$210,000)

The University of Illinois receives a direct appropriation for payments of Worker's Compensation claims unlike all other universities and State agencies which handle claims through the Illinois Department of Central Management Services. The table below details the State appropriation for each of the last ten years compared to the University's actual expenditure claims. As is shown, since FY 1985, claims have held relatively constant and it has not been necessary to request incremental appropriations. For the past two years, however, the University has completely expended its appropriations.

Appropriations and Expenditures for Worker's Compensation
FY 1979 to FY 1989

| | <u>Appropriation</u> | <u>Expenditure Claims*</u> | <u>% Change in Expenditure Claims</u> |
|---------|----------------------|--------------------------------|---|
| FY 1979 | \$ 440.0 | \$ 570.0 | 48.1 |
| FY 1980 | 840.0 | 840.0 | 47.4 |
| FY 1981 | 1,003.5 | 934.5 | 11.2 |
| FY 1982 | 1,105.1 | 1,144.1 | 22.4 |
| FY 1983 | 1,186.9 | 1,517.3 | 32.6 |
| FY 1984 | 1,493.1 | 1,390.0 | (8.4) |
| FY 1985 | 1,633.1 | 1,493.8 | 7.5 |
| FY 1986 | 1,633.1 | 1,527.9 | 2.3 |
| FY 1987 | 1,593.1 | 1,610.3 | 5.4 |
| FY 1988 | 1,560.9 | 1,609.0 | 0.0 |
| FY 1989 | 1,560.9 | 1,686.6 (est.) | --- |

* For years in which expenditures have exceeded the appropriation, the balance of funds has come from the Department of Central Management Services, or from other University funds.

For the last several years, the University has utilized the assistance of an actuarial firm to establish an appropriate level of funding for Worker's Compensation. Their methods for estimating projected claims and resulting payments have proven to be very accurate and helped the University determine that incremental funds were not required between FY 1985 and FY 1988. Budget reductions in FY 1988, however, now create a projected deficit for Worker's Compensation in FY 1989. Clearly an increment is therefore required for FY 1990.

Assuming a 5.0% increase in claims, payments for FY 1990 are projected to be \$1,770,900. An increment of \$210,000 (\$1,770,900 - \$1,560,900) is therefore requested.

OPERATION AND MAINTENANCE
(\$14,081,800)

This section of the FY 1990 Operating Budget Request is comprised of three separate Operation and Maintenance components: (1) operation and maintenance support for new areas, (2) a preventive maintenance deficiency program to arrest and to eliminate the current and expanding accumulation of deferred maintenance projects, and (3) an ongoing Repair and Renovation Program within the operating budget of the University. The Operation and Maintenance Division at the Urbana-Champaign campus and the Physical Plant at the Chicago campus are responsible for operating and maintaining approximately 18.9 million square feet of nonresidential space which comprise the physical facilities of the University of Illinois. Over the past decade, these units have had to operate at significantly underfunded levels, restricting the provision of adequate repair, renovation, and remodeling activities. The loss of operating budget resources in FY 1988 and FY 1989, and Build Illinois funds in FY 1989, has only compounded these difficulties. To protect the State's investment in University facilities and to assure adequate support for the University's academic programs, it is imperative that the University receive adequate operation and maintenance funding in FY 1990.

The major operation and maintenance function is to determine and meet the physical support requirements of existing, new, or significantly remodeled facilities. When new or remodeled facilities are brought into use, it is important to secure adequate maintenance funds, so that new space does not begin its useful life with a built-in maintenance deficiency. Given the major new construction programs under way at both University of Illinois campuses, maintenance costs for new space have been and will continue to be a major budget requirement. As the first component of the Operation and Maintenance request, funding requirements for new areas support in FY 1990 total \$5.7 million.

A preventive maintenance deficiency request is the second component of the request. Preventive maintenance is composed of building and grounds maintenance and janitorial services. If these elements of the overall operation and maintenance program are adequately supported, the useful life

of a facility can be greatly extended. If they are not, the facility will deteriorate rapidly. Based upon funding history, projected inflationary increases, and campus growth, it is estimated that during FY 1990 the University's preventive maintenance funding deficiency will total \$6.75 million. A request for \$3.375 million is presented within this section to reduce the accumulated deficiency by one-half. The balance will be requested for FY 1991.

The third component of this section is a request for funding of an ongoing repair and renovation program directed toward resolving more pronounced facility problems resulting from deferred maintenance, and for supporting programmatic changes through the renovation of existing space. Creation of such a program within the operating budget will provide a source of regular support for such activities which now must be met on an irregular "if funds are available" basis. The loss of the capital budget renovation program supported through Build Illinois makes this program even more critical for FY 1990. FY 1990 funding for this repair and renovation program is set at \$5 million, with a second increment of \$5 million to be requested in FY 1991.

Operation And Maintenance of New Areas
(\$5,706,800)

The estimate for FY 1990 operation and maintenance costs for new areas at the University of Illinois is \$5,286,800. A total of fourteen projects, comprising approximately 930,000 gross square feet (GSF) of new or significantly remodeled space, are submitted for either full or partial funding of the annual costs of operation and maintenance.

In FY 1989, for the second consecutive year, the absence of State funding of new areas operation and maintenance requirements necessitated internal reallocations to respond to the unavoidable expense of opening new buildings. Although delays of a few months on certain projects will help alleviate some FY 1989 needs, these delays result in slightly expanded needs for FY 1990.

An Urbana-Champaign campus Operation and Maintenance Division budget shortfall associated with increasing solid waste disposal costs is also included in the FY 1990 request at a cost of \$420,000. Thus, the FY 1990 Operation and Maintenance Request for New Areas Support totals \$5,706,800.

The costs associated with each new project are based upon factors pertaining to the specific types and uses of space in each project, the expected costs of the commodities and services which are necessary to support each operation and maintenance function and, more obviously, the expected date upon which occupancy of the structure will occur. Estimates are determined by staff from the Operation and Maintenance Divisions at each campus in conjunction with those professionals responsible for the design and construction of the project. In addition, staff from the departments which will utilize the new areas are consulted regarding specific operation and maintenance requirements of the space.

Each project included in this request is described in the following narrative and is presented in the cost summary shown on Table 8.

Urbana-Champaign Campus
(\$4,899,880)

Art and Design Building

Conversion of the former south garage facility to accommodate expansion of the School of Art and Design represents a natural evolution of this space. Structurally defined by high ceilings and concrete floors, garage space, like industrial or factory space, converts easily and efficiently into painting and sculpting studios. Use of this space for art and design activities will in turn make space presently used for these activities available for the College of Commerce, which faces severe overcrowding.

The lack of State funding of the FY 1989 request for operation and maintenance funds for the new Motor Pool facility requires the current request of funds for the converted garage. The funds which operated and maintained this space will be required to support the new Motor Pool building, thus leaving a budget shortfall for support of the converted space, now the Art and Design Building.

Space conversion and subsequent operation and maintenance needs will focus on the ventilation systems required to clear the air of chemical fumes and exhaust from the bronze casting foundry and from the studios. The FY 1990 request for funds in support of this 14,100 GSF structure is \$84,600 and comprises the total annual need.

Beckman Institute

The Arnold O. and Mabel M. Beckman Institute for Advanced Science and Technology is an interdisciplinary research institute devoted to a broad range of research programs which explore issues of organization and information processing within systems. In the broadest sense, the focus of the Institute is on the nature of intelligence, whether natural or artificial, whether in living or non-living systems, in systems at all levels of complexity. To accommodate this broad range of research programs and to stimulate interdisciplinary interaction, flexible, shared and common use areas have been incorporated into the building design where possible. Operation and maintenance support of this facility was first requested for FY 1989. Construction of the Beckman Institute has been proceeding smoothly and partial occupancy is planned for October 1988. The current

request represents the balance of the annual support requirements of this 313,000 GSF building, a total three month expense of \$932,740.

Digital Computer Laboratory Addition

The addition of 124,300 GSF of new space to the existing Digital Computer Laboratory will permit the consolidation of the Computer Science Department into one location. Interpersonal communications will be enhanced through this consolidation, particularly between professors and students and among professors as researchers. Data communications will be enhanced through the consolidation, and research regarding very high bandwidth communication links will be possible because of the physical proximity of the units involved. The common facility will permit the shared and full use of expensive computer equipment by all teaching and research pursuits of the Department.

The three story addition will contain research labs, computer rooms, offices, instrumented auditoriums, a conference room, photo labs, tape storage areas, a mail room, a graduate student lounge, and an expansion of the existing library. Reflecting a year round need for air-conditioning and high electrical consumption to power mainframe computers, terminals and microcomputers, the operation and maintenance request for five months of support during FY 1990 totals \$617,360. Construction of the addition has begun, with initial occupancy scheduled for February 1990.

Environmental Sciences Remodeling

Referred to as the Environmental Sciences Remodeling, this project entails renovation of heating, ventilation, and air-conditioning systems throughout the old Veterinary Medicine Building. Upon completion of this project, the Institute for Environmental Studies will occupy the third floor. Operation and maintenance costs for the structure are currently supported within the Urbana-Champaign campus' base budget; however, significant remodeling, particularly the installation of central air-conditioning service and greatly extended fume hood capacity, will upgrade the electrical demand and thereby increase the operational and maintenance costs of this building. As such, an incremental request to provide for the ventilation requirements of this 82,400 GSF structure is a component of the

FY 1990 Operation and Maintenance Request for New Areas. Projected completion in July 1989 requires an FY 1990 support request reflecting twelve months of the incremental need, a sum of \$288,500.

Fire Service Institute

The University of Illinois is mandated by the State of Illinois to provide a fire fighting academy, the Illinois Fire Service Institute. Comprising a 20,000 GSF classroom and office building, a facility support building, two structural burn buildings and a remodeled fire tower, the Fire Service Institute consolidates all administrative and on-campus instructional functions required by its training and research missions. On-campus, 60 courses per year taught by eleven full-time faculty members provide basic training to new state and local fire fighters, in addition to giving management training to fire officers from throughout the state. Other activities included in the Institute's program are consultations, curriculum development, and public education awareness. Funds to construct the facility were provided from the Capital Development Board Fund, with the understanding that debt service requirements would be repaid by the Institute over a twenty-five year period. The repayment process has been in place for the past two fiscal years. The FY 1990 request for operation and maintenance funds is for twelve months of support and totals \$116,000.

Hazardous Materials Laboratory

The Hazardous Materials Laboratory is a 44,000 GSF building composed of roughly half office and half laboratory space. Maintained by the University of Illinois and occupied by the Illinois Department of Energy and Natural Resources, the Hazardous Materials Laboratory administers training and research programs on the management of hazardous waste materials. State and local emergency response technicians, state regulatory staff, and university and industry researchers will be the primary participants of training programs and sponsored research projects undertaken in the new lab.

Five of the fifteen laboratories are high hazard areas that maintain negative air pressure and require regular maintenance, inspection, and replacement of carbon and other more complex air filters to ensure against

faults or leaks which would reverse the negative pressure. A pilot laboratory which permits experiments larger than bench scale and less than field scale has facility and utility support which includes air and liquid tanks, pumps, plumbing, and three utility panels which provide electricity, steam, and water on an industrial scale. A moveable "elephant trunk exhauster" supplements the fume hood exhaust set-up within the pilot lab. Scheduled for completion in January 1990, the FY 1990 Operation and Maintenance Support for New Areas is for six months of service, a cost of \$224,400.

Microelectronics Center

Seeking to increase the competitiveness of the microelectronics semiconductor industry in the United States and to enhance communication and interaction between education and industry, the Microelectronics Center will provide teaching and research space for the development of technological breakthroughs of international scope. Of central focus within the building is the "clean room" space where semiconductor chip design and production will be performed. Providing opportunities for research and development integration and the exposure of students to industrial production environments, the clean room space operations will center upon crystal growth, fabrication, and semiconductor device processing. Maintenance of stringent air quality standards and monitoring of the computer controlled gas and exhaust systems are two of the unique facility support requirements. The FY 1990 operation and maintenance funds request for this 91,083 GSF structure completes funding of the annual support and includes two months of support due to delayed occupancy, a total of twelve months at a cost of \$1,727,775.

North Campus Chiller Facility

Operation and maintenance of the North Campus Chiller Building is critical to the heat, ventilation, and air-conditioning needs of the Beckman Institute, Digital Computing Laboratory, Microelectronics Center, and other north campus utilities needs. A 24-hour per day operation, the utilities distribution functions will occupy 13,200 GSF. This facility request represents the balance of the annual needs, a sum of \$85,075 for two months of operation and maintenance.

Police Training Institute

The recent University purchase of a property at 1004 South Fourth Street will permit the consolidation of all academic and administrative offices and approximately one-half of the instructional activities of the Police Training Institute (PTI) into one location. The Police Training Institute is a State mandated facility which provides training for Illinois law enforcement officers in conjunction with the instructional resources of the University of Illinois. A full-time staff of 38 people will coordinate the training of 70 to 80 students per day. Students of the Police Training Institute are police and correctional officers attending advanced professional in-service training and new recruits receiving basic training. The facility comprises 26,800 GSF and will provide classrooms, offices, practical exercise areas such as interrogation rooms and crime scene set-ups, and a wet laboratory. Provision of operation and maintenance services for the structure will commence when occupancy occurs in July 1989. The FY 1990 request comprises the annual operation and maintenance needs of the facility, a sum of \$160,800 for twelve months of support.

South Campus Load Center

The South Campus Load Center is a 2,500 GSF structure that will be constructed adjacent to the annex of the old Veterinary Medicine Sciences Building as part of a utilities infrastructure renovation project. The load center will manage the electrical power load distribution to portions of the south campus, while concurrently resolving some prior problems associated with increased demand and limited distribution facilities in that area. The construction of the Biotechnology Laboratory and the Animal Sciences Laboratory addition, and remodeling within the old Veterinary Medicine Sciences building are three of the projects which require an improvement in the electrical distribution system on the south campus. Consisting of a simple brick shell to house the electrical switching equipment, the South Campus Load Center has minor utility requirements; however, building maintenance, janitorial, and security attention are required. Scheduled for completion in July 1989, the FY 1990 operation and

maintenance request is for twelve months of support, a total cost of \$6,650.

Talbot Laboratory Crane Bay and Remodeling

This request reflects the increased operation and maintenance demands of the newly remodeled and significantly expanded space within Talbot Laboratory. Utilities, custodial, and routine maintenance support is required for the expanded space, some 23,000 GSF. The significantly remodeled space, 6,850 GSF, only requires utilities support, specifically for the expanded air-conditioning, air intake and exhaust systems, and major electrical needs. Completion of the annual request together with two months of delayed utilities support and the total annual maintenance needs of the new space requires an FY 1990 support request of \$235,980 for twelve months of support.

Urbana-Champaign Campus Solid Waste Disposal Costs

On October 1, 1988, the contract between the University of Illinois and the City of Urbana which provides for the disposal of campus solid waste in the municipal landfill will be nullified by the closure of the landfill. An alternative disposal site will be selected from two other area landfills located in Danville and Villa Grove.

Increased costs associated with closure of the landfill will result in an estimated budgetary deficiency in FY 1990 of \$420,000. An increment of this extent is not recoverable through general budget price increases. This significant change in waste disposal costs requires a one time budgetary increase to raise the operation and maintenance base budget. Subsequent solid waste disposal increases would then be addressable through general budget price increases.

Chicago Campus
(\$806,920)

Clinical Sciences Building Remodeling

The first priority of the FY 1989 capital development program at the University of Illinois at Chicago is the renovation and remodeling of the 240,000 GSF Clinical Sciences Building. Significant expansion of the educational and research initiatives of the College of Medicine will be afforded through the transformation of this former hospital-patient care facility into modern research laboratory facilities and associated class and office space. As the attraction and retention of prominent faculty is a major determinant in the competition for external research support funding, so is the existence of appropriate research laboratory space.

A major component of the renovation and remodeling efforts will be the replacement and extension of the building's electrical and mechanical systems. Plumbing, piping, and electrical riser replacement is one of the first phases of the remodeling. Associated attention will be paid to the lateral distribution systems of electrical, steam, gas, and water utilities by the provision of new mechanical operation rooms on each floor.

Based upon the provision of expanded utilities systems and services and the associated increase in the operation and maintenance support of these utilities systems, a new areas support request is being incorporated into the FY 1990 request. Significant use of the renovated space is expected to commence in March 1990, thus, the FY 1990 request is for four months of support, a sum of \$314,400.

Engineering Research Facility

The Engineering Research Facility is a new 139,075 GSF building at the University of Illinois at Chicago. The facility will strongly assist the College of Engineering in its goal to further its reputation as a leading source of research and educational advancements in the various fields of robotics, biotechnology, microelectronics, and mineral processing.

Addressing a laboratory space deficiency of 90,000 net assignable square feet (NASF), the Engineering Research Facility will provide high quality, environment controlled space for advanced research and graduate

student training. Air free of particulates, as that found within clean room space, is a critical laboratory resource requirement. Fume hoods and the associated exhaust fans and systems are a second lab resource that is in high demand. Additionally, there is a need for chemical waste incineration facilities.

Classrooms, offices, robotics labs, clean room spaces, instrumented classrooms and workstation labs, and lecture and seminar rooms have all been provided for in the design of the facility. As with most technologically sophisticated buildings, the Engineering Research Facility has specialized operation and maintenance requirements to inspect and maintain the sophisticated services and equipment provided within the research and instruction areas. Ventilation and electrical systems maintenance and service provision, janitorial service, and building security are of critical importance. As the facility is scheduled for occupancy in April 1990, the FY 1990 Operation and Maintenance request is for three months of support, a sum of \$415,140.

Environmental Safety Facility

The Environmental Safety Facility at the Chicago campus will operate and maintain a hazardous chemical waste incinerator. The 5,640 GSF enclosure will house the incinerator and provide space for 2 full-time technicians who will operate the system. Chemical waste cannot be mixed with general University waste; it must be disposed of separately. The facility will provide a dependable and cost effective alternative to contracted chemical waste disposal. The structure will be operational in July 1989 and, as such, the FY 1990 request for operation and maintenance support funds totals \$77,380 for twelve months of support.

TABLE 8
FY 1990 REQUEST FOR OPERATION AND MAINTENANCE
SUPPORT FOR NEW AREAS

| Project | GSF | Total Annual Cost | Total Unit Cost \$/GSF | Date of Occupancy | No. Months Funding | FY 1990 Amount |
|-------------------------------------|---------|-------------------------|------------------------------|----------------------|--------------------------|-------------------|
| Urbana-Champaign | | | | | | |
| Art and Design Building | 14,100 | \$84,600 | \$6.00 | December 1988 | 12 | \$84,600 |
| Beckman Institute | 313,000 | 3,730,960 | 11.92 | October 1988 | 3 | 932,740 |
| Digital Computer Lab Addition | 124,300 | 1,481,656 | 11.92 | February 1990 | 5 | 617,360 |
| Environmental Sciences Remodeling | 82,400 | 288,500 | 3.50 | July 1989 | 12 | 288,500 |
| Fire Service Institute | 20,000 | 116,000 | 5.80 | July 1988 | 12 | 116,000 |
| Hazardous Materials Laboratory | 44,000 | 448,800 | 10.20 | January 1990 | 6 | 224,400 |
| Microelectronics Center | 91,083 | 1,727,775 | 18.97 | July 1989 | 12 | 1,727,775 |
| North Campus Chiller Building | 13,200 | 510,445 | 38.67 | September 1988 | 2 | 85,075 |
| Police Training Institute | 26,800 | 160,800 | 6.00 | July 1989 | 12 | 160,800 |
| South Campus Load Center | 2,500 | 6,650 | 2.66 | July 1989 | 12 | 6,650 |
| Talbot Lab Crane Bay and Remodeling | 29,850 | 235,980 | 7.91 | May 1989 | 12 | 235,980 |
| Solid Waste Disposal Costs | | | | | | 420,000 |
| Subtotal | | | | | | \$4,899,880 |

TABLE 8 (CONT.)
FY 1990 REQUEST FOR OPERATION AND MAINTENANCE
SUPPORT FOR NEW AREAS

| Project | GSF | Total Annual Cost | Total Unit Cost \$/GSF | Date of Occupancy | No. Months Funding | FY 1990 Amount |
|---------------------------------------|---------|-------------------------|------------------------------|----------------------|--------------------------|-------------------|
| Chicago | | | | | | |
| Clinical Sciences Building Remodeling | 240,000 | \$943,200 | \$3.93 | March 1990 | 4 | \$314,400 |
| Engineering Research Facility | 139,075 | 1,660,560 | 11.94 | April 1990 | 3 | 415,140 |
| Environmental Safety Facility | 5,640 | 77,380 | 13.72 | July 1989 | 12 | 77,380 |
| Subtotal | | | | | | \$806,920 |
| TOTAL UNIVERSITY | | | | | | \$5,706,800 |

Preventive Maintenance Deficiency
(\$3,375,000)

Fundamental to the University's missions of teaching, research, and public service is the absolute requirement to provide space in which to perform these activities. Faculty, staff, and students need adequately maintained and efficiently operated offices and classrooms in which to educate and learn. It is the Operation and Maintenance Division at the Urbana-Champaign campus and the Physical Plant at the Chicago campus which serve the essential function of developing and maintaining facilities suitable to support the full range of academic and administrative activities which occur on the campuses. Classrooms, laboratories, animal rooms, lecture halls, offices, and seminar rooms all require the technical and skilled operation and maintenance support offered by these units. Provision of utilities and a variety of maintenance duties, such as building and grounds maintenance, general maintenance, and security, janitorial, transportation, and mail services describe some of the functions required to keep the University's physical plant in operation.

However, a history of underfunded operation and maintenance functions exacerbated by periods of high economic inflation have weakened the operation of the physical plant. Annual funding has been insufficient to provide operation and maintenance service at appropriate levels for nearly two decades.

An inevitable response to continual inadequate funding is the prioritization of imperative maintenance over preventive maintenance. Minor inconveniences which result from deferred maintenance receive minor priority in the practice of operation and maintenance triage. Major concerns such as broken pipes, leaky roofs, and overloaded electrical circuits consume the available resources; routine preventive building repair service is deferred.

In an effort to begin to control the ever-increasing problem of deferred maintenance, the University is requesting funds to arrest the growth of deferred maintenance and provide relief before many of these minor problems worsen. The proposed maintenance effort addresses some specific items associated with the campus deferred maintenance problem,

such as: painting and plaster repair, carpet repair, window and sash repair, interior lighting, and so on.

Deferred maintenance has been a compounding problem for the University since FY 1971, when annual funds to maintain the campuses fell below appropriate levels. The current level of inadequacy of operation and maintenance support is determined through a comparison of recent funding data with a projected adequate standard obtained by applying prevailing inflation rates and productivity adjustments to the FY 1971 base, thus yielding a preventive maintenance deficiency for FY 1987 of \$5.8 million. Inflation of this deficiency to FY 1990 dollars results in an estimated maintenance deficiency of \$6.75 million. Table 9 illustrates these calculations.

This target program will address the FY 1990 deficiency through two annual requests. One-half of the current maintenance deficiency, \$3.375 million, is requested for FY 1990. A second request for the balance of the deficiency will be made in FY 1991.

The nearly two decade long history of underfunded operation and maintenance activities has resulted in a deficiency which affects the ability of the University's physical plant to meet daily functional demands. The targeted maintenance program will begin to address these needs. There are, however, deferred maintenance problems which are beyond the scope of the targeted maintenance program. These are problems which have been left unattended for so long that they have grown into major projects: roofs which require replacement, heating and ventilation upgrades, faulty or unsafe elevators, and so on. These projects must now be considered in the context of a separate Repair and Renovation Program as described in the following section.

TABLE 9
FY 1990 PROJECTED OPERATION & MAINTENANCE DEFICIENCY
FOR PREVENTIVE MAINTENANCE ONLY [a]

| | Chicago | Urbana-Champaign | Total |
|---|-------------|------------------|-------------|
| 1. FY 1987 Deficiency [b] | \$4,351,303 | \$1,475,891 | \$5,827,194 |
| 2. Add: Impact of Inflation on Deficiency (FY 1988) 5.4% | 234,970 | 79,698 | 314,668 |
| 3. Less: FY 1988 Incremental Dollars | 0 | 0 | 0 |
| 4. FY 1988 Projected Base Deficiency | \$4,586,273 | \$1,555,589 | \$6,141,862 |
| 5. Add: Impact of Inflation on Deficiency (FY 1989) 4.7% | 215,555 | 73,113 | 288,668 |
| 6. Less: FY 1989 Incremental Dollars | 0 | 0 | 0 |
| 7. FY 1989 Projected Base Deficiency | \$4,801,828 | \$1,628,702 | \$6,430,530 |
| 8. Add: Impact of Inflation on Deficiency (FY 1990) 5.0% | 240,091 | 81,435 | 321,526 |
| 9. FY 1990 Projected Base Deficiency | \$5,041,919 | \$1,710,137 | \$6,752,056 |
| % Distribution by Campus | 74.7% | 25.3% | 100.0% |

[a] Preventive maintenance consists of janitorial services, building maintenance services and grounds maintenance activities.

[b] The UIC deficiency does not include an amount for janitorial services at the hospital because this service is financed by the hospital.

Operating Budget Repair and Renovation Program
(\$5,000,000)

Funding for repair and renovation fills a critical void between capital budget appropriations for major remodeling needs and operating budget appropriations for the regular maintenance and day-to-day operation of existing buildings.

Repair and renovation needs fall into two separate but related categories:

1. Programmatic Renewal Projects

The capacity and configuration of academic facilities must be adequate to support a changing mix of academic programs as well as constantly changing emphases within programs. New knowledge and technology is evolving at an accelerating pace, particularly in the laboratory sciences and engineering. To remain current with instructional and research activities, let alone to work at the forefront of knowledge development, often requires modifications or upgrading of facilities and of support systems. The use of sophisticated equipment for teaching and research, frequently requiring specialized environmental controls, also demands renovation of the space which houses the equipment.

2. Deferred Maintenance Projects

The structural integrity of existing facilities, and of the campus-wide utilities systems which support them, must be assured. Routine maintenance too long deferred eventually requires the funding of renovation projects to replace whole building components such as roofs, elevators, plumbing, masonry, and so on. The cumulative effects of more than a decade of operating budget maintenance deficiencies have produced a monumental backlog of deferred maintenance projects.

The two categories of repair and renovation projects described above represent ongoing needs which the University feels will require \$10 million annually to adequately address. However, the University currently has no source to provide these funds.

In past years, the University of Illinois has been able to fill the critical void for repair and renovation with funding from two separate programs approved and supported by the IBHE. From FY 1976 to FY 1985, repair and renovation needs were addressed by the Space Realignment, Renewal and Replacement (SR³) program. This was a formula-based program which calculated the cost to repair and renovate a certain percentage of

the University's physical plant; for FY 1989, the SR³ formula would have generated over \$16 million for the University of Illinois.

From FY 1986 to FY 1988, the Build Illinois Repair and Renovation program addressed repair and renovation needs. This program allocated \$20 million to all Illinois public institutions of higher education based on the amount of on-campus non-residential space. The University of Illinois's share of that program was \$7.834 million annually. Now, however, the Build Illinois program has been suspended, and the University of Illinois again faces the prospect of a funding void.

Proposed here for FY 1990 is a request for \$5 million, which represents the initial phase of a program to fund a target of \$10 million for repair and renovation. In the absence of any other State-funded program, the critical need for a regular, recurring source of funds to address repair and renovation needs will be achieved through the implementation of this request.

PROGRAMMATIC REQUESTS

PROGRAMMATIC REQUESTS

As we enter this final decade of the 20th century, it is important to remember that for much of the 1980's, significant physical and programmatic growth took place on each of the University of Illinois' campuses. This growth was supported by new State funds, enriched by increases in federal and private sources of funds, and augmented by the realigning of existing institutional resources. These successes created a base from which further efforts to expand and improve instructional, research, and public service programs can be accomplished.

The University has established a momentum in program development that, if sustained, can lead to new initiatives that will not only improve the educational experiences of our students and the environment within which new scientific, technological, intellectual and cultural advances can be made, but will also benefit the short- and long-term economic development of our State and nation.

This momentum, however, has been interrupted--at least temporarily--by the outcome of the FY 1988 and FY 1989 appropriations processes. No new GRF-based programmatic funds were appropriated by the legislature to the University in either FY 1988 or FY 1989. In addition, in FY 1988 the Governor reduced total General Revenue Funds and Agriculture Premium funding to the University by 4% below FY 1987 levels. It is imperative that the programmatic funding being requested by the University of Illinois for FY 1990 be given the utmost consideration, so that the momentum of the mid-1980's can be regained.

Most of the physical and programmatic growth of the 1980's has served as means to ends which have yet to be fully realized. Given the limited incremental resources available to the State to distribute among all agencies, few of the initiatives proposed by the University have been fully implemented as initially planned. Yet, what has been initiated has reaped significant tangible and intangible returns on the investment made.

The tangible returns are easy to find. They range from the formation of the two supercomputer centers on the Urbana-Champaign campus that were made possible through the leveraging of campus and new State funds to match grants from the Federal government, to the establishment of the Beckman

Institute in which the State matched a major private gift. At the Chicago campus advances in public health, gerontology, and molecular biology have spawned significant growth in external support.

The intangible returns are as easy to find, but they are often not as quantifiable. Examples include the increased number of students who are able to pursue some of the finest engineering educational programs in the nation, made possible through Engineering Revitalization efforts; and the increased numbers of minority students throughout the State who are better prepared for the academic rigors of a higher education than they would have been, had they not been able to participate in the University's Principal's Scholars and Saturday College early outreach programs. The funds earmarked for these and other such programmatic improvements can be easily quantified, but not their residual benefits to the State. In fact, long after these dollars have cycled through the economy, the residual benefits of these investments will profit the State in the form of enhanced human capital.

Throughout the 1980's, attempts were made to weigh the ever changing situational, economic, and intellectual contexts at play within the University, the State, and the nation in developing programmatic requests. Though the individual initiatives within the major programmatic themes which serve as the focal points for new and expanded initiatives at the University of Illinois have changed over the past decade, the major themes themselves have remained relatively static.

This is again the case for FY 1990, as the University of Illinois is proposing new and expanded program initiatives under the following main themes:

- I. Promoting Instructional Excellence
- II. Scientific and Technological Advances
- III. Minority Access
- IV. Engineering Revitalization
- V. Library Improvements
- VI. Academic and Institutional Support Services
- VII. University of Illinois Hospital

Initiatives outlined within the Promoting Instructional Excellence theme address cooperative efforts to improve the ability of elementary and secondary schools to provide quality education, the enhancement of general undergraduate educational curricula, meeting specific areas of student

enrollment demand, expanding existing curricular options, and augmenting current instructional support activities.

The Scientific and Technological Advances are described under three subheadings: those having to do with pioneering advances in basic research, others having to do with the application of those pioneering advances, and the technology transfer efforts of the University in making these advances available to those who are most in need of them.

Under the Minority Access theme the "pipeline problem" which faces both minority students and higher education in their joint quest to increase both the aggregate numbers and success rates of minorities in their educational endeavors is addressed from both an early outreach and a re-tention perspective.

The fourth main theme is a request to continue the efforts initiated in FY 1984 to revitalize the engineering curricula at both campuses. Progress has been made toward many of the initial goals the campuses set, but there is still ground to be covered in seeing them through to their fruition.

With respect to Library Improvements, arguments are presented for increasing funding in order to address both the growing inability of the University of Illinois Libraries to keep pace with the rise in costs of serial and monographic materials and to permit the Libraries to stay abreast of the programmatic growth into new areas of inquiry, both of which have been prevalent throughout the 1980's.

The sixth theme addresses a most critical issue to the University, that of providing adequate support services to the institution's academic programs. Initiatives are outlined that will permit the campuses to be more responsive, healthy, safe, and secure environments in which the University's educational enterprises may unfold.

The final programmatic theme is a request to provide incremental support to the financially troubled University of Illinois Hospital. The Hospital has been confronted over the past few years with reduced cash revenues caused by changes in federal reimbursement programs and an increasing population of the medically indigent. These financial pressures have made it increasingly difficult to provide high quality medical instruction to health professions students.

The amounts requested by each campus, by theme, are listed in Table 10.

TABLE 10
FY 1990 PROGRAM BUDGET REQUEST
(Dollars in Thousands)

| | Chicago | Urbana-Champaign | Central Administration | Total University |
|--|-------------------|-------------------|---------------------------|---------------------|
| I. Promoting Instructional Excellence | \$1,700.0 | \$3,500.0 | | \$5,200.0 |
| II. Scientific and Technological Advances | 1,000.0 | 5,150.0 | \$1,000.0 | 7,150.0 |
| III. Minority Access | 400.0 | 500.0 | | 900.0 |
| IV. Engineering Revitalization | 500.0 | 750.0 | | 1,250.0 |
| V. Library Improvements | 500.0 | 800.0 | | 1,300.0 |
| VI. Academic and Institutional Support Services | 900.0 | 1,000.0 | | 1,900.0 |
| VII. University Hospital | 5,000.0 | | | 5,000.0 |
| | <u>\$10,000.0</u> | <u>\$11,700.0</u> | <u>\$1,000.0</u> | <u>\$22,700.0</u> |

EXPANDED/IMPROVED PROGRAMS
I. PROMOTING INSTRUCTIONAL EXCELLENCE

PROMOTING INSTRUCTIONAL EXCELLENCE
(\$5,200,000)

Throughout the past decade, there have been numerous calls for reform and upgrading of the quality of education being offered in the United States. These calls have ranged from those focusing on preschool, primary, elementary, and secondary education to those focusing on the general quality of the undergraduate educational experience. Regardless of the level of their focus, they have been consistent in their criticism of the educational enterprise as being both too "soft" and too "narrow."

In particular, the conception of the role of higher education as simply a technical training ground prior to the beginning of a career has proven to be far too narrow a mission within a society where new knowledge is created at an ever increasing pace. In many cases, the initiatives outlined below seek a balance and equilibrium in the swing of the curricular pendulum between the notion of an elitist, classical education for a limited few and that of circumscribed, particularized, technical training for entrance into the work force.

The initiatives proposed by both the Chicago and Urbana-Champaign campuses to promote instructional excellence are intended to meet a variety of instructional needs, ranging from assisting elementary and secondary schools in providing quality educational opportunities for their full range of students to initiatives which will strengthen the quality of education offered at the University of Illinois. They seek as well to meet existing student demand for undergraduate, graduate, and professional programs and to enrich other curricular offerings through the development and expansion of academic programs and the provision of instructional support.

These efforts to promote instructional excellence must also be seen as integral to the continuing economic development of the State of Illinois. With changes in society taking place at an increasingly rapid pace, it is important that the citizenry of the State of Illinois be prepared not only to carry out the working demands of our present economy, but that they also be well prepared to adapt and develop as the world and economy around them continue to change at geometric rates.

Promoting instructional excellence at the University of Illinois is a significant means by which this end can be realized. The vast majority of the University's 60,000 plus students are Illinois residents and a significant proportion of its graduates remain in Illinois not only to begin, but to conduct the entirety of their careers. Providing these students with quality undergraduate, graduate, professional, and continuing education programs which not only prepare them in narrow technical competencies, but which also stress broader, more transcendent skills will help to ensure the State's ability to meet the developing challenges of the foreseeable future.

Promoting Instructional Excellence at the Elementary and Secondary Levels

Many students reach college unprepared for not only the rigors of their chosen disciplinary major, but also less than prepared to tackle the general tasks associated with being a university student. Remedial programs are one option for addressing this problem, but this is more a methodology that treats the symptoms than one that attempts to develop a cure for the underlying, central malady.

To better address this problem, in September 1987, the University of Illinois at Chicago established the Center for Urban Educational Research and Development (CUERD) in the College of Education. The Center is dedicated to the improvement of educational opportunities for children, with particular attention on the problems and dilemmas associated with elementary and secondary schools in the Chicago metropolitan area. Schools in the Chicago area are partners in this undertaking, and large numbers have expressed a keen interest in joining UIC in this endeavor.

The Center's primary purpose will be to improve the quality of education in urban schools through programmatic and sustained research focused on: (1) schools as organizations; (2) teachers and administrators; (3) children; (4) the process and content of instruction; and (5) the relationship of schools to their communities. A major priority will be the impact this work has upon minority students, their academic and social achievement, and their readiness to succeed in post-secondary educational programs and employment.

A better understanding of these problems and their potential solutions will be addressed through: (1) conducting research addressed to critical

educational issues; (2) making available conceptually coherent and intellectually rigorous professional growth programs for educational professionals in urban environments; (3) coordinating the transfer of educational interventions from the university to the schools, and from school to school; (4) developing a model of technology transfer; and (5) implementing programs to enhance minority preparation for and representation in higher education.

CUERD will coordinate knowledge production, technology transfer, and dissemination across a number of disciplines. The Center draws on faculty expertise from across the campus to provide interventions that focus on educational problems, the physical well-being and health of children, and on conditions in homes and neighborhoods that influence school effectiveness. Because CUERD is an interdisciplinary, interactive, comprehensive center, it provides a coordinated and vigorous attack on the problems of educational systems through an amalgam of rigorous and imaginative research, the meaningful transfer of educational technology, and public service.

Promoting Instructional Excellence through the Enhancement of Basic and Fundamental Skills

First and foremost among the needs for improving the quality of educational opportunities at the University level are initiatives that enhance and improve general undergraduate curricula. The critical importance of basic, fundamental skills that transcend disciplinary expertise--thinking and problem solving; clear, cogent, and concise writing; and critical reading and analysis--are recognized as integral facets of the undergraduate educational experience. They are increasingly being understood to be vital elements in the education of those we expect to enter the work force and help to stimulate our State and national economies. They are skills and practices to be nurtured in conjunction with the development of technical/professional expertise in a particular discipline. The goal for both campuses is to reinvigorate the undergraduate educational experience to place it on a par with the quality of graduate and professional educational programs offered at the University of Illinois.

Efforts to date have shown the effectiveness of both computer assisted writing laboratories and "writing across the curriculum" programs. Yet

more needs to be done in these areas. Continued development of interactive and cross-disciplinary efforts which will enhance the abilities of our students to communicate both effectively and efficiently in all disciplinary specialties is imperative. Both campuses are developing programs which will incorporate expanded writing instruction into the entirety of the undergraduate curricula. Faculty with special expertise in teaching writing and communication skills are working in conjunction with faculty from the cognate disciplines to develop the most beneficial means of enhancing student writing within various discipline clusters.

Improvement of the delivery of instruction at the earliest undergraduate levels is of equal importance. Both campuses propose the continued development of new curricular options which stress the development of ideas and their synthesis through reading, discussion, and writing, rather than the prevalent information transmission and regurgitation mode of instruction which most freshmen and sophomores face in meeting their general educational requirements. These initiatives, which will promulgate increased faculty-student interactions, will include seminar courses for freshmen and sophomores taught by tenure stream faculty and the development of more integrative core curricula within various colleges.

Additional faculty are sought for core academic departments which have significant service components as well as sizable major populations. These departments include Biological Sciences, Chemistry, Physics, Mathematics, Statistics, Computer Science, Political Science, and Sociology. Through these additions, the campuses will be able to reduce presently overloaded lecture and laboratory sections to more reasonable class sizes, enabling more personalized and interactive instruction.

Changing market demographics necessitate that the University aggressively recruit faculty in these areas now, while there are still outstanding new Ph.D.'s available. Within the next few years a combination of factors will make it significantly more difficult to hire faculty in these areas. During the 1990's a large majority of the faculty hired to serve the swelling ranks of academe following World War II and fueled by the post-war baby boom will be reaching retirement age, causing a large increase in the demand for new talent nationwide. Corresponding to this increased demand is the fact that graduate enrollments in these disciplines--with individuals preparing themselves specifically for academic

careers--are on the decline. Thus, when demand reaches its peak in the mid 1990's, supply will have ebbed to a point where the competition for any new Ph.D. will be intense.

Promoting Instructional Excellence Through Meeting Student Demand for Present Curricular Offerings

A third set of important needs addressed by the initiatives from each campus are responses to specific areas of student demand. These include not only demand for selected undergraduate curricula, but also for graduate, professional, and continuing education programs offered by the University.

Areas where there is particularly heavy student demand presently not being met, are in the business, public policy, health professions, and biological, behavioral, and neurological sciences curricula. There are acute needs to expand the availability of offerings not only to those individuals who wish to major in these disciplines, but also to individuals majoring in other areas who would benefit from exposure to the rudimentary principles of these high demand areas of study.

The demand for these curricula stem from a variety of forces which include the changing market demand for university graduates with broader skill backgrounds, the need to provide existing programs at different times of the day to accommodate students forced to finance their education by working full- or part-time while attending the University, and the demand for offerings of programs at remote sites to accommodate both individual student and regional educational concerns.

Specifically, there are heavy demands, at both campuses, for business-related curricula, both by students wishing to major in this area, and from students with other majors who recognize the need to have an understanding of business practices and theory to complement their own discipline concentrations. In order for practicing health professionals to enhance their present practices of service to the citizens of Illinois, the University must provide more accessible continuing professional educational opportunities and programs, some leading to an advanced degree. In addition, the broad spectrum of biological, behavioral, and neurological sciences is experiencing a resurgence that present curricular offerings are inadequate to satisfy.

Promoting Instructional Excellence Through Enhancements to Present Curricular Offerings

During the middle portion of the 1980's, curricular enhancements were focused primarily on engineering and scientific fields. There is a distinct need to balance these past efforts by implementing similar curricular enhancements in the social sciences, arts, and humanities.

Curricular developments that make use of new instructional technologies to promote interdisciplinary instructional efforts and to augment present curricular offerings to include a broader and more far reaching understanding of particular disciplines are needed to provide more integrative and contemporary educational opportunities to students. Special efforts are under way at both campuses to provide this interdisciplinary and integrative type of education to Illinois' top high school graduates through honors programs. These campus-wide programs, that complement various discipline-based honors programs, are striving to provide close, interactive, broadly-based, intellectually challenging, and individually stimulating integrative educational opportunities. Too many of Illinois' best high school graduates now leave the State to find these educational experiences at expensive private schools.

Changing economic conditions--globally and here in Illinois--are causing increased curricular attention in new areas within existing disciplines. Such phenomena as the explosion of the international business community, the growth and attention being paid to commodities futures, and the need for better marketing and distribution of Illinois raw materials and finished products are leading to curricular developments at the undergraduate, graduate, and professional levels, which are attempting to better prepare students and practicing professionals to cope with and exploit these phenomena in the interests of promoting global economic development. The latter two phenomena are of particular concern to the agricultural community of Illinois.

Efforts need to be increased to further integrate the use of microcomputers into non-science and non-engineering curricula. Students in the social sciences, arts, and humanities greatly benefit from the availability of microcomputers for use as analytical, design, and problem solving tools in their studies. Not only will this necessitate the expansion of present microcomputer laboratory facilities, it also necessitates the

development of better orientation and instructional support services for faculty who wish to integrate the use of microcomputers into their courses.

Increasingly, interdisciplinary research and instruction, which by definition crosses the standard boundaries of single discipline-based instruction, has brought about exciting new insights into both old and new areas of inquiry. In the most recent past, "interdisciplinary" has typically meant a melding of various physical and natural sciences, but the fruits of new partnerships can be just as bountiful within the arts, humanities, and social sciences.

Efforts in the humanities and social sciences which are attempting to bring a more expansive, global perspective to today's most pressing scientific, political, and social problems are already under way. However, there is a need to expand these efforts and provide support to faculty who are working to develop these multi-faceted approaches to addressing issues and problems of historical, current, and future concern. These cross-pollination efforts are spawning new courses which intertwine a variety of discipline-bound perspectives on issues and provide students with opportunities to expand their knowledge and develop skills and problem solving strategies in ways that traditional, single-discipline approaches to instruction have failed to provide. As a result, the University's graduates will be that much better prepared to face and take an active role in not only how these issues will interact with their chosen careers, but also in their lives as citizens of the State and nation.

Promoting Instructional Excellence Through Instructional Support Enhancements

Central to the success of instructional programs at the University of Illinois are initiatives which provide support to these efforts. These supports range from providing ample and adequate configurations of equipment, hardware, and software to implement the curricular expansions and enhancements described above, to providing orientation, curricular enhancement, and professional development services and opportunities. Programs are being designed to improve the classroom teaching skills of new and continuing instructional staff to assist in conducting courses in a variety of formats and settings. Efforts are also being expanded to assure the verbal competencies of non-native English speaking teaching staff.

Many of the initiatives described above will require computer, simulation, and other types of laboratory course sections. In order for these initiatives to work, not only do the labs need to exist physically and be adequately equipped, there is a great demand for them to be available for student use for extended periods of time, thus necessitating significant increases in staffing.

In addition, some of the initiatives described above, and some of the ongoing curricular activities at both campuses, have as key elements the development of extensive cooperative educational programs where students can have the opportunity to practice what they have learned in the classroom in more "real" situations. Students majoring in business, engineering, architecture, the health professions, and various other curricula benefit enormously from opportunities to experience first hand how the principles and theories they have learned apply in actual problem solving situations. These types of developments will necessitate coordination among the various departments and colleges as they are involved with community, business, industry, and governmental partners in seeking out and developing the most beneficial practica, internship, and apprenticeship opportunities for University students.

Budget Summary of Initiatives at Chicago

| | |
|-------------------------|----------------|
| 65 FTE Academic Staff | \$ 1,200,000 |
| 5 FTE Nonacademic Staff | 100,000 |
| Wages and Fellowships | 25,000 |
| Expenses | 125,000 |
| Equipment | <u>250,000</u> |
| TOTAL | \$ 1,700,000 |

Budget Summary of Initiatives at Urbana-Champaign

| | |
|-------------------------|----------------|
| 70 FTE Academic Staff | \$ 2,200,000 |
| 9 FTE Nonacademic Staff | 175,000 |
| Wages | 25,000 |
| Expenses | 300,000 |
| Equipment | <u>800,000</u> |
| TOTAL | \$ 3,500,000 |

EXPANDED/IMPROVED PROGRAMS
II. SCIENTIFIC AND TECHNOLOGICAL ADVANCES

SCIENTIFIC AND TECHNOLOGICAL ADVANCES
(\$7,150,000)

Revolutionary changes are taking place in the areas of science and technology that affect not only the practice of science, commerce and industry today, but which, when looked back upon 30 years hence, will be seen as pivotal events in the history of scientific, commercial, and industrial development. For more than 100 years, the University of Illinois has pioneered scientific and technological advances that have directly affected the way in which society functions.

Recent efforts in biotechnology, artificial intelligence, cognitive science, robotics, magnetic resonance imaging, supercomputing, and toxicology not only continue the University's tradition of being on the cutting edge of science and technology, but they also impact the economic development of the State and the nation. Additionally, the "critical mass" of research and researchers in these fields is beginning to effect curricular enhancements for the training of the next generation of scholars who will delve even further into what is yet unknown.

The University's efforts in applying pioneering advances in science and technology research are also important to the development of new and enhanced economic markets. Genetic research on livestock, and efforts in value-added agriculture, are making use of the latest advances in biotechnology and bioprocessing and employing them in efforts to enhance production and to find new and more ecologically suitable end products from the raw materials found naturally or produced in abundance throughout Illinois.

Advances being made in science and technology at the University of Illinois, and those on the verge of being made, will impact not only the State's and the nation's economy in the long term, but are already producing tangible benefits. The initiatives outlined below are in some cases enhancements and expansions of ongoing projects that have already paid rich dividends on the State's initial investment, while others are new efforts that promise to open further doors of intellectual and instructional advancement, and ultimately economic development.

Pioneering Advances in Computation and Interdisciplinary Science

Through a significant infusion of Federal grant support, combined with reallocated campus resources and new State dollars, the University is making a dramatic and decisive move toward providing state-of-the-art facilities and a comprehensive research environment through which major computing breakthroughs can be made in American universities. The University's Center for Supercomputing Research and Development has teamed with the National Center for Supercomputing Applications (NCSA) to provide the University of Illinois with supercomputing leadership unmatched at any university in the nation. The two centers are bringing together, in a university setting, many of the world's best scientists, engineers, computer designers, and computational algorithm developers. As a result of this environment, the University is already realizing major breakthroughs in scientific and engineering problems including new computer algorithms, software, designs, and theory. University faculty are also involved in the preparation of an entire new generation of researchers and graduate students skilled in the use of supercomputers, both locally and at remote sites.

The total National Science Foundation (NSF) commitment to the NCSA during the five-year period from May 1, 1985 through April 30, 1990 totals \$43.9 million. In negotiating NSF support for the center, the University agreed to contribute a total of \$4.35 million over the life of the agreement in non-recurring funds, to be provided as one \$350,000 installment for remodeling, and five \$800,000 allocations to help meet operating expenses. Funds to meet this commitment will be generated from existing campus resources.

Additionally, the State agreed to contribute a total of \$14 million over the period of agreement, with the understanding that by FY 1989 there would be a recurring base of \$4 million that would allow the Center to continue operations if the NSF is unable to fund the Center after April 30, 1990. The State's commitment to the Center began in FY 1986 with a \$1 million appropriation, which was to be incremented by \$1 million in each of the next three fiscal years. The second \$1 million increment was appropriated in FY 1987. However, as a result of severe budget constraints in FY 1988 and FY 1989, the third and fourth \$1 million increments were not provided. To satisfy the terms of the cooperative agreement with NSF and to minimize the negative impact on NCSA, the campus has attempted to temporarily provide a portion of

this commitment. For FY 1990 the University seeks a \$2 million increment to fulfill the balance of the State's commitment.

The Beckman Institute, funded by a \$40 million gift from the Beckmans and \$10 million from the State of Illinois, is expected to become fully operational in December, 1988. The interdisciplinary programs that will eventually occupy this state-of-the-art facility are already taking shape. These include programs in cognitive sciences/artificial intelligence, theoretical physical sciences, advanced computer sciences, neuromagnetic recording of brain activity, and advanced imaging technologies, among others. The faculty in these programs will be drawn from many departments across the campus. Efforts are in progress to secure funding for the research programs to be conducted within the Institute from private foundations, Federal, and other sources. Nevertheless, there is a need to insure that a strong scientific and administrative support structure is in place to serve the Institute's research programs.

The facilities within the Institute include wet laboratories for chemical and biological research, computing facilities, human subject rooms for cognitive sciences research, and many laboratories that will contain state-of-the-art equipment for specialized research applications. To serve the needs of the diverse community of faculty, graduate students, and other researchers within the facility will require a substantial service staff and supporting budget. Within 165,000 net assignable square feet of space, the Institute is programmed to accommodate the activities of over 150 faculty; 50 senior visitors; 450 graduate students, post-doctoral research associates, or other research personnel; and about 100 support staff. Undergraduate student participation is expected in the research and support programs of the Institute.

To support the continuing activities within the Institute--exclusive of research activities--will require approximately \$2.5 million in recurring State funds. Original plans were for this funding to be phased in over three years beginning with an increment of \$790,000 in FY 1988, followed by increments of \$800,000 in FY 1989 and \$910,000 in FY 1990. However, due to the actions of the General Assembly and the Governor in FY 1988 and FY 1989, where no GRF-based programmatic funds were provided to the University for any purpose, the entire increment of \$2.5 million is sought for FY 1990.

Pioneering Advances in Science and Technology

Many efforts presently under way at both campuses of the University of Illinois are at the forefront of science and technology. Generally interdisciplinary in their approach to investigating these phenomena presently on the fringes of our understanding, these efforts are concentrated around basic and fundamental research in the biological and life sciences and in advanced computational research, with particular emphasis on the development of the next generation of advanced computational devices and in the instruction and training of users of these facilities at remote sites. Because of the interdisciplinary approach to investigation in these endeavors, bringing together researchers from a wide variety of cognate, complementary, and supplementary disciplines, most of these pioneering research efforts are coordinated and conducted through research centers.

At UIC, faculty with expertise in microbiology, molecular biology, biochemistry, genetics, biology, chemistry, medicine, dentistry, anatomy, physiology, dermatology, histology, oncology, pathology, and pediatrics have been drawn together in research efforts which can generally be called biotechnology. Their efforts to date, focusing in large part on recombinant DNA technology, have led to advances in the understanding and treatment of such diseases as hemophilia, sickle cell anemia, arthritis, cancer, and periodontal disease. Present expertise needs to be augmented with additional faculty, research, and technical staff as well as additional support and administrative staff to manage, administer, and support the activities of the centers.

At UIUC there is also a wide variety of faculty--drawn from the Colleges of Agriculture, Engineering, Liberal Arts and Sciences, and Veterinary Medicine--pioneering scientific and technological advances in biotechnology. Efforts to date, utilizing techniques in molecular biology and recombinant DNA research, have been successfully applied to the development of pesticide resistant crops, the production of medicinally important hormones, amino acid and vitamin production for nutritional supplementation, the development of new antibiotics, the utilization of antibody molecules as diagnostic tools, and the production of enzyme and other proteins targeted for specific medical and nutritional benefits.

Intermediate between the application of these benefactions and their development is the scale-up to production which involves product composition

and yield, on-line computer monitoring of production, material and cell harvesting, separation methodologies, product purification, etc. These areas of commercialization in their broadest context can be referred to as bioprocessing--the next major area of development in biotechnology that the campus proposes to pursue. At UIUC, the juxtaposition of intensive value-added agricultural activities with the College of Agriculture's Sponsored Research Incubator facility is combining to create a fertile environment for ideas and developments that will enhance the Illinois economy. For example, efforts are under way that promise to lead to the production of more ecologically sound, biodegradable plastics made from corn.

Magnetic resonance and its applications have come to play a central role in a number of areas within the life sciences and the field of medicine. The interdisciplinary nature of this field, the complex and expensive equipment required, and the special expertise needed to develop new equipment and techniques and to guide research projects have stimulated the development of new integrated programs in many institutions. The program being developed at the University of Illinois covers a broad spectrum: the basic theory of image formation; the development of mathematical algorithms and instrumentation; novel applications in the fields of plant, animal and human physiology, pharmacology, and biophysics; as well as the development of new areas of usefulness in medicine.

Crucial to the interdisciplinary research efforts of both campuses are facilities adequate to house the researchers and their laboratories in relative proximity to one another in order to foster the easy interchange of ideas and expertise. At the Urbana-Champaign campus, construction is near completion on the Beckman Institute, which will serve as the physical focal point of the University's interdisciplinary efforts to pioneer advances in science and technology. As described earlier, incremental program funds sought for FY 1990 will support the programmatic and administrative operation of the Institute.

The adequacy of physical facilities to house and support these evolving multi-disciplinary programs in science and technology continues to be a prime concern for the University. Remodeling is continuing at the Agricultural Bioprocessing Facility (formerly called the Dairy Manufacturers Building) to provide space for value-added agriculture research. The Digital Computer Laboratory addition is under construction, and the federally financed USDA

Plant and Animal Biotechnology Laboratory is in advanced planning stages. In FY 1990, UIUC is requesting three major planning projects that will address significant space concerns: the Life Sciences Research Lab, the Chemical Sciences Research Lab, and the Electrical Engineering Research Lab.

At Chicago, modest remodeling of space in the old hospital has made some inroads into the need for centralized facilities for the centers pursuing biotechnological research. A major remodeling project was appropriated in FY 1989 for this facility. However, there is still a great need for space for state-of-the-art facilities--such as advanced wet labs, computer labs, and clean rooms--that cannot be met by remodeling existing space. To further meet this need, a Molecular Biology Research Lab is described in the capital requests section of this budget request. Additionally, groundbreaking occurred June 1, 1988 for the Engineering Research Facility that will provide much needed space for the College of Engineering's expanding research efforts.

Applications of Pioneering Advances in Science and Technology

The potential applications of the advances in science and technology at the University of Illinois and elsewhere throughout the world are virtually endless. However, the University of Illinois, by virtue of its strength in a number of disciplines which are natural complements to the research taking place in biotechnology, artificial intelligence/cognitive science, magnetic resonance imaging, and supercomputing, is particularly well situated to apply these advances in ways that will have a significant impact on our society and our economy.

For instance, scientific and technological advances in a number of these areas have the potential to have an enormous impact on research that responds to the aging of our society. The U.S. Bureau of the Census has reported that the nation's median age rose from 27.9 years in 1971 to 31.2 years in 1984. Scientific and medical advancements continue to increase expected average life, so that by the year 2030 there will be 65 million baby-boomers alive. While today one in every eight Americans is considered "elderly," then it will be one in every five. At UIC, a group of faculty from a number of disciplines is working to identify ways the elderly can be helped to remain healthy, independent, and productive for as long as possible.

By building on results of the research efforts described above and conducting further research of an interdisciplinary nature, these faculty are

endeavoring to provide an intellectual milieu in which to facilitate important gerontological breakthroughs and to enhance the quality of clinical care and services to the community. The development of a model long-term health care program for the elderly and empirical research into the impact of care-management services upon program utilization, the influence of care-giver support groups on the well-being of the elderly, and the effects of Alzheimer's disease on family members are a few examples of the types of aging initiatives which need to be expanded.

Further applications and resultant research advances at the University of Illinois are also taking place in applied genetic research on various forms of livestock, the remote access and application of supercomputing facilities, and the development of efforts to deal with toxicologic threats to the maintenance of our environment.

Technology Transfer of Pioneering Advances in Science and Technology

The initiatives outlined above seek to advance science and technology through both basic and applied research. Implicit in these endeavors are related efforts to provide curricular enhancements and new instructional opportunities for undergraduate and graduate students. These instructional activities develop as a natural outgrowth of the institution's research efforts. They are the first line of technology transfer the University of Illinois undertakes: the transfer of technology as embodied by our graduates who will serve the State and the nation as both a well-qualified work force and as the next generation of scholars and researchers necessary to sustain the revitalization of the economy.

The University seeks, however, through centrally administered programs that draw on the expertise of faculty at both campuses, to provide the citizens, government, businesses, and industries of the State with two other critical forms of technology transfer:

1. Continuing education and professional development activities, that keep the skills of those presently in the work force up-to-date and on the cutting edge; and
2. Direct technical consultation from University researchers to industry, as well as joint industry/University research ventures that have the potential to create new products and services that can ultimately lead to the further expansion of the State's economy.

These initiatives are designed to meet service and outreach needs State-wide, with special emphasis on the western Chicago suburbs. The primary focus of the plan is to extend professional educational opportunities to a region that has experienced rapid demographic, commercial, and industrial growth and to continue similar opportunities already under way in the Rockford area, a region that has experienced industrial decline. Ancillary to these programs are plans to provide important technology transfer in the form of policy analysis to State and Federal government officials and legislators, as well as for State-wide dissemination of this research to policymakers, professionals, and the public.

The University will focus on four major areas of activity in which it has special expertise to assist in meeting these needs: science and technology; engineering; business and related executive training; and health care.

Budget Summary of Initiatives at Chicago

| | | |
|-------------------------|----|----------------|
| 15 FTE Academic Staff | \$ | 600,000 |
| 8 FTE Nonacademic Staff | | 175,000 |
| Expenses | | 125,000 |
| Equipment | | <u>100,000</u> |
| TOTAL | \$ | 1,000,000 |

Budget Summary of Initiatives at Urbana-Champaign

| | | |
|--------------------------|----|------------------|
| 35 FTE Academic Staff | \$ | 1,200,000 |
| 60 FTE Nonacademic Staff | | 1,050,000 |
| Wages | | 150,000 |
| Expenses | | 1,450,000 |
| Equipment | | <u>1,300,000</u> |
| TOTAL | \$ | 5,150,000 |

Budget Summary of Initiatives at Central Administration

| | | |
|--------------------------|----|---------------|
| 35 FTE Academic Staff | \$ | 350,000 |
| 60 FTE Nonacademic Staff | | 50,000 |
| Expenses | | 550,000 |
| Equipment | | <u>50,000</u> |
| TOTAL | \$ | 1,000,000 |

EXPANDED/IMPROVED PROGRAMS
III. MINORITY ACCESS

MINORITY ACCESS
(\$900,000)

Population demographics indicate that a decline in the number of high school graduates will continue until the late 1990's. However, because the drop in birth rates after the "baby boom" was not the same for all racial and ethnic groups, an increasingly larger proportion of each year's traditional pool of college applicants will be minorities, particularly Blacks and Hispanics. This will be the case well into the twenty-first century.

Higher education is already faced with a "pipeline problem" with respect to minority students: too few of this growing population are going on to higher education, and even fewer are reaching and completing graduate and professional school. Large numbers of minority students are unprepared for the demands of a post-secondary education, though they may have "completed" the prerequisite twelve grades of formal education. Far too many minority students never reach this stage of "completion," and all too many of those who do are lacking in the essential skill and content competencies required to compete with non-minority students who are more typically the products of "better" suburban public, private, and parochial school systems. Thus, unless steps are taken now to assist this expanding cohort of minorities in preparing for college, the pipeline problem will only be exacerbated by the increasingly larger numbers of college age minority students from which colleges and universities may draw potential students.

As early as elementary school, minority students--especially those in urban, public school systems--are found to lag behind in skill development and content mastery. As they progress through the system these early developed deficiencies are compounded with the result that by the end of their high school years, the affected students simply are not adequately prepared to directly step into higher education.

The University of Illinois has been working for some time to help address this problem. Special programs designed to smooth the transition between high school and higher education have been functioning for a number of years. Outreach activities to minority students in high schools, and even junior high and elementary schools, to help in skill development and

content mastery have met with success. Retention efforts designed to provide support to minority students throughout their collegiate careers are also in place. More recently, the Center for Urban Educational Research and Development at UIC has initiated a program of cooperative research to address, in part, the minority pipeline problem.

Expanded efforts in minority access must also address the need for assistance to minority students who are attempting to prepare for and pursue academic careers. Attention must, therefore, be paid to the terminus of the pipeline. Typically, this has been understood in terms of programs and services to assure that those students who enter the university as undergraduates have a reasonable opportunity to succeed and to earn a bachelors degree. This notion, however, neglects to consider that one reason why institutions have such a difficult time in attracting minority students is the lack of minority faculty present on campus. Thus, the real terminus of the pipeline is at the level of preparing minority students to take on faculty responsibilities. To begin addressing this need the University of Illinois proposes to expand graduate and post-doctoral fellowship programs for minorities who may be interested in academic careers.

Each of these efforts is important not only in helping to produce a more adequately prepared minority applicant pool and for ensuring that the necessary assistance is provided to minority students so that they earn a degree, but these efforts also have a bearing on the economic vitality of the State of Illinois. The changing demographics affecting the mix of young people throughout the population base that produces the State of Illinois' tax and revenue base will also become increasingly minority. Thus, efforts to better prepare minorities for entrance into higher education, and to see that they have reasonable opportunities to succeed once they have matriculated, will in the long term also ensure a more stable and productive work force, and revenue base, for the State.

Increasing Minority Access Through Early Outreach Programs

The University of Illinois has been involved in early outreach programs to increase the State-wide pool of adequately prepared minority high school graduates since 1975. UIUC initiated efforts in the Principal's Scholars Program in 1975, and UIC began its Saturday College Program of early outreach in 1979. Initially these programs were designed to work

exclusively with minority high school students, but over the years they have expanded to include support services for parents, teachers, principals, and staff members, as well as expansion to include pre-high school students in these developmental activities. The success rates of the programs are quite high in terms of the numbers of participants who go on to pursue higher education. Historically, less than half of the students who participate in either campus' early outreach programs, and who go on to college, attend one of the campuses of the University of Illinois. This is truly a recruitment program for all of higher education.

Nevertheless, at both campuses, there is a need to expand outreach activities to reach more minority students. New FY 1990 funds will permit programmatic expansion to meet three specific needs. First, there is a need to expand presently successful early outreach activities further down into the pre-high school years. An expansion of the junior high and middle school early outreach programs is necessary, as are increased activities at the elementary school level. Second, the Saturday College Program at UIC which has been primarily a health sciences related initiative, will continue to expand to include all colleges on the campus in efforts to expose minority students to a fuller variety of the options available to them in higher education. Third, there is a need to expand present outreach activities to new geographic areas presently underserved by either campus' initiatives. Particularly, increased efforts in the Rockford, Springfield, and Danville areas are needed to meet locally expressed interest and demand for these initiatives.

Increasing Minority Access Through Enhanced Retention Efforts

Many minority students are admitted to the University needing assistance to help them make the transition from high school to college, and to maintain satisfactory progress through their college careers to graduation. Even among minority students who arrive at the University with what appears to be adequate preparation, such as the students involved in the President's Award Program, there is often a need for intensive academic advising and counseling services.

Both campuses presently offer underprepared students summer bridge and transitional programs that should be expanded to serve more Black and Hispanic students. Incremental funds will provide for proactive monitoring

systems at the college level in which each student is assigned an advisor responsible for closely monitoring their academic performance and for intervening when necessary. Additionally, follow-up services, employing successful minority graduate and undergraduate students, will provide intensive academic tutoring for these students. These tutors will not only serve as role models to minority undergraduates at the beginning of their university careers, but they will also provide tangible evidence of minority students who have succeeded in academe.

Particular attention must be paid to retention efforts among minority students who enter curricula such as business and medicine. With the heavy emphasis on quantitative skills necessary to complete these curricula, minority students are often severely disadvantaged. Programs are under way which shift the emphasis of academic support from high risk students to high risk courses; these efforts will also be expanded. As well, successful retention efforts for educationally disadvantaged minority medical students will be expanded for the College of Medicine's programs at Rockford, Peoria, and Urbana-Champaign.

The success of the campuses in attracting and retaining minority students is causing a major increase in the workload of the Student Financial Aid Offices. The processing, monitoring, and careful review of scholarship and other awards to this increasing body of minority students has simply overdrawn the present resources of these offices. It is imperative that the success of the University's initiatives in improving minority student access not be thwarted by its inability to provide thorough and timely financial aid services to these students. A modest level of new funds will be used to meet this support need.

Budget Summary of Initiatives at Chicago

| | | |
|-------------------------|----|---------------|
| 10 FTE Academic Staff | \$ | 275,000 |
| 2 FTE Nonacademic Staff | | 25,000 |
| Wages | | 25,000 |
| Expenses | | 50,000 |
| Equipment | | <u>25,000</u> |
| TOTAL | \$ | 400,000 |

Budget Summary of Initiatives at Urbana-Champaign

| | | |
|-------------------------|----|---------------|
| 20 FTE Academic Staff | \$ | 325,000 |
| 2 FTE Nonacademic Staff | | 25,000 |
| Wages | | 75,000 |
| Expenses | | <u>75,000</u> |
| TOTAL | \$ | 500,000 |

EXPANDED/IMPROVED PROGRAMS
IV. ENGINEERING REVITALIZATION

ENGINEERING REVITALIZATION
(\$1,250,000)

Between FY 1984 and FY 1987 the Engineering Revitalization Program has infused approximately \$10.6 million into the Colleges of Engineering at the University of Illinois. These budget enhancements have enabled both Colleges to move toward fulfillment of the development plans that are foundational to the Engineering Revitalization initiative. Most conspicuously, these funds have improved the educational environment in the Colleges by reducing student/faculty ratios. Through a combination of re-allocating vacated positions and utilizing new funds provided for revitalization, both Colleges have been successful in attracting top quality new faculty from the nation's premier engineering schools into curricular areas that are vital to current engineering studies. In FY 1987 faculty salaries, at all levels, were fairly competitive with each College's peers. (However, the lack of salary increase funding in FY 1988 has caused salaries to decline precipitously once again.) Revitalization funds have also helped to provide needed equipment and support for teaching assistants and other support personnel.

As the description of student/faculty ratios below makes clear, the revitalization efforts begun in FY 1984 have not yet been completed. However, as later sections depict how funds used to hire new faculty have had dramatic impacts on curricular enrichment, the quality of faculty being attracted to the University of Illinois, and the success the Colleges' faculties have had in generating outside support for their research efforts, it becomes clear that continued efforts to reduce these student/faculty ratios will produce similar, and perhaps even more pronounced effects on the University's efforts in engineering.

Decreased Student/Faculty Ratios

The funds provided in response to the multiyear revitalization requests have had a direct impact upon reducing class sizes, and each department is working to reduce them further, to more appropriate levels. This reduction in class sizes, without reducing total enrollments, does more than merely provide each College with additional faculty and bring

student/faculty ratios into closer proximity with what is found at peer institutions, though these are in themselves important results. Most crucially, the reduction in class sizes brings them closer into line with generally accepted norms for laboratory type courses, that prevail in the engineering curricula.

At UIC, student/faculty ratios have dropped to approximately 15 to 1, well on the way to the goal of 13 to 1 established at the outset of the revitalization efforts. At UIUC, a study conducted during 1986 found that in relation to their peers, the ratio of equivalent students per faculty-staff-man-years was 13.65 to 1, while the comparable figure for all institutions surveyed combined was 11.16 to 1. Thus, there is still further ground to be gained in order for both campuses to compare favorably with their peers.

At UIC, to reach the targeted student/faculty ratio will require an additional 15 FTE faculty over the remaining years of Engineering Revitalization. UIUC projects hiring an additional 50 FTE faculty, to reduce its ratio to approximately 12 to 1.

Curricular Enrichment

Revitalization efforts were undertaken with a blueprint of contemporary academic programs to serve as a magnet for attracting quality faculty and students and to fulfill the Colleges' educational missions, thereby better serving public and private constituencies. It was understood from the outset of the revitalization effort that for the University to maintain and enhance its national prominence in research and academic programs related to engineering, changes would need to be implemented to the curricula early in the 1980's. Progress in implementing the plan and building the programs identified has been remarkable and provides a foundation for even greater accomplishments as the continuing phases of revitalization are implemented and the Colleges' national reputations continue to climb.

The targeted areas in which new faculty have been hired who are both enriching the curriculum and generating significant research advances are: advanced manufacturing systems; microelectronics; robotics; new engineering materials and unconventional processing; biological processing systems; energy studies; and supercomputing.

Attraction and Retention of Faculty

Revitalization funding has not only made it possible for each campus to increase the total number of faculty in its College of Engineering, but to accomplish these increases by hiring top quality new graduates from the best engineering programs throughout the country, as well as the best available faculty from other outstanding colleges of engineering. UIC has increased its faculty by 22.00 FTE since 1984, and UIUC by 40.00 FTE.

In large part these new additions were made possible by the infusion of new monies that permitted the Colleges to succeed in the intensely competitive academic marketplace for engineering faculty. The Engineering Revitalization funds received to date have also made it possible to retain faculty whom the University would have been in danger of losing if salary compression problems had not been addressed. Again, however, the budget reductions and lack of salary increases in FY 1988 have contributed to recent significant faculty losses at both campuses. Individuals who in prior years had rejected outside offers unilaterally are now accepting them, in large part due to the wavering of support from the State. While this problem extends throughout the University, the Colleges of Engineering are especially vulnerable since the national demand for top quality engineering faculty is particularly acute.

Equipment and Support Personnel

Revitalization funds have also made it possible for the Colleges to provide these new and continuing faculty with the kind of support--equipment and technical support personnel--necessary to permit them to seek out extramural research support from a considerable basis of strength. At UIC, this has meant an increase from roughly \$22,000 in outside research support per faculty member in FY 1984 to approximately \$34,000 per faculty member in FY 1987. At UIUC, which began from a stronger position when revitalization was first initiated, annual extramural research support has increased from \$30 million in FY 1982 to \$54 million in FY 1987.

Budget Summary of Initiatives at Chicago

| | | |
|-------------------------|----|----------------|
| 10 FTE Academic Staff | \$ | 250,000 |
| 5 FTE Nonacademic Staff | | 100,000 |
| Expenses | | 50,000 |
| Equipment | | <u>100,000</u> |
| TOTAL | \$ | 500,000 |

Budget Summary of Initiatives at Urbana-Champaign

| | | |
|-----------------------|----|----------------|
| 15 FTE Academic Staff | \$ | 575,000 |
| Expenses | | <u>175,000</u> |
| TOTAL | \$ | 750,000 |

EXPANDED/IMPROVED PROGRAMS
V. LIBRARY IMPROVEMENTS

LIBRARY IMPROVEMENTS
(\$1,300,000)

The Libraries of the University of Illinois are central to the instructional, research, and public service missions of its two campuses. To support the University's multidimensional mission, the Libraries must acquire materials in all formats and languages of the world by collecting comprehensively from a vast number of areas of knowledge. The results of that collecting must be made available to library users in an efficient and timely manner. To support campus needs, the Libraries maintain high-use public facilities; respond to a diverse clientele ranging from under-prepared undergraduates to research and clinical faculty; maintain cooperative relationships with other libraries; act as a State-wide resource for both on-site users and remote users of its vast interlibrary loan system; and work to make an ever-increasing amount of information available in a wide variety of formats. The materials budget of the Libraries is crucial to the Libraries' ability to provide these services.

The University Library at Chicago is a complex organization, with nine locations in four cities. Its collections consist of more than 1.5 million items, including 15,000 periodicals. Computer search capabilities of world scientific and medical literature are available in Chicago and at branch libraries in Peoria, Rockford, and Urbana-Champaign. The Library of the Health Sciences, one of the larger medical library units in the nation, serves the University and various affiliated institutions throughout the State; and it is the regional medical library for 2,700 medical libraries in 10 states from North Dakota to Ohio.

The University Library at Urbana-Champaign is the third largest academic research library in the country and serves a campus which grants the third largest number of doctoral degrees in the nation. The Library is internationally recognized, not only for the size of its collections, but also for the scope and quality of its holdings. Its collections consist of more than 12 million items, including 7 million bound volumes; only Harvard and Yale have larger academic collections. UIUC's main library with 38 departmental branches serves as a prime State resource for scholarly

knowledge through ILLINET, the State's computerized interlibrary loan system. It was the second largest lender in the nation among all academic libraries in 1987, lending 131,498 volumes.

The Libraries of the University of Illinois require a strong and competitive funding base to preserve their quality and leadership. Analysis of the University Libraries' collections reveals a disturbing trend. Rising costs for acquisitions, which began to escalate dramatically in 1971, made it impossible for the Libraries to maintain their earlier pattern of growth. During several years of high inflation, incremental funding failed to match the rate of inflation, and a significant differential accumulated between the cost of acquisitions and funds available for library materials. Although the rate of library price increases moderated for several years, it is rising again and the legacy of earlier inflation continues to undermine incremental appropriations. In the past three years the value of the dollar against foreign currencies has tumbled dramatically. The initiation of discriminatory pricing of journals for North American libraries during this same time has had an equally traumatic and deleterious effect. In combination, these two factors threaten the stability of serials collections.

In addition to falling behind inflation, State allocations have also failed to respond to program-related needs. In FY 1988 a survey of 45 UIUC library fund managers revealed a need for \$275,000 to purchase library materials related to new programs, and a need for \$693,000 to fund accumulated deficiencies. Since FY 1986 a need for greater funding for the libraries at both campuses has been identified to support more than 20 new and expanding academic programs, a number of recently appointed endowed/distinguished professorships, new and rapidly developing research initiatives, and recently established doctoral programs. Developments in fields such as biotechnology, artificial intelligence, supercomputers, microelectronics, biomedical pharmaceutical engineering, and genetics are having a far-reaching impact on the Libraries' materials budget. The Libraries were unable to address any of these problems in FY 1988, for the State provided no incremental increase in acquisition funds for FY 1988. Further exacerbating this issue is the 0% increase in the FY 1989 budget allocated for Library improvements. Both the Chicago and Urbana-Champaign

Libraries require additional incremental resources, beyond yearly increases, to address these programmatically driven acquisition needs.

The disparity between library cost increases and appropriations for library materials has most severely affected periodical and serial purchases which presently account for 55% and 61% of the Libraries' acquisition budgets at UIC and UIUC respectively. Annual increases for American periodical subscriptions have averaged 11.2% since 1977. Most, if not all, of the departmental libraries have been forced into a pattern of severely curtailing monograph acquisitions and, in some cases, cancelling serial subscriptions in order to purchase new serial titles. From June 1986 to April 1987 the UIUC Library has been forced to cancel 2,277 serial titles. In FY 1988 the UIC Library has cancelled 131 serial titles.

The UIC Library will focus its efforts toward purchasing materials which support programs of special significance to the UIC campus including biological pharmaceutical engineering, computer design, molecular and cellular biology, genetics, and the neurosciences. Additionally, collections must be strengthened in those areas where Ph.D. programs have been recently established or where research interests are growing. These include anthropology, Black studies, criminal justice, education, business, and the history of architecture and art.

The expansion of national universities, research institutes, and publishers in underdeveloped countries is receiving increasing attention by western scholars; and publications relating to all aspects of minority and third world cultures are of increasing interest to UIC faculty and students. In addition to these direct acquisition needs, there is also a need to increase the size of the processing staff and to increase the contractual services budget. New funds will be used to hire a life sciences bibliographer who will coordinate the selection of materials to support the biological science programs located on the east and west campuses and at the regional sites in Peoria, Rockford, and Urbana, and the interdisciplinary programs which draw upon the collections at all locations. In addition, two catalogers are needed to eliminate the present cataloging backlog and prepare new materials in a timely fashion.

At the Urbana-Champaign campus, a number of new programs have been added to its instructional and research endeavors and other programs have expanded rapidly over the past several years placing tremendous demands on

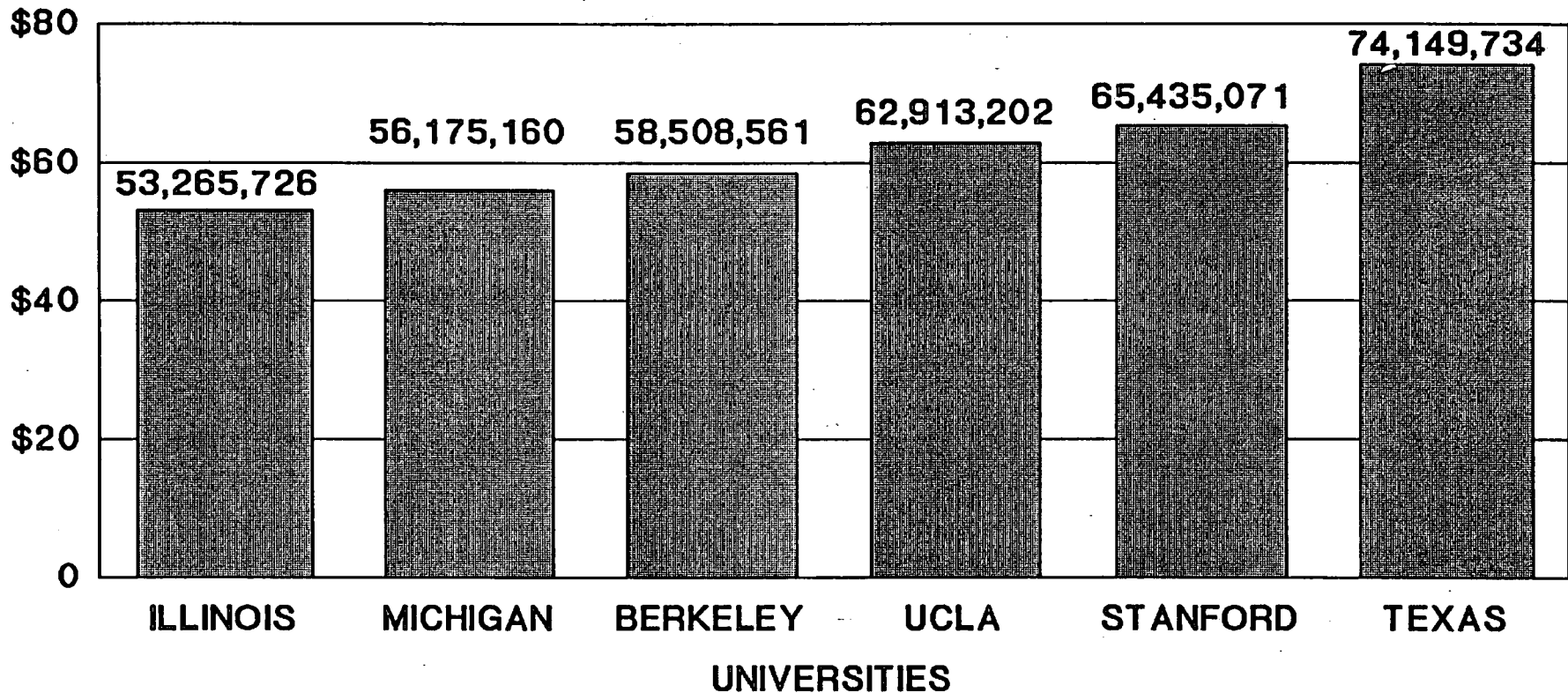
the library's material budget. Microelectronics, biotechnology, supercomputing, artificial intelligence, cognitive science, music, and Western European studies lead these high-growth areas. With continued inadequate funding in these and other highly technical fields the UIUC Library collection has lost ground relative to collections at several peer institutions. Figure 10 illustrates that from FY 1969 through FY 1987 the University of Michigan, the University of Texas, Stanford University, the University of California at Los Angeles and the University of California at Berkeley have devoted more funds to acquiring library materials than has UIUC. The prestige of the internationally acclaimed UIUC library will decline if it is unable to meet the research and instructional needs of its faculty, students, and users throughout the State of Illinois. The incremental funds requested for FY 1990 will be focused toward increasing material demands and toward reversing the imbalance between serials and monographic publications.

If the budgetary stress described continues for the Libraries, it will affect students and faculty alike. Research resources will be diminished, damaging the quality of education which University students receive, and making the University of Illinois a less attractive option for productive scholars in all disciplines. The Libraries' ability to serve as State-wide resources will also diminish, impacting educational and research activities throughout Illinois. Not only must the FY 1990 budget provide adequate resources to maintain and to enhance current acquisition rates, but a significant element of recovery from past losses should be introduced if the quality of this crucial educational resource is to be maintained. In order to begin the process of recovery \$1.3 million is being requested, in FY 1990, \$500,000 for UIC and \$800,000 for UIUC, to help restore the acquisitions budget to an appropriate level.

FIGURE 10

CUMULATIVE LIBRARY MATERIAL EXPENDITURES FY 1969-FY 1987

DOLLARS IN MILLIONS



Budget Summary of Initiatives at Chicago

| | | |
|----------------------------------|----|----------------|
| 1.00 FTE Academic Staff | \$ | 25,000 |
| 2.00 FTE Nonacademic Staff | | 25,000 |
| Wages | | 100,000 |
| Monographs, Serials, and Binding | | 250,000 |
| Expenses | | <u>100,000</u> |
| TOTAL | \$ | 500,000 |

Budget Summary of Initiatives at Urbana-Champaign

| | | |
|----------------------------------|----|---------|
| Monographs, Serials, and Binding | \$ | 800,000 |
|----------------------------------|----|---------|

EXPANDED/IMPROVED PROGRAMS
VI. ACADEMIC AND INSTITUTIONAL SUPPORT SERVICES

ACADEMIC AND INSTITUTIONAL SUPPORT SERVICES
(\$1,900,000)

Over the past decade, the expansion of University of Illinois programs and its physical plant has forced support service units (those units that exist primarily to provide required and specialized services to the University's academic community) to dramatically increase their range and level of services. At the same time, budget constraints affecting the entire University have been felt most severely in the support and service areas. Steadily increasing monitoring and reporting requirements imposed at the State and Federal levels have consumed ever larger amounts of time and energy from current staff. The initiatives that follow highlight some of the most pressing support needs of each campus. These range from expansion of student services support, to enhancements of ancillary academic support services, to augmentation of support services which provide a safe and secure environment in which the University's students, faculty, and staff can most productively live, learn, and work.

Areas such as Environmental Health and Safety are highlighted because both campuses are faced with a rapid increase in research efforts involving potentially hazardous materials, as well as increasing costs and regulations associated with the handling and disposal of these materials. Security units at each campus are faced with the need for increased security patrols as a result of campus expansion and growing theft rates that stem in part from expanded acquisitions of computer equipment.

Safety and Security Activities

Safety on and about campus is of paramount consideration to students, faculty, and staff. The physical growth of each campus requires an expansion of the level of security provided by unarmed security patrols, police officers, and modern communications equipment. Without an adequate number of personnel to patrol the campus and its surroundings, security is jeopardized and the performance and morale of students, faculty, and staff deteriorate.

Augmentation of present police personnel to meet the security demands posed by the opening of the Student Resident Hall and Commons at UIC and a

variety of new buildings on the north campus at UIUC is imperative. In addition, the broad introduction of computer hardware and software across the campuses substantially increases the University's exposure to loss through thefts, burglary, fire, and other hazards. To assist in combating this increased exposure, the University proposes a low-cost approach to expanding the security force: the initiation of a late-night patrol program consisting of unarmed security guards who will work each night from 11:00 p.m. to 7:00 a.m. In addition extra daytime patrols during University break periods will give more intensive coverage to campus laboratories and buildings during these times of reduced building occupancy.

Malfunction and failures of outdated and worn communications and alarm monitoring systems pose a threat to the University community and to police personnel. Present equipment was adequate 20 years ago; but in those 20 years the equipment has aged and the campuses have expanded. There is a significant need to upgrade to sophisticated security devices, such as computerized entry systems that are readily available at reasonable prices.

Extremely high and dramatically increasing costs make it imperative to have a well-managed, safe, and cost-effective program for the disposal of radioactive waste materials that are produced as a result of the University's research and clinical efforts. Incremental funds are necessary to augment existing resources to minimize the quantity of waste held in storage, and to dispose of the waste in a safe, routine, timely, and cost-effective manner.

Disposal of the waste (appropriate packaging, shipping by a licensed carrier, and ultimate disposal at a licensed facility) is governed by University policy as well as an increasingly complex set of Federal, State, and local laws. Until recent years, the cost of disposal was \$1 to \$2 per cubic foot. However, heightened national concerns about nuclear waste disposal have ballooned current costs to over \$45 per cubic foot. Federal surcharges will increase this to nearly \$90 per cubic foot in 1990.

An aggressive waste-management program to use all safe, legal, and practical means of volume reduction has been initiated on a small scale, but needs to be expanded. This program includes separation of long- from short-lifetime wastes, on-site storage and disposal of decayed short-lifetime wastes, and the compaction and shipping of only long-lifetime wastes. The program has the potential to reduce the annual hazardous waste

volume of the University by over 60%, with a corresponding reduction in shipping and storage charges.

Expanded Student Services Activities

Particularly at the Chicago campus, enrollment management and planning has become a critical concern. The changing demographics described in the Minority Access request, combined with widespread institutional choice for commuters in the greater Chicago area, have made efforts to attract and retain an appropriate mix of students an uphill battle. Coordinated and expanded recruiting, advising, orientation, and retention efforts need to be enhanced.

The proliferation of externally mandated reporting requirements placed on the University of Illinois by both State and Federal agencies is causing a critical overload on the staffs of a number of University service units. For example, the administration of student financial aid is influenced by both internal and external policy changes in requirements and procedures. These changes usually necessitate computer programming alterations, revision and updating of student information materials, retraining of staff at all levels, the coordination with other units impacted by these changes, and ever increasing demands to counsel with the affected students.

Financial aid counselors perform the validation and verification of student files to evaluate aid eligibility and prepare all necessary supporting documents. The workload of each counselor has increased markedly in the last two years due to changes in Federal and State regulations requiring an increasing number of validations and to an increased demand for financial aid services. For example, in FY 1984 validations were required for less than one-third of Pell award recipients, but in FY 1986 two-thirds required validations. Additionally, beginning in FY 1987, all guaranteed loan applications required validation.

In addition to performing validations, financial aid counselors advise students, parents, high school counselors, and the general public regarding more general matters of financial aid through individual conferences, telephone conversations, and group sessions. The fact that each application for any form of financial aid now requires approximately 50% more time to complete than three years ago, has resulted in not only a serious backlogging of financial aid applications, but also in significantly

lengthened periods of anxiety for each applicant. The addition of academic professional staff will alleviate this backlog and allow all financial aid counselors to begin resumption of many of the outreach activities which have been necessarily curtailed over the past two years.

Budget Summary of Initiatives at Chicago

| | | |
|--------------------------|----|---------------|
| 15 FTE Academic Staff | \$ | 350,000 |
| 10 FTE Nonacademic Staff | | 300,000 |
| Expenses | | 200,000 |
| Equipment | | <u>50,000</u> |
| TOTAL | \$ | 900,000 |

Budget Summary of Initiatives at Urbana-Champaign

| | | |
|-------------------------|----|---------------|
| 5 FTE Academic Staff | \$ | 175,000 |
| 8 FTE Nonacademic Staff | | 150,000 |
| Wages | | 350,000 |
| Expenses | | 275,000 |
| Equipment | | <u>50,000</u> |
| TOTAL | \$ | 1,000,000 |

EXPANDED/IMPROVED PROGRAMS
VII. UNIVERSITY OF ILLINOIS HOSPITAL

UNIVERSITY OF ILLINOIS HOSPITAL
(\$5,000,000)

In the FY 1989 budget request, the University of Illinois requested \$5 million in incremental support for the University of Illinois Hospital (UIH) to reduce the financial instability resulting from: (1) recent changes in the Medicare/Medicaid reimbursement program and, (2) the increasing population of medically indigent patients to whom the Hospital provides services. In their budget recommendations to the Governor, the Illinois Board of Higher Education (IBHE) provided for \$3 million of support in FY 1989. However, the University's appropriation process has been completed; and there are no incremental dollars allocated to UIH for FY 1989.

As represented in past University budget requests and IBHE recommendations, there is no question of the need to support UIH in its multifold mission of providing instructional and research support for the education of health professions students while concurrently serving a growing number of Illinois citizens unable to meet the costs of their medical treatments. Currently, there are three very significant issues that the administration of the University and UIH must face in order to maintain its mission.

The most significant issue is the restoration of UIH to a position of financial stability. Since FY 1986, the hospital's cash balance has deteriorated to a projected deficit of between \$10 and \$12 million at the end of FY 1988. Throughout this period there has been a continued effort on the part of UIH to control expenditures while increasing revenues as much as possible. Since FY 1986, the administration of UIH has reduced cash expenditures by more than \$14 million; however, at the same time, cash receipts have stayed relatively constant and it is expected that UIH will end FY 1988 with a positive cash flow of approximately \$100,000 for the year.

Secondly, the need for additional equipment acquisitions must be addressed. In reducing hospital expenditures over the past two years, a large portion of the budget cuts have affected equipment purchases. This has been a sound financial decision to solve a short term crisis. However, as time goes on and current equipment is not replaced with new technologies, it is clear that both the academic mission to instruct the health

professionals of the future and the provision of quality health care to patients will suffer.

Another increasingly severe problem for the entire health care industry is the rapidly increasing cost of medical liability insurance. UIH has not been an exception to these increasing costs. Professional liability coverage represents an area where reduction or even management of expenditures has been, for all practical purposes, outside the control of hospital or University officials with costs driven instead by market forces affecting the entire hospital industry.

These special budget needs involving the provision of high quality medical instruction to health professions students and patient care to a financially disadvantaged population of Illinois citizens require that continuing attention be devoted to the University Hospital. For FY 1990, an increment of \$5 million is requested.

SPECIAL SERVICES FUNDING

SPECIAL SERVICES FUNDING
(\$673,400)

The University of Illinois provides a variety of special services to the citizens of the State of Illinois. Three of those service areas, the Division of Services for Crippled Children, the County Board Matching program, and the Fire Service Institute, require incremental funding in FY 1990.

Division of Services for Crippled Children

The major activity of the Division of Services for Crippled Children (DSCC) is the provision and support of medical services to children with special health care needs who meet specified medical eligibility criteria. These criteria are categorical; that is, certain medical and surgical conditions are recognized as eligible for services while others are exempted. As a result of advances in medical knowledge it is clear that certain conditions now ineligible for DSCC services are very closely related, both in origin and management need, to others which are currently considered eligible. Legal counsel has indicated that failure to include these closely related conditions could be considered an arbitrary and capricious act.

DSCC plans to use new incremental funds to extend medical services to children with systemic lupus erythematosus (SLE) and other related disorders which have been excluded in the past, as well as to children with adrenogenital syndrome, now identified by a new Illinois newborn screening program. In addition, DSCC currently provides diagnostic and treatment services to children with a variety of genetic and metabolic conditions reported through the mandated State newborn screening program. On July 1, 1987, a new component of this program began screening all newborns in Illinois for the adrenogenital syndrome. It is anticipated that approximately 300 infants, requiring further evaluation and services, will be discovered each year through this screening program. This follow-up service is an expected collaborative activity by DSCC and is significant to the success of the State newborn screening program.

Expansion of eligibility criteria to include all presentations of SLE and closely related disorders will increase DSCC's costs for direct support by approximately \$130,000 annually. The added costs to DSCC brought about by the expansion of the State newborn screening program will amount to at least \$117,000 (300 cases x \$390 per evaluation and follow-up). Thus, total incremental funding needed for FY 1990 totals \$250,000.

County Board Matching

Under the County Cooperative Extension Law of 1963, amended in 1979, the State, through the University of Illinois, is required to provide appropriations from the Agriculture Premium Fund (APF) to match allocations from county sources in support of County Extension work. The State money now supplements county funds at a dollar for dollar matching rate, a change from the one-third State match in earlier years shown in Table 11.

County or multicounty extension councils are established according to guidelines approved by the University of Illinois Board of Trustees. The councils submit budgets to the appropriate county governing board. The county executive councils forward proposed county or multicounty budgets to the Director of the University of Illinois Cooperative Extension Service for review and approval. Local funds are paid to the University of Illinois to be held in county trust accounts and are used with the APF matching funds in a manner consistent with the approved budgets. Trust funds are used to pay costs such as rent, utilities, some salaries for extension personnel, program materials, and local travel of the more than 100 County Extension officers.

Recent increases in tax levies helping to support agricultural programs in several counties have made more county revenues available in FY 1988 than were anticipated. To further exacerbate this problem, in FY 1988 there were fewer State dollars available to match county sources than in FY 1987 due to the General Assembly's approving no increment in APF funding and the Governor's subsequent line item veto reduction of APF funding by 4%.

Incremental funds for FY 1990 are requested in the amount of \$250,000 to match anticipated increasing revenues from Illinois counties. The incremental amount requested for FY 1990 represents an 8% increase in the State matching contribution over the expected FY 1989 level.

TABLE 11
AGRICULTURE PREMIUM FUND COUNTY BOARD MATCHING

| <u>Budget Year</u> | <u>County Sources</u> | <u>APF State Match</u> | <u>Change in APF Allocations</u> | <u>Total</u> |
|------------------------|---------------------------|----------------------------|--------------------------------------|--------------|
| 1978-79 | \$2,351,400 (75%) | \$ 783,800 (25%) | | \$3,135,200 |
| 1979-80 | 2,539,500 (70%) | 1,088,300 (30%) | \$304,500 | 3,627,800 |
| 1980-81 | 2,546,700 (65%) | 1,371,300 (35%) | 283,000 | 3,918,000 |
| 1981-82 | 2,550,000 (60%) | 1,700,000 (40%) | 328,700 | 4,250,000 |
| 1982-83 | 2,600,000 (55%) | 2,127,300 (45%) | 422,300 | 4,727,300 |
| 1983-84 | 2,800,000 (50%) | 2,800,000 (50%) | 672,700 | 5,600,000 |
| 1984-85 | 2,845,000 (50%) | 2,845,000 (50%) | 45,000 | 5,690,000 |
| 1985-86 | 2,990,000 (50%) | 2,990,000 (50%) | 145,000 | 5,980,000 |
| 1986-87 | 2,997,300 (50%) | 2,997,300 (50%) | 7,300 | 5,994,600 |
| 1987-88 | 2,877,300 (50%) | 2,877,300 (50%) | (120,000) | 5,754,600 |
| 1988-89 | 3,327,300 (50%) | 3,327,300 (50%) | 450,000 | 6,654,600 |
| 1989-90 | 3,577,300 (50%) | 3,577,300 (50%) | 250,000 | 7,154,600 |

Illinois Fire Service Institute

Since the passage of the Illinois Fire Service Institute Act (Public Act 81-1147, effective July 1, 1980), the University of Illinois has received a direct appropriation from the Fire Prevention Fund for the operation of the Institute. Previously, monies had been received through a contract with the Office of the Illinois State Fire Marshal. The monies received from the Fire Prevention Fund are used for four major purposes:

1. To continue conducting programs of training and education for paid and volunteer fire fighters and officers on campus, and at regional and local sites throughout Illinois.
2. To provide adequate teaching and training facilities for the Institute.
3. To permit program growth and improvement.
4. To make transfers to the debt service fund to return the bonds issued to build the facility completed in July, 1988.

Additional incremental funds for FY 1990 will be required to meet anticipated salaries and operational costs. Based upon current revenue projections, growth of the Fire Prevention Fund for FY 1990 is estimated to be about 5%, increasing the total fund to approximately \$10.5 million. The University of Illinois' share of the fund (1/8) would be \$1,309,200. The FY 1989 appropriation is expected to be \$1,135,800, resulting in a total increment of \$173,400 needed for FY 1990.

APPENDICES

APPENDIX I

RETIREMENT
(\$106,772,500)

The level of funding of the State Universities Retirement System has been a source of significant concern during the past several years. Although legislation passed in 1967 requires that annual appropriations for the System cover the projected costs of future benefits plus interest on the System's existing unfunded liability (i.e., future pension costs for employees still working), this statutory level of funding has never been reached and, in effect, part of the State's obligation to cover the retirement costs of current employees has been shifted to future years.

There was, however, some movement towards an improved level of retirement funding from FY 1979 through FY 1981. In each of those years the State's contribution was at or above the "gross payout" level of funding--covering all of that year's benefits and administrative expenses. The System was then able to add all employee contributions, as well as interest and dividend income, to the System's assets to help offset the costs of future benefits earned by current employees.

This improved funding was, unfortunately, short-lived. As the State's economy worsened, so did funding for the Retirement System. From FY 1982 through FY 1988 funding dropped significantly below the "gross payout" level. While these reductions were seen as necessary to prevent disastrous cuts in operating funds, the State has in effect been borrowing against the future. Eventually the State will have to compensate for these cuts; the longer it waits to meet these obligations, the more it will cost and the greater the impact on all sectors of the higher education operating budget, including the University of Illinois.

It is a matter of long-standing policy of the Board of Trustees of the University of Illinois that the request for incremental funds for Retirement be set at the amount needed to achieve the statutory funding level. The University's FY 1989 Retirement appropriation is \$36,203,500. Based on data from SURS, the estimated statutory level for FY 1990 is \$142,976,000. Therefore, an increment of \$106,772,500 would be required to meet this target for FY 1990.

At the same time, it is evident that an increment of this magnitude is unrealistically large to achieve in a single year. Recent studies of the overall health of the State Universities Retirement System indicate that achieving a funding level equal to 60% of the "gross payout" benchmark would begin to achieve a measure of fiscal stability for the System and would represent a considerable improvement over the current 44% of "gross payout" level of support. Meeting the 60% benchmark for FY 1990 would require an increment of approximately \$37 million for all of higher education; and achieving this benchmark should be regarded as an essential first step in returning fiscal stability to Retirement funding. The fiscal soundness of the Retirement System is an issue of considerable importance to the institution and its staff, and the University will continue to analyze the State's funding of the System on a regular basis.

**BASES AND CALCULATIONS FOR
FY 1990 CONTINUING COMPONENTS INCREASES
(Dollars in Thousands)**

I. Compensation Improvement

A. Salary Increase

| | | |
|--|---|-------------|
| 1. FY 1989 Personal Services Base | : | \$438,148.7 |
| 2. 95% of the Base | : | \$416,241.3 |
| 3. FY 1990 Percentage Increase | : | 9.00% |
| 4. FY 1990 Increase (on 95% of the Base) | : | \$37,461.7 |

B. Fringe Benefits Improvement

| | | |
|--|---|-----------|
| 1. FY 1990 Percentage Increase | : | 2.00% |
| 2. FY 1990 Increase (on 95% of the Base) | : | \$8,324.8 |

C. Medicare Costs

| | | |
|--|---|-----------|
| 1. FY 1989 Base | : | \$1,108.4 |
| 2. FY 1990 Increase for Salary Increases | : | \$99.8 |
| 3. FY 1990 Increase for Turnover (5%) | : | \$317.7 |
| 4. FY 1990 Total Increase | : | \$417.4 |

II. General Price Increases

| | | |
|--------------------------------|---|------------|
| A. FY 1989 Base | : | \$77,452.4 |
| B. FY 1990 Percentage Increase | : | 6.00% |
| C. FY 1990 Increase | : | \$4,647.1 |

D. Note: The General Price Increase Base includes the following objects of expenditure: Contractual Services, Travel, Commodities, Equipment, Telecommunication Services, Operation of Automotive Equipment, Permanent Improvements, Awards & Grants, Hospital and Medical Services and Appliances, CES Expenses, the Prairie State Games, and the Veterinary Medicine Diagnostic Laboratory.

III. Utilities Price Increase

| | | |
|--------------------------------|---|------------|
| A. FY 1989 Base | : | \$36,730.4 |
| B. FY 1990 Percentage Increase | : | 7.80% |
| C. FY 1990 Increase | : | \$2,870.0 |

IV. Library Price Increase

| | | |
|--------------------------------|---|-----------|
| A. FY 1989 Base | : | \$8,015.3 |
| B. FY 1990 Percentage Increase | : | 25.00% |
| C. FY 1990 Increase | : | \$2,003.8 |

FISCAL YEAR 1990 CAPITAL BUDGET REQUEST

FY 1990 CAPITAL BUDGET REQUEST

Introduction

While much attention has been focused during the past year on the immediate fiscal difficulties which impede the University's ability to attract and retain top-quality faculty and staff, it is critical to emphasize that both short-term and long-term facility inadequacies pose no less severe a threat to the quality of the University's teaching and research programs. Both campuses are plagued by significant shortages of modern space in which scientists and scholars can work and students can learn. Some aged University facilities must be replaced. Other space must be renovated to provide the physical resources to support state-of-the-art academic programs. Projects now underway must be completed; but it is equally important that new projects be undertaken to ensure that steady progress is made on an overall facilities problem which will require a decade of sustained attention to eliminate.

This request is composed of three major sections: regular capital projects, repair and renovation projects, and energy conservation projects.

Regular Capital Projects

Several moveable equipment projects requested but not funded in FY 1989 are essential to complete major new buildings now under construction. These include the Engineering Research Facility on the Chicago campus, and the Beckman Institute, the Digital Computer Laboratory Addition, the Microelectronics Center, and the Swine Research Center on the Urbana-Champaign campus. Equipment is also required for the Environmental Sciences Building remodeling project, originally funded in FY 1986. Timing is a critical aspect of this request, because the funds must be appropriated and the equipment ordered and delivered in time to furnish and equip the buildings as they are completed.

Upgrading facilities through new construction or major remodeling continues to be a high priority at both campuses for FY 1990. Of the \$70.2 million need described in the regular capital portion of this request, \$32.7 million or approximately 47% is devoted to remodeling projects.

Equally important in the request, planning funds of \$9.1 million (13%) for new construction projects, representing approximately \$190 million in future needs, are also included for FY 1990. These two categories comprise 60% of the regular capital request and represent a critical portion of the backlog of University initiatives designed to renovate, upgrade, and expand current facilities to meet new instructional and research space requirements.

The FY 1990 planning projects are not included on the University's priority list, but are shown separately on Table 1A. In recent years, the State of Illinois has conducted a capital improvement program that emphasizes limiting the State's bonded indebtedness while also providing incentives to entice the Federal government to locate the Superconducting Super Collider in Illinois. Pursuit of these objectives, while important in a Statewide context, has seriously limited the availability of new construction funding for higher education. As a result, the University is treating these planning projects separately from the other categories of regular capital projects in order to emphasize their critical importance while not detracting from equally serious needs for other types of projects.

The FY 1990 capital request has been reviewed by campus and University officials and by the University Planning Council. At both the Chicago and the Urbana-Champaign campuses, the regular capital request emphasizes the advancement of research in science and engineering disciplines. Although substantial funding has been obtained for high technology initiatives in the past, additional funding is necessary to continue the progress which the State has made in providing a "critical mass" of facilities that can help to propel the State into stable, long-term economic growth.

The 22 projects that comprise the University's FY 1990 regular capital request are displayed in Tables 1 and 1A. Complete descriptions of the projects are included in the section which follows this introduction.

To understand the direction and emphasis of the FY 1990 request, it is important to view the request in the context of past capital appropriations. The tables which immediately follow this introduction summarize the regular capital request and provide an update of current and historical capital appropriation activities. More specifically, in addition to the project lists in Tables 1 and 1A, Table 2 provides a breakdown of the request by budget category and by campus; Table 3 illustrates the financial

impact of the FY 1990 projects for future year requirements; and Table 4 details the cost per square foot that is anticipated for new buildings and major remodeling projects requested for FY 1990. Table 5 provides a summary of actions on capital budget requests from FY 1985 through the FY 1989 appropriation, and Table 6 shows the construction status of recent appropriations through FY 1988.

The projects currently included in the FY 1989 capital appropriation bills are shown below along with their proposed funding levels.

Regular Capital

Chicago

| | |
|---------------------------------------|--------------|
| Clinical Sciences Building Remodeling | \$ 9,547,900 |
| Asbestos Abatement | 3,030,000 |

Urbana-Champaign

| | |
|--------------------------------|----------------|
| Utility Infrastructure Upgrade | \$ 2,470,000 |
| Asbestos Abatement | <u>600,000</u> |

| | |
|-----------------------|--------------|
| TOTAL Regular Capital | \$15,647,900 |
|-----------------------|--------------|

Pending final gubernatorial and legislative actions, only the University's first and second priority projects, the Clinical Sciences Building Remodeling and the Utility Infrastructure Upgrade, are included in appropriation legislation for FY 1989. The need for new and remodeled facilities continues to rank high on the list of the University's unmet budget needs for FY 1990. Critical projects which address renovation needs are backlogged and urgently require attention, along with the construction of new facilities to replace outmoded and unusable buildings and to support the expansion of a number of programs important to the State's overall economic development.

Repair and Renovation Projects

Appropriations for the Build Illinois Repair and Renovation program provided the University with \$7.8 million annually in FY 1986, FY 1987, and FY 1988. This program provided the University with a critical source of support for repair and renovation projects. With the loss of operating budget funds which in past years have been available for repair and renovation needs, and with funding for the Build Illinois program suspended in FY 1989, some other source of funds for this critical need must be found.

The delay of even a single year of funding will cause great disruption to the University's repair and renovation program: phased projects will be interrupted, planning funds will have been spent with no tangible results, and space assignments and reassignments will be thrown into disarray. The University is therefore requesting \$7.95 million for FY 1990 to provide a new source of support for repair and renovation needs. This sum includes \$7.834 million for the actual projects and \$116,000 for the 1.5% fee the Capital Development Board now imposes on all contracts it administers.

The types of projects that have been included in the Build Illinois request in the past are proposed again for FY 1990 under this repair and renovation program. They include the realignment of space to meet changing programmatic needs, the remodeling of space to restore old or heavily worn facilities, and the replacement of building and campus utility systems. This program would allow each campus a measure of flexibility uncharacteristic of the regular capital funding process. The project lists included in this request are summarized on Table 7; as in past years, these lists may undergo minor changes in terms of the specific projects to be funded or in the elements a project will include, depending on the priorities which are most critical to the University at the time that the funds become available.

Energy Conservation Projects

Since FY 1982, the University has been requesting funding from the U.S. Department of Energy's Institutional Building Grants program for energy conservation capital improvements. These grants have been matched by the State on a one-for-one basis. Capital appropriation bills for FY 1989 include State matching funds of \$255,300 for the Chicago campus and \$234,300 for the Urbana-Champaign campus. This year, the University is requesting \$612,120 in State funds to match a Federal grant of \$612,112 for 20 energy conservation capital improvement projects. The specific projects requested are listed on Table 8.

TABLE 1
UNIVERSITY OF ILLINOIS
FY 1990 CAPITAL BUDGET REQUEST
PRIORITY LIST
(Dollars in Thousands)

| Priority | Campus | Project | Budget Category | FY 1990 Request | Cumulative Cost | | |
|----------|--------|--|--------------------|--------------------|-----------------|------------|------------|
| | | | | | University | Chicago | Urbana |
| 1 | C/U | University Critical Equipment | EQUIP | \$10,487.0 | \$10,487.0 | \$ 6,122.5 | \$ 4,364.5 |
| 2 | U | English Building Remodeling - Phase 3 | REMD | 3,760.0 | 14,247.0 | | 8,124.5 |
| 3 | C | Alumni Hall Remodeling - Phase 2 | REMD | 4,597.0 | 18,844.0 | 10,719.5 | |
| 4 | U | Util. Infrastruct. Upgrade/Water System Improve. | UTIL | 4,030.0 | 22,874.0 | | 12,154.5 |
| 5 | U | Noyes Laboratory Remodeling | REMD | 2,233.0 | 25,107.0 | | 14,387.5 |
| 6 | C/U | University Land Acquisition & Development | LAND/SITE | 4,800.0 | 29,907.0 | 13,919.5 | 15,987.5 |
| 7 | * | Administrative Computing Electrical Improve. | UTIL | 2,107.0 | 32,014.0 | 16,026.5 | |
| 8 | C | Assoc. Health Professions Bldg. Remd. - Phase 1 | REMD | 6,868.0 | 38,882.0 | 22,894.5 | |
| 9 | U | Campus Site Improvements | SITE | 2,690.0 | 41,572.0 | | 18,677.5 |
| 10 | U | Mechanical Engineering Laboratory Remodeling | REMD | 3,958.5 | 45,530.5 | | 22,636.0 |
| 11 | U | Campus Police Station | BLDG/UTIL | 2,064.0 | 47,594.5 | | 24,700.0 |
| 12 | C | College of Medicine West Tower Remd. - Phase 1 | REMD | 9,445.5 | 57,040.0 | 32,340.0 | |
| 13 | U | Engineering Hall Remodeling | PLAN | 233.5 | 57,273.5 | | 24,933.5 |
| 14 | U | Plant & Animal Biotechnology Laboratory | EQUIP | 1,522.5 | 58,796.0 | | 26,456.0 |
| 15 | C | Pharmacy Building Remodeling - Phase 2 | REMD | 1,847.0 | 60,643.0 | 34,187.0 | |
| 16 | U | Storm & Sanitary Sewer System Improvements | UTIL | 447.0 | 61,090.0 | | 26,903.0 |

*Because this project serves the needs of both the Chicago and Urbana-Champaign campuses, the cost may be applied on an equal basis to both. For the purpose of this table, the entire project cost will be included under Chicago.

TABLE 1A
UNIVERSITY OF ILLINOIS
FY 1990 PLANNING FOR NEW BUILDINGS
(Dollars in Thousands)

| <u>Campus</u> | <u>Project*</u> | <u>FY 1990 PLAN</u> | <u>Costs for FY 1991 & Beyond</u> | |
|------------------|---|-------------------------|---------------------------------------|----------------|
| Chicago | | | <u>BLDG/UTIL</u> | <u>EQUIP</u> |
| | Architecture and Art Building Additions | \$ 785.5 | \$ 14,242.0 | \$ 1,250.0 |
| | College of Business Administration Building | 1,147.0 | 21,324.0 | 1,250.0 |
| | Molecular Biology Research Laboratory | <u>1,966.0</u> | <u>39,167.0</u> | <u>2,500.0</u> |
| | TOTAL, Chicago | \$3,898.5 | \$ 74,733.0 | \$ 5,000.0 |
| Urbana-Champaign | | | | |
| | Chemical Sciences Research Laboratory | \$1,851.0 | \$ 35,983.0 | \$ 3,000.0 |
| | Electrical Engineering Research Laboratory | 1,726.0 | 33,318.0 | 1,500.0 |
| | Life Sciences Research Laboratory | <u>1,680.0</u> | <u>32,701.0</u> | <u>2,500.0</u> |
| | TOTAL, Urbana-Champaign | \$5,257.0 | \$102,002.0 | \$ 7,000.0 |
| | TOTAL, University of Illinois | \$9,155.5 | \$176,735.0 | \$12,000.0 |

*Projects are arranged alphabetically, by campus. Priority assignments will be made as the opportunity to include planning projects within the State's capital budget program becomes available.

TABLE 2
UNIVERSITY OF ILLINOIS
FY 1990 CAPITAL BUDGET REQUEST
SUMMARY BY CAMPUS AND CATEGORY
(Dollars In Thousands)

| <u>Category</u> | <u>Chicago</u> | <u>Urbana-Champaign</u> | <u>Total</u> |
|---|----------------|-------------------------|----------------|
| Buildings, Additions, and/or Structures | | \$ 2,024.0 | \$ 2,024.0 |
| Land Acquisition | \$ 1,600.0 | 1,600.0 | 3,200.0 |
| Moveable Equipment | 6,122.5 | 5,887.0 | 12,009.5 |
| Utilities | 2,107.0 | 4,517.0 | 6,624.0 |
| Remodeling | 22,757.5 | 9,951.5 | 32,709.0 |
| Site Improvements | 1,600.0 | 2,690.0 | 4,290.0 |
| Planning | <u>3,898.5</u> | <u>5,490.5</u> | <u>9,389.0</u> |
| TOTAL | \$38,085.5 | \$32,160.0 | \$70,245.5 |

TABLE 3
UNIVERSITY OF ILLINOIS
FUTURE FUNDING IMPLICATIONS OF THE
FY 1990 CAPITAL BUDGET REQUEST
(Dollars in Thousands)

| Priority | Campus | Project | Budget Category | FY 1990 Request | FY 1991 Costs | Cost for FY 1992 and Beyond |
|----------|--------|--|--------------------|--------------------|------------------|--------------------------------|
| 1 | C/U | University Critical Equipment | EQUIP | \$10,487.0 | | |
| 2 | U | English Building Remodeling - Phase 3 | REMD | 3,760.0 | \$ 690.0 | \$ 4,650.0 |
| 3 | C | Alumni Hall Remodeling - Phase 2 | REMD | 4,597.0 | 750.0 | 3,970.0 |
| 4 | U | Util. Infrastruct. Upgrade/Water System Improve. | UTIL | 4,030.0 | | |
| 5 | U | Noyes Laboratory Remodeling | REMD | 2,233.0 | | 4,070.0 |
| 6 | C/U | University Land Acquisition & Development | LAND/SITE | 4,800.0 | | |
| 7 | C/U | Administrative Computing Electrical Improve. | UTIL | 2,107.0 | | |
| 8 | C | Assoc. Health Professions Bldg. Remd. - Phase 1 | REMD | 6,868.0 | 6,412.6 | |
| 9 | U | Campus Site Improvements | SITE | 2,690.0 | 950.0 | |
| 10 | U | Mechanical Engineering Laboratory Remodeling | REMD | 3,958.5 | 700.0 | |
| 11 | U | Campus Police Station | BLDG/UTIL | 2,064.0 | 50.0 | |
| 12 | C | College of Medicine West Tower Remd. - Phase 1 | REMD | 9,445.5 | 3,825.0 | 24,009.0 |
| 13 | U | Engineering Hall Remodeling | PLAN | 233.5 | 2,300.0 | 2,300.0 |
| 14 | U | Plant & Animal Biotechnology Laboratory | EQUIP | 1,522.5 | 1,522.5 | |
| 15 | C | Pharmacy Building Remodeling - Phase 2 | REMD | 1,847.0 | 1,605.0 | 1,412.0 |
| 16 | U | Storm & Sanitary Sewer System Improvements | UTIL | 447.0 | | |
| TOTAL | | | | \$61,090.0 | \$18,805.1 | \$40,411.0 |

TABLE 4
UNIVERSITY OF ILLINOIS
FY 1990 CAPITAL BUDGET REQUEST
COST PER SQUARE FOOT OF NEW BUILDING AND MAJOR REMODELING PROJECTS BY CAMPUS

| | <u>Project Cost*</u> | <u>Gross Square Feet</u> | <u>Net Assignable Square Feet</u> | <u>Efficiency NASF/GSF</u> | <u>\$/GSF</u> | <u>\$/NASF</u> |
|------------------------------------|--------------------------|------------------------------|---------------------------------------|--------------------------------|---------------|----------------|
| <u>Chicago</u> | | | | | | |
| Major Remodeling | | | | | | |
| Alumni Hall - Phase 2 | \$4,597,000 | | 21,455 | | | \$214.26 |
| Assoc. Health Professions Bldg. | 6,868,000 | | 107,500 | | | 63.89 |
| College of Med. W. Tower - Phase 1 | 9,445,500 | | 121,800 | | | 77.55 |
| Pharmacy Building - Phase 2 | 1,847,000 | | 16,800 | | | 109.94 |
| <u>Urbana-Champaign</u> | | | | | | |
| New Buildings | | | | | | |
| Campus Police Station | \$2,064,000 | 11,485 | 6,575 | .57 | \$179.71 | \$313.92 |
| Major Remodeling | | | | | | |
| English Building - Phase 3 | \$3,760,000 | | 22,500 | | | \$167.11 |
| Noyes Laboratory | 2,233,000 | | 111,486 | | | 20.03 |
| Mechanical Engineering Laboratory | 3,958,500 | | 48,083 | | | 82.33 |

*Project cost includes planning, construction, and utilities but excludes moveable equipment.

TABLE 5
HISTORY OF RECENT CAPITAL BUDGET ACTIONS

| | <u>FY 1985</u> | <u>FY 1986</u> | <u>FY 1987</u> | <u>FY 1988</u> | <u>FY 1989</u> |
|--|-------------------|------------------------|-------------------|---------------------|-------------------|
| <u>Campus Requests</u> | | | | | |
| Chicago | \$17,775,400 | \$26,253,500 | \$19,564,400 | \$24,177,000 | \$48,293,200 |
| Urbana-Champaign | <u>23,032,100</u> | <u>18,556,500</u> | <u>39,148,900</u> | <u>33,643,800</u> | <u>30,198,500</u> |
| TOTAL | \$40,807,500 | \$44,810,000 | \$58,713,300 | \$57,820,800 | \$78,491,700 |
| <u>IBHE Recommendations</u> | | | | | |
| Chicago | \$ 4,255,400 | \$11,712,800 | \$ 8,869,100 | \$18,393,000 | \$23,874,500 |
| Urbana-Champaign | <u>10,447,500</u> | <u>9,140,000</u> | <u>29,718,800</u> | <u>18,589,000</u> | <u>17,005,000</u> |
| TOTAL | \$14,702,900 | \$20,852,800 | \$38,587,900 | \$36,982,000 | \$40,879,500 |
| <u>Regular Capital Appropriation¹</u> | | | | | |
| Chicago | \$ 757,700 | \$14,112,800 | \$22,499,900 | | \$12,577,900 |
| Urbana-Champaign | <u>4,378,800</u> | <u>20,045,300</u> | <u>28,817,400</u> | <u>\$ 7,779,000</u> | <u>3,070,000</u> |
| TOTAL | \$ 5,136,500 | \$34,158,100 | \$51,317,300 | \$ 7,779,000 | \$15,647,900 |
| <u>Appropriations for Special Projects</u> | | | | | |
| Food Production Research | \$10,116,100 | \$ 600,000 | | | |
| Energy Conservation | 1,642,100 | | \$ 296,400 | \$ 547,136 | \$ 489,600 |
| Build Illinois R & R | | 7,834,000 | 7,834,000 | 7,834,000 | |
| Build Illinois - Major Projects | | 1,700,000 | 14,500,000 | 2,000,000 | |
| Fire Service Institute | | 2,600,000 ² | | | |
| Beckman Institute | | 10,000,000 | | | |
| Pollution Control Equipment | | | 800,000 | | |
| TOTAL | \$11,758,200 | \$22,734,000 | \$23,430,400 | \$10,381,136 | \$ 489,600 |
| <u>Total Appropriation</u> | | | | | |
| University of Illinois | \$16,894,700 | \$56,892,100 | \$74,747,700 | \$18,160,136 | \$16,137,500 |

¹Excludes appropriations for special projects.

²The Fire Service Institute will make an annual payment of \$218,400 for a period of 24 years to the State of Illinois for debt service associated with this appropriation.

TABLE 6
STATUS OF CAPITAL PROJECTS
FY 1983 - FY 1988
AS OF AUGUST 1988
(Dollars In Thousands)

| | Project Cost | Estimated Completion Date | Status |
|---|-----------------|------------------------------|--|
| FY 1983 Appropriations | | | |
| <u>Urbana-Champaign</u> | | | |
| Abbott Power Plant - Scrubber and Coal Conversion | \$21,900.0 | 1/89 | 80% complete. |
| FY 1983 TOTAL | \$21,900.0 | | |
| FY 1984 Appropriations | | | |
| <u>Chicago</u> | | | |
| Roof Replacement, Peoria College of Medicine | \$ 202.9 | | Complete. |
| Hazardous Waste Incinerator | 457.1 | N/A | Building 98% complete; awaiting EPA approval for equipment. |
| FY 1984 TOTAL | \$ 660.0 | | |
| FY 1985 Appropriations | | | |
| <u>Chicago</u> | | | |
| Pharmacy Bldg. Air-Cond. (planning) | \$ 433.2 | 4/89 | Contract documents. |
| Library Renovation & OAR Relocation (planning) | 324.5 | 5/89 | Construction 50% complete. |
| Energy Conservation | 781.5 | 10/88 | 95% complete. |
| Subtotal | \$ 1,539.2 | | |
| <u>Urbana-Champaign</u> | | | |
| Plant Sciences Greenhouse Complex | \$10,116.1 | | Complete. |
| Animal Sciences Lab Chilled Water Line | 354.6 | | Complete. |
| Roof replacement, various buildings | 524.2 | | Complete. |
| Energy Conservation | 860.6 | 10/88 | 95% complete. |
| Subtotal | \$11,855.5 | | |
| FY 1985 TOTAL | \$13,394.7 | | |
| FY 1986 Appropriations | | | |
| <u>Chicago</u> | | | |
| Pharmacy Building Remodeling & Air-Cond. | \$ 5,218.0 | 4/89 | Contract documents. |
| Office of Admissions and Records Relocation | 1,149.8 | 5/89 | Construction 50% complete (coordinated with Library Renovation). |
| Engineering Research Facility (planning) | 2,400.0 | 9/90 | 100% design review. Contract documents. |
| Library Renovation | 5,345.0 | 5/89 | 50% complete. |
| Build Illinois (R & R) | 3,284.9 | 12/88 | 30% complete. |
| Subtotal | \$17,397.7 | | |

TABLE 6 (cont.)

| | Project Cost | Estimated Completion Date | Status |
|---|-----------------|------------------------------|--|
| <u>Urbana-Champaign</u> | | | |
| Fire Service Institute | \$2,600.0 | 3/89 | Phase I 75% complete; phase II bid awards pending. |
| Swine Research Center | 1,745.3 | 11/88 | Construction underway. |
| Environmental Sciences Building Remodeling | 3,500.0 | 11/89 | Contract documents 50% complete. |
| Digital Computer Lab Addition | 1,100.0 | 6/90 | Construction underway. |
| Animal Sciences Lab Addition (Build Illinois) | 1,000.0 | 4/92 | Contract documents. Preliminary design complete. |
| Microelectronics Center | 13,700.0 | 6/89 | 25% complete. |
| Food for Century III | 600.0 | | Complete. |
| Beckman Institute | 10,000.0 | 1/89 | 50% complete. |
| Build Illinois (R & R) | 4,549.1 | 2/89 | 80% complete. |
| Orr Farm Purchase | 700.0 | 9/88 | 98% complete. |
| Subtotal | \$39,494.4 | | |
| FY 1986 TOTAL | \$56,892.1 | | |
| FY 1987 Appropriations | | | |
| <u>Chicago</u> | | | |
| Engineering Research Facility | \$22,499.9 | 9/90 | 100% design review. Contract documents. |
| Energy Conservation | 296.4 | N/A | Design development. |
| Build Illinois (R & R) | 3,284.9 | 12/88 | Construction underway. |
| Subtotal | \$26,081.2 | | |
| <u>Urbana-Champaign</u> | | | |
| Digital Computer Lab Addition | \$17,417.4 | 6/90 | Construction underway. |
| Utility Infrastructure Upgrade | 9,410.0 | 10/88 | Construction underway. |
| Motor Pool Relocation | 1,990.0 | 9/88 | 80% complete. |
| Build Illinois (R & R) | 4,549.1 | 10/89 | Construction underway. |
| Animal Sciences Lab Addition (Build Illinois) | 14,500.0 | 4/92 | Contract documents. |
| Pollution Control Equipment | 800.0 | | Funds lapsed 7/87. |
| Subtotal | \$48,666.5 | | |
| FY 1987 TOTAL | \$74,747.7 | | |
| FY 1988 Appropriations | | | |
| <u>Chicago</u> | | | |
| Build Illinois (R & R) | \$3,284.9 | N/A | Funds released, 12/12/87 and 3/25/88. |
| Energy Conservation | 458.8 | N/A | Funds released 4/12/88. |
| Subtotal | 3,743.7 | | |
| <u>Urbana-Champaign</u> | | | |
| Build Illinois (R & R) | \$4,549.1 | N/A | Funds partially released, 12/12/87 and 3/25/88. |
| Animal Sciences Lab Addition (Build Illinois) | 2,000.0 | 4/92 | Funds unreleased. |
| Energy Conservation | 88.4 | N/A | Funds released 4/12/88. |
| Federal Research Facility Site Improvement | 1,000.0 | N/A | Funds released 12/1/87. |
| Beckman Institute Equipment | 3,000.0 | 1/89 | Funds released 2/3/88. |
| Utility Infrastructure Upgrade | 3,779.0 | N/A | Funds released 12/4/87. |
| Subtotal | \$14,416.5 | | |
| FY 1988 TOTAL | \$18,160.2 | | |

REGULAR CAPITAL PROJECTS

FY 1990 REGULAR CAPITAL PROJECTS
CHICAGO CAMPUS

University Critical Equipment (\$6,122,500)

The Chicago campus portion of the University Critical Equipment request involves equipment for the Engineering Research Facility. Planning and construction for the Engineering Research Facility were funded in Fiscal Years 1986 and 1987, respectively. The project has undergone 100% design review, and construction is expected to start in August of 1988 with completion scheduled for April 1990. To help meet the moveable equipment needs of this new facility, the University is requesting \$6,122,500 for FY 1990.

Moveable equipment funds approved in FY 1990 are expected to be available for use by October of 1989. This will allow only six months for specifying, ordering, manufacture, and delivery of furnishings and equipment needed for this new facility. However, a substantial portion of the equipment required has a lead-time greater than six months. Therefore, any further delay in funding the moveable equipment for this facility will set back the date at which the building can be put into use.

Alumni Hall Remodeling - Phase II (\$4,597,000)

Alumni Hall, formerly a garment manufacturing and wholesale warehouse, was purchased in 1980 with endowment funds donated to the University. The building was constructed in two phases, the South Wing in 1910 and the North Wing in 1920. The building contains a total of 154,000 GSF and occupies a strategic site at the north end of campus, immediately adjacent to the major commuter rail and expressway networks into Chicago.

Immediately following its acquisition, some endowment and local funds were used to initiate remodeling to provide office space for Intercollegiate Athletics, the Alumni Association, the University of Illinois Foundation Office, the Office for Capital Programs, the Center for Urban Transportation, the Center for Law and Justice, the Survey Research Laboratory, and the Energy Resources Center. A large part of the south portion of the building has been serving as a temporary warehouse for the Business Office Stores operations, and most of the north portion of the building as office,

classroom, and studio space for the Art and Design programs of the College of Architecture, Art, and Urban Planning. Approximately \$3 million was invested in the purchase and early renovation. In FY 1985, an energy conservation project funded a new chiller to supply chilled water to the existing air-conditioning systems.

Early plans for the Chicago campus included provision of a student services building that was never constructed. For more than 20 years the campus has endured the hardship of dispersed activities while attempting to support a student body in need of extraordinary support services. Many UIC students are on campus only long enough to attend classes. More than three-fourths of the students are employed while attending school, and nearly one-fourth attend classes in the evening. As the number of part-time students has grown, it has become increasingly necessary to create opportunities for students to register for classes, pay tuition, apply for financial aid, and obtain information without having to move from one end of the campus to the other.

In FY 1986, a major renovation project (\$1.15 million) was approved to provide for the relocation of the Office of Admissions and Records and the Office of School and College Relations. This project is the first phase of a major renovation plan to convert the south wing of Alumni Hall to a student services facility to accommodate Student Placement Services, the Dean of Students, Student Financial Aid, Student Employment, Student Legal Services, Student Development Services, Foreign Student and Staff Affairs, Student Accounts Receivable, the Alumni Career Center, and other student service programs. Locating student services staff in one building will create a new student traffic "center" for the campus, thereby enhancing UIC's image in the community. More importantly, it will allow students to obtain assistance and information regarding admissions, student records, financial aid policies, and student development programs without having to traverse the campus during busy periods and evening hours.

To plan effectively for the renovation, the architectural firm of O'Donnel, Wicklund, and Pigozzi was employed to conduct a total building study and develop a "Master Building Renovation Plan." The study, undertaken cooperatively with the Office for Capital Programs, the Physical Plant Department, building users, the College of Architecture, Art, and Urban Planning, and the campus administration, identified building space

use plans, code requirements, building service needs, and building infrastructure requirements. The plan described a three-phase remodeling program of which phase one consists of approved FY 1986 and FY 1987 projects (\$2,456,500), phase two is requested for FY 1990, and a future phase three request is planned for FY 1991.

Key to the building renovation plan is construction of a central service and transportation core; installation of new heating, ventilation, and air-conditioning systems; electrical upgrading; code corrections; window replacement; and structural repairs. These improvements are essential support to the proposed space remodeling. This building renovation plan will provide a desirable facility, strategically located, able to service the long-term needs of the campus.

Upon completion of the consolidation plan, a total of approximately 40,000 square feet of existing office space will be vacated by the student affairs functions for reassignment to the Colleges of Engineering, Liberal Arts and Sciences, Business Administration, the Library, and the campus administration. These space transfers are a critical element of the campus master space plan.

Administrative Computing Electrical Improvements (\$2,107,000)

This project provides for the installation of facilities to generate autonomous emergency electrical power for the Administrative Computer Center located in the Roosevelt Road Building. Power conditioning to computers as well as an uninterrupted power source will be provided, thus eliminating undesirable electrical harmonics and unstable voltage levels. This facility will also provide the standby electrical power necessary to prevent the loss of data that would occur in the event of a power outage of either the local utility company's electrical service or the power distribution network that serves the building.

The project calls for the installation of two complete UPS (uninterrupted power source) units, one with a rating of 400 KVA and the other with 750 KVA, which will provide power for a duration of 15 minutes when the normal power is at fault or lost. The 400 KVA UPS Drive will be wired to the Hi-Frequency System and the 750 KVA Drive will support all other computer facilities including the air-conditioners used to cool the computers. These two UPS Drives will be in service at all times; consequently, all

incoming electrical power will be properly filtered by these systems to provide clean power for computer operations.

Furthermore, as part of the project, two diesel engine driven generators with a synchronized controller will be installed to provide full capacity operation when the normal source of electrical power fails. This system will remain in continuous operation until the normal power source is restored.

When completed, this project will provide adequate electrical protection for the University's Administrative Computer Center to guard against sudden loss of power, which could cause both the loss of key data and damage to computing equipment. It will also protect against the loss of power for prolonged periods of time, which could cause serious disruption of all major administrative processes supported by the Computer Center (payroll, purchasing, student record systems, hospital systems, and so on).

University Land Acquisition and Development (\$3,200,000)

At this stage of campus master planning, it is apparent that some property is required to provide for the athletic, physical education, and recreation needs of the Chicago campus. Future developments in the sciences and engineering will also require additional property. The Chicago campus portion of the University Land Acquisition and Development request concerns land which must be acquired quickly before speculation and private development make its acquisition impossible. The cost of vacant land in this area is valued from \$2-\$16 per square foot. The current campus interest is in approximately one million square feet of vacant land. The \$3,200,000 requested must be viewed as a preliminary estimate for acquisition and development of the site pending property appraisals, tax delinquency findings, zoning considerations, and acquisition processing.

Associated Health Professions Building Remodeling - Phase 1 (\$6,868,000)

The College of Associated Health Professions is currently located in several buildings which span a three block area. Communication barriers among faculty, students, and administrators exist on both inter- and intradepartmental levels. Relocating these departments to one building would facilitate greater interdisciplinary collaboration in research and in service. In addition, consolidation would create a more efficient use of

space in the scheduling of classes and conferences, more efficient use of research and teaching equipment, and a substantial reduction in faculty and staff travel time between locations.

The Associated Health Professions Building (formerly the 1919 West Taylor Street Building) experienced a decline in use for patient care programs during the late 1970's, and therefore provides a feasible site for the College of Associated Health Profession's expansion and consolidation. The building is an "H" shaped eight story structure, constructed as a tuberculosis hospital in the early 1950's. The building has approximately 183,000 GSF and 107,500 NASF of space. Since the building was first acquired in June of 1975, the need for a major upgrade has been evident. Some academic projects proposed for this facility have been postponed due to inadequate electrical power, while others have been conducted only through the aid of innovative logistical maneuverings. The requested building upgrade represents a continuing effort to correct facility deficiencies and provide useable facilities for the College of Associated Health Professions.

The Associated Health Professions Building houses a variety of campus programs dependent on this building remodeling including the College of Associated Health Professions, the Family Practice Department and Clinic, the Child Care Center, the Early Outreach Program, the Obstetrics Clinic, the Division of Services for Crippled Children, and the Sickle Cell Center.

Many of the building occupants require more adequate electric power, air-conditioning, window replacement, and general building improvements such as code corrections and elevator renovation. The College of Associated Health Professions also requires space renovation to accommodate the relocation of two additional departments and development of its most promising research endeavors: metabolism studies, computerized anatomical imaging, collaborative research in physical therapy and nutrition, and kinesiology.

Initial upgrading and modernization of electrical services in the building began with the allocation of funds in FY 1979 and FY 1980. Completion of this modernization has provided adequate electrical service for current and future needs to most floors. However, building occupants will be unable to fully utilize the newly provided electrical services or to service new program requirements without the installation of electrical

control panels and supplemental wiring. A Build Illinois project approved in FY 1987 will distribute electrical power on floors two, three, and four to accommodate the needs of the Biocommunications Arts, Occupational Therapy, and Physical Therapy departments. A second Build Illinois project approved for funding in FY 1987 will remodel part of the sixth floor for the Department of Nutrition and Medical Dietetics.

The overall project proposed for FY 1990 is the first of two phases required to restore and upgrade the building for permanent use. This phase addresses three distinct components:

1. Electrical power distribution;
2. Installation and distribution of a central air-conditioning systems; and
3. Window replacement and tuck-pointing.

The second phase of work will address elevator renovation, code corrections, and the balance of the electrical distribution and window replacement work.

College of Medicine West Tower Remodeling - Phase I (\$9,445,500)

The Basic Medical Sciences departments, which have occupied space primarily in the College of Medicine West Tower for many years, have been "land-locked" with little or no opportunities for expansion. Internal remodeling of space vacated by other campus units has constituted the only feasible method of providing new space. Although researchers in the medical sciences departments are well-funded and highly motivated, a major deficiency facing the departments is the lack of adequate, modern facilities.

The department heads of the Basic Medical Sciences departments have identified a number of important research goals which they hope to achieve during the next five years. For example, the Department of Biological Chemistry plans to develop data which help to explain how the primary nucleotide sequence can signal the intricate phases of differentiation seen with embryonic organogenesis. Special facilities required to conduct the department's planned research are presently unavailable to the department. If the Basic Medical Sciences departments remain unable to satisfy their own basic research requirements, then the College will be unable to attract

new, young, and vigorous faculty/researchers and the resources they develop or bring with them.

To build the College of Medicine's Basic Medical Sciences departments and to strengthen its research efforts, new or remodeled facilities are required. Since the remodeling of the College of Medicine East Building in the mid and late 1970's, the research productivity of faculty and researchers who occupy the remodeled space has increased dramatically. Furthermore, as a result of increased productivity within the College, the reputations of faculty, researchers, and the University of Illinois have all been favorably promoted.

The College of Medicine West Tower requires a major program of renovation, remodeling, and upgrading. The program must involve a major effort in which first the building systems (heating, ventilation, air-conditioning, plumbing, and so on) are upgraded, and the structure and building enclosure are restored. Interior space remodeling should be considered as a second phase of the project.

The College of Medicine West Tower is comprised of two buildings built in 1925 and 1930, respectively. The buildings contain 229,200 GSF and 121,800 NASF of space and are located on the Health Sciences Center campus, at Polk and Wolcott Streets. The buildings were constructed as academic and library facilities for the Colleges of Medicine and Dentistry.

The buildings are currently being used by the College of Medicine Administration, and by six departments of the College (Anatomy, Biological Chemistry, Pathology, Pharmacology, Physiology and Biophysics, and Preventive Medicine) for faculty offices, instructional programs, and research activities. The remodeled space will continue to be used--although much more efficiently--by the same departments.

The campus commissioned an architectural and engineering firm, John Victor Frega and Associates, to develop a comprehensive plan for renovation. This plan, which was completed and published in February 1987 and proposes a multi-phased renovation project, is the basis of this FY 1990 request.

The building systems must be converted to a variable air volume central heating and cooling operation; new electrical circuitry must be provided; a new plastic pipe, treated water system must be installed; and the existing manual elevators require automation. The initial phase of the

project will upgrade mechanical services and utilities for each floor of the building including heating, air-conditioning equipment, special exhaust, laboratory utilities systems, water and waste systems, and electrical power. Local floor distributions of the systems will be accomplished as the individual floors are remodeled.

Pharmacy Building Remodeling - Phase II (\$1,847,000)

Since the Pharmacy Building was constructed, there have been major changes in the programs of the College of Pharmacy. A new pharmacy curriculum, the Doctor of Pharmacy degree program, was approved for implementation in FY 1984. The new Pharm.D. curriculum is a six-year program composed of two years of pre-pharmacy and four years of professional education. Previously, the faculty of the College taught several basic science courses (e.g., physics, organic chemistry, history, anatomy, etc.), whereas, in the new curriculum, these courses are a component of the pre-pharmacy requirements available at the undergraduate level. The undergraduate curriculum has undergone significant changes with much less emphasis on wet laboratory instruction and greater emphasis on the social, behavioral/administrative, and biological sciences, and the professional practice of pharmacy. As a result of this major curricular change and the corresponding reduction in class size, there is no longer a need for the large laboratories designed in the early 1950's. Some of these laboratories should be modernized into smaller laboratories for computer applications, faculty offices, and laboratories for research. With the increased emphasis on high technology research among its faculty, the conversion of unneeded undergraduate laboratory space into areas where high technology research can be conducted by students and faculty is a high priority goal of the College.

Another high priority goal of the College is to increase the level of research funding from external sources including pharmaceutical corporations and international organizations such as the World Health Organization. Completion of this capital improvement project will also make the College more competitive in attracting research project money sponsored by the National Institutes of Health, the National Cancer Institute, and the National Science Foundation.

The College of Pharmacy faculty and administration have prepared a space plan for all College of Pharmacy space. This space plan is incorporated in a four-phase redevelopment and renovation program for this building.

- Phase I is comprised of the renovation of the building HVAC systems, the Pharmacy Practice Simulation Laboratory, and the Computer Applications and Robotics Laboratory, all funded in FY 1986.
- Phase II of the plan, requested for FY 1990 and described herein, addresses the highest priority office and research laboratory needs.
- Phase III, scheduled for FY 1991, will address the need for new flexible student laboratories and classroom space.
- Phase IV, scheduled for FY 1992, will address lecture room and office renovations in the basement and on the first floor.

The projects described below are a direct result of this study and have the highest priority. Four of the areas (rooms 237, 304, 346 and 404) are large undergraduate laboratories which need to be remodeled as faculty office and research space. Room 237 will be remodeled for the Department of Pharmacy Practice. Room 304 will be remodeled for the Program for Collaborative Research in the Pharmaceutical Sciences. Room 346 will be remodeled for the Department of Pharmacodynamics, and room 404 will be remodeled for the Department of Medicinal Chemistry and Pharmacognosy. Rooms 501-510 are graduate research laboratories which need to be modernized for conducting high technology research. Room 133, a former manufacturing pharmacy area, is to be remodeled for offices and research laboratories for the Clinical Pharmacokinetics Laboratory. A total of 16,800 NASF is involved in this remodeling phase.

The College of Pharmacy Space Management Plan Report of February 1984 showed that the College had a deficiency of approximately 9,000 square feet of office and research space, but a corresponding excess of 20,000 square feet of teaching laboratory space. This office and research space deficiency has grown considerably over the past two years as new research initiatives have been implemented. Research activities have increased 74% from FY 1983 to FY 1986, reaching \$1.88 million in annual expenditures in FY 1986. The conversion of teaching areas to office and research space will alleviate current deficiencies and will position the College of Pharmacy for leadership in related biotechnology research.

Architecture and Art Building Additions - Planning (\$785,500)

The College of Architecture, Art, and Urban Planning (AAUP) has an established reputation for outstanding academic programs. For example, the Department of History of Architecture and Art is currently the largest and most diverse such program for undergraduates in the nation. The department includes faculty with expertise in film, photography, and design. The School of Urban Planning and Policy is officially recognized by the American Planning Association and currently maintains a distinguished and productive faculty. In fact, annual expenditures for the School's research have grown from \$316,000 in 1984 to \$634,000 in 1986. Yet, despite its progress and outstanding academic programs, the College continues to lack adequate physical facilities.

The Architecture and Art Building was designed to be completed in two distinct phases. Based on the original design, the second phase of the building construction would account for 60% of the total required space and would include faculty offices, seminar and classrooms, a resource center and gallery, and additional instructional laboratory space. However, the second phase was never implemented. One result of not initiating the second phase of construction has been the dispersal of the College's units to six different campus locations, including leased space. Some of the units in the College have been moved as many as six times in the last 20 years.

The current lack of proximity between units makes it difficult to operate joint programs that require close faculty collaboration. Failure to address the problem will create more acute problems in the future, especially as programs in Architecture, Urban Planning, and affiliated centers become more interdisciplinary.

Furthermore, there are now major graduate programs in Architecture and Art and Design which were not part of the original curricula. There is also a new graduate program in the History of Architecture and Art. In 1977, the College of Architecture and Art and the College of Urban Sciences merged to form the current College of Architecture, Art, and Urban Planning. The current College also includes the Center for Urban Economic Development and the Nathalie Voorhees Center for Neighborhood and Community Improvement. No additional space was acquired to house these new programs, however. At present, there are 62 full-time and 50 adjunct faculty in

Architecture and Art, and a total of 20 faculty offices. Seminar and teaching assistant spaces are non-existent. Since 1975, graduate programs in AAUP have grown from 68 students to almost 300 students in 1986 with no increase in physical facilities.

The proposed Architecture and Art Building Additions will help provide the space required to accommodate the College's programs and will relocate the College's dispersed faculty, students, and administration from six different locations to two campus locations. The proposed building additions would satisfy the College's most urgent space needs and help to promote greater program efficiency and effectiveness for AAUP.

The proposed Architecture and Art Building Additions will provide 41,200 NASF broken down by the following space types:

| <u>Room Type and USOE Code</u> | <u>NASF</u> |
|--------------------------------------|-------------|
| Classrooms (110, 115) | 4,000 |
| Non-Class Lab and Service (250, 255) | 8,000 |
| Office (310, 315, 350, 355) | 23,600 |
| Library and Study (410, 420) | 2,000 |
| Special Use (530, 535) | 3,600 |
| TOTAL | 41,200 |

Some portion of the existing 23,000 square feet of space AAUP now uses in the Behavioral Sciences Building, Henry Hall, and University Hall will become available to existing units where there are also critical space shortages. The 6,600 square feet of leased space will also be vacated.

The new additions will be added to the north and south of the Architecture and Art Building at locations which are adjacent to existing horizontal and vertical circulation and where provisions were made for additions in the original building planning and construction. Funds for construction of these additions would be requested in FY 1991.

College of Business Administration Building - Planning (\$1,147,000)

The College of Business Administration at the University of Illinois at Chicago was established as a business education program in the post-World War II period at Navy Pier in Chicago. The program was relocated to the Chicago Circle Campus in 1965, and achieved its college status thereafter. Thus, the College has a 40-year history of development during which it has brought together a distinguished faculty in accounting, economics, finance, management, marketing, information systems, and business administration. Recent years have also seen the development of its graduate studies and research programs. Assessing its role as a major public

research university's business college in urban Chicago--a regional, national, and international center of commerce and industry--the College of Business Administration is addressing the growing importance of business and economics in social institutions.

The College is also adopting significant research and graduate training initiatives to expand its potential as a productive participant in the revitalization and growth of the Illinois economy. Specifically, the College is developing research programs in the areas of commodities and futures trading and theoretical and applied approaches to critical issues and problems, with particular emphasis on those factors which influence the economic and social fabric of the State of Illinois. These expanded research programs will have a direct impact upon the instructional programs within the College at both the advanced undergraduate and graduate levels. Special efforts will also be made to disseminate the knowledge developed in these programs to the broader public through publications, lectures, seminars, and workshops, as well as direct communication with government organizations, private firms, groups, and individuals through executive training programs.

The College of Business Administration is comprised of six academic departments, a number of research programs, and undergraduate and graduate degree programs with 3,238 students and 108 FTE academic staff in FY 1987. The graduate program has grown from 21 master's degree students in FY 1975 to 522 master's and 43 Ph.D. students in FY 1986, while undergraduate enrollments have remained stable.

These developments have occurred in the absence of facility resources to support the growth of the College. The College has progressed over the past 10 to 15 years in anticipation of new and expanded facility resources. There are many program activities that cannot be considered for implementation or growth at this time due to a lack of space. Faculty office and research space is now being acquired by conversion of conference rooms and by leasing of commercial space. The College occupies four floors in University Hall and one floor in a converted classroom building that totals approximately 26,000 NASF.

Based on comparative data from other Big Ten institutions, a business school with this number of undergraduate majors, graduate students, credit hours, and faculty requires a 133,000 GSF facility to accommodate the

College's requirements. The proposed facility would consist of 80,000 NASF in the following space types:

| <u>Room Type and USOE Code</u> | <u>NASF</u> |
|--------------------------------------|-------------|
| Classrooms (110, 115) | 14,100 |
| Class Lab and Service (210, 215) | 3,800 |
| Non-Class Lab and Service (250, 255) | 7,870 |
| Office (310, 315, 350, 355) | 44,340 |
| Library and Study (410, 420) | 5,650 |
| Special Use (530, 535) | 1,410 |
| General Use (650, 655) | 500 |
| Support (730) | 2,330 |
| TOTAL | 80,000 |

Funds for construction of this building would be requested in FY 1991.

Molecular Biology Research Laboratory - Planning (\$1,966,000)

The biological and biomedical sciences are currently in the midst of a major revolution, brought about by the techniques and concepts of molecular biology and molecular genetics. No area in the life sciences has been left untouched by this revolution, which has been driven primarily by the developing capabilities in recombinant DNA and gene cloning. (The term molecular biology is used here in a limited sense to denote those areas of fundamental and applied research involving recombinant DNA technology.)

Molecular biology research has become a central theme in all areas of the life sciences. In addition to providing basic information on fundamental principles of biological organization and activity, the research has applications in areas as diverse as human health, the environment, agriculture, and energy production. In the area of human health, for example, recombinant DNA research has provided major insights into the molecular basis of human disease, dramatic new methods of treatment based on gene therapy, the production of important pharmaceuticals and vaccines by means of genetic engineering, and significantly improved methods of diagnosis by means of molecular probes. The tremendous commercial implications of recombinant DNA research have been proven, and an entire new industry of genetic engineering has developed within the span of a few years. By now, genetically engineered reagents have become the preferred means of treating a variety of human diseases including diabetes, dwarfism, and some forms of cancer. Clearly, molecular biology has implications and applications for many different disciplines in several departments and colleges within the University.

In addition to its impact on the research and educational capabilities of the University, a first rank molecular biology program will greatly facilitate the University's efforts to help Illinois capitalize on the current biotechnology revolution and to support and stimulate the growth of the biotechnology industry in the State. Other states such as California and Massachusetts have demonstrated that strong research programs within the University community can significantly stimulate the growth of the State's biotechnology industry.

The University of Illinois at Chicago has developed some strong areas of concentration in molecular biology. To take advantage of these areas of strength for future growth and to develop a solid foundation of molecular biology research for the entire academic community, it is essential that the University provide a major new research facility for molecular biology.

A new building for molecular biology research will also provide a vehicle through which major campus goals can be achieved in the areas of interdisciplinary campus-wide expansion of molecular biology research into new departments, faculty recruitment and retention, advanced training, visibility to the outside community, and university-industrial relations.

The principal feature of the proposed new molecular biology research building is its interdisciplinary nature. The building will be shared by faculty from a number of different departments and colleges from across the campus. In addition, the molecular biology community in the building could serve as the focus for expansion of molecular biology into basic science and clinical departments.

Bringing together the community of molecular biology researchers in a new building will also have a significant impact on education and training activities at the University. The concentration of molecular biology research within a single building will provide a most attractive training situation for students at all levels including undergraduates, graduate students, and postdoctoral trainees in basic and clinical science disciplines. Thus, the recruitment of top students and trainees by many departments and colleges at the University will be enhanced by the new building.

The facility plan for this focus in molecular biology is to provide a building sized to accommodate the consolidation of existing programs in Genetics, Biological Sciences, Microbiology and Immunology, Biological

Chemistry, and other departments. It must also provide for expansion of these programs and the development of new programs. The program is projected to accommodate 50 faculty plus associated research staff who will attract approximately \$5 million of annual grant support.

Facility needs for research in molecular biology are determined by the size and composition of "research teams," the configuration of basic laboratory-office modules, the amount and distribution of shared research facilities, and provision of general support needs. Research in molecular biology requires a substantial amount of special equipment and facilities dependent on environmental control. The research teams and their facility resources are organized to provide a modular organization of facilities and functions and to provide an efficient and effective research environment.

Research teams will vary in size from five to fifteen persons with the most frequent groupings consisting of about ten people. Research teams consist of a faculty member as a principal investigator and a supporting research staff. These research teams are accommodated in standard laboratory and office modules, supported by shared-use facilities and general support facilities.

Basic laboratory modules contain laboratory bench space with utility services, hoods, and equipment common to most molecular biology laboratory procedures. Each laboratory will have integral offices for faculty and support staff. The shared-use and general support facilities will consist of research resources with special environmental requirements and technical service needs.

These 50 faculty positions will generate a total of 50 research teams, and based on a standard ratio of five research personnel per basic laboratory module, 100 modules totaling 57,000 NASF will be required.

The resulting space requirements for shared-use and general facilities needed to support the laboratory and office space yields an additional 59,000 NASF. These facilities, totaling 116,000 NASF, are expected to be designed into a building with an efficiency factor of 60%. This efficiency will yield a building envelope containing approximately 193,000 GSF.

The estimated space by U.S. Office of Education Room Type is summarized as follows:

| <u>Room Type and USOE Code</u> | <u>NASF</u> |
|---------------------------------------|-------------|
| Non-Class Lab and Service (250, 255) | 78,000 |
| Office and Office Services (310, 315) | 9,000 |
| Seminar/Conference (350) | 3,000 |
| Library and Study (410, 420) | 2,000 |
| Special Use (570, 575) | 15,000 |
| General Use (610, 650, 660) | 5,000 |
| Supporting Facilities (720, 730) | 4,000 |
| TOTAL | 116,000 |

The building will be equipped with special utility services and features including:

- Recirculating, reverse-osmosis deionized water
- Emergency electric power
- Zoned heating, ventilation, and air-conditioning
- Fume hood exhaust manifolding
- Safety alarm systems
- Piped carbon dioxide and liquid nitrogen
- Laboratory gases
- Passenger and service elevators
- Loading dock and service drive
- Roof-top greenhouses
- Below-grade parking

Construction of the building is estimated to cost approximately \$44 million including funds for planning and moveable equipment. Funds for construction will be requested in FY 1991.

As described above, the proposed building, by providing a focus for molecular biology research, offers several important advantages including: (1) interdisciplinary, campus-wide interactions among faculty, (2) expansion of molecular biology research into new departments, (3) improved faculty recruitment and retention, (4) expanded educational opportunities, (5) visibility to the outside community, and (6) enhanced University-industrial relations. At the national level, the proposed building will allow the University to compete with other institutions in the development of centers of excellence in molecular biology research. The highest quality researchers and students will be concentrated in these centers of excellence, and the universities and regions that have developed such centers will benefit academically and economically. Given a new building for molecular biology, the University of Illinois at Chicago is well positioned to develop as a major center of excellence in this increasingly important field of research.

FY 1990 REGULAR CAPITAL PROJECTS
URBANA-CHAMPAIGN CAMPUS

University Critical Equipment (\$4,364,500)

This portion of the University Critical Equipment request addresses the equipment needs of four new buildings and of one building which is undergoing major remodeling. All five of these buildings will be available for occupancy in FY 1990. The buildings involved are the Compound Semiconductor Microelectronics Center, the Digital Computer Laboratory Addition, the Chinese Swine Research Center, the Beckman Institute for Advanced Science and Technology, and the Environmental Sciences Building. The general types of equipment to be purchased for each project are indicated in the following summary descriptions.

The request relates to and supports the construction of the Compound Semiconductor Microelectronics Center. The major portion of the equipment to be purchased is needed for the office area, with limited equipment purchases for the laboratory area. The major research equipment will be provided by the researchers, using non-State resources. It is estimated that the total moveable equipment needs for the building will require \$5-6 million. Researchers who will occupy the building have presently secured a substantial portion of this equipment funding, and it is anticipated that grants and industrial gifts will provide the bulk of the remaining funds. This \$761,250 equipment request will provide items such as office equipment and laboratory equipment that cannot be funded through grants or gifts.

The request also relates to and supports the construction of the Digital Computer Laboratory Addition. The equipment request for this building involves library equipment, computer terminal equipment, and equipment for instructional laboratories and offices. Typical office equipment that will be requested includes desks, chairs, bookcases, and file cabinets. Instructional laboratories will be equipped with tables, chairs, and carrels in addition to computer terminal equipment. This \$1,522,500 moveable equipment request will allow the teaching and office staff to optimally utilize the newly constructed space.

The Chinese Swine Research Center equipment request (\$152,250) relates to and supports the Chinese Swine Research Center project of the College of Agriculture. The major portion of the equipment to be purchased will consist of metal pen sections, gates, feeding systems, and livestock waterers. There will be some general support equipment purchases for both the headquarters building and swine facilities.

Current estimates for all types of moveable equipment for the Beckman Institute for Advanced Science and Technology total \$4.5 million. The University received an FY 1986 appropriation of \$3.0 million and intended to supplement this appropriation to complete the furnishing of the Institute. However, the FY 1988 operating budget reduction eliminated these funds. As a result, the University is requesting \$1,522,500 for the remaining equipment needs. The major portion of the equipment to be purchased will be needed for the office area, with limited equipment purchases for the laboratory areas. Highly specialized research equipment required for individual research projects will be secured through specific research grants or funded from Federal or private sources. What remains, therefore, is to provide the Beckman Institute with basic office equipment (not furnishings) and laboratory support service equipment that can not be funded through grants or gifts.

The request also involves the purchase of relatively expensive equipment items which are needed to fully utilize the remodeled space on the third floor of the Environmental Sciences Building for the Institute of Environmental Studies. The equipment to be purchased will include such items as an ultracentrifuge, plant growth chambers, laminar flow hoods, a multichannel analyzer, a liquid scintillation system, and animal caging. This \$406,000 equipment request supports the first phase of remodeling approved in FY 1986 and scheduled for completion in November of 1989.

English Building Remodeling - Phase III (\$3,760,000)

In 1975 an architect was hired and a master plan was developed to convert the English Building to its new and permanent use. The plan that was developed calls for the remodeling of the English Building in four phases at a total cost of \$9.7 million. When the job is completed, the Department of English will have all new facilities within the original

exterior walls at a cost of 40-50% less than the cost of a new facility of the same size.

In total, 61,940 NASF (118,140 GSF) will undergo remodeling. The entire program involves the addition of a new heating and air-conditioning system for the building, construction of a new fire-rated stair, enclosing two existing stairs, installation of an elevator, additional rest rooms, new plumbing, and new structural flooring in the west half of the building as well as the typical partitioning, lighting, and ceiling improvements associated with office and classroom remodeling. To date, only the first two phases of the remodeling have been completed in the English Building. The unremodeled portion of this building is in deplorable condition because of the extended delays in funding this important project.

The third phase of the work, which is currently proposed, involves the renovation of the northwest section of the building as well as the west center portion of the building on the first, second, and third floors. The remodeling will involve the installation of an elevator and the construction of new floors in the areas to be remodeled. A total of 22,500 NASF of space will be converted into office space and classrooms.

There will be an equipment request in FY 1991 to support this remodeling request.

Utility Infrastructure Upgrade (\$4,030,000)

The completion of numerous Build Illinois remodeling projects, the recent addition of major new buildings, and the addition of new equipment with increased power requirements have combined to strain the limits of the existing electrical, chilled water, sanitary sewer, water, and steam distribution systems of the Urbana-Champaign campus. To support current facility and program growth, it is essential that the fourth phase of upgrading the utility infrastructure at the Urbana-Champaign campus be completed to provide the improvements required to service the campus' expanded utility needs.

Phase I of this project, funded in FY 1987, provided funds for the planning and construction of a north campus utility building to provide electrical, steam, and chilled water distribution for three new north campus projects: the Beckman Institute, the Digital Computer Laboratory Addition, and the Microelectronics Center. Phase I further provided

planning funds for steam and condensate line modifications to provide adequate capacity to supply the north and south campus steam needs. Finally, Phase I provided planning for a new electrical distribution center and the installation of a feeder line to the proposed distribution center to supply the electrical needs of the south campus area where the new Plant and Animal Biotechnology Laboratory, the Plant Sciences Greenhouse Complex, and the Animal Sciences Laboratory Addition are to be constructed.

Phase II, appropriated for FY 1988, provides funds for steam line modifications; construction of an electrical distribution center; construction of a chilled water line cross-connection between two existing air-conditioning centers to share peak loads; and finally, planning for a new sewer line to support the new construction underway on the south campus.

Phase III, appropriated for FY 1989, provides funds to redistribute electrical loads on the south campus to the new electrical distribution center; complete steam line extensions for the north campus; construct a new sewer line on the south campus; install a new water line on the south campus; and plan an expansion of the Library Air-Conditioning Center.

Phase IV, requested for FY 1990, involves the following components: electrical, \$508,000; chilled water, \$2,030,000; water system improvements, \$172,000; and steam distribution, \$1,320,000. The total estimated cost for the fourth phase project is \$4,030,000.

The electrical portion of the project involves:

- replacement of a section of paper-insulated 15 KV cable in the area of the Armory which has proven to be subject to premature failure (\$203,000);
- relocation and replacement of Load Center 33 (at the Library) which is both substandard and dangerous (\$152,500);
- planning for a new Electrical Distribution Center (#7) to serve the east central campus area (\$152,500).

The new Distribution Center is necessary to redistribute loads in the central campus and to accommodate new loads created by the proposed Life Sciences Research Laboratory, the proposed Chemical Sciences Research Laboratory, and major remodeling projects in the area. It is anticipated that the Distribution Center would be fed from Illinois Power Company substations. The total estimated cost of the electrical portion is \$508,000.

The chilled water portion of this project will expand the campus chilled water capacity needed to serve the new buildings currently on the Library Air-Conditioning Center. The FY 1988 Utility Infrastructure

project to interconnect the Student-Staff Air-Conditioning Center with the Library Air-Conditioning Center will solve the existing overloading problem, but allows no excess capacity for anticipated needs such as air-conditioning in David Kinley Hall and Bevier Hall, or for converting various stand-alone building systems to the Library Air-Conditioning Center as the various buildings' chilling equipment fails. The proposed Life Sciences Research Laboratory and Chemical Sciences Research Laboratory would ideally be served by the increased capacity of this project and the flexibility provided by the FY 1988 interconnection of the Student-Staff and Library Air-Conditioning Centers. The estimated construction cost will be \$2,030,000. The FY 1989 request funded the \$150,000 planning portion of the project.

The water systems portion of this request involves two major components. The first involves capping two wells near the Beckman Institute as required by the Illinois Environmental Protection Agency. The second improvement involves connecting two dead-end water main loops near St. Mary's Road, which will increase water quality and the reliability of the water supply during an outage by enabling the isolation of the area being repaired. Additionally, in the event of a fire in the area served by the loops, the water pressure would be increased by the interconnection. The water systems portion of the project cost is estimated at \$172,000.

The steam portion of the project involves replacement of an old and deteriorated section of tunnel and piping which is in a key area of the steam distribution system. The section of tunnel and piping to be replaced runs from the Animal Sciences Laboratory north to Smith Music Hall. Also, part of this project will include replacement of a section of high-pressure steam line in the Mathews Avenue tunnel north of Smith Music Hall with a larger diameter line. The untimely failure of this steam line would interrupt the steam supply in six major buildings. The estimated cost of these improvements is \$1,320,000.

In summary, this request is needed to fully maximize the increased capacity potential provided in the first three phases. These improvements will have a long-term positive effect upon the expanding research programs of the Urbana-Champaign campus by providing basic utility capacities to implement these programs, which will benefit the economy of the area and the State of Illinois.

Noyes Laboratory Remodeling (\$2,233,000)

Noyes Laboratory was built in two major sections which date back to 1902 and 1917, respectively. Since the beginning of the century, when the building was constructed, the discipline of chemistry and the nature of the facilities it requires have changed markedly, leaving Noyes Laboratory out-of-date. Severe deficiencies exist in the utilities and ventilation systems of the building. Temperature and humidity control are virtually non-existent. The sizes and shapes of rooms and the furnishings in them do not relate to their functions. There are too few adequate fume hoods. In sum, the building is a dismal place in which to work. These deficiencies not only make it very difficult to conduct a modern program of teaching and research in chemistry, but the environment is unattractive and the safety of the space is questionable. While the building has many problems, it has become evident that the lack of adequate fume hoods and effective fume hood exhaust is the major problem needing resolution.

This project was developed to allow the existing fume hoods to operate at designed efficiency and will provide an adequate supply of air in the laboratories containing fume hoods, which will confine the odor problems of the building to the rooms where the odors originate. Because the School of Chemical Sciences has such a space shortage, only two or three thousand square feet can be vacated at one time for renovation. It has been determined that a major ventilation system installation is much more effective and efficient than a series of small systems dedicated to three or four rooms. Remedying the ventilation problems of the entire building will allow various Build Illinois projects slated for the Noyes Laboratory to renovate laboratories in a phased manner. These laboratory renovation projects work toward the ultimate goal of completing the renovation of Noyes Laboratory while the School of Chemical Sciences occupies the space. This project is, therefore, an important component of the overall plan to renovate Noyes Laboratory into the next decade.

University Land Acquisition and Development (\$1,600,000)

The campus has begun an update of its long-range land use and needs plan. The original plan was last revised in the early 1970's, and work already completed on the current update has confirmed that many premises of the 1970's plan remain accurate and important for the campus to pursue.

Certain issues, such as research parks, athletic facilities, and agricultural needs have changed somewhat, but the general overall acquisition boundaries of the earlier plan are still meaningful. It is apparent, however, that few actual land acquisitions for satisfying that plan have been accomplished. As a result, a large number of properties which ultimately will be needed by the Urbana-Champaign campus have not yet been acquired.

It is extremely important that a multi-year Land Acquisition Plan be immediately implemented for the Urbana-Champaign campus. Although some land acquisition funds were included in the Beckman Institute project budget, these funds are sufficient only to acquire the land specifically needed for accommodating the Beckman Institute. Other land adjacent to the planned complex will still be privately owned, thus eliminating or severely restricting future growth and the placement of support services for the Institute. The University Master Plan calls for considerable land acquisition east of the Beckman Institute to accommodate future growth. The plan calls for a total acquisition need of over \$7,000,000 over the next ten years. With the implementation of this plan, the University can retain a compact, cohesive campus, which is important for an economical campus operation in terms of reducing wasted effort by faculty, staff, and students as well as the physical plant operation.

A second reason for immediate action involves availability and acquisition costs of many locations. Of the properties included on the University's long-range needs list, few have been materially improved in the past 15 years. This "status quo" condition is about to change, however, since the existing buildings on most of the locations under consideration have outlived their usefulness. Replacing existing structures with new student apartment complexes is therefore becoming quite attractive to current owners and private investors. Upgrading a given location immediately increases the value of that location approximately ten-fold and can make the acquisition and clearing of a site for an academic building impractical. The conversion of a single lot can also virtually destroy the value of adjacent University-owned land as far as accommodating existing building needs.

The Urbana-Champaign campus portion of the FY 1990 University Land Acquisition and Development request involves the acquisition of critical

locations that appear to be prime targets for commercial apartment-type development, at a total cost of \$1,600,000. If these properties are not acquired by the University and commercial improvements are allowed to proceed, the acquisition cost of these properties will increase dramatically, and the use of adjacent University-owned land will become quite limited.

Campus Site Improvements (\$2,690,000)

This request is for site and landscaping improvements made necessary because of recent construction on the north campus and to improve the general appearance of the Urbana-Champaign campus. The area of major concern on the north campus lies between University Avenue and Springfield Avenue; this area is the main focus of the request.

The first portion of this request will provide for the development and implementation of site improvements within a 26-acre unimproved area of the north campus. Currently this area houses the Hydrosystems Laboratory, Newmark Laboratory, the Digital Computer Laboratory, and Kenney Gymnasium and Annex. By May of 1990, over 536,000 GSF of new buildings will be completed within this area including the Beckman Institute, the Microelectronics Center, the Digital Computer Laboratory Addition, and the North Campus Chiller Building.

The University is requesting \$2.59 million to completely landscape the pedestrian allee leading from Springfield Avenue to the oval quad area along with the Main Street and Stoughton Street pedestrian corridor. This portion of the request will include drainage, sidewalks, bike paths, lighting, landscaping, and site furnishings including the setting for the CDB-funded art object. The art object itself will be funded with \$250,000 from the Art in Architecture program and \$250,000 from the campus. Improvements to the Wright Street, Springfield Avenue, and Mathews Avenue street edges are necessary to make this area an integral part of the "Beckman Block," for which the University will request \$750,000 in FY 1991. A further \$500,000 has been funded from the Beckman project for the area north of Clark Street. In all, approximately \$4.3 million will be spent on site improvements in this area, of which \$2.59 million is requested for FY 1990 and \$750,000 will be requested in FY 1991.

The second portion of this request involves site improvements meant to improve the general appearance of the Urbana-Champaign campus. Among the

improvements planned for FY 1990 is the reforestation of Illini Grove to begin a gradual replacement of existing trees. Although Illini Grove is still an attractive area, in 10 years or so many species will have reached the end of their lives, requiring a major replacement project. By using a phased approach, the trees will be replaced gradually, thus avoiding an unattractive transition period when Illini Grove would look like a nursery instead of the attractive recreation area that it has been for the past 40 years.

Also included would be the replacement of some of the sidewalks leading into buildings and the improvement of parkways between sidewalks and street curbs. Many of the walks are in poor condition due to age and are no longer favorably located to respond to current traffic patterns. Many of the parkways are either mud or loose rock and detract from the appearance of the campus.

The final landscape improvement proposed for FY 1990 is a continuation of the street tree plantings on campus. The recent master planning effort reinforced the importance of the street trees in giving structure and identity to the campus on our prairie setting. It is proposed that tree plantings be continued in a phased approach.

The second portion of this request for FY 1990 is estimated to cost \$100,000. A similar request will be made in FY 1991 for \$200,000.

Mechanical Engineering Laboratory Remodeling (\$3,958,500)

The Mechanical Engineering Laboratory is a building of approximately 48,000 NASF constructed in 1905 with an addition in 1917. The continued use of the building was in question until the recent North Campus Master Plan prepared by Sasaki & Associates was completed. Sasaki & Associates recommended that this building be retained, forming the east edge of the Engineering Quadrangle. In that location it will serve the needs of the Mechanical Engineering Department, as well as other departments, such as Aeronautical and Astronautical Engineering, that are related in scope and educational content.

This building was originally built as a part of the University Physical Plant and served in that capacity until the early 1950's. Because of the original construction and use of the building, it requires major remodeling to bring it up to modern standards for laboratory and office

space. The renovation would include either complete roof replacement or a major renovation of the existing roof. The basic structure of the building is acceptable but the interior space needs upgrading. The internal remodeling would realign the floor levels of the building, making them more accessible and useful for instructional laboratories, research laboratories, and office space. A new central heating and cooling system for the entire building would also be required.

The programs currently envisioned to occupy the space are in the fields of thermal sciences, thermal dynamics, and air and water flow research as well as other related research fields. It is anticipated that additional laboratories will be developed. These would be set up in approximately 780 to 900 square feet modules with central utility chases serving the rooms. This approach allows constructing rooms for current use with the ability to easily adapt them to future uses.

The current plan creates a lower office and wet laboratory level with at least one area being devoted to a high ceiling laboratory (two stories high) for use in fluid flows research. The second level will have 12 office/laboratories of less than 300 square feet each, four office/laboratories at 360 square feet, and two office/laboratories at 600 square feet. The proposed use would meet the current needs and requirements of the Mechanical Engineering staff with allowances for anticipated future growth. When the remodeling of this facility is completed, it will serve the Mechanical and Industrial Engineering Department's research needs in thermal sciences, thermal systems, and fluid and air flow research.

Campus Police Building (\$2,064,000)

The Campus Police Building will create new facilities for the Police Department. The building which the Police Department is currently using for its headquarters is an Army barracks type building constructed in 1945. The building is expensive to maintain and is grossly inadequate for police operation, both in the quality and the configuration of the space. The effectiveness of the campus security force is greatly hampered by the lack of adequate space. In order to help alleviate the crowded space conditions, the Police Department was assigned space in the nearby Engineering Research Laboratory and a frame house at 1207 West Springfield. The Engineering Research Laboratory space is primarily basement space which floods,

experiences extreme temperature fluctuations, and is poorly arranged. The space at 1207 West Springfield is used for investigative staff and evidence storage, and it is not secure.

The new facility will replace the inadequate facilities currently used by the Police Department, make way for the imminent razing of the old structure, and eliminate the present efficiency and coordination problems caused by dispersed and inadequate quarters. Additionally, the relocation of the Police Department is becoming even more vital because the new North Campus Master Plan indicates that the existing Campus Police Station is on a portion of the site where the proposed Engineering Library is to be located.

The Campus Police Building is programmed to contain the following types and amounts of space:

| <u>Room Type and USOE Code</u> | <u>NASF</u> |
|-----------------------------------|-------------|
| Office (310, 315, 350) | 3,905 |
| Lounge (650, 655) | 1,030 |
| Locker (690) | 1,050 |
| Storage (730) | 280 |
| Other Supporting Facilities (590) | 310 |
| TOTAL | 6,575 |

The project cost of \$2,064,000 includes \$40,000 for utility extensions.

Upon completion of this project, the existing Campus Police Station (2,027 NASF) and 1207 West Springfield (1,213 NASF) will be vacated by the Police Department and razed. Additionally, the Police Department will vacate its presently assigned space in the Engineering Research Laboratory (1,904 NASF), and that space will be reassigned for a more appropriate use.

Engineering Hall Remodeling - Planning (\$233,500)

This project involves planning to renovate and remodel Engineering Hall, which was constructed in 1894. The existing structure has not had a mechanical systems upgrade since it was constructed some 95 years ago. Over the years, the building has had a number of window air-conditioners and small package units installed to cool most of the occupied spaces. Basically, a new heating, ventilation, and air-conditioning (HVAC) system needs to be installed to replace the existing one-pipe steam system and various small air-conditioning units currently installed. The HVAC system needs to be designed with flexibility in mind since the University hopes to construct a new Engineering Library in the near future, which would change the use of the existing 11,129 NASF of Engineering Hall into office-related

space. Additionally, the windows which are almost 100 years old need to be replaced as part of this project.

The renovation will provide the basic mechanical infrastructure in the building that will allow the University to rearrange and remodel small blocks of space within the building. The building is the advising center of the College of Engineering as well as the location of the dean's office. The existing locations of various functions are not ideal since four or five classrooms are currently located on the fourth floor. Various additional remodeling projects would rearrange space to put classrooms and student-related functions on the lower floors with the less heavily student-oriented functions on the upper floors.

The total planning cost including working drawings is estimated to be \$233,500. It is anticipated that remodeling funds will be requested in FY 1991.

Plant and Animal Biotechnology Laboratory Equipment (\$1,522,500)

This request relates to and supports the completion of the Plant and Animal Biotechnology Laboratory. The major portion of the equipment to be purchased will be needed for the office and laboratory animal areas, with limited equipment purchases for the research laboratory areas. Highly specialized research equipment required for individual research projects will be secured through specific research grants or funded from Federal or private sources.

What remains, therefore, is to provide the Biotechnology facility with the basic office equipment and laboratory support service equipment that normally cannot be funded through grants or gifts.

An estimated \$3.045 million is needed for the basic building equipment. A total of \$1,522,500 is requested in the FY 1990 budget, with the remaining \$1,522,500 to be requested in FY 1991.

Storm and Sanitary System Improvements (\$447,000)

The Locust Street storm sewer serving Abbott Power Plant is scheduled to be replaced in FY 1990 by the City of Champaign. The City of Champaign has approached the University to pay a portion of the replacement cost because of the extensive use of the storm sewer by the Abbott Power Plant. The estimated cost to the University for its share of the cost is \$447,000.

Chemical Sciences Research Laboratory - Planning (\$1,851,000)

The School of Chemical Sciences at UIUC has long been one of the world's major sources of well-trained, highly-qualified chemistry graduates. That role is now jeopardized by the negative impact that existing space, particularly in Noyes Laboratory, has on the School's ability to attract the best faculty and students. Future developments in the chemical sciences will depend primarily on the continued availability of a pool of talented people. Anything that works to reduce that pool will clearly have a major technological and economic impact on the State and Nation. Several examples will follow which demonstrate how the School's lack of quality space impacts the School's research and instructional programs.

One of the current research programs in inorganic chemistry is heavily involved in fossil fuel desulfurization. (This program is relevant to issues such as coal beneficiation and, in the longer term, acid rain.) By necessity, much of this research involves work with the malodorous organo-sulfur compounds found in fossil fuels. Unfortunately, the fume hood, ventilation, and plumbing systems in Noyes Laboratory severely limit this work because sulfurous fumes vented in the hoods re-enter the rooms located above, and dilute wastes flushed down the drain produce strong odors in neighboring laboratories. Progress is severely restricted because this work must be carried out at night when the area is largely unoccupied. Wholesale improvements in the fume hood, ventilation, and plumbing systems would be required to make this research routine.

Lasers are fast becoming an important tool in the study of molecular structure and dynamics. Several research groups in physical chemistry use lasers, and the School has established a central laser facility for general use. For lack of any other location, the central laboratory was set up in Noyes Laboratory. Unfortunately, deficiencies in the building greatly impair its usefulness. Proper layout of experiments is hampered by the size and shape of the laboratory; building vibrations interfere with the alignment of the laser beams; poor temperature control causes changes in calibrations; and dust in the air scatters the laser light, making it necessary to work with reduced laser power, lowering the sensitivities of the experiments. Individuals working with lasers in their own research labs in Noyes Laboratory have similar difficulties. Work goes on in these

laboratories, but it is clearly very inefficient and relatively crude compared to what could be done in modern facilities.

The above two examples illustrate a broad range of problems that the conditions in Noyes Laboratory present. In these cases the faculty and students involved try to work around these difficulties so that at least some research progress can be made. Unfortunately, this is the norm in Noyes Laboratory rather than an isolated situation. Similar problems plague the teaching laboratories in the building. There, it has been necessary to "water down" the experiments being conducted and to eliminate some experiments. This, of course, negatively affects the educational experience of the students.

There are a number of important activities that cannot be conducted at all in Noyes Laboratory at this time. The inadequate fume hood and ventilation systems clearly make it risky to do any work involving highly toxic gases, especially if they have no smell. The severe dust and general cleanliness problem make it impossible to do certain work in the areas of tract analysis, surface studies, and radiopharmaceuticals. The absence of isolation facilities imposes significant restrictions on genetic engineering experiments that the biophysical chemists would like to pursue.

Company representatives are coming to UIUC and the other top schools in the country to hire young scientists and support personnel to work in these new areas of research. The University, as an employer, cannot compete directly with industry for these people on a purely monetary basis, nor can it presently compete with industry in providing facilities for research. It takes from \$100,000 to \$150,000 of set-up funds to establish a new, adequately equipped laboratory. Because the chemical sciences are highly technical, special and often-times newly-designed facilities are required for these research efforts. The University struggles in each instance to establish a new faculty member. Its facilities are outmoded and do not readily adapt to new research activities. The University does, however, offer one attraction which industry cannot provide, and that is the freedom to conduct research in one's chosen field in a purely experimental situation without the restrictions or mandates associated with commercial enterprises.

Because the School of Chemical Sciences currently has a space deficiency of 68,500 NASF, it has no temporary space to accommodate those

scientists whose space is being remodeled. It is therefore impossible to remodel large sections of the School's space at one time. This means that remodeling must be phased over a number of years. Several areas have already been remodeled for the chemical sciences through the Build Illinois program, and other areas have been identified for similar funding, but these areas represent only a small portion of the School's total space. Because of the magnitude of the School's space deficiency and the fact that certain specialized facilities do not currently exist, new modern facilities are needed to reinforce and enhance the School's reputation in the chemical sciences field. The proposed Chemical Sciences Research Laboratory will fulfill that need.

This project is programmed to contain the following types and amounts of space:

| <u>Room Type and USOE Code</u> | <u>NASF</u> |
|---------------------------------|-------------|
| Office (310, 315, 355) | 14,000 |
| Non-Class Laboratory (250, 255) | 68,500 |
| Storage (730) | 6,500 |
| Lounge (650) | 1,000 |
| TOTAL | 90,000 |

When this project is completed and occupied, the School of Chemical Sciences will vacate approximately 3,400 NASF in Davenport Hall. The vacated space will be reassigned to other expanding units that require additional space.

The planning cost, through the initial steps in construction document development, is estimated to be \$1,851,000. It is anticipated that funds for constructing this building will be included in the FY 1991 capital budget request.

Electrical Engineering Research Laboratory - Planning (\$1,726,000)

This proposed building will give the Urbana-Champaign campus an opportunity to develop an environment in which overlapping and mutually compatible program strengths can be enhanced. The Departments of Computer Science, Electrical and Computer Engineering, and selected units in the multi-disciplinary Coordinated Science Laboratory span the spectrum from theory to application. In common facilities, these programs would have greater potential to generate new endeavors than the same units operating alone. While this facility will primarily serve the research missions of the Electrical and Computer Engineering and the Coordinated Science Labora-

tory programs, it will also improve and expand graduate education and enhance specialized upper-level undergraduate programs and projects.

This building will serve as a part of a programmatic link from the Beckman Institute to the current Electrical Engineering Building for scientists and engineers in the electrical and computer engineering fields. Along with the Beckman Institute, the Microelectronics Center, and the Digital Computer Laboratory Addition, this building will provide the modern facilities needed to reinforce and enhance the campus' reputation in electrical and computer engineering while forming the foundation for lasting preeminence in these fields.

Currently, the programs to be included in this facility have a space deficit of 110,000 NASF, which is further exacerbated by the poor quality of the existing space. Upon completion of this building, because of their antiquated and deteriorated state, the Electrical Engineering Annex (11,300 NASF) and the Electrical Engineering Research Laboratory (29,200 NASF) will be razed to provide areas for more suitable uses. The space vacated in the Coordinated Science Laboratory will be reassigned to the Department of Physics and the Materials Research Laboratory, which in turn will solve some of the space problems of those units. The building, as proposed, will act largely as a vehicle to relocate programs of mutual interest and upgrade the space for programs requiring more sophisticated space.

This project is programmed to contain the following types and amounts of space:

| <u>Room Type and USOE Code</u> | <u>NASF</u> |
|--------------------------------|-------------|
| Office (310, 315, 355) | 65,000 |
| Research Laboratory (250, 255) | 20,000 |
| Storage (730) | 5,000 |
| TOTAL | 90,000 |

Construction of this building is estimated to cost approximately \$36 million including funds for planning and moveable equipment. Funds for construction will be requested in FY 1991.

Life Sciences Research Laboratory - Planning (\$1,680,000)

Scientists are now able to isolate, study, and move genetic information. The very first industrial application of this knowledge involved the isolation of the genetic information for human insulin, a drug used for the treatment of diabetes. This meant that insulin could be manufactured through a synthetic process. This breakthrough came at a critical time,

when population health trends indicated that the number of diabetics in the population was increasing faster than the supply of porcine and bovine pancreas, animal organs previously used to produce insulin.

It once took 500,000 sheep to provide less than 1 mg of the growth hormone, somatostatin. Now it is possible to produce twice that amount in under 24 hours, in an area smaller than that occupied by a half-gallon container of milk. Likewise, the clotting factor required by hemophiliacs, and a bovine growth hormone to stimulate weight gain in cattle are presently under genetic development. Overall, there are presently over two dozen products in clinical trials that are produced through genetic engineering.

Many other major developments of genetic engineering are also underway. One of the most notable of these, and one which has major implications for global food production, involves the ability to create superior agricultural products. For example, hormones produced from cloned genes could be used to improve the growth rates or reproductive capabilities of farm animals.

In other areas the very first experiments involving the introduction of foreign genetic information into humans are being conducted, with the object of correcting specific genetic defects in diseased human cells. Examples of diseases that respond to such techniques are Lesch-Nyhan disease, adenosine deaminase (bubble baby syndrome), and Tay-Sachs (hypercholesterolemia). Other well-publicized examples of the use of this technology involve the release of genetically engineered organisms into the environment to detoxify chemical wastes, digest oil spills, and prevent ice-crystal formation when crops are exposed to temperatures slightly below freezing.

Aside from the direct health related implications of genetics research, recent scientific discoveries are extremely important to the economy of the State of Illinois. Estimates currently available suggest that by the turn of the century, direct industrial sales emanating from such work will approximate \$64 billion. There are currently over 300 new companies engaged in biotechnology research. Established companies have invested heavily in this new area. For example, DuPont has just dedicated a new \$85 million biological research laboratory, and biological research is the fastest growing area of its several hundred million dollar per year research budget. Monsanto has constructed a new \$150 million biological research

facility and is spending over \$200 million a year on life sciences research. In addition, Upjohn, Searle, Eli Lilly, Abbott, Pittsburgh Plate Glass, Kodak, W. R. Grace & Company, and Corning Glass are placing heavy emphasis on biological research. At Princeton, Michigan, Michigan State, Indiana, Maryland, Rutgers and Berkeley, to mention only a few, new basic life sciences research facilities are currently underway. Based upon the rapid advancement of basic life sciences research, it would appear that \$64 billion in industrial sales related to new biotechnological discoveries by the year 2000 may be an underestimate.

The companies mentioned previously are coming to UIUC and the other top schools in the country to hire young scientists and support personnel to work in these new areas of research. The University, as an employer, cannot compete directly with industry on a purely monetary basis. Nor can the University presently compete with industry in providing facilities for research. On the average, it takes from \$100,000 to \$150,000 of set-up funds to establish an adequately equipped laboratory for a life scientist. Because the life sciences are highly technical, special and often times newly designed facilities are required for these research efforts. The University struggles in each instance to establish a new faculty member. Its facilities are outmoded and do not readily adapt to new research activities.

For the next several decades it is anticipated that basic life sciences research will profoundly affect numerous other disciplines important to the campus. To be competitive, proper facilities must be available in order to attract and retain the best faculty and students so that the full benefit of research in this vital area will be retained on this campus and within the State of Illinois.

The School of Life Sciences has experienced a severe space shortage for the past decade and the current shortage approximates 58,000 NASF. However, the space problems of the School of Life Sciences extend far beyond the existing and projected space deficiency. Much of the space currently assigned to the School is outdated and is totally inappropriate for modern research and teaching.

Buildings which were planned and constructed just 30 years ago were designed prior to the biological revolution. The use of radioactivity for biological experiments, the growth of animal and plant viruses, tissue

culture facilities, large scale fermentation facilities, sterile rooms, and transfer rooms were virtually unknown 30 years ago, yet they represent a very basic need in today's research environment. Life sciences research, particularly in the areas of molecular and cell biology, genetics, virology, biophysics, and microbiology is highly technique-oriented, and relies on the use of the most sophisticated equipment.

The proposed solution to the space problem in life sciences involves constructing a new Life Sciences Research Laboratory of 140,000 NASF. Planning funds (\$1.68 million) are requested for FY 1990 to prepare for the construction of the first phase of the building in FY 1991. This initial phase would include 80,000 NASF and would cost approximately \$34.4 million. This cost includes \$575,000 for utility extensions for telephone, steam, and electrical systems. The second phase of the facility, at 60,000 NASF, is tentatively scheduled for construction in FY 1996 at an estimated cost (in current dollars) of \$18 million.

The Life Sciences Research Laboratory, Phase I will include the following types of space:

| <u>Room Type and USOE Code</u> | <u>NASF</u> |
|--------------------------------|-------------|
| Research Lab (250, 255) | 62,860 |
| Office (310, 315, 350) | 14,810 |
| Animal Rooms (570, 575) | 1,330 |
| Lounge (650) | 1,000 |
| TOTAL | 80,000 |

Upon completion of this project, the School of Life Sciences will vacate 3,500 NASF in Davenport Hall and 11,762 NASF in Harker Hall. The vacated space will be reassigned to other expanding units that require additional space.

REPAIR AND RENOVATION PROJECTS

FY 1990 REPAIR AND RENOVATION REQUEST

Funding for repair and renovation fills a critical void between capital budget appropriations for major remodeling needs and operating budget appropriations for the regular maintenance and day-to-day operation of existing buildings. While funding of adequate magnitude is of major importance, it is also critical to assure some level of support on a regular, recurring basis.

The University has relied upon the Capital Budget as the principal source of support for facility repair and renovation needs. That source in the past provided funds for repair and renovation through programs which are now discontinued--first through the Space Realignment, Renewal, and Replacement program, and most recently through the Build Illinois Repair and Renovation program. The Build Illinois program provided the University of Illinois with \$7.834 million annually in FY 1986, FY 1987, and FY 1988, but was suspended in FY 1989. The University is therefore requesting funding to provide a new source of support for repair and renovation needs at the same level of funding as the Build Illinois program. The \$7.95 million requested for FY 1990 repair and renovation needs includes \$7.834 million for actual projects and \$116,000 for the 1.5% fee the Capital Development Board now imposes on all contracts it administers.

The specific projects requested for FY 1990 are listed on Table 7 and are described in the section which follows.

TABLE 7
UNIVERSITY OF ILLINOIS
FY 1990 REPAIR AND RENOVATION PROJECTS

| <u>Campus</u> | <u>Project</u> | <u>Budget Category</u> | <u>Amount Requested</u> | <u>Cumulative Total</u> |
|------------------|---|------------------------|-------------------------|-------------------------|
| Chicago | AAB - Architecture Studios Remodeling | REMD | \$ 150.0 | \$ 150.0 |
| | AHP - Collaborative Research Laboratory | REMD | 232.8 | 382.8 |
| | CSN - Bioinstrumentation Facility Phase 3 | REMD | 301.3 | 684.1 |
| | SEL - Office Construction for LCMDB | REMD | 150.0 | 834.1 |
| | SES - Remodel Physics High Bay Phase 3 | REMD | 300.0 | 1,134.1 |
| | SEL - Organic Chemistry Remodeling | REMD | 300.0 | 1,434.1 |
| | MSA - Microbiology Research Remodeling | REMD | 146.0 | 1,580.1 |
| | PHARM - Pharmacodynamics Research Facility | REMD | 385.0 | 1,965.1 |
| | Roof Replacements - 3 Buildings | REMD | 1,019.5 | 2,984.6 |
| | Masonry Repairs - 4 Buildings | REMD | 300.3 | 3,284.9 |
| | Provision for CDB Contract Administration Fee | | \$ 48.0 | \$3,332.9 |
| Urbana-Champaign | Vet. Med. Bldg. - Complete Unfinished Space | REMD | 700.0 | 700.0 |
| | Main Library - Remodel 4th Floor & S. Elevator | REMD | 475.0 | 1,175.0 |
| | Huff Hall - Basement Remodeling | REMD | 360.0 | 1,535.0 |
| | Greenhouse Addition | REMD | 500.0 | 2,035.0 |
| | Bevier Hall - Elevator Installation | REMD | 300.0 | 2,335.0 |
| | Roger Adams & Noyes Labs - Waste Pipe Replacement | REMD | 204.1 | 2,539.1 |
| | Morrill & Burrill Halls - Vent. Improvements | REMD | 350.0 | 2,889.1 |
| | Psychology Bldg. - HVAC Improvements | REMD | 310.0 | 3,199.1 |
| | Undergraduate Library - Plaza Deck Replacement | REMD | 600.0 | 3,799.1 |
| | Geological Survey Lab - Masonry Repairs | REMD | 100.0 | 3,899.1 |
| | Noyes Lab - Masonry Repairs | REMD | 100.0 | 3,999.1 |
| | Fire Station - Upgrade Central Fire Alarm System | REMD | 150.0 | 4,149.1 |
| | Medical Sciences Bldg. - Enclose Porticoes | REMD | 400.0 | 4,549.1 |
| | Provision for CDB Contract Administration Fee | | \$ 68.0 | \$4,617.1 |

FY 1990 Repair and Renovation Projects
Chicago Campus

AAB - Architecture Studios Remodeling (\$150,000)

This project provides for the remodeling of Architecture Studio rooms B100, B552, 2100, 4100, 4300, and 5300 in the Architecture and Art Building (AAB). This remodeling will allow more productive use of existing facilities and will help satisfy a long-standing space deficiency for the School of Architecture. These spaces in AAB were not designed for their present use and are far below minimum standards for classroom and studio functions, particularly in relation to lighting and acoustics.

This project will bring spaces assigned to Architecture Studio activity up to the minimal light, acoustic, ventilation, and electrical requirements. It will provide for the separation of large spaces, additional electrical circuits, task lighting, and informal jury and display space.

AHP - Collaborative Research Laboratory (\$232,800)

This project will remodel space in room 125 of the Associated Health Professions Building (AHP) into wet laboratory space for a collaborative research program between the Departments of Nutrition and Medical Dietetics (NMD) and Physical Therapy (PT). The goals and objectives of the new program are to investigate the effects of exercise and diet on metabolic balance in normal young, normal elderly, and diabetic obese individuals. The remodeled area will also provide wet laboratory resources for NMD to use in support of its Food Metabolism Research Unit and for PT to use in support of its Kinesiology (human movement) Lab.

The project scope provides for the demolition of existing walls; the removal of obsolete equipment; and the installation of new laboratory furniture, shelving, lighting, ceiling, plumbing, and ventilation.

CSN - Bioinstrumentation Facility Phase III (\$301,300)

This project will provide space for an electronic test equipment laboratory for the Research Resource Center as a replacement for rooms

156 and 169 in the Benjamin Goldberg Research Center (BGRC) which are being assigned to the Academic Computer Center.

The proposed replacement space, 960 NASF in rooms W67 and W25 of the Clinical Sciences North Building (CSN), are to be remodeled and renovated to accommodate four biomedical electronic engineers and test equipment used in the design and construction section of the Bioinstrumentation Facility. Remodeling will consist of the removal of a washroom and lockers, the installation of floor and ceiling tiles, painting, distribution of electrical service, and the installation of temperature controls compatible with the use of the test equipment. All equipment and furniture at the present location in BGRC will be moved to the new laboratory.

SEL - Office Construction for LCMDB (\$150,000)

A major component of the biotechnology initiatives at the Chicago campus has been the Laboratory for Cell, Molecular, and Developmental Biology (LCMDB). The LCMDB brings together faculty and students in the most promising areas of microbiology, physiology, ecology, entomology, plant sciences, vertebrae biology, mammalian tissue culture, and evolutionary and population genetics research.

LCMDB has developed a multi-phased, comprehensive plan for converting underutilized teaching laboratories, common areas, and a storage room to productive research space. The scope of the plan contains 16 remodeling components valued at approximately \$1.5 million. The remodeling plan was initiated in FY 1985 and continued in FY 1986 with the support of local funds. The use of FY 1987 and FY 1988 Build Illinois funds is planned for the third and fourth increment of this plan respectively.

This phase of the plan will develop offices for the Laboratory on the fourth floor of the Science and Engineering Laboratories (SEL) and will require \$150,000 in FY 1990.

SES - Remodel Physics High Bay Phase III (\$300,000)

The Physics Department's success in attracting outside funding, its quality research, and its demonstrated commitment to quality teaching have earned the backing of a number of noteworthy supporters. Indeed, support from diverse sectors such as private industry, the Federal government, and

academic research agencies reveals widespread recognition of the value of physics research at the University of Illinois at Chicago.

The Physics Department's success results from a recognition of its applied research potential. For example, laser microchips, semiconductors, and data-based computer applications provide enormous opportunities for collaborative scientific projects between the University and numerous government and private sector agencies.

The Physics Department's continued success will depend upon its ability to attract funding support. Faculty must be provided with the required equipment and space facilities if the Department is expected to perform. Sophisticated technological research requires the availability of adequate equipment and space.

The proposed High Bay - Phase III project will remodel the space created by the Physics High Bay - Phase I and II projects. The Physics High Bay - Phase III project will entail the remodeling of 3,000 NASF on the second floor of the Physics High Bay area in the Science and Engineering South Building (SES) for ion implantation and device construction labs.

SEL - Organic Chemistry Remodeling (\$300,000)

The Department of Chemistry urgently needs additional research laboratory space. The most pressing need is in organic chemistry, where the Department is currently recruiting a senior synthetic organic chemist requiring space for a research group of approximately 20 student and postdoctoral co-workers.

The Department currently has no available space which is appropriately equipped to offer a work group of this size. This project is designed to provide this requisite space and equipment for synthetic organic chemistry research by remodeling rooms 3209 and 3210 in the Science and Engineering Laboratories Building (SEL) by creating partitions and installing the necessary plumbing, electrical, and ventilation systems.

MSA - Microbiology Research Remodeling (\$146,000)

Since the Medical Sciences Addition (MSA) was designed some 25 years ago, the way in which microbiological research is conducted has changed from single individuals working in small office laboratory suites to research teams using large modern laboratory facilities. Such teams,

organized and functioning in well-equipped laboratories and with adjacent support facilities, are able to manage productive research programs. This project provides for the remodeling of 1,000 NASF of small underutilized office laboratory suites, located on the eighth floor of MSA, into two large modern research laboratories. This remodeling will include electrical, plumbing, and ventilation upgrades.

PHARM - Pharmacodynamics Research Facility (\$385,000)

Room 346, on the third floor of the College of Pharmacy Building (PHARM), is currently used as an undergraduate pharmacology laboratory. This activity is going to be moved to room 440 of the Pharmacy Building, space more suitable for this lab. As a result, the vacated room 346, approximately 700 GSF, will be used as a research laboratory for graduate students in Pharmacodynamics. The entire room will be remodeled into several modular research laboratories and offices for faculty and graduate students. The current physical facilities are inadequate for biological research. However, once remodeled, this space will effectively be utilized for expanding faculty research in the important areas of drug toxicity and pharmacodynamics.

Roof Replacement - 3 Buildings (\$1,019,500)

A backlog of deferred maintenance has resulted in the campus' inability to maintain existing campus roofs effectively. The deterioration of facilities, the majority of which are well over 20 years old, has made spot roof repairs no longer feasible. Consequently, continuous leaks, affecting the progress of regular classes and research activities, are apparent in several buildings.

This FY 1990 project will provide funds to repair the tile roofs of the College of Medicine East and West Towers and the Clinical Sciences North Building.

Masonry Repairs - 4 Buildings (\$300,300)

This project will provide for masonry repairs on the College of Medicine West Tower, Clinical Sciences Building, Medical Sciences Addition, and the Neuropsychiatric Institute. Mortar in brick joints of these buildings is loose and deteriorating rapidly. Water infiltration is

causing damage to building interior surfaces and will soon cause structural damage. This project entails cutting out all loose mortar in the joints and tuck-pointing the facilities.

FY 1990 Repair and Renovation Projects
Urbana-Champaign Campus

Veterinary Medicine - Completion of Unfinished Space (\$700,000)

In September 1981, the Veterinary Medicine Basic Sciences Building was completed and occupied. Because of funding problems during the initial construction phase, it was decided that approximately 27,000 NASF of space would be shelled and completed at a later date. In November, 1986, approximately 11,120 NASF of first floor shelled area was completed. This multi-phased Build Illinois Project involves the completion of the remaining 15,880 NASF on the second and third floors. In FY 1987, planning funds were approved to initiate the final phase. Upon its completion, the remodeled area will provide the College of Veterinary Medicine with desperately needed research and office space for its research staff and graduate students.

Main Library - Remodel Fourth Floor and Replace South Elevator (\$475,000)

The current arrangement of libraries on the fourth floor does not make efficient or effective use of the space available. Existing walls are constructed of cellulose wall board over wood studs and do not meet current fire codes. Steel support columns supporting the roof are not covered with fire-retardant materials as required by current codes. Relocating the smaller libraries from the fourth floor to larger open areas on the second floor will increase the efficiency of operations and could reduce the staff required to operate these units. Library administrative and technical processing personnel will then be located into open landscaped office and work space on the fourth floor.

The existing elevator located in the southern portion of the Library was installed in 1929. This request includes the replacement of this obsolete and functionally inadequate elevator with a new elevator car that will have selective-collective controls, an automatic leveling system, and power door controls for ease of operation by paraplegics.

Approximately one third of the space on the fourth floor (6,948 NASF) will be remodeled as a part of this project. The remodeling must be

completed in various phases to allow for the relocation of staff and books around the construction area and to keep the library areas open and usable by faculty, staff, and students. Additional funds will be requested in future years to complete additional phases of remodeling on the fourth floor.

Huff Hall - Basement Remodeling (\$360,000)

This project involves remodeling 7,700 NASF on the west side of the Huff Hall basement to accommodate new offices for the Department of Leisure Studies and new locker room space for women. Remodeling will make all activity areas available to women and will increase the women's locker room facilities. Construction of the office space will permit the Department of Leisure Studies to be centrally located in Huff Hall and to vacate space in the Children's Research Center needed for expansion of the research projects being conducted by the Institute for Research on Human Development. Also included in this project is the installation of a fire alarm warning system and evacuation annunciator for the entire building.

The remodeling will involve new partitioning, and heating, ventilation, electrical, flooring, and ceiling changes and improvements. Included in this project is a new towel distribution room, a conversion for a women's rest room, and a coed corridor connecting all activity areas. There will be a similar request in future years to remodel the east half of the basement to make it more efficient for office and recreational use.

Greenhouse Addition (\$500,000)

This project involves the completion of an additional greenhouse range that will be used by the Department of Horticulture. The range was designed as a part of the original Plant Sciences Greenhouse construction project but was eliminated to reduce the total project cost. The design need only be modified slightly to be consistent with the final design of the facilities just completed. With the construction of this greenhouse addition the original commitment made to the College of Agriculture and the School of Life Sciences for greenhouse replacement will be completed.

Bevier Hall - Elevator Installation (\$300,000)

This project is a request for funds to install an elevator at the south end of Bevier Hall. The new elevator will be used to carry animals and people to the upper floors from a new underground tunnel system that will interconnect Bevier Hall, Turner Hall, the Animal Sciences Laboratory, and the new federally funded Plant and Animal Biotechnology Laboratory. Instead of remodeling rooms in Bevier Hall, new animal rooms that meet Federal guidelines for ventilation and sanitation will be constructed in the basement of the Biotechnology Laboratory. Animals may then be transferred from the Biotechnology Laboratory and, through the use of this new elevator, transported to the various research laboratories on the third and fourth floors of Bevier Hall.

Waste Pipe Replacement (\$204,100)

This project is a continuation of the replacement of waste piping in research laboratories, runouts, and risers around the campus. Waste piping consisting of hubbed cast iron has a very short life when exposed to today's organic chemicals. This iron piping exists in nearly any wet laboratory that is 50 years or older. The waste piping in the research laboratories will be replaced with a much more durable fused joint polypropylene plastic piping. This project will comprise the third phase of such remodeling in Noyes Laboratory, and will begin replacement of waste piping in Roger Adams Laboratory.

Morrill and Burrill Hall - Ventilation Improvements, Phase I (\$350,000)

This project is designed to improve some of the building ventilation problems in both Morrill and Burrill Hall. As originally designed, these buildings had oil bath filter systems that subsequently became functionally inadequate. An improved system was installed but the oil and dust from the original equipment remained in the duct system. As a result, there is currently a problem with this material being transported through the system that creates a "dirt" shower in laboratories and offices causing contamination of important research projects. The project consists of cutting access holes for clearing the ducts, cleaning the duct system, installing an enhanced filtering system, and replacing several severely deteriorated ducts.

Psychology Laboratory - HVAC Improvements, Phase II (\$310,000)

This project is the second phase required to correct deficiencies in the ventilation system at the Psychology Laboratory Building. This phase consists of separating the office and laboratory reheat systems throughout the nine floors of the building and then balancing all air and water components of the HVAC system in the building.

Undergraduate Library - Plaza Deck Replacement, Phase I (\$600,000)

This project will provide a new roof surface, the replacement of brick pavers, and improvements to the drainage system at the Undergraduate Library. The roof and plaza deck pavers have been a continuing maintenance problem since the building opened in 1969. The roof has always leaked and is getting progressively worse. If improvements are delayed much longer, continued water infiltration will deteriorate the structural integrity of the building and will result in a much larger and costlier remodeling project. Interim brick paver repairs are presently required on an annual basis. The total plaza deck replacement project is expected to be completed in two phases with a request for the final phase in FY 1991.

Geological Survey Laboratory - Masonry Repairs (\$100,000)

This project will provide for masonry repairs on the Geological Survey Lab Building originally constructed in 1942. Mortar in brick joints in the chimney areas and the east and west buttress walls is loose and deteriorating rapidly. Water infiltration is causing damage to building interior surfaces and woodwork and it will soon cause structural damage. This project entails cutting out all loose mortar in joints and tuck-pointing and caulking the joints and cracks.

Noyes Laboratory - Masonry Repairs (\$100,000)

This project will provide for masonry repairs on Noyes Laboratory, originally constructed in 1902 and 1915. Mortar in the brick stacks and the south elevation brick parapet wall is loose and deteriorating rapidly. Water infiltration is causing severe deterioration to walls, woodwork, bricks, and mortar joints, and if not improved, will cause severe structural damage. This project includes cutting out all loose mortar in joints and tuck-pointing and caulking the joints and cracks.

Fire Station - Upgrade Central Fire Alarm System (\$150,000)

This project will upgrade the existing central fire alarm work station facility and equipment at the fire station to improve function and reliability. Because of the increasing number of automatic alarm devices being installed in new and remodeled areas, new microprocessor-based equipment is needed at the central alarm work station. This project provides for the remodeling of the existing facility and installation of the new equipment.

Medical Sciences Building - Enclose Porticoes (\$400,000)

To increase the Medical Sciences Building's efficiency, funds are requested to remodel the west and north porticoes and to realign some underutilized areas. The Medical Sciences Building was originally designed for a one year program; however, in 1978 the College of Medicine at Urbana-Champaign became a four year medical school. This change from a one to a four year school was not accompanied by an appropriate physical alteration in the Medical Sciences Building and as a result, the building has become seriously inadequate in size and configuration. This project will add approximately 2,600 square feet of new useable space to the building. This space will be used to construct a new 1,100 square foot classroom and space for a portion of the Library of Health Sciences. The new enclosure will provide an after-hour access to the Library that will eliminate the existing security problem of having the entire building open during low use hours.

ENERGY CONSERVATION PROJECTS

FY 1990 ENERGY CONSERVATION REQUEST

Energy conservation has been an important goal of the University of Illinois for nearly two decades. Since 1970, the campuses have operated an active program aimed at identification and implementation of energy cost saving measures. During the first ten years the program focused primarily on operational changes which could be accomplished at little or no direct cost to achieve energy savings. These operational measures included actions as rudimentary as turning off lights when a building was not in use, cycling fan systems, lowering building temperatures in winter, and reducing levels of illumination in corridors and infrequently used areas. Some slightly more sophisticated measures included replacement of existing temperature controls with more efficient units, installation of timers on fan systems, replacement of hot water storage tanks with units employing instantaneous heaters, and providing additional weather sealing to buildings. These measures represent only a few of the many initiatives which resulted in energy savings. However, they illustrate the University's early efforts to maximize energy conservation at minimal expense.

At the end of the last decade, however, it became clear that virtually all significant operational energy conservation measures had been implemented, and new ways to curb the precipitous growth in the utilities budget must be devised. The energy conservation capital improvements program was therefore implemented. Projects in this program aim toward improving the energy efficiency of building and mechanical systems and utilizing more economical fuel sources.

In FY 1981 the University began requesting funding for the Energy Conservation program and it received enthusiastic support from the Illinois Board of Higher Education, the Bureau of the Budget, the General Assembly, and the Governor. Approximately \$1.9 million was appropriated to the University of Illinois in FY 1981. In addition, \$6.9 million was appropriated in FY 1981 for the reconversion of three boilers at the Urbana-Champaign Abbott Power Plant from oil/natural gas burning to coal burning. Since FY 1982, the University has been requesting funding from the U.S.

Department of Energy's Institutional Building Grants program. These awards have been matched by State appropriations.

On average, the energy conservation projects which have been funded thus far will recover their initial capital cost through energy savings in approximately three and a half years. It is important to note that the "energy savings" discussed here do not represent a net cash savings. The reduction in energy usage as a result of the implementation of these projects more accurately represents energy cost avoidance, which will reduce the amount of the utility budget increase. For example, as the University expands and intensifies its uses of instructional and research computers and supercomputers, a significant amount of additional energy will be required. In addition, research efforts in areas such as Electrical Engineering, Computer Science, and Plant and Animal Genetics will require "clean rooms" and other sophisticated laboratory environments which are extensive consumers of energy. To some extent, the increased energy requirements these programs carry can be partially offset as a result of conservation efforts within the University's overall energy budget.

To support this continued effort to moderate overall energy costs, the University is requesting \$612,120 in FY 1990 for 20 energy conservation capital improvement projects. These State funds will match a Federal grant of \$612,112 from Cycle X of the ongoing Institutional Building Grants program. The individual projects which comprise the Cycle X request are listed on Table 8 and are described in the section which follows it.

TABLE 8
UNIVERSITY OF ILLINOIS
FY 1990 ENERGY CONSERVATION REQUEST - CYCLE X

| <u>Campus</u> | <u>Building</u> | <u>Federal Grant</u> | <u>Requested State Funds</u> | <u>Total Project Cost*</u> |
|------------------------|-------------------------------------|--------------------------|--------------------------------------|------------------------------------|
| Chicago | Addams Hall | \$2,526 | \$2,526 | \$5,052 |
| | Burnham Hall | 3,353 | 3,353 | 6,706 |
| | Campus Health Services Building | 3,951 | 3,952 | 7,903 |
| | College of Dentistry Building | 45,226 | 45,226 | 90,452 |
| | Eye and Ear Infirmary | 12,144 | 12,144 | 24,288 |
| | Henry Hall | 650 | 650 | 1,300 |
| | Illinois Neuropsychiatric Institute | 15,757 | 15,758 | 31,515 |
| | Lincoln Hall | 6,841 | 6,842 | 13,683 |
| | Medical Sciences South Building | 8,854 | 8,854 | 17,708 |
| | Roosevelt Road Building | 24,179 | 24,179 | 48,358 |
| | Sangamon Street Building | 11,895 | 11,896 | 23,791 |
| | Science & Engineering Laboratories | 116,444 | 116,445 | 232,889 |
| | Science & Engineering South Bldg. | 101,816 | 101,816 | 203,632 |
| | Steam Plant | 19,127 | 19,127 | 38,254 |
| | Taft Hall | 6,841 | 6,842 | 13,683 |
| | Utility Building | <u>12,154</u> | <u>12,154</u> | <u>24,308</u> |
| | TOTAL | \$391,758 | \$391,764 | \$783,522 |
| Urbana-Champaign | Burrill Hall | \$63,970 | \$63,970 | \$127,940 |
| | Coordinated Science Laboratory | 51,159 | 51,159 | 102,318 |
| | Materials Research Laboratory | 71,830 | 71,831 | 143,661 |
| | Medical Sciences Building | <u>33,395</u> | <u>33,396</u> | <u>66,791</u> |
| | TOTAL | \$220,354 | \$220,356 | \$440,710 |
| University of Illinois | TOTAL | \$612,112 | \$612,120 | \$1,224,232 |

*The amounts indicated in the project descriptions which follow are the requested State funds, not the total project cost.

FY 1990 Energy Conservation Projects - Cycle X
Chicago Campus
(\$391,764)

Addams Hall (\$2,526)

This project will install automatic lighting controls in the 10 classrooms in Addams Hall.

Burnham Hall (\$3,353)

This project will install automatic lighting controls in the 10 classrooms in Burnham Hall.

Campus Health Services Building (\$3,952)

This project will install a control system to monitor and control the building temperature. The building will be divided into several heating zones. The system will not allow heating until the outside air temperature drops below 60° F during the day; the system will then modulate the zone valves to maintain a 70° F room temperature. At a programmed time, the system will switch to the night mode to maintain a building temperature of 55° F. When the system switches back to day mode, the temperature will ramp slowly back to 70° F.

College of Dentistry Building (\$45,226)

This project will recover heat from six exhaust fans and transfer the recovered heat to two large penthouse supply fans.

Eye and Ear Infirmary (\$12,144)

This building has a single air handler which services the operating room areas on the second floor. This project will install a heat recovery system around the air handler and a nearby toilet exhaust fan.

Henry Hall (\$650)

This project will install automatic lighting controls in the two classrooms in Henry Hall.

Illinois Neuropsychiatric Institute (\$15,758)

This project will install a control system to monitor and control the building temperature. The building will be divided into several heating zones. The system will not allow heating until the outside air temperature drops below 60° F during the day; the system will then modulate the zone valves to maintain a 70° F room temperature. At a programmed time, the system will switch to the night mode to maintain a building temperature of 55° F. When the system switches back to day mode, the temperature will ramp slowly back to 70° F.

Lincoln Hall (\$6,842)

This project will install automatic lighting controls in the 30 classrooms in Lincoln Hall.

Medical Sciences South Building (\$8,854)

This project will install a control system to monitor and control the building temperature. The building will be divided into several heating zones. The system will not allow heating until the outside air temperature drops below 60° F during the day; the system will then modulate the zone valves to maintain a 70° F room temperature. At a programmed time, the system will switch to the night mode to maintain a building temperature of 55° F. When the system switches back to day mode, the temperature will ramp slowly back to 70° F.

Roosevelt Road Building (\$24,179)

This project will replace one of the building's existing low-pressure fire tube boilers with a high-efficiency steam boiler.

Sangamon Street Building (\$11,896)

This building has a single air handler and a companion exhaust fan. This project will recover heat from the exhaust fan and deliver it to the air handler for reuse in the building.

Science and Engineering Laboratories (\$116,445)

This project will install a new return duct system for the current fan system. This will allow exhaust air to be recirculated.

Science and Engineering South Building (\$101,816)

This project will replace the present laboratory steam still with a reverse osmosis and deionization system. This new system will provide laboratory water acceptable to the current requirements of researchers.

Steam Plant (\$19,127)

This project will replace 564 incandescent light fixtures with 282 fluorescent fixtures in the utility tunnel system of the Health Sciences Center. One hundred and forty-one weatherproof receptacles will also be installed to allow task lighting when repair work in local areas is necessary.

Taft Hall (\$6,842)

This project will install automatic lighting controls in the 30 classrooms in Taft Hall.

Utility Building (\$12,154)

This project will replace 358 incandescent light fixtures with 179 fluorescent fixtures in the utility tunnel system of the University Center. Ninety weatherproof receptacles will also be installed to allow task lighting when repair work in local areas is necessary.

FY 1990 Energy Conservation Projects - Cycle X
Urbana-Champaign Campus
(\$220,356)

The FY 1990 energy conservation capital improvement projects for the Urbana-Champaign campus involve extending the Monitor and Control System (MACS) to the four buildings listed below. The MACS is connected to a Central Supervisory Control Center, which monitors and regulates all building energy use from a single campus location. By controlling fan speeds during low-occupancy and no-occupancy hours, these projects will conserve steam and electricity.

- Burrill Hall (\$63,970)
- Coordinated Science Laboratory (\$51,159)
- Materials Research Laboratory (\$71,831)
- Medical Sciences Building (\$33,396)