

## CHAPTER 2

# ACADEMIC UNITS

### OVERVIEW OF ACADEMIC UNITS

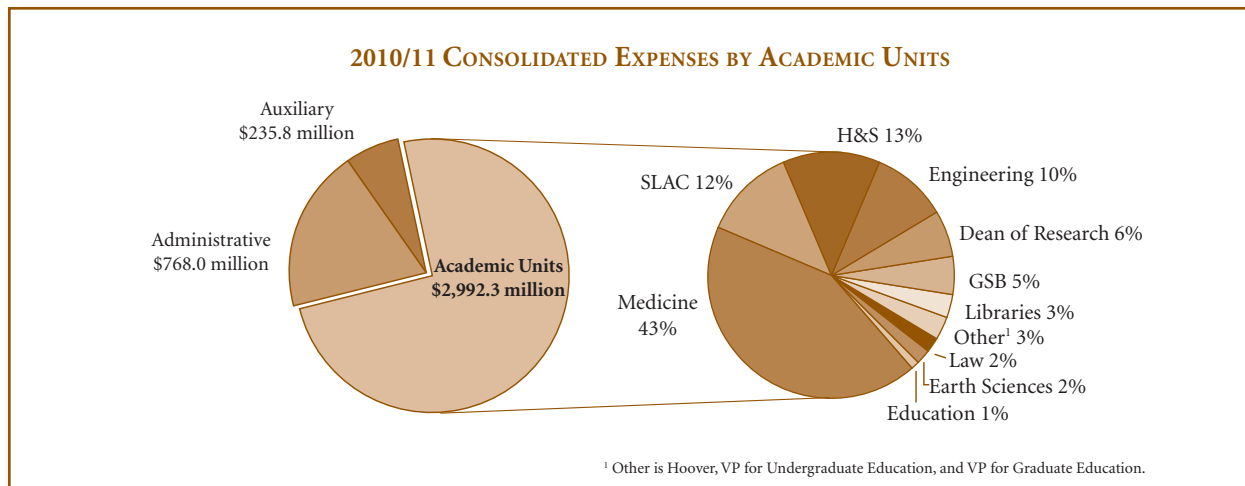
This chapter summarizes programmatic and financial activity for each academic unit. It offers a particular focus on the financial condition in each unit. Overall, the academic units are projecting an operating surplus

of \$45.1 million. However, after transfers to facilities and endowment, the units will be virtually balanced with a \$1.1 million surplus.

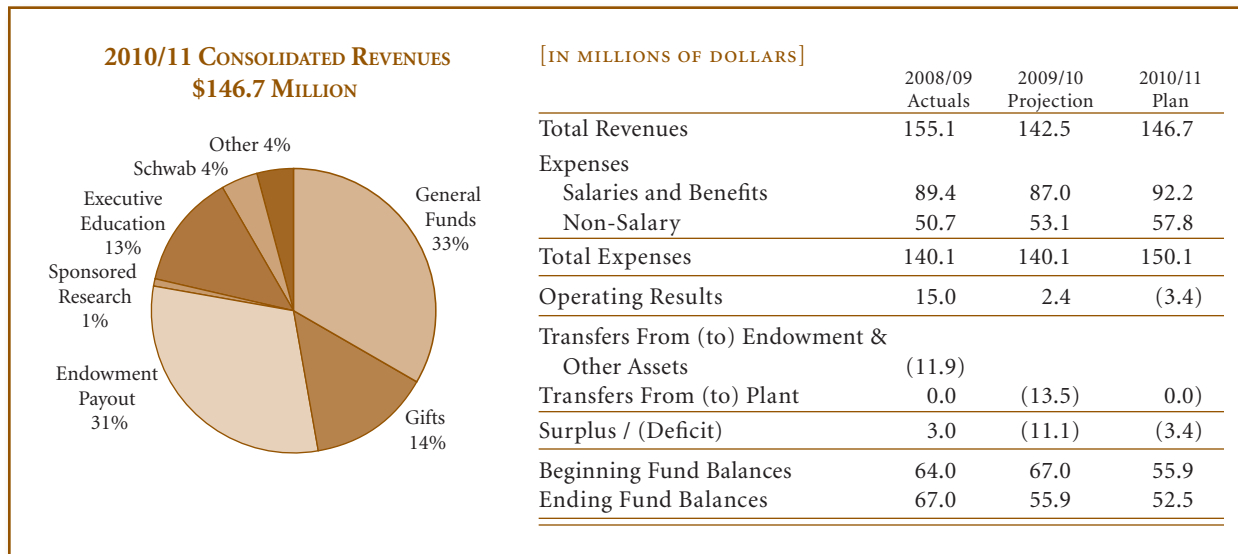
### CONSOLIDATED BUDGET FOR OPERATIONS, 2010/11: ACADEMIC UNITS

[IN MILLIONS OF DOLLARS]

	Total Revenues and Transfers	Total Expenses	Result of Current Operations	Transfers (to)/from Assets	Change in Expendable Fund Balance
<b>Academic Units:</b>					
Graduate School of Business	146.7	150.1	(3.4)		(3.4)
School of Earth Sciences	47.4	45.1	2.3	(3.0)	(0.7)
School of Education	39.0	38.6	0.5	(1.5)	(1.0)
School of Engineering	310.4	304.4	6.1	(0.3)	5.8
School of Humanities and Sciences	396.1	379.7	16.4	(9.2)	7.2
School of Law	61.6	58.8	2.8	(3.2)	(0.4)
School of Medicine	1,328.7	1,293.9	34.9	(25.6)	9.3
Vice Provost and Dean of Research	171.6	179.4	(7.7)	2.1	(5.7)
Vice Provost for Undergraduate Education	39.3	39.2			
Vice Provost for Graduate Education	1.8	6.1	(4.2)		(4.3)
Hoover Institution	44.1	42.7	1.5	(4.0)	(2.5)
Stanford University Libraries	97.1	101.2	(4.2)	0.7	(3.5)
SLAC	353.4	353.2	0.2		0.2
<b>Total Academic Units</b>	<b>3,037.4</b>	<b>2,992.3</b>	<b>45.1</b>	<b>(44.0)</b>	<b>1.1</b>



## GRADUATE SCHOOL OF BUSINESS



The Graduate School of Business (GSB) is moving forward with the new MBA curriculum (now in its third year); reviewing course offerings in executive education and the Sloan Master's Program; expanding and deepening collaborations across the Stanford campus; and completing the Knight Management Center, which is scheduled to open during 2010/11. The GSB was the first unit on campus to take action in response to the economic downturn, and this has placed the school in a strong financial position going forward.

### PLANNING DIRECTIONS

The economic downturn that began in the fall of 2008 had a substantial, multiyear impact on finances at the GSB. Faculty and staff worked hard to reduce expenses in response to the projected decrease in revenues. The final results for 2008/09 were better than originally anticipated. Revenues were higher than expected, due mostly to a few large expendable gifts that were received at fiscal year-end. In addition, expenses were reduced more than planned, largely due to staffing reductions as well as deep cuts in discretionary spending (such as supplies, food, and travel). As a result, the school was able to set aside additional funding for the Knight Management Center. The improved financial results will also allow the school to resume plans to grow faculty, remain on course with the Knight Management Center, and consider a possible evening program.

Faculty leadership at the GSB has estimated that 110 tenure-line faculty members are needed to maintain the new MBA curriculum. The size of the MBA class increased slightly for fall 2009/10. Both the MBA class and the Sloan Master's Program are expected to grow a bit more once the Knight Center is complete. The school also intends to grow the PhD program to 110 students. The GSB has undertaken aggressive faculty recruitment efforts during 2009/10, with plans to increase the total number of tenure-line faculty over the next few years. A faculty review of the new MBA curriculum was completed during the summer, and recommendations have been implemented during 2009/10. To make the workload more even throughout the program, fewer courses are now required, although more units are needed to graduate.

The GSB faculty is also considering offering new evening programs in tandem with the Sloan Master's Program. One possible model is the very successful and highly regarded Summer Institute for Entrepreneurship, which has facilitated collaborations across campus. A faculty director has been appointed for this effort, and focus groups are being conducted to assess interest levels. These programs, if launched, will be different from other GSB offerings in that they will be part time and thus will attract a more local, yet potentially very talented and diverse, student base from Silicon Valley and the broader Bay Area. The goal is to achieve the same level of quality and high standards as other program offerings at the GSB.

The school is conducting a faculty-led review of the executive education program, which has been moving toward more customized courses targeting specific organizations with specific needs. The faculty committee will determine the future direction of the program to ensure that it is in alignment with the school's strengths and future objectives, and that course offerings are competitive and in alignment with market demand.

Efforts are in process to ensure that the Knight Center will be an active and engaging place for the GSB and the broader Stanford community. Plans are under way for the campus moves, which are planned for December 2010 and March 2011.

### **CONSOLIDATED BUDGET OVERVIEW**

GSB revenues are projected to be relatively flat overall in 2010/11. Tuition increases will help offset the decreased endowment payout, as will slight increases in expendable giving and executive education. Tuition revenue for degree programs is expected to increase 5.4% over the current budget plan. Tuition for first-year MBAs will increase 3.5%, less than in prior years. Sloan students' tuition will increase 5.0%. The school forecasts executive education revenues to increase 5.4%, as the market for these courses is slowly improving after a major downturn last year due to the economy.

GSB expenses are projected to increase about 7% from the 2009/10 year-end projection to reach \$150.1 million in 2010/11. Part of the increase is due to plans to increase faculty as part of the longer-term goal to support the MBA curriculum. The school also intends to increase financial aid support at the same rate as tuition in spite of the decrease in endowment payout, which means that some unrestricted funds will be used to make up the shortfall. The school will also incur one-time costs (estimated at \$1.5 million) to run two facilities simultaneously for six months during the transition to the Knight Center. Another incremental

expense will be debt service for the Knight Center. The school has been approved for \$54.6 million of long-term debt, and debt service will commence after the buildings become occupied.

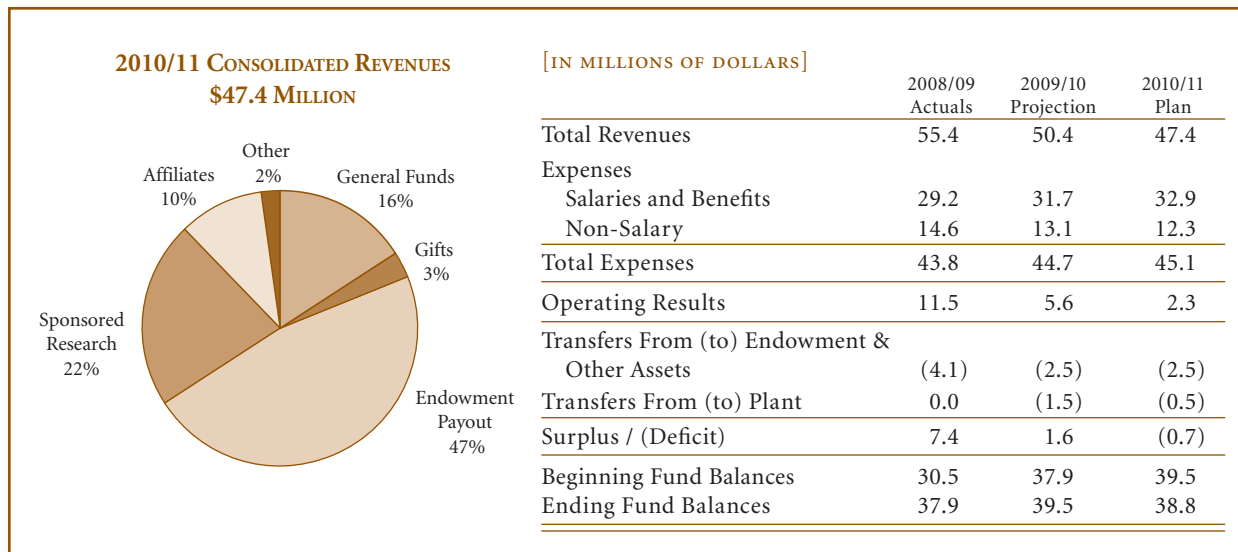
Endowment income is expected to decrease 12%, due in part to changes in the stock market and the university payout policy. During 2008/09, the endowment provided 36% of the overall funding for the school, particularly for teaching, research, and fellowships. That figure will be 31% in 2010/11. The school expects an increase in expendable gifts of 5% over the current budget plan. The GSB has been extremely fortunate in that alumni have been able to show continued generosity in spite of the economic downturn.

The school expects 2010/11 reserves to show a slight decrease relative to the projected balance for 2009/10. Due to some of the temporary expenses of the campus move, a slight deficit is planned. The school also continues to fund surge space for the central university staff formerly located on Serra Street at a cost of about \$3.3 million per year. This expense impacts reserves rather than the operating budget. In addition, over the last three years the school put aside \$22.3 million from operations toward the Capital Facilities Fund to help fund the Knight Management Center, which reduces the amount of debt required for the project.

### **CAPITAL PLAN**

The Knight Management Center is integral to the school's plans for continued leadership in business education. The new center is on target to be completed in 2011 at or below the board-approved budget of \$345.5 million. The Knight Management Center is designed to earn a Platinum Certification under the U.S. Green Building Council's LEED rating system. This is the highest rating a building can receive and represents a substantial commitment to sustainable design. The center will also satisfy and in some cases exceed the university's space-planning guidelines.

## SCHOOL OF EARTH SCIENCES



### PLANNING DIRECTIONS

The School of Earth Sciