

1993-94 SESSION
COMMITTEE HEARING
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Joint Committee on
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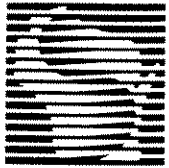
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MAR 26 1993

March 22, 1993

To: Governor Tommy G. Thompson
Senator Gary R. George, Co-chair, Joint Committee on Finance
Representative Barbara J. Linton, Co-chair, Joint Committee on Finance

FROM: President Katharine C. Lyall *K. Lyall*

RE: Revised Research and Public Service Report

Section 36.45(3), Wisconsin Statutes, requires the University of Wisconsin System to report to the Governor and the Joint Committee on Finance on the purpose, duration, cost and anticipated completion date of all research and public service projects for which it is expending general purpose revenues. The first of these biennial reports was submitted in July 1992.

After reviewing the July 1992 report, the Joint Committee on Finance requested supplemental information, particularly more information on the annual research and public service allocation/reallocation process at UW System institutions. This report provides the supplemental information.

If you need additional information regarding the research and public service report, please contact Senior Vice President Stephen R. Portch (262-3826).

Enclosure

cc: Members, Joint Committee on Finance
Vice Presidents
Secretary Klauser (DOA)
Robert Lang (LFB)
Martin Olle, (DOA)
David Suchman, (LFB)
Legislative Reference Bureau (3 copies)

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UNIVERSITY OF WISCONSIN SYSTEM

RESEARCH AND PUBLIC SERVICE REPORT

UNIVERSITY OF WISCONSIN SYSTEM RESEARCH AND PUBLIC SERVICE INTRODUCTION

I. STATUTORY REQUIREMENT

S. 36.45 (3) of the Wisconsin Statutes requires the University of Wisconsin to report to the Governor and the Joint Committee on Finance the purpose, duration, cost, and anticipated completion date of all research and public service projects for which it is expending general purpose revenues. The first of these biennial reports was submitted in July, 1992.

II. REVISED REPORT

After reviewing the July 1992 report, the Joint Committee on Finance requested supplemental information, particularly more information on the annual research and public service allocation/reallocation process at UW System institutions. This report provides the supplemental information.

The July 1992 report focused on the 1991-92 fiscal year. The public service section was revised using 1991-92 information. The descriptions of legislated research and public service projects also reflect the 1991-92 fiscal year. UW-Madison elected to use the most current data available (1992-93) when revising the research section. Because the research allocation/reallocation process did not change between 1991-92 and 1992-93, the difference in fiscal years does not have any effect on the process information described in this report. Both sections of the next research and public service report, which is due September 1994, will focus on the 1993-94 fiscal year.

III. PROJECT DURATION

All of the legislated research and public service projects described in this report address ongoing needs (see Appendix 3 and Appendix 4 of the research section and Appendix 1 and Appendix 4 of the public service section). As a result, *these projects do not have specific ending dates*. However, the specific focus of a project can be modified to reflect emerging needs and priorities. For example, UW-Stout's Manufacturing Technology Transfer project was initially developed in 1986 to assist the J.I. Case Company to consolidate and develop a new advanced manufacturing system at its Wausau facility. Currently, the program serves companies throughout Wisconsin by providing the means to transfer state-of-the-art manufacturing practices to manufacturers via interaction with UW-Stout's faculty, technical advisors, and students. Although the program no longer targets the J.I. Case Company, it does provide similar services to other Wisconsin companies.

UNIVERSITY OF WISCONSIN SYSTEM

RESEARCH REPORT

UNIVERSITY OF WISCONSIN SYSTEM RESEARCH

I. OVERVIEW

As shown in Table 1, the University of Wisconsin System's 1992-93 GPR research budget is \$51.5 million. The majority of the research funding (82.8%) is in the UW-Madison budget.

TABLE 1
RESEARCH FUNDING BY INSTITUTION
1992-93 FISCAL YEAR

INSTITUTION	FUNDING	PERCENT
Madison	\$42,616,761	82.8%
Milwaukee	\$6,795,889	13.2%
Comprehensives and Centers	\$909,875	1.8%
Systemwide	\$1,146,843	2.2%
Extension	\$0	0.0%
UW System Total	\$51,469,368	100.0%

II. UW-MADISON RESEARCH

A. Background

UW-Madison's 1992-93 GPR research budget was \$42.6 million. Some of the key facts about the research budget include:

- \$32.6 million is allocated to salaries and wages and \$9.7 million is allocated to fringe benefits.
- The salary and wage budget provides funding for 485.57 unclassified and 368.23 classified FTE research positions.
- The budget is divided among three funds: general program operations, distinguished professorships, and industrial and economic development research.
- The general programs operations fund accounts for 98% of the total GPR research budget.
- Five schools and colleges accounts for 86% of the general program operations research budget: the Colleges of Agricultural and Life Sciences, Engineering, and Letters and Science, and the Graduate and Medical Schools. The budget for the College of Agricultural and Life Sciences alone is 47% of the general program operations research budget.

B. Use of Funds

The GPR research monies function as an investment in UW-Madison's research enterprise. *It provides the core support and basic infrastructure that are required for the continued operation of sponsored research programs.* In a typical department, GPR research funds support the salaries of classified clerical and fiscal staff responsible for payroll processing and purchasing related to external grants, typing grant applications and correspondence related to grant activities, etc. Typical biological and physical science departments, and campus-wide research support centers, also budget GPR research funds for classified and unclassified technical support personnel, such as laboratory technicians, lab animal care staff, and instrumentation technicians. These positions form a human resource infrastructure that provides general support to sponsored research programs. Responsibilities of the positions are not limited to, or associated with, particular research grants or projects. Instead, they provide broad support to the total sponsored research program. Continuity of funding for these positions is a fundamental requirement. A department cannot, for example, hire and terminate a payroll benefits specialist whenever it begins and concludes a sponsored research project. The GPR research budget ensures continuity of funding.

The budget is also invested in partial salary support for faculty members. GPR research funds are budgeted for faculty salaries for a variety of purposes, including:

- match money for federal grants that require institutional contributions,
- supplements to existing sponsored research activities,
- support for a faculty member to compete for extramural funds, or
- "bridge" funds which support a faculty member's research efforts for an interim period when extramural funding has expired.

In 1991-92, the return on this investment in support staff and faculty salaries was \$318.5 million in extramural grants and contract awards.

C. Relationship of Research Funding and Research Projects

With the exception of legislated research projects and projects funded through the Faculty Research Committee, the GPR research budget is not allocated on a project by project basis or for narrowly defined research purposes. The support staff discussed above are rarely associated with specific research efforts or projects. Therefore, they are not budgeted in that manner. At any time, the research components of a particular faculty member's salary might be associated with multiple research projects, with different time frames and purposes, some federally and some privately funded, for which the salary serves different functions (e.g. as a required match for some, as a supplement for others, etc.). Alternatively, the research component of a faculty member's salary might not be associated with any specific research projects: the faculty member might be writing one or multiple grant proposals. Given these complexities, GPR research funds for faculty salaries, like support staff salaries, are not budgeted for specific projects or narrowly defined research purposes.

D. Reductions and Reallocations

UW-Madison has absorbed significant reductions and made significant reallocations of its GPR research budget over the past twenty years. Since 1972-73, almost \$9 million of GPR funds has been cut by the state or reallocated to other programs (e.g. instruction, academic support). The reallocation resulted from three categories of funding shifts:

- institutional reallocations to meet institutional priorities,
- internal school and college reallocations to meet school and college priorities, and
- program and activity reclassifications.

In addition, there have been significant reallocations that did not affect the total GPR research budget. Existing GPR research funds have been shifted between school and colleges, and departments. Although there have been large individual reallocations, most reallocations are relatively small, take the form of vacant position transfers or redefinitions, and are conducted at the school or college level. *The position approval process is the primary tool available to school and college administrators for reallocating the GPR research budget.*

Appendix 1 provides historical analysis of the UW-Madison research budget. Appendix 2 describes the research budget review process of the largest UW-Madison schools and colleges. Appendix 4 describes legislated UW-Madison research projects.

III. UW-MILWAUKEE RESEARCH

UW-Milwaukee's total 1992-93 GPR funded research budget is \$6.8 million. The specific use of more than 75% of this funding is reviewed on an annual basis. There are several different processes used to prioritize and/or assign these funds.

- The Graduate School's Research Committee reviews proposals by new faculty and provides seed money to develop research programs.
- The grant-matching process in the Graduate School provides required institutional cost sharing (primarily for salary support for research assistants and equipment).
- The Graduate School's Research Centers undertake an annual review of research projects by Research Center staff and Graduate School administration.
- The College of Engineering uses a process by which senior faculty are awarded a match for grant funding and junior faculty are awarded seed money and release time to allow them to start their research programs.
- The College of Letters and Science assigns faculty research dollars based on extramural funding. This serves as an institutional match for grant funding.

The remaining 25% of the GPR research funding is committed on a permanent basis. These commitments are primarily used to support the research infrastructure. Included in this total is approximately \$500,000 assigned to the Graduate School's Office of Research and Sponsored Projects, \$100,000 assigned to the School of Education's Research Office, and \$50,000 in the School of Architecture's Center for Urban Planning Research.

Table 3 in Appendix 1 provides a breakdown by school/college of GPR funded research expenditures for 1973-74, 1982-83, and 1992-93. Appendix 4 describes legislated UW-Milwaukee research projects.

IV. UW COMPREHENSIVE INSTITUTIONS AND UW CENTERS RESEARCH

Although nearly 95% of the UW System's GPR research funding is budgeted at UW-Madison and UW-Milwaukee, faculty at the comprehensive institutions also need to engage in research in order to remain current in their fields. The comprehensive institutions have established internally-funded programs designed to encourage and support faculty and academic staff members to engage in research and other scholarly and creative activities. Funds are available for researchers, writers, artists, and performers who need project support for gathering data, accessing primary materials, equipment, services, supplies, student research collaboration, and clerical assistance. Funding awards are relatively small (\$100 to \$5,000).

V. SYSTEMWIDE RESEARCH

Funding for three UW System research programs is held in systemwide accounts. These programs include:

- Applied Research, which provides funding for UW System institutions for research addressing specific problems faced by Wisconsin industries. Details regarding this program are provided in a separate annual report to the State.
- Distinguished Professors, which provides partial support for 20 Distinguished Professor positions in the University of Wisconsin System. The GPR funding is matched by an equal or greater match from businesses and/or other non-GPR sources. During the 1991-92 fiscal year, this funding supported eight professors at UW-Madison, three at UW-Milwaukee, two each at UW-Parkside and UW-Stevens Point, and one each at UW-Eau Claire, UW-Oshkosh, and UW-Whitewater. An annual fiscal report is provided for this program.
- Solid Waste Experiment Centers, Noncompostible Landfill and Sludge, which provides funding to UW System institutions for research into the alternative methods for the disposal of solid waste. Details regarding these programs are provided in a separate annual report to the State.

APPENDIX 1

HISTORICAL ANALYSIS OF RESEARCH BUDGETS AT UW-MADISON AND UW-MILWAUKEE

I. UW-MADISON

A. Background

UW-Madison's GPR research budget, excluding fringe benefits, increased by \$21.1 million between 1972-73 and 1992-93. The 1972-73 GPR budget reflects the State's "general purpose" base investment in UW-Madison's research enterprise at the time of merger. This base served the same purposes as the GPR research base does today: it provided a stable human resource infrastructure, opportunities for faculty to compete for extramural funds, and matching funds for gifts, grants, and contracts. The \$21.1 million increase is a function of changes in the following four general categories of funding. (All amounts exclude fringe benefits.)

1. Compensation Increases.

This category includes all salary and wage related allocations, such as faculty, academic, and classified pay plans; catch-up; student wage increases; length of service pay; performance awards; quality reinvestment; pay equity, etc. Cumulative compensation increases over the period were approximately \$24.1 million.

2. Specific Research Allocations.

This category includes all legislated appropriations for specific research purposes, such as Sea Grant Institute, Biotechnology Center, and Family Farm Institute. A list of these allocations is shown in Appendix 3. Total UW-Madison specific research allocations were approximately \$5.9 million. This amount reflects the sum of the initial allocations for these projects; subsequent pay plan increases related to the projects are included in the category above.

3. General Reductions and Allocations.

This category includes all general allocations that were not restricted to the research program, excluding compensation increases, such as productivity and base budget reductions, inflation offsets, and turnover savings. General reductions and allocations reduced the research budget by \$2.7 million over the period. The negative impact of this category is primarily because of mandated base budget reductions in 1980-81, 1981-82, and 1985-86.

4. Institutional Reallocations.

This category includes all GPR reallocations made by UW-Madison that resulted in a shift of funds to or from the research program. Net reallocations over the period reduced the GPR research budget by \$6.2 million.

Thus, since 1972-73, UW-Madison's "general purpose" GPR research budget has changed as a result of standard pay plan increases, specific research allocations, required budget cuts, and funds reallocated to other activities. The total GPR research budget increased by \$5.9 million due to legislated appropriations for specific research purposes. Assuming standard pay plans represent the cost-to-continue for the 1972-73 base budget, UW-Madison's current "general purpose" GPR research budget is almost \$9 million lower than the budget that would have developed from that 1972-73 base. This is a minimum estimate because the impact of the reductions and reallocations on subsequent compensation increases has not been taken into consideration.

The extent of UW-Madison's internal reallocations is confirmed by two facts. First, as a percentage of total GPR, GPR budgeted for research has declined by approximately 1 percentage point over the past twenty years, from 18.7% in 1972-73 to 17.8% in 1992-93. (Figures represent research GPR taken as a percent of total GPR excluding special purpose appropriations, such as debt service, utilities, etc.) Moreover, approximately \$7 million of the current budget consists of those legislated, specific research projects that did not exist in 1972-73. If the \$7 million is excluded from current budget amounts, the current research portion becomes 14.5%, or a 3.2 percentage point decline.

Second, the change in research FTE positions funded by GPR also reflects substantial reallocation. In 1973-74 (1972-73 FTE data are not available), 738.01 FTE GPR funded positions were budgeted on research. In 1992-93, 847.21 FTE GPR funded positions are budgeted on research. Thus, there has been a 109.2 FTE growth in GPR funded research positions since 1973-74. However, over that period UW-Madison received an additional 146.63 FTE positions for legislated, specific research projects. If these are removed from the current budget, there has been a net reduction of 37.43 FTE. This reduction represents a minimum because it does not include reallocations of positions required for some legislated projects for which FTEs were not provided.

B. Reallocations

The net reduction of \$6.2 million of GPR funded research represents the effects of several types of funding shifts: institutional level reallocations to meet new institutional priorities, internal school and college reallocations to meet new school college priorities, and reclassification of existing activities. In the first two cases, funds are removed from an existing function, which is usually terminated, and applied to an alternate function. In the latter case, a particular function continues to be funded, but it is redefined as another activity such as instruction, academic support, etc. These reclassifications occur because program definitions evolve through time.

In aggregate, internal school and college reallocations account for most of the institution's total reallocations. School and college deans and faculty members have the greatest knowledge concerning their respective disciplinary areas and are in the best position to recognize and act upon changing needs and priorities in their various programs. Typically, such reallocations are relatively small in magnitude (i.e. less than \$100,000), so that the \$6.2 million total is the result of many individual decisions to reallocate funds over the past twenty years. Some examples of UW-Madison's GPR research reallocations are listed below.

1. Institutional Reallocations.

- In 1992-93, UW-Madison reallocated approximately \$760,000 of GPR research funds as part of the institution's Quality Reinvestment Plan. The plan involved examination of all of the institution's programs and a redirection of funds to meet unfunded priority needs.
- In 1988-89, \$113,000 was reallocated from research to support development and implementation of automated registration.
- In an effort to strengthen UW-Madison's public service mission, the institution established the Division of University Outreach in 1984-85. The new division was partially funded through a \$100,000 reallocation from the research budget.

2. Internal School and College Reallocations.

- In 1976-77, the School of Family Resources and Consumer Sciences shifted \$11,000 in faculty salaries from research to instruction after a faculty member retired.
- To meet instructional program requirements, \$78,000 for a vacant position in the Medical School was reallocated from research to instruction in 1980-81.
- To encourage retention of a faculty member in 1984-85, the College of Engineering provided a research opportunity at the Engineering Experiment Station. This effort required the college to reallocate \$10,000 to the research budget.
- In 1987-88, the College of Letters and Science conducted a \$567,000 reallocation from research to instruction to meet the expenses of operating a quality instructional program. At that time, competitive starting salaries for faculty in such areas as Computer Science had increased significantly beyond the growth rate in the college's instructional budget. The college also faced a high priority need for micro computers and other technical equipment to adequately meet the needs of students.

3. Reclassification.

- In 1985-86, Earthwatch and Public Information Programs in the Institute for Environmental Studies were reclassified from research to public service, causing a \$20,000 decrease in the research budget.
- The Guidance Institute for Talented Students in the School of Education was reclassified as a public service activity in 1978-79; \$61,000 was shifted from research to public service.
- In 1982-83, \$405,000 was reclassified from research to experimental farms to appropriately reflect the magnitude of farm operations in the College of Agricultural and Life Sciences.
- In 1989-90, administration of the extramural support program in the Medical School was reclassified from academic support to research in accordance with appropriate activity definitions. The reclassification produced an \$84,000 increase in the research budget.
- In 1991-92, \$160,000 for undergraduate research fellowships was reclassified from instruction to research.

These examples illustrate the types of reallocations and funding shifts that affect the aggregate GPR research budget at the UW-Madison. There are, however, other reallocations that do not necessarily impact UW-Madison's aggregate GPR research budget. These reallocations take the form of GPR research funding shifts within and between schools and colleges.

Table 2 shows the portion of the total GPR budget accounted for by each school, college, and administrative unit in 1973-74, 1982-83, and 1992-93. To isolate the effects of the budget shifts between colleges, all legislated specific GPR research allocations have been excluded. The table indicates, for example, that in 1973-74, the College of Agricultural and Life Sciences, the Graduate School, and the Medical School accounted for approximately 61%, 20%, and 2% of the GPR research budget respectively. By 1992-93, these units accounted for approximately 56%, 17%, and 10% of the GPR research budget respectively. The combined share accounted for by the College of Agricultural and Life Sciences and the Graduate School declined by about 8 percentage points, equivalent to \$2.0 million, while the Medical School experienced a commensurate increase in the portion of the budget for which it accounts. Part of this shift is attributable to formal reallocations between divisions, and part is attributable to greater incremental funding being directed to the Medical School. Other units also show significant change.

TABLE 2
UNIVERSITY OF WISCONSIN—MADISON
COMPARISON OF GPR RESEARCH BUDGETS
1973—74, 1982—83, AND 1992—93

DIVISION	1973—74		1982—83		1992—93	
	FUNDING	PERCENT	FUNDING	PERCENT	FUNDING	PERCENT
General Services	\$0	0.0%	\$0	0.0%	\$160,000	0.6%
Business Services	\$252,926	2.5%	\$238,775	1.2%	\$431,903	1.7%
Information Technology	\$0	0.0%	\$0	0.0%	\$0	0.0%
College of Agriculture and Life Sciences	\$6,163,303	60.9%	\$10,559,153	54.8%	\$14,137,886	56.2%
School of Education	\$267,361	2.6%	\$194,397	1.0%	\$202,427	0.8%
College of Engineering	\$365,321	3.6%	\$806,451	4.2%	\$1,023,492	4.1%
Family Resources and Consumer Science	\$0	0.0%	\$50,073	0.3%	\$26,685	0.1%
Graduate School	\$2,000,738	19.8%	\$3,855,170	20.0%	\$4,328,013	17.2%
Institute for Environmental Studies	\$31,096	0.3%	\$134,233	0.7%	\$45,040	0.2%
Law School	\$40,650	0.4%	\$172,074	0.9%	\$233,733	0.9%
College of Letters and Science	\$634,793	6.3%	\$1,424,528	7.4%	\$1,524,934	6.1%
Medical School	\$227,411	2.2%	\$1,536,906	8.0%	\$2,562,794	10.2%
School of Nursing	\$0	0.0%	\$0	0.0%	\$25,393	0.1%
Psychiatric Institute	\$120,455	1.2%	\$183,872	1.0%	\$250,783	1.0%
School of Pharmacy	\$10,691	0.1%	\$99,348	0.5%	\$203,824	0.8%
TOTAL	\$10,114,745	100.0%	\$19,254,980	100.0%	\$25,156,907	100.0%

* Excludes Fringe Benefits and Legislated Research Projects *

II. UW-MILWAUKEE

Table 3 shows the portion of the total GPR budget accounted for by each UW-Milwaukee school, college, and administrative unit in 1973-74, 1982-83, and 1992-93. The largest research budgets are found in the Graduate School, Letters and Science, Engineering and Applied Science, and Business Administration. The largest percentage increases since merger have occurred in Business Administration and Computing Services. The largest percentage decrease occurred in the Graduate School.

**TABLE 3
UNIVERSITY OF WISCONSIN - MILWAUKEE
COMPARISON OF GPR RESEARCH BUDGETS
1973-74, 1982-83, AND 1992-93**

DIVISION	1973-74		1982-83		1992-93	
	FUNDING	PERCENT	FUNDING	PERCENT	FUNDING	PERCENT
Administrative Affairs	\$0	0.0%	\$8,674	0.2%	\$46,485	0.7%
Academic Affairs	\$0	0.0%	\$59,700	1.5%	\$796	0.0%
Allied Health Professions	\$0	0.0%	\$0	0.0%	\$27,330	0.4%
Architecture and Urban Planning	\$1,274	0.1%	\$4,171	0.1%	\$50,394	0.7%
Business Administration	\$16,700	1.0%	\$73,873	1.9%	\$436,444	6.4%
Computing Services	\$0	0.0%	\$36,790	1.0%	\$273,727	4.0%
Education	\$29,101	1.7%	\$15,432	0.4%	\$200,298	2.9%
Engineering and Applied Science	\$160,121	9.4%	\$259,296	6.7%	\$547,985	8.1%
Fine Arts	\$4,154	0.2%	\$4,707	0.1%	\$0	0.0%
Graduate School	\$882,213	51.9%	\$2,256,381	58.3%	\$2,826,144	41.6%
Joint Program/Urban Observatory	\$44,875	2.6%	\$0	0.0%	\$0	0.0%
Letters and Science	\$384,094	22.6%	\$592,513	15.3%	\$1,165,715	17.2%
Nursing	\$0	0.0%	\$43,717	1.1%	\$127,295	1.9%
Social Welfare	\$0	0.0%	\$26,072	0.7%	\$61,350	0.9%
Academic Support	\$0	0.0%	\$75,000	1.9%	\$0	0.0%
Unit Wide	\$178,305	10.5%	\$415,452	10.7%	\$1,031,926	15.2%
TOTAL	\$1,700,837	100.0%	\$3,871,778	100.0%	\$6,795,889	100.0%

APPENDIX 2

UW-MADISON RESEARCH BUDGET REVIEW PROCESS

I. BACKGROUND

Five UW-Madison schools and colleges account for 86% of the 1992-93 general program operations GPR research budget: Colleges of Agricultural and Life Sciences, Engineering, and Letters and Science, and the Graduate and Medical Schools. Historically, these units have effectively accounted for UW-Madison's total GPR research budget, excluding any legislated specific research allocations. Table 2, which excludes such allocations, shows that these units accounted for 94% of the GPR research budget in 1992-93; in 1973-74 they accounted for 93%. A description of the budget for each of these units is provided below.

II. COLLEGE OF AGRICULTURAL AND LIFE SCIENCES

A. Background

The College of Agricultural and Life Sciences (CALs) has the single largest school or college GPR research budget at the UW-Madison. Its 1992-93 budget is \$15.2 million, which is approximately 47% of the UW-Madison general program operations GPR research budget and over twice as large as the next largest school or college GPR research budget. CALs accounts for 371 of the 854 FTE total research positions funded by GPR.

The relative size of CALs GPR research budget illustrates its status as a "special case" among UW-Madison schools and colleges. To a great extent, the anomalous size of the research budget is the result of certain federal and state policies dating back to the 1800s. Briefly, in the nineteenth century, the Hatch-Adams Act created the federal land grant system, which established land grant educational institutions and agricultural experiment stations in each state. In Wisconsin, UW-Madison was established as the land grant institution, and the state agricultural experiment stations were administered by the institution's agricultural college. Until the 1940s, the federal government sponsored research at experiment stations through fixed allocations of funds under the Hatch program. The State of Wisconsin also funded agricultural research at the experiment stations through the agricultural college. When, in the 1940s, the modern era of accelerated research and development spending began, the Hatch program was modified to promote greater agricultural research activity. The federal government modified the program to distribute funds on a formula basis, which required and gave weight to state contributions to agricultural research. To qualify for these formula funds, states budgeted greater amounts of research funds through their land grant agricultural colleges and experiment stations. Hatch funds are still distributed on this formula basis.

As a consequence of this infusion of state research funds, state funded research budgets at most land grant agricultural colleges are relatively large when compared with other state funded research programs. Some land grant agricultural colleges separately budget their state contribution to agricultural research, as does UW-Madison. Others separately budget a portion and fund the remainder through a fixed allocation of instructional funds to departmental research. In any case, the relative size of the CALS research budget when compared with other UW-Madison schools and colleges is similar to relative budget levels at other land grant institutions.

B. Use of Funds

The CALS GPR research budget is divided among 29 academic and research support departments. It is well distributed across these departments. Twenty-three have budgets in excess of \$200,000; of these, twelve have budgets in excess of \$500,000. The budget provides funding for 251.75 unclassified and 119.22 classified FTE positions (152.25 of the unclassified positions are faculty positions). CALS conducts several legislated research projects, including the Family Farm and Cheese Research Institutes, Nonpoint Source Pollution Control, and Sustainable Agriculture. The intent and budget of the legislation authorizing these projects are appropriately observed by the college. The budget for these projects is approximately \$1.1 million, excluding fringe benefits.

The primary purpose of the CALS GPR research budget is to provide core support and basic infrastructure for the extramurally funded research program. The budget, which is almost exclusively allocated for salaries, is essentially divided between faculty and support staff. Support staff positions, both classified and unclassified, include titles such as laboratory managers, laboratory technicians, and fiscal and clerical support staff. Most of these positions provide general research support to a department and are allocated based on program need (e.g. animal science departments require animal caretakers). Continuity of funding for such general support positions is a fundamental requirement of departmental research programs; GPR research funds guarantee this continuity. In contrast, support positions directly involved in discrete research projects are funded by gifts, grants, or contracts.

C. Allocation/Reallocation of Funds

The allocation of the GPR budget across departments and disciplinary areas is designed to shape and conform to the long range research agenda established by CALS administrators and faculty. Their ability to direct research programs in the short term is, however, limited to discretionary funding authority in certain non-GPR funding categories, such as Hatch formula funding. For example, if CALS determines that agricultural systems research is of high priority, they can designate a certain portion of Hatch funds for that use and specifically invite proposals in that area. Although all research proposals made to Hatch and other federal formula funds are peer-reviewed, there are normally many more projects recommended for funding by the peer-review process than there are resources to fund. Thus, there is some flexibility to select peer-review approved projects that are of highest priority and consistent with CALS research objectives.

In the longer term, CALS is able to shape the research direction of the college by adjusting the GPR research budget. By approving or not approving open faculty and academic staff positions, CALS administrators are able to exercise their greatest control of CALS long range research direction. When a position opens in the college, administrators evaluate with departmental faculty and academic staff the type of position that should be defined to replace the departing staff member. Eventually, the department chair and executive committee define a position that is then forwarded to CALS administration and considered for funding along with other open positions in the college. Through these critical decisions to fill or not fill certain defined positions, the long range direction of CALS research is focused.

Thus, the CALS GPR research budget process is primarily determined by its long range research agenda. The agenda is implemented on an incremental basis, as unclassified positions are vacated and made available for reallocation or redefinition. Position approval is the primary tool available to CALS administration for controlling the future direction of CALS research. Because faculty positions are tenure track positions, these decisions have implications far into the future, particularly when young faculty members are being hired.

D. Determining the Research Agenda

There are many determinants of the CALS long range research agenda. The most important determinant is the judgement of knowledgeable scientists about areas that constitute promising and feasible research. The evolution of scientific knowledge is the principal determinant of the research agenda. Examples of other determinants of the CALS research agenda include the following.

- The U.S. Department of Agriculture's (USDA) User Advisory Board consists of agricultural, agribusiness, and state government representatives. The board helps define emphasis areas and future funding directions for USDA research programs, which in turn influences CALS research programs.
- Agricultural experiment station directors, operating through such organizations as the Experiment Station Committee on Organization and Policy and the National Association of State Universities and Land Grant Colleges, meet frequently to assess national agricultural and natural resource research needs. The research agenda developed through their deliberations influences the CALS research agenda.
- One of the considerable strengths of a land grant institution is that it fosters close relationships between research and extension/outreach faculty. Such close relationships exist in CALS programs. County extension staff members, because of their frequent contact with farmers, agribusiness, and other research users, have a well informed sense of the research needs that exist across the state in agricultural, natural resources, and community development.

County staff are also influenced by elected county officials who serve on agricultural and extension committees of county boards. Structures and programs exist within extension to ensure that local concerns are communicated to campus researchers.

- The Wisconsin Agricultural Experiment Station cooperates with the USDA Cooperative State Research Service in reviewing each CALS department every five years. Review committees, composed largely of professionals from other land grant institutions, offer advice on research direction of departments.
- Approximately half of the CALS departments have one or more advisory committees, which provide advice and guidance on research efforts. Advisory board members are drawn from all of a department's user groups, including employers, former students, county extension staff, state agency representatives, farmers and business leaders.
- Many interdisciplinary, applied research programs have advisory panels of citizens and users who influence the CALS research agenda. Research programs funded through state authorized marketing orders are required to have marketing board oversight of funds used for research programs. These boards work closely with the research staff in defining important research needs and advising on research project funding. Dairy product and market development, potato, cranberry, and fertilizer and lime marketing research efforts are examples of these types of research programs and advisory committees.

III. GRADUATE SCHOOL

A. Use of Funds

The 1992-93 GPR research budget for the Graduate School is \$6.7 million, which constitutes the second largest school/college GPR research budget at the UW-Madison. Approximately \$6.0 million is budgeted for salaries and wages, and the remaining \$0.7 million is allocated to supplies and expense. The salary and wage budget provides funding for 83.04 unclassified and 73.05 classified FTE research positions. All of the GPR funded unclassified research positions in the Graduate School are non-faculty positions. The school administers several technical and specialized research centers, which provide support to departments campus-wide and employ a significant number of unclassified scientific and technical support personnel, such as instrumentation technicians and specialists.

B. Allocation/Reallocation of Funds

The Graduate School's GPR research budget is divided among four general categories or functions: legislated research programs and projects, flexible interdepartmental funds, compliance units and units that provide broad support to departments campus-wide, and interdisciplinary research centers.

1. Legislated research programs

Legislated research programs and projects account for approximately \$2.3 million of the Graduate School's general program operations GPR research budget. The intent and budget of the legislation authorizing these programs are observed by the school. These programs include the Biotechnology Center and Transfer Office, Sea Grant Institute, and the Groundwater Research program. (The Graduate School also administers the separate Industrial and Economic Development fund, which is not included in the budget total above.) Approximately 45 FTE research positions and \$0.6 million in supplies and expense funds are also budgeted for these programs. Thus, legislated programs comprise 34% of the school's total GPR research budget, 86% of its GPR supplies and expense budget for research, and 29% of its GPR research positions.

2. Interdepartmental Research Support

Approximately \$1.0 million of the Graduate School's GPR research budget is allocated for general interdepartmental research support. The funds are allocated on a competitive basis by the Faculty Research Committee to support specific research projects or activities. The committee, which is composed of 40 faculty members and includes members from all four divisional affiliations (i.e. Biological Sciences, Humanities, Physical Sciences, and Social Sciences), annually issues a request for proposals, and proposals are evaluated in a peer review process (e.g. humanities faculty members review humanities proposals). Although flexible in principle, the funds are essentially intended to function as an investment which enables faculty members to remain current in their fields or which provides start-up research opportunities for young faculty members. In the context of that intent, awards are made for a variety of specific purposes: as exclusive funding for a particular research project, as a supplement to a successful extramural award, or as leverage funds which finance a portion of a faculty member's time while the faculty member completes a research grant proposals. This fund was created in the 1950s and has not been subject to substantial reallocation over time. It has increased or decreased from year to year primarily as a result of standard pay plan increases, mandated budget cuts, etc.

3. Research Compliance and General Research Support

A substantial portion of the Graduate School's GPR research budget is allocated to research compliance units and general research support units. The mission of the Graduate School entails management and budget responsibilities for compliance issues associated with federally supported research programs and campus-wide research support facilities and programs. Examples of compliance units include the Biological Safety Office and the Research Animal Resources Center, examples of general support units include the Physical Science Laboratory, Biotron, and the University Industry Research program. The total GPR research budget for these units is \$2.2 million. GPR budgets for compliance units (\$0.6 million) are based on total research effort at the UW-Madison and work complexities imposed by federal regulations. In general, research support units are expected to charge users for actual costs. Moderate subsidies (\$1.6 million in total) have been allocated to these units in the past and are rotated among units as business levels fluctuate. The

subsidies ensure continuity of operation during periods of reduced revenues. Working targets for 1992-93 subsidies are 0% to 15% of total expenditures.

4. Interdisciplinary Research Support

Approximately \$1.2 million of the GPR research budget is allocated primarily to classified salary support for Graduate School interdisciplinary research units. These units include the Waisman Center, Synchrotron Radiation Center, Water Resources, Enzyme Institute, Space Science and Engineering Center (SSEC), Molecular Biology, Institute for Molecular Virology, and the Institute on Aging and Adult Life. The SSEC is the only unit in this category for which GPR funded unclassified research positions are budgeted. Approximately \$0.3 million unclassified salaries and 5 FTE unclassified positions are budgeted in the SSEC, primarily for programs directors and specialists at the center. The balance of \$0.9 million in this category is budgeted for 29 FTE classified research positions, such as laboratory helpers, instrument makers, and clerical support staff. These positions provide a minimum level of administrative support and basic facilities and instrumentation maintenance in the centers and institutes. The Graduate School engages in an on-going evaluation of the units to determine whether reallocations of GPR funds are required. The school bases unit budgets on their success in competing for extramural grants and contracts, using rolling three to five year averages of gift and contract expenditures and earned overhead to determine and reallocate GPR budgets.

IV. MEDICAL SCHOOL

A. Use of Funds

The 1992-93 GPR research budget in the Medical School is \$2.7 million. The school budgets \$3.7 million for GPR funded research salaries -- the difference between the total budget and budgeted salaries is accounted for by a combination of budgeted supplies and expense and sales credits. The Medical School's budget for salaries and wages provides funding for 45.19 unclassified and 53.02 classified FTE research positions (31.63 FTE of the unclassified positions are faculty positions). The GPR research budget is allocated among 29 Medical School departments. Departmental budgets range from \$369,000 in Oncology to \$13,000 in the Genetics Clinical Program.

The primary purpose of the Medical School's GPR research budget is to provide the basic infrastructure needed to conduct extramurally sponsored research. This infrastructure investment resulted in \$86.3 million of extramural research grants and contracts in 1991-92. The Medical School generates more extramural research funding than any other school or college at the UW-Madison.

B. Allocation/Reallocation of Funds

1. Extramural Support Office

In allocating the GPR research budget, the Medical School's highest priority is to provide funds to its Extramural Support Office. In 1992-93, approximately \$70,000 of GPR research funds is budgeted for partial support of two academic and one classified staff member in this office. The office reviews extramural support applications before formal submission to funding agencies. Applications are reviewed for consistency with institutional and Medical School policies. Budget calculations, rate selection, personnel identification, and contract terms are also reviewed.

2. Human Subjects Review Committee

The second priority for the Medical School's GPR research budget is the Human Subjects Review Committee. Federal guidelines require the establishment of such a committee to ensure that the rights and well-being of human subjects in medical research are protected. The committee is primarily funded by UW-Madison's Center for Health Sciences--Administration unit. However, to help reduce the review backlog of the committee, the Medical School annually reallocates GPR research funds to provide supplemental support.

3. Legislated Research Projects

The Medical School also conducts two legislated research projects: the Cancer Care Program and the Arthritis Consultation Center. The school appropriately follows the intent and budget of the legislation authorizing these projects. The combined budget for the projects in 1992-93 is approximately \$0.1 million.

The vast majority of the Medical School's GPR research budget is allocated for the infrastructure support of research programs in academic departments. In a typical Medical School department, GPR research funds are allocated for the following: a small portion of the department chair's salary for administrative time dedicated to research programs; a maximum of 50% of the department administrator's salary for time dedicated to research program; salary for 1 FTE fiscal clerk for processing payroll and purchasing related to research and reviewing budget status reports for principal investigators; salary for 1 FTE secretarial or clerical position for typing grant proposals, manuscripts, research results, and correspondence related to grant activities; and a maximum of 25% of the salaries for as many as six faculty members, either to supplement (and/or provide match) existing extramural funding or to provide "bridge" funds while a faculty member competes for sponsored research.

C. Reallocation Flexibility

Given the volume of sponsored research generated by the Medical School, the school's \$2.7 million GPR research budget can only support a minimal level of departmental research infrastructure requirements. Consequently, the school does not have available a significant amount of flexible funds for potential reallocation. As discussed, the school reallocates funds to the Human

Subjects Committee, but in total this allocation is only 1 FTE and approximately \$30,000.

As is generally the case throughout the institution, the school's principal source of GPR research funds for reallocation consists of vacated positions. The school requires that position FTEs and funding revert to the Dean upon vacancy for retirement, resignation, or termination. Vacant positions and associated funding are reallocated after reviewing position and funding requests from all departments. This process has produced net reallocations between programs (research, instruction, etc.) and departments. However, scarcity of resources across departments, and within programs, has resulted in a reallocation pattern that heavily favors departments that initially produced a vacant position and program definitions for new positions that resemble those that have been vacated.

V. COLLEGE OF LETTERS AND SCIENCE

A. Use of Funds

The 1992-93 GPR research budget for the College of Letters and Science is \$1.9 million. This amount includes \$0.4 million budgeted for the LaFollette Institute for Public Affairs, which was authorized by specific legislation. The balance of \$1.5 million is budgeted entirely for classified salaries and provides funding for 63.09 FTE classified research positions in 23 Letters and Science departments. Departmental GPR budgets for classified research salaries range from \$250,000 in the Chemistry department to \$2,000 in the Anthropology department. Six departments account for \$1.0 million of the classified salary total: Chemistry, Physics, Center for Limnology, Zoology, Geology and Geophysics, and Psychology.

B. Allocation/Reallocation of Funds

The budget provides core program and administrative support for departmental research activities through partial funding of such positions as financial specialists, pay and benefits specialists, fiscal clerks, and program assistants. These positions are funded in recognition of the added administrative requirements generated by extramural gift and contract programs. GPR research budgets for departments in the biological and physical sciences tend to be larger than budgets for other departments for two reasons: (1) biological and physical science departments generate a significantly larger volume of extramural research grants and contracts and, therefore, have greater administrative support needs; and (2) these departments require specialized technical support from classified staff, whereas other departments do not. For example, research programs in the departments of Chemistry and Physics require the technical support of such positions as instrument makers, electronics technicians, and mechanics.

In general, the college maintains the core support from year to year on a relatively constant basis to ensure efficiency and continuity. However, whenever a position vacancy occurs, any research component of the position (as well as other program components) is carefully reviewed by departmental and

college administrators. Reallocation of GPR research funds in the College of Letters and Science is conducted primarily through the position approval process.

VI. COLLEGE OF ENGINEERING

A. Use of Funds

The 1992-93 GPR research budget for the College of Engineering is \$1.2 million, of which \$1.1 million is allocated for salaries and wages. The budget provides funding for 13.55 unclassified and 16.19 classified FTE research positions. This budget is divided among four general categories of research activity; research proposal development and administration, interdisciplinary and multiple user research facilities support, departmental support staff, and legislated research projects.

1. Engineering Experiment Station

The first two categories are budgeted with the college's Engineering Experiment Station, which accounts for approximately \$1.0 million of the Engineering GPR research budget. The GPR budget for the Engineering Experiment Station provides funding for the operations of the Office of the Associate Dean for Research and Graduate Programs. This office is responsible for the liaison function between college research faculty and external funding sources, proposal development, and gift, grant and contract administration. The office includes unclassified program and classified clerical support staff. In addition, the GPR budget for the Engineering Experiment Station supports interdisciplinary and multiple user research facilities. Approximately 8 FTE scientific and technical research staff -- instrument innovators, instrumentation technicians, and assistant scientists -- in five facilities are supported by GPR funds. Also, funding for a base level of supplies, equipment maintenance, and other facilities needs is provided. These facilities include the Materials Science Center, Center for Applied Microelectronics, Graphics and Visualization Laboratory, Water Science and Engineering Laboratory, and the Laboratory for Parallel Computation in Engineering. These centers and laboratories provide basic infrastructure support for the research activities of faculty members from many departments within Engineering and across campus.

2. Support Staff

The third general use of the Engineering GPR research budget is to provide partial support of clerical, and administrative and technical support staff in the departments and research program offices throughout the college. All staff members in this capacity are classified. Eight departments, excluding the Engineering Experiment Station, receive classified salary support for their research program offices and personnel. Departmental GPR budgets for this purpose range from \$5,000 to \$42,000. GPR funds are allocated for this purpose in recognition of the additional demands that research activities place on departmental support staff.

3. Legislated Research Projects

The College of Engineering conducts two GPR funded, legislated research projects: Materials Engineering (Ceramics) and Engineering Quality (Thin Film Deposition and Applications, and Automation and Robotics). The intent and budget of the legislation authorizing these projects are appropriately followed.

B. Allocation/Reallocation of Funds

With the exception of the two legislated research projects, the College of Engineering GPR research budget is limited to providing basic infrastructure support to Engineering research programs. Administrative, program, and clerical support staff responsible for managing and meeting the various demands of the research program, either with departments or across the entire college, are partially funded with GPR. Technical support staff and basic facilities support expenses in several multiple user facilities are also funded. These functions represent basic, fixed requirements of the Engineering research program and are not subject to significant variance in the short term. As a result, the college does not exhibit substantial reallocation of GPR research funds over short time periods: funds are effectively committed to on-going needs.

However, the College of Engineering does conduct limited reallocation exercises on a continuing basis with any flexible funds that can be identified. As research opportunities become available in emerging technologies, the college makes an effort to commit start-up, matching, or leveraged GPR funds to the new research program areas. Occasionally, some flexible GPR funding becomes available as existing research programs mature to levels of self-sufficiency.

APPENDIX 3
UNIVERSITY OF WISCONSIN SYSTEM
LEGISLATED RESEARCH PROJECTS
1973-74 THROUGH 1991-92

RESEARCH PROJECTS	1991-92 BUDGET
UW-MADISON	\$7,838,153
A. Advanced Programs in the Medical School	\$50,800
B. Agriculture Research Consortium Cooperative Research	\$270,800
C. Arthritis Consultation Center	\$51,800
D. Biotechnology Center	\$792,017
E. Biotechnology Transfer	\$81,100
F. Cancer Care Program	\$62,100
G. Center for Integrated Agriculture Systems/Sustainable Agriculture	\$268,000
H. Cheese Research Institute	\$200,335
I. Family Farm Institute	\$207,700
J. Geographic Information Systems	\$145,100
K. Groundwater Research	\$274,800
L. LaFollette Institute	\$422,040
M. Materials Engineering	\$104,000
N. Nonpoint Source Pollution	\$113,314
O. School of Veterinary Medicine	\$2,779,726
P. Sea Grant Institute	\$1,165,814
Q. Small Scale Waste Systems	\$211,680
R. Wisconsin Idea - Engineering Quality	\$85,953
S. Industrial and Economic Development Research Fund	\$551,074
UW-MILWAUKEE	\$977,900
A. Grant Matching and Faculty Research Committee Awards	\$406,500
B. Great Lakes Research Facility	\$102,800
C. Research in Engineering, Business, and Technology	\$54,000
D. Office of Industrial Research and Technology	\$107,600
E. Milwaukee Plan Research	\$220,600
F. Manufacture of Metal Composites	\$86,400
UW-STOUT	\$91,400
A. Manufacturing Technology Transfer	\$91,400
SYSTEMWIDE	\$1,371,184
A. Applied Research	\$404,648
B. Distinguished Professors	\$547,348
C. Solid Waste Experiment Centers, Noncompostible Landfill & Sludge	\$419,188
UNIVERSITY OF WISCONSIN SYSTEM TOTAL	\$10,278,637

APPENDIX 4 LEGISLATED RESEARCH PROJECTS

I. UW-MADISON

A. Advanced Programs in the Medical School

In 1973-74, the UW-Madison Medical School received funding for research to advance the understanding of medical applications in:

- advanced clinical care of cancer patients;
- rehabilitation of the aged;
- law enforcement pathology; and
- environmental and occupational medicine.

This funding was added to the Medical School's GPR research base to support research efforts in the prescribed areas. The funds remain in the Medical School's GPR research budget and provide base support for the Medical School's research program.

B. Agriculture Research Consortium Cooperative Research

The UW System's Agriculture and Natural Resources Consortium was established approximately 20 years ago. Its primary purpose is to foster coordination and cooperation in research and extension planning among the agriculture and natural resource programs at UW-Madison, UW-Platteville, UW-River Falls, UW-Stevens Point, and UW-Extension. The consortium promotes excellence in undergraduate and graduate training, and, through these funds, supports applied research for stronger information outreach related to agriculture and natural resources areas.

The funds are administered through the UW-Madison College of Agricultural and Life Sciences. Projects are normally established for a two-year period, subject to renewal.

To maximize the effectiveness of the research funding, consortium members are targeting selected research areas each year. Areas that are currently emphasized include rural health and youth issues, forest landscape diversity, tourism development, and alternative agriculture products and uses of products. Each of these areas have a significant impact on the economic viability of Wisconsin's rural communities. The list of targeted research areas is reviewed periodically to respond to changing and emerging needs in Wisconsin agriculture, forestry, and tourism.

C. Arthritis Consultation Center

This project provides base support for the research program in the Arthritis Consultation Center, which is located within the Section for Rheumatic Disease at the UW-Madison Center for Health Sciences. Research efforts focus on improving diagnostic and therapeutic services to patients suffering from

connective tissues diseases. In addition to providing clinical care services and conducting related research, the Center has developed consultative, educational outreach services for physicians, hospitals, and other institutions throughout the State of Wisconsin.

D. Biotechnology Center

The mission of the Biotechnology Center is to maximize the benefits of biotechnology to UW-Madison, the UW System, the State of Wisconsin, and the nation by supporting, coordinating, advancing, and disseminating biotechnology and related activities.

The Center operates five service facilities that provide state-of-the-art shared services, equipment, and trained personnel to support campus research and the research needs of Wisconsin biotechnology businesses. The service facilities include Protein/DNA Sequence/Synthesis, Protein Purification, Transgenic Mouse, Hybridoma, and Bioinformation.

The Biotechnology Center also conducts its own research program. Current research efforts include projects on enzyme engineering, plant biotechnology, and methods development. In addition, the Center has formed multidisciplinary applied research consortia in the areas of biopulping and bioremediation. The Center is forming new consortia in the areas of biomaterials and bioscience.

The Biotechnology Center also disseminates knowledge, information, and technology to state government agencies, businesses, and educational institutions through active technology transfer and public education efforts.

E. Biotechnology Transfer

The Biotechnology Transfer Office was established to improve interactions between Wisconsin's biotechnology business community and Wisconsin universities. The office, which is part of the Biotechnology Center, initiated a three-tiered approach to improve interactions with Wisconsin industry. This approach includes:

- **Wisconsin Busses Newsletter.** The monthly newsletter reports on news and information that is important to Wisconsin's biotechnology community; provides a chronicle of the issues, events, and growth of the biotechnology industry in Wisconsin; and includes regular articles on legislative activities relevant to biotechnology, company profiles, investment and partnership opportunities, research highlights and technology briefs, etc. The newsletter is intended as an informational and marketing tool both inside and outside of Wisconsin. It is sent to biotechnology companies, state biotechnology agencies, legislators, and researchers. At present, there are approximately 3,000 recipients of the newsletter.
- **Wisconsin Biotechnology Company Database.** The newsletter and direct interactions with companies enable the Biotechnology Transfer Office to compile current and comprehensive information about biotechnology firms

in Wisconsin. A database has been created that enables the office to monitor the industry, its needs, and its growth.

- Interaction with Business and Government Agencies. The Biotechnology Transfer Office is an important university interface with the Wisconsin biotechnology business community. The Office provides businesses with information, referral to appropriate sources of expertise, and connections and introductions. The Office regularly visits companies to gather information and inform them of available assistance. It also actively supports the efforts of the following agencies/groups: the Governor's Task Force on Science and Technology, its Biotechnology Task Force and several task force subcommittees (marketing, education, databases), the Department of Development, Forward Wisconsin, and Dane County government.

F. Cancer Care Program

The community cancer care program, which is part of the UW-Madison Center for Health Sciences, provides multiple services to the public and physicians and other health care professionals. Examples include the Cancer Prevention Clinic, Wisconsin Oncology Group, Cancer Nursing Newsletter, and Cancer Information Service. The program conducts cancer research studies on such topics as smoking cessation and epidemiology. Because over 80% of cancer patients are treated in their home communities, a primary goal of the program is to disseminate information statewide about cancer prevention and treatment.

G. Center for Integrated Agricultural Systems/Sustainable Agriculture

The Center for Integrated Agricultural Systems was established to provide research and extension programs that address issues involving agricultural profitability, environmental quality, and linkages to rural communities. These programs are conducted by the Center's faculty and staff in collaboration with Wisconsin farmers and other Wisconsin citizens, who participate on an advisory council to the Center.

In conducting research projects, the Center assembles interdisciplinary research teams from the faculty of the four UW-System agricultural colleges, and involves Wisconsin farmers. Recent projects include: comparisons of alternative dairy farming methods and cropping systems, alternatives to pesticide use in potato production, verification of using legumes and soil tests to reduce nitrogen use, and an examination of the value of groundwater to central Wisconsin residents. Current activities are focused on developing case studies for research, various research projects related to intensive rotational grazing and dairy systems and socio-economic implications of biotechnology.

The Center published and distributed a teacher's guide to sustainable agriculture for use in high school agriculture curriculum. The Center also coordinates graduate work and research in sustainable agriculture, and is developing related capstone graduate and undergraduate seminars.

H. Cheese Research Institute

The research program of the Cheese Research Institute provides the Wisconsin dairy industry with current information on the economics, processes, and techniques of cheese production and distribution. Because the market for cheese products has become increasingly segmented (both in terms of cheese types and consumers), it is important that Wisconsin producers have up-to-date information on production technologies and consumer preferences. Examples of recent research efforts include:

- the development of a "user-friendly" economic engineering model designed for use by cheese plant managers to maximize the profitability of large or small dairy plants;
- a study of the factors affecting physical characteristics of cheeses;
- a study of the correlation between milk quality parameters and the economics of cheese production;
- studies on controlling and enhancing flavor and body characteristics of low-fat and low-sodium cheeses;
- an analysis of consumer preferences regarding surface color of commercially smoked cheddar and swiss cheeses; and
- twelve interrelated projects that focus on flavor control, mechanisms of flavor development, and the measurement of flavor compounds. These projects analyze the effects of selected bacteria and enzymes on control and enhancement of cheese flavor, quality, and intensity.

I. Family Farm Institute

The Agricultural Technology and Family Farm Institute (ATFFI) was established to conduct research and extension/outreach on the relationships between technology and family farms. The purposes of the ATFFI are to:

- evaluate the effects of new technology, state and federal policies, and other factors on family farm agriculture;
- recommend policies to take advantage of new technologies and mitigate disadvantages;
- assist farmers in meeting the challenges of new technologies; and
- ensure that farmers have access to new technologies.

Current research efforts include:

- a feasibility study of a "marketing agency in common" for milk (and the benefits, costs, and consequences for family dairy farmers);
- construction of a conceptual scheme for inventorying relationships between biotechnology and sustainable agriculture;
- a case study of the legal, policy, and commercialization options associated with innovative scientific approaches to directing biotechnology research to local agro-ecological conditions;
- a case study of organizational problems and options in small horticultural production and marketing cooperatives; and more.

J. Geographic Information Systems

The State Legislature and the UW-Madison have entered into a collaborative arrangement to produce an integrated system that incorporates geographical information software programs, U.S. Census data, and State Elections Board data. The project was designed to aid the Wisconsin Legislature in the decennial redistricting process and to give researchers and members of the public access to spatial and tabular data from the 1990 census. The project is being coordinated by UW-Madison's Land Information and Computer Graphics Facility.

The project's long-term goal is to provide access to data from the 1990 census to researchers who need information on geographic factors. This data will include all publicly available data for Wisconsin. Other states will be included as the geographic data becomes available.

K. Groundwater Research

The Groundwater Research Program was established to conduct research on groundwater problems in the State of Wisconsin. The program provides funding for individual research projects. Input into the selection of individual research projects is provided by the Groundwater Research Advisory Council, which is appointed by the UW-Madison Chancellor to advise the program, and the Groundwater Coordinating Council of the State of Wisconsin, a legislatively mandated State council having broad responsibility for coordinating groundwater-related problems in Wisconsin. Projects recently selected for funding were divided into five general categories of groundwater research, including:

1. Mathematical modeling of groundwater contaminant transport.
2. Sorption reactions which retard contaminant movement to groundwater.
3. Movement of water and contaminants to and through groundwater.
4. Remediation of contaminated soils and waters.
5. Economic effects of groundwater contamination.

L. LaFollette Institute

The budget amount shown above includes only the portion of the LaFollette Institute's GPR funds that are budgeted for research activities. The LaFollette Institute also has GPR funding for public service and instruction.

In 1991-92, the LaFollette Institute continued policy research and public service programs and also inaugurated new programs. These programs promote the examination of public policies and public institutions, thereby affecting policy-making in the state and the nation. Programs include basic and applied research by individual scholars and teams of scholars and/or practitioners; policy development based on research already completed; and specific and immediate information and seminars, publications, and colloquia designed both to disseminate research results and to stimulate analysis and evaluation.

State GPR funds are used for staff support (faculty release time, graduate research and project assistants, professional and support staff), production and dissemination of publications, and other operating costs.

M. Materials Engineering

The economic future of product oriented companies in consumer and capital goods industries depends heavily on the understanding and use of newly engineered materials. Materials processing in Wisconsin has traditionally emphasized heavy industrial metals. However, in order to remain viable and economically competitive, many Wisconsin industrial concerns will focus on expanding into high technology non-metal applications involving ceramic, semiconductor, and superconductor materials. Ceramics form a versatile class of materials offering an extraordinarily wide range of physical properties, flexible processing, and substitution of inexpensive abundant materials for expensive or rare ones. Wisconsin industry has long been a leader in low technology ceramic application, but advanced applications will provide opportunities for new industrial growth. Prior to receiving this funding, the College of Engineering did not have a faculty member with expertise and interest in this area. The College used the funds to hire two assistant professors who have ceramics expertise. This enabled the College to establish a communication and research link, related to advanced ceramics, with Wisconsin industry, and to obtain federal research funds that are available for ceramics research. This expansion of the materials programs in the College of Engineering will contribute to industrial competitiveness and productivity in Wisconsin.

N. Nonpoint Source Pollution

The nonpoint source pollution project is a continuing program which provides current best-management information and develops a database for establishing priorities in nonpoint source pollution control. The project also supports demonstration and educational activities. The objectives of the project are to evaluate:

- the effectiveness of agricultural practices in reducing the potential for water pollution from sediment, nutrients, and pesticides;
- the effects of selected soil and crop management practices on runoff and water quality in watersheds, where stream monitoring programs are administered by the U.S. Geological Survey and the Wisconsin Department of Natural Resources; and
- on a whole farm basis, the social and economic factors which govern the adoption of best-management practices to reduce nonpoint source pollution.

Current research efforts include:

- the investigation of the effects of irrigation management and tillage on pesticide movement in alluvial sands and investigation of the movement of atrazine and alachlor with field installed lysimeters in alluvial sands;

- the evaluation of the effect of tillage systems for soil erosion control and water quality during establishment of alfalfa;
- the measurement of changes in soil properties as influenced by corn production tillage practices;
- the evaluation of the use of recycled paper for urban and highway soil erosion control;
- the evaluation of soybean production practices which minimize soil erosion and maintain water quality in the non-glaciated region of Wisconsin;
- the measurement of runoff, nutrient and pesticide losses from constructed soils to develop practices for urban lawn construction; and
- the determination of the importance of having grass included in a forage production system to minimize soil erosion and nutrient losses to surface waters.

O. School of Veterinary Medicine

The School of Veterinary Medicine's GPR research funding is a portion of the School's total start-up and operating budget, which was provided by the State of Wisconsin in order to establish a veterinary medical school at UW-Madison. In the 1978 "Report of the University of Wisconsin System to State Government on Veterinary Medicine," the full costs of operating a veterinary school were identified by four major cost components, including academic programs, teaching hospitals, library, and facility operating costs. Biennial budget requests for the incremental funding of the School of Veterinary Medicine's operating budget further separated the academic program budget into instruction and research activities. The breakdown between instruction and research reflected the anticipated activity of the faculty in teaching and research and related support costs of those activities. In 1991-92, GPR research funding at the School was apportioned as follows:

- 45% for faculty salaries (individual salaries range from 10% to 40% on research funds);
- 21% for graduate assistant/trainee stipends;
- 16% for research support personnel;
- 15% for shared support resources (animal care, histopathology, electronmicroscopy, etc.); and
- 3% for administration through the Office of Research and Graduate Training.

P. Sea Grant Institute

The Sea Grant Institute is dedicated to the wise use and development of Great Lakes and ocean resources. Although the Sea Grant Institute is headquartered on the UW-Madison campus, the Wisconsin Sea Grant Program operates systemwide and is statewide in scope. Research projects conducted by the Institute focus on helping to:

- solve Great Lakes water quality problems,
- improve sport and commercial fisheries,
- promote aquaculture development,
- develop methods to assess potential effects of climate change on the Great Lakes,
- respond to the introduction of nuisance exotic species into the Great Lakes, and
- stimulate the economic development of coastal communities and Great Lakes related industries.

State GPR funding is used to provide the required one-third match for the federal funding the Sea Grant program receives, and to support research and public advisory activities on toxic substances in the Great Lakes and the aquatic environment.

Q. Small Scale Waste Systems

The primary objective of the Small Scale Waste Systems project is to conduct research of low cost sewage systems for problem soils. In particular, the research addresses small wastewater flows that are primarily domestic and non-hazardous. Current research emphasis focuses on two major areas, including the treatment of wastewater by soil and through pretreatment (prior to soil infiltration), and the disposal of wastewaters by infiltration systems of various design. In addition to research, project members provide training and advising to professionals and Wisconsin residents.

R. Wisconsin Idea -- Engineering Quality

Funds for this project are being used to strengthen the operation and utilization of College of Engineering facilities and equipment in two areas:

- the fabrication and study of ultra-thin films of one material on the surface of another material; and
- automation and robotics.

The fabrication and study of ultra-thin films is one of the most important and fastest growing areas of materials science. Automation and robotics are becoming increasingly important in manufacturing, medicine, the nuclear industry, and work in space.

Funding for ultra-thin film research is used at the Center for Thin Film Depositions and Applications. The funds provide for the renovation, installation, maintenance, and operation of state-of-the-art research equipment, for which there is a growing demand by College of Engineering materials researchers and Wisconsin industry. Funding for robotics and automation is used for maintenance, operation, and upgrading of robotics and related computer equipment. In both cases, funds also provide for specialists who ensure proper operation of equipment and effective collaboration with industry in the State of Wisconsin.

S. Industrial and Economic Development Research Fund

The Industrial and Economic Development Research Fund (UW-Madison Fund 118) supports faculty research projects that show potential for stimulating economic development in Wisconsin and plan for implementation or transfer of technologies which result from such research projects. In 1991-92, the Fund provided support for the following research topics:

- the transfer of biotechnologically based pest control technologies to the fiber and bioenergy industries;
- the State of Wisconsin's cultural, historical, and environmental contribution towards the successful developing, manufacturing, and marketing of good product design;
- polysaccharide gums from whey permeate for food and industrial use.
- low noise electronics for sensors;
- development of a permeable wall-closed loop humidity control system;
- analysis and evaluation of advanced bicycle frame design and manufacturing -- a joint research effort of UW-Madison and Trek Bicycle Company;
- improved lifetime of die casting molds by plasma source ion implantation;
- off-resonance spin-locking technique for high field magnetic resonance imaging; and
- development with Tracor/Northern of a real-time confocal laser-scanning microscope for three dimensional and four dimensional (three dimensional versus time) imaging.

II. UW-MILWAUKEE

A. Grant Matching and Faculty Research Committee Awards

The twofold purpose of this funding is to build upon Graduate School activities that are designed to foster extramurally funded research by providing matching funds for grant proposals submitted to external funding agencies, and to bolster the Research Committee Awards to faculty undertaking initial research, pilot studies, and research in areas with limited access to funding. This funding is used as a revolving fund.

B. Great Lakes Research Facility

This funding is used to maintain the research capabilities of the Great Lakes Research Facility, which supports research in a number of UW System activities as well as the Graduate School Center for Great Lakes Studies. The Great Lakes Research Facility continues as a UW System support facility, and the Graduate School Center for Great Lakes Studies continues as a UW-Milwaukee Regent research center of excellence, providing faculty research opportunities and facilities directly related to UW-Milwaukee's mission statement.

C. Research in Engineering, Business, and Technology

The 1985-86 allocation for Research in Engineering, Business and Technology of \$27,000 is used to increase the ability of the College of Engineering to foster collaborative research projects (not a single specific project) between UW-Milwaukee faculty members and the Milwaukee business community. This allocation has been used to partially fund salaries of various faculty researchers engaged in such activities. An additional \$27,000 is used to foster and facilitate applied research in engineering and business through the Office of Industrial Research and Technology Transfer.

D. Office of Industrial Research & Technology

This funding is used to augment the capabilities of the Graduate School Office of Industrial Research and Technology Transfer. The Office was established in 1983 in order to foster collaborative applied research projects between UW-Milwaukee faculty members and researchers in business and industry. This ongoing program continues to operate as originally purposed.

E. Milwaukee Plan Research

UW-Milwaukee received \$65,800 in 1985-86 and \$90,600 in 1987-88 to support the staffing of the Management Research Center (MRC) and to create and develop the International Business Center (IBC). These centers are designed to enable faculty and staff to facilitate the ongoing task of increasing the competitive capabilities of business, primarily in southeastern Wisconsin, through teaching and research. Successful faculty recruiting since 1987 and the Board of Regents' designation of the Center for Business Competitiveness have established the framework for instructional and research activities of the future. The emphasis has been on creating more linkages between the faculty resources and the business community needs through the International Business Center and the Center for Business Competitiveness.

This allocation, along with institutional funds, was used to establish the Management Research Center, which serves as a broad-based problem-solving and knowledge-sharing resource for southeastern Wisconsin businesses. This is not a specific project, but rather an ongoing applied research center. The MRC offers high quality, objective research assistance through Small Business Administration faculty and its staff. In addition to designing, conducting, and analyzing the results of research for the business community, the MRC focuses on educational activities such as executive programs, seminars, and short courses offered to the Milwaukee business community in response to individual or collective needs. The Management Research Center has provided research support for faculty which has resulted in numerous publications and presentations.

The International Business Center has provided support and assistance for research projects conducted by faculty in the international business-related fields. Currently, faculty members are working on research projects related to pricing of exchange rate risk to multinational firms, foreign direct investment in Wisconsin, and export marketing behavior of small- and medium-size firms.

The 1987-88 Milwaukee Plan research allocation included \$17,500 that was provided to the Graduate School to increase the collaboration between researchers at UW-Milwaukee and the Milwaukee business community. The initial endeavor was an aquaculture project, which was a joint effort of Milwaukee County and the UW-Milwaukee Center for Great Lakes Studies. The project entailed developing methods for breeding and growing fish which were then used to seed lakes in the Milwaukee County Park System. At the conclusion of this particular project, the Graduate School used these funds for a series of other joint efforts between UW-Milwaukee and Milwaukee area businesses and public agencies. These funds are awarded through the Office of Industrial Research and Technology.

The 1987-88 Milwaukee Plan Research Allocation also included \$46,700 that was used by the College of Engineering in conjunction with "Educational Excellence" funding to create three new positions. The funding is used for quality assurance and automated manufacturing.

F. Manufacture of Metal Composites

This project provides a research base at UW-Milwaukee on the design, development, and manufacturing of metal matrix composites. The project is designed to benefit the materials processing industry in Wisconsin, specifically equipment manufacturers. This project is being carried out by UW-Milwaukee in collaboration with Wisconsin industry. Specific composites being investigated include those for engines, electromechanical machinery, and high-temperature superconducting cables. Specific Wisconsin industries likely to benefit from this project include Mercury Marine, Kohler, Tecumseh, Outboard Marine, Wisconsin Electric, Eaton, Louis Electric, and ASEA.

III. UW-STOUT

A. Manufacturing Technology Transfer

This project was initially developed in 1986 to assist the J.I. Case Company to consolidate and develop a new advanced manufacturing system at its Wausau facility. The program provides the means to transfer state-of-the-art manufacturing practices to manufacturers via interaction with UW-Stout's faculty, technical advisors, and students. The program provides three basic services, including:

- assessment of current manufacturing operations, technologies, and training needs;
- written recommendations for improving the use of existing technologies, implementing newly developed technologies, and improving job performance through focused training and educational seminars; and
- coordination of management and technical experts who can assist in implementing changes.

Project teams are assigned to client companies selected for participation in the program. These teams assist the manufacturer in evaluating existing conditions and in planning and implementing changes designed to meet the client's needs. Project activities can include factory layout, production methods, cellular manufacturing, material flow and handling, productivity improvement, employee training, quality assurance, preventive maintenance, and information systems and management information development and support activities.

IV. SYSTEMWIDE

A. Applied Research

This program provides funding for UW System institutions for research addressing specific problems faced by Wisconsin industries. Details regarding this program are provided in a separate annual report to the State.

B. Distinguished Professors

This funding provides partial support for 20 Distinguished Professor positions in the University of Wisconsin System. The GPR funding is matched by an equal or greater match from businesses and/or other non-GPR sources. During the 1991-92 fiscal year, this funding supported eight professors at UW-Madison, three at UW-Milwaukee, two each at UW-Parkside and UW-Stevens Point, and one each at UW-Eau Claire, UW-Oshkosh, and UW-Whitewater.

C. Solid Waste Experiment Centers, Noncompostible Landfill and Sludge

This program provides funding to UW System institutions for research into the alternative methods for the disposal of solid waste. Details regarding these programs are provided in a separate annual report to the State.

UNIVERSITY OF WISCONSIN SYSTEM

PUBLIC SERVICE REPORT

UNIVERSITY OF WISCONSIN SYSTEM PUBLIC SERVICE

I. OVERVIEW

As shown in Table 1, the University of Wisconsin System's 1991-92 GPR public service budget is \$42.25 million. The majority of the public service funding (77.3%) is in the UW-Extension budget. The University's budget for extension and public service activities in FY 1991-92 was \$42.2 million, which included \$1.3 million for special projects and \$40.9 million for ongoing programs.

TABLE 1
PUBLIC SERVICE FUNDING BY INSTITUTION
1991-92 FISCAL YEAR

INSTITUTION	FUNDING	PERCENT
Madison	\$6,977,657	16.5%
Milwaukee	\$820,860	2.0%
Comprehensives and Centers	\$1,772,265	4.2%
Systemwide	\$0	0.0%
Extension	\$32,606,585	77.3%
Totals	\$42,177,367	100.0%

Extension faculty and staff, based in UW-Extension, on every campus of the UW System and in county Extension offices throughout the state, develop and teach extension programs. They plan their programs within a statewide structure that is based on the detailed planning and priority-setting processes of the three UW-Extension divisions: Cooperative Extension, Continuing Education Extension, and Extension Communications. Each of these divisions develops a long range plan, annual plans, and an operating budget based on the institution's mission. Appendix 2 provides detail on the UW Extension mission and the planning processes of each UW Extension division.

To meet its mission, UW-Extension develops statewide plans and priorities based on the emerging needs affecting individuals, families, labor, business, agriculture, youth, the environment, the economy, communities, the professions, and senior citizens. Planning involves faculty and staff, public representatives, cooperating agencies, and clientele groups. These plans are the basis for reallocating base funds from lower to emerging higher priorities and for faculty/staff to shift the focus and direction of their individual programs on an annual basis.

II. THE RELATIONSHIP BETWEEN BASE PROGRAM FUNDS AND SPECIAL PROJECT FUNDS

Base program funds constitute 96 percent of UW-Extension's budget, and these funds support ongoing program activities. But this does not mean that extension programs are static. Investments are constantly re-examined so changes can be made to meet emerging priority needs defined through deliberate, regular planning and priority-setting processes. Program changes also are made as faculty annually evaluate and refocus their program emphases and directions. Both these means are essential for extension programs to remain relevant and responsive.

Appendix 3 offers selected examples of how base funds were reallocated in FY 1992 to meet changes in priority needs.

Sometimes, however, base reallocations are not sufficient to meet emerging priority needs associated with new legislation, societal change, and critical new issues. In these cases, special project funds are requested to support emerging priorities that require funding beyond the institution's capacity to respond through base reallocation. There are limits to the ability to reprogram existing resources to meet all new program needs. For example, ongoing programs basic to core activities must be sustained, faculty talents in a high priority field may be fully committed and unavailable for reallocation, or new faculty expertise and skills may be required.

Usually, the issues and needs requiring Special Project funding are of such magnitude that they require long-term programming. For example, innovative programs in Water Quality, Waste Management, Sustainable Agriculture, and Manufacturing Technology Transfer, which emerged as critical priority issues in the 1980s, require long-term investments in sustained educational programs that make a significant impact over time. And, just as base programs are not static, programs in special project areas change to address changing issues. For example, in Dairy Profitability, priority emphases at any given time may fluctuate from milk quality to marketing orders to input cost reductions.

Special Project funding is only part of a long-term commitment to sustain high priority initiatives. UW-Extension reallocates base funds to augment Special Project funding for new programs and integrates special projects with base programs to assure they are part of its ongoing statewide educational effort. Uniting special projects with base programs assures better identity and acceptance, access, continuity, and better stewardship of all financial and personnel resources. Special Project funds remain committed to the programs for which they were allocated and retain their budget and program identity, but special projects do not stand alone. They become part of a comprehensive educational program accessible to people throughout the state and adaptable to local needs.

Appendix 4 describes and links UW-Extension's Special Projects to the institution's base program areas.

**APPENDIX 1
UNIVERSITY OF WISCONSIN SYSTEM
PUBLIC SERVICE PROJECTS
1991-92 FISCAL YEAR**

PROJECT TITLE	ALLOCATIONS
COOPERATIVE EXTENSION LEGISLATED PROJECTS:	\$830,972
Community Economic Analyses	\$38,900
Center for Economic Development	\$51,183
Rural Development Institute	\$113,594
Rural Tourism Development	\$37,740
Biotechnology Education	\$43,350
Farm Financial Management	\$50,600
Dairy Profitability Center	\$191,205
Agricultural Technology and Family Farm Institute	\$113,300
Nutrient and Pest Management	\$191,100
CONTINUING EDUCATION EXTENSION LEGISLATED PROJECTS:	\$478,228
Minority Entrepreneurship	\$66,400
School for Workers	\$56,655
Manufacturing Technology Transfer	\$145,113
Educational Technology	\$94,800
Solid and Hazardous Waste Education	\$115,260
UNIVERSITY OF WISCONSIN SYSTEM TOTAL	\$1,309,200

APPENDIX 2

UW-EXTENSION MISSION AND DIVISIONAL PLANNING PROCESSES

I. UW-EXTENSION MISSION

The select mission of the University of Wisconsin-Extension is to provide, jointly with the UW institutions and the Wisconsin counties, an extension program designed to apply University research, knowledge and resources to meet the educational needs of Wisconsin people, wherever they live and work. This mission includes the work of the three UW Extension divisions: Cooperative Extension, Continuing Education Extension, and Extension Communications, in:

- Teaching. To extend non-credit education opportunities and campus-based degree credit, through a variety of delivery methods and media. These programs develop, organize and impart knowledge and research applications needed by the general public and by such special groups as business, labor, agriculture, youth, families, government and the professions.
- Applied Research. To identify research problems, conduct applied research and demonstrate the results of research relevant to the specific needs of individuals, organizations, businesses and communities.
- Public Broadcasting and Communications. To provide informational, educational, cultural and public affairs programming via radio and television and to improve and encourage effective use of existing and emerging communications technologies for public information, extension education, and communication among faculty, staff and clientele.
- Statewide Program Leadership, Coordination and Accountability. To provide for access of all Wisconsin citizens to the research, knowledge and resources of their university system through program leadership, budget administration, and program/budget accountability for a coordinated statewide extension program delivered with and through the University of Wisconsin System institutions and county and area Extension offices.

II. PLANNING AND BUDGETING PRACTICES IN UW-EXTENSION

To meet these mission responsibilities, UW-Extension leads the development of statewide plans that provide the policy framework for identifying program needs, assigning relative priorities, and making budget allocations and reallocations. The institution's program planning and budget guidelines link programs and budgets and changes. Each UW Extension division follows an internal budget and program planning process within this institutional model.

A. Cooperative Extension Planning and Budgeting

Cooperative Extension operates on a four-year planning cycle. Planning involves faculty and staff, public officials, business, labor, cooperating agencies and county leaders, agricultural and other citizen representatives. The resultant four-year plan defines priorities and special needs. In its annual budget process, Cooperative Extension moves resources to support priorities. Some changes involves no budget modifications, as faculty and academic staff shift the focus and direction of their individual programs. Other changes move budget and position resources to support program priorities defined by the division's strategic plan.

B. Continuing Education Extension Planning and Budgeting

Continuing Education also reallocates resources in a priority framework, defined by the strategic plan it develops every five years. The division involves its faculty and staff, public representatives, community interests, professional groups, and others in its priority setting process. In its annual operating budget, Continuing Education reallocates funds to support ongoing priorities or emerging priority programs. It uses an interactive process to initiate, define and discuss changes to ongoing programs or to meet emerging needs.

C. Extension Communications Planning and Budgeting

Strategic Planning in Extension Communications differs in its approach but not in its objectives, compared to other UW-Extension divisions. The division works closely with its partner in Wisconsin Public Broadcasting, the Wisconsin Educational Communications Board (ECB), to define strategic thrusts in educational areas, identify distance educational needs, and differentiate regional programming needs throughout Wisconsin. It also responds to demands made on it for programming support, delivery outlets, and production facilities by faculty and staff of the UW-System. Detailed programming is scheduled annually, as educational, instructional and cultural programs are modified to meet public and professional priorities. Resources are moved annually from lower to higher priority programs.

**APPENDIX 3
PROGRAM REALLOCATIONS IN FY 1992
(Selected List)**

Reprogrammed From: (Institution/Division/Program)
Priority Investment: (Institution/Division/Program)
Amount: (Funding and FTE)

1. From: Mineral Studies (UW-Madison/CALS/Ag Econ)
To: Community Economic Development (UW-Madison/CALS/Ag Econ)
Amount: (\$21,252 and 0.48 FTE)

Reoriented the Harkin position in Ag Economics from Minerals to Community Economic Development

2. From: Natural Resources (UW-Madison/CALS/Ag Econ)
To: Water Quality (UW-Madison/CALS/Ag Econ)
Amount: (\$12,925 and 0.22 FTE)

Reoriented the Barrows position in Ag Economics from general natural resources issues, to provide specific expertise for statewide water quality issues.

3. From: General Land Use (UW-Madison/CALS/ERU)
To: Water Quality (UW-Madison/CALS/Ag Econ)
Amount: (\$49,978 and 0.90 FTE)

Replaced and reallocated from Ag Econ/CALS to Madison the Yanggen position, which had examined issues of general land use, to strengthen the Water Quality program through placement of the position in the Environmental Resources Center.

4. From: Campground Management (UW-Madison/L&S/URPL)
To: Recreation and Tourism Industry (UWEX/CES/Rec Resources)
Amount: (\$56,674 and 1.00 FTE)

Will allocate the Cooper position from UW-Extension to UW-Madison's department of Urban and Regional Planning, to provide applied research and analysis in macro-economic aspects of the recreation and tourism industries, reducing applied aspects focusing on activities such as campground management and administration.

5. From: Nutrition (UW-Stout)
To: Child and Family Development (UW-Green Bay)
Amount: (\$27,382 and 0.31 FTE)

Reallocated the McIntosh position from UW-Stout, where it emphasized issues of Nutrition to UW-Green Bay, where it specializes in issues related to Interpersonal Relations in the area of Child and Family Development.

6. From: Interior Design (UW-Madison/FRCS)
 From: Housing (UW-Madison/FRCS)
 Amount: (\$45,374 and 1.00 FTE)

Will redirect the Graff position in the School of Family Resources and Consumer Sciences at UW-Madison from interior design to housing issues. Major concerns of the position will involve affordability, tenants' rights, rights and responsibilities of ownership, development of lower and middle class housing stock and financing issues.

7. From: Family Issues (UWEX/Family Living)
 To: Youth-at-Risk (UW-Madison/FRCS)
 Amount: (\$39,129 and 1.00 FTE)

Reallocated the Thompson position, which had examined general public policy issues related to the family, from UW-Extension to UW-Madison. Appointed in FRCS, with a joint appointment in the LaFollette Institute, the position will emphasize youth development and youth-at-risk activities.

8. From: Farm Economics (UW-Platteville/Ag)
 To: Ruminant Physiology, Farm Management,
 and Meat/Animal Welfare (UW-Platteville/Ag)
 Amount: (\$36,854 and 0.59 FTE)

Reallocated the Cropp position among three positions, jointly funded by UW-Platteville and UW-Extension, to enhance statewide specialist support in ruminant physiology, farm management and meat/animal welfare.

9. From: Area Agents (UWEX/Milwaukee County)
 (UWEX/Southwest District)
 To: Minority/Ethnic Programs (UWEX/Southeast District)
 Amount: (\$78,423 and 2.61 FTE)

Reallocated an area business agent (Davison), an agent specializing in general family issues (May), and economic development agent (Walker) to support expanded programs focussed on minority and ethnic community needs. Initial efforts will focus on community development in Hispanic communities and minority youth programs.

10. From: General Business (UWEX/Northern District)
 Arts (Madison/DUO/Arts)
 To: Community Resource Development (UWEX/Washburn and Calumet)
 Amount: (\$48,062 and 0.87 FTE)

Parts of positions supporting general business programs at UW-Madison (Pricer) and arts in the Northern District (Aderman) were reallocated to Calumet and Washburn Counties, where they were merged with county support to establish Community Resource Development agents.

11. From: Engineering Program (UW-Platteville)
 To: Indianhead Arts Center (UW-Eau Claire)
 Amount: (\$6,990 and 0.10 FTE)

The Indianhead Arts Center is a unique residential summer arts program in northwestern Wisconsin; it is a consortial effort of four UW institutions. These funds assure continued support for the Center's director, whose contacts and expertise in attracting nationally recognized faculty and whose effectiveness in developing and coordinating programs among the four institutions are critical to the program's success.

12. From: Infotext (UWEX/Extension Communications/ICS)
 To: Satellite Downlink (UWEX/Extension Communications/ICS)
 Amount: (\$12,232 and 0.50 FTE)

In response to shifting priorities, the Instructional Communications Center has reallocated staff to service the statewide satellite downlink system of the Cooperative Extension program. The reallocation came from the Infotext program, earlier established to support the dissemination of CES program information to farmers throughout the state.

13. From: Center for Interactive Programs (UWEX/CEE/CIP)
 To: Business Outreach (UW-Green Bay/Business)
 Amount: (\$33,000)

As part of the Statewide Small Business Development program, this reallocation strengthens educational programs in production and total quality management, and enhances the relationship of integrated program activity to UW-Green Bay's business program faculty and academic staff.

14. From: Program Media and Audio Visual Programs (UWEX/CEE/BAVI)
 To: Project STREAM (UW-Whitewater)
 Amount: (\$40,088 and 0.50 FTE) (UW-Parkside)

Project STREAM is a collaborative program at UW-Parkside and UW-Whitewater. It identifies gifted and talented minority students in southeast Wisconsin. The project fosters the students' development through a multiple intervention model involving local school staff, parents and students. Funds support training, consultation and involvement by these participants.

15. From: Special Programs (UW-Milwaukee/DOCE)
To: Forestry (UW-Stevens Point/Natural Resources)
Amount: (\$28,294 and 0.20 FTE)

Emphasizing programs in Wood Utilization, this reallocation to UW-Stevens Point is part of a three-way partnership between the SBDC program, UW-Stevens Point and Continuing Education/Extension. The partnership, which these resources support, is providing outreach programs, workshops, conferences and one-on-one consultation for small to medium sized wood products companies.

16. From: Engineering Programs (UW-Platteville)
To: WAIED (UW-Stevens Point)
Amount: (\$7,012)

This allocation enhances permanent funding for the Wisconsin American Indian Economic Development program (WAIED). These resources will permit WAIED to strengthen its counselling services and support for economic development for American Indians in the central Wisconsin area.

17. From: UW-Madison/Arts, Liberal Studies, and Health/Human Issues
To: Reserved for FY 1993 Reallocation
Amount: (\$93,755 and 2.32 FTE)

Funds to support lower priority activities (general health issues, Dane County local history and the Wisconsin Youth Symphony Orchestra) have been reallocated to UW-Extension to support priority investments identified and funded in the FY 1993 planning process. Reallocations in Continuing Education Extension occur across fiscal years; funds recaptured in Year 1 are committed in Year 2; commitments made in Year 1 are supported by resources recaptured in the previous year(s).

APPENDIX 4 PROGRAMS AND SPECIAL PROJECTS UW-EXTENSION PROGRAMS AND PROJECTS

I. OVERVIEW

Each of UW-Extension's divisions divides its activities among broadly defined program areas. Cooperative Extension and Continuing Education Extension have special projects, which complement these divisions' program thrusts. This appendix briefly describes the division's major program areas and identifies any special projects associated with each.

II. COOPERATIVE EXTENSION

Cooperative Extension's faculty and staff develop programs that help people understand and use knowledge and research from the university. Its county staff, supported by designated faculty and staff of UW System institutions who have collaborative appointments with UW-Extension, bring university resources to meet local needs. Institution-based faculty and staff conduct applied research and interpret knowledge in their specialties through programs and activities coordinated by UW-Extension, and teach in collaboration with county faculty and staff. CES has four program areas.

A. Community, Natural Resources, and Economic Development (CNRED).

CNRED programs help people set goals, make decisions, and develop sound local public policies; build strong communities and neighborhoods, strengthen local economies; provide good jobs and essential services, and balance economic growth and environmental quality issues. Special Projects in this program area are:

- Community Economic Analysis, a joint project of UW-Madison and UW-Extension (\$38,900 GPR), provides information on the economic characteristics and structure of Wisconsin communities to university faculty and staff, county-based community faculty, area agents and community representatives working on economic development issues. Project funds support an Information Processing Specialist who assures the data are current; the need for this support will continue because dynamic local, state, national, and international economies continually alter the economic development options open to local decision makers.
- Regional Centers for Economic Development -- three projects, located at UW-Superior as the Center for Economic Development (\$51,183 GPR), UW-River Falls as the Rural Development Institute (\$43,100 Fund 104 and \$70,494 Fund 102) and UW-Stout, as the Rural Tourism Development Project (\$37,740), provide resources that support regional economic development activities. These Centers' programs complement those funded with ongoing resources, to provide a statewide network of support for community development. In two instances, at UW-River Falls and

UW-Stout, projects which initially focussed more narrowly on tourism and localized regional development have been melded into larger, multi-disciplinary teams, funded by reallocated ongoing resources, to strengthen continuing and ongoing local and regional programming efforts. The combination of ongoing and special project funding has expanded research and program delivery capabilities beyond those supported by special project funds, demonstrating the synergistic relationship of special projects and core programs.

B. Family Living Education

Family Living Education help Wisconsin families thrive in a rapidly changing society. They help people learn effective parenting and communications skills; identify and minimize risks to children; make healthy choices about diet, exercise, and food safety and quality; assess community and family needs for child care; and take charge of family finances. There is one special project in this program area:

- Biotechnology Education, a joint effort of UW-Madison and UW-Extension, represents a programming departure into a new disciplinary areas -- that of biotechnology. Funded with Special Project resources of \$43,350 GPR, the project began by developing curricula on biotechnology, with a focus on nutritional quality and food safety, and soon moved into working with extension faculty and staff, community-based teachers, health professionals, and citizens to conduct programs directly and over the statewide satellite network. This program continues to use Special Project funds to develop curricula and support programming delivery costs, tasks which will continue into the foreseeable future.

C. Agriculture and Agribusiness

The Ag/AgBusiness Program area help producers and people in agribusiness improve their enterprises' profitability and competitiveness in a global marketplace; conserve and protect soil and water resources; produce and distribute an adequate supply of high-quality food; and develop effective agricultural public policies. The four special projects in this program area illustrate the dilemmas involved in prioritizing among competing priority demands, for internal funding for these critical activities would have required reallocation from existing programs that support Wisconsin's agribusiness enterprises.

- Farm Financial Management, a joint activity of UW-Extension and UW-Madison, (\$50,600 GPR), analyzes the factors affecting the financial performance of Wisconsin farm businesses, so farmers, educators, policy makers, and other agricultural professionals better understand why some farm businesses survive and others do not. The initial project, whose initial focus on the records of the Farm Credit System of St. Paul, demonstrated a continuing need to understand how factors such as size, debt position, efficiency, owners' skill, can affect the profitability, solvency, and liquidity that affect the financial characteristics and performance of Wisconsin farm businesses. The project continues to distribute information for use by county agents and campus-based

specialists in their educational programs. Information changes, so this special project continues, with its goals and objectives redefined to meet contemporary needs for information.

- The Dairy Profitability Center, a joint project of UW-Extension, UW-Madison, UW-Platteville and UW-River Falls (\$191,205 GPR), provides faculty resources that augment ongoing programs to support Wisconsin's dairy industry. It has developed and now delivers interdisciplinary programs that emphasize integrated production, financing, and marketing management systems. There is an ongoing need for programs to assist the state's farmers maintain their national and international competitiveness. Continuing resources are now available to support Farm Electrification/Milking Systems Engineering (UW-Madison), Dairy Farm Financial Management (UW-River Falls), Dairy Beef and Veal Production and Marketing (UW-Platteville), and Dairy Herd Improvement (UW-Madison), and maintain information systems such as HAYMARKET, an information and data base system, and DAIRY-PROFIT, an electronic bulletin board which provides information on the availability and price of feeds. Emerging issues such as BGH require continued project activity.
- Agricultural Technology & Family Farm Institute, a Special Project of UW-Madison and UW-Extension, (\$113,300 GPR), is a multi-institutional and multi-disciplinary educational approach to farming that focuses on the impact of technology on farms and rural communities. Initial efforts focussed on surveys of farmers' and their attitudes toward technology; these have evolved into the examination of issues such as resource stewardship, risk communication, biotechnology, water quality, natural resource management, and food safety, topics largely excluded from the traditional curriculum of agricultural extension programs. The Institute's will continue to focus on the intersection of technology, broadly defined, and farm families, using Special Project funds to support its activities.
- The Nutrient and Pesticide Management Program, funded by Special Project resources (\$191,100) provides educational programs and fosters the exchange of information in the university and agricultural communities. The need is ongoing, given the broad number of crops grown in Wisconsin, the array of nutrients and pesticides currently available, the ongoing evolution in both crops grown and pesticides applied in the state. The NPM program links research and extension faculty and farmers together, to develop site-specific problems involving soil fertility, pest control, and water quality.

D. 4-H Youth Development

4H/Youth Development Programs work with and through community volunteers, organizations, and schools, to offer educational programs that to engage young people in educational projects, events, activities, and clubs; identify and minimize the sources of risk facing young people; help young people make contributions to family and community life; and train volunteer leaders. There are no special projects in this area.

III. CONTINUING EDUCATION EXTENSION

UW-Extension coordinates the delivery of continuing education from all UW System institutions. The statewide plan for continuing education, developed by the institutions under the leadership of UW-Extension, embraces four broad program areas, within which faculty and staff provide credit and non-credit continuing education programs that meet the needs of professionals, business managers and operators, students and the public. Unifying priorities and programs in Continuing Education is the concept of 'change'.

A. Change and the Economy

Faculty and staff who contribute to 'Change and the Economy' assist the state's corporations, small businesses, professionals and entrepreneurs by providing programs that strengthen and expand economic activities, contribute to economic development, and enhance the knowledge and skills of the business community. They help state, county and municipal governments attract, retain and expand business and economic development; businesses compete in a global economy or improve the usefulness of technology to businesses; and engineers solve complex problems in innovative ways.

Special projects in this area include:

- The Minority Entrepreneurship Program, at UW-Milwaukee (\$66,400), provides real world, practical education for minority clients and others who are interested in operating or starting their own businesses. Its courses, which cover the basic components of successful business ventures, are delivered on-site in minority communities, using practitioners (such as bankers, marketing specialists, accountants, business attorneys, and human resource managers) who can relate their experiences and the problems they encountered to others considering business ventures. The program's educational components complement the ongoing activities of the Small Business Development and Business Outreach Programs. The need is ongoing because of the problems confronting minority entrepreneurs in Milwaukee.
- Manufacturing Technology Transfer, at UW-Stout (\$145,113) was originally a project to assist the JI Case, Corporation, improve its use of technology in its processing activities. The program continues on a project basis, assisting businesses to analyze their manufacturing operations and implement changes to improve their production activities. Through cross-referrals, the program is linked to professional, business development and community economic development activities sponsored by Continuing Education and Cooperative Extension. The project continues to focus on Wisconsin industries seeking to improve their competitiveness and profitability.

- The Educational Technology Project, at UW-Eau Claire (\$94,800) initially paid for an integrated voice/video/data transmission system in the Chippewa Valley. Next, project funds were used to determine programming priorities. Project funds are now used to develop curriculum and programs that use the infrastructure that was developed. Project funds assure the system is useful.
- Solid and Hazardous Waste Education, a project supporting faculty and staff resources at UW-Extension, UW-Madison, UW-Stevens Point (\$115,260), provides statewide educational programs, so local government and business leaders can address federal mandates involving recycling and pollution prevention and control. The project operates on a continuing basis, because compliance will require ongoing efforts.

B. Change and the Professions

Continuing education extension programs help individuals maintain and renew their professional and academic skills. They assure peak competitiveness and skill for Wisconsin's business, social service, legal, health, educational, management, engineering and other professionals. There is one Special Project in this area.

- The School for Workers, a statewide program of UW-Extension received project funding (\$56,655) to support the redirection of its curriculum, from traditional labor management programming to programs to enhance labor leadership's participation in management strategies that improve the competitive economic position of American business. Funds, initially used to develop a strategic plan, are used on a continuing basis to support, deliver and update programs on topics such as WIN/WIN bargaining, the team concept, labor management cooperation, employee involvement, joint health and safety activities, strategies for improving productivity, quality and technology, new variable compensation systems based on productivity improvement and profitability, and joint efforts to control health care costs.

C. Change and Public Policy

Informed and involved citizens are critical to the effective functioning and even the survival of a democratic society. Through its programming in 'Change and Public Policy,' the University helps citizens become informed and active participants in their society and in the world community; and enhance the professional and decision-making skills of elected and appointed officials and public sector employees. There are no Special Projects in this area.

D. Change and the Individual

'Change and the Individual' embraces liberal arts programs that are largely non-technical and facilitate the development of reasoning, questioning and critical judgment. They contribute to the intellectual, cultural and social development of Wisconsin's citizens, and underscore the University's commitment to lifelong learning as a means to an informed and intelligent citizenry. Programs are available for all age groups. There are no Special Projects in this area.

IV. EXTENSION COMMUNICATIONS

In partnership with the Wisconsin Educational Communications Board (ECB), the Division of Extension Communications produces and delivers cultural, educational and instructional programs that meet the needs of individuals, communities, and the state, using the facilities and resources of Wisconsin Public Broadcasting. WHA-TV and WHA-Radio, licensed to the board of Regents, serve the south central Wisconsin area, and provide educational production facilities and support for faculty in Extension and at institutions located throughout the state. There are no Special Projects in Extension Communications.

V. OTHER UW SYSTEM INSTITUTIONS

UW Institutions other than UW-Extension manage \$9.5 million in extension and public service funds. Most funds are at UW-Madison, where they support the State Laboratory of Hygiene, and ongoing programs in the School of Veterinary Medicine, the State Cartographer's Office and the LaFollette Institute.

Other programs at UW System institutions support institution-based extension program activities, public service radio station operations and programming, community service forums and program, and business awareness and development outreach efforts in communities.

The largest non-Extension program is the State Laboratory of Hygiene (\$3.9 million), which provides highly complex laboratory testing services.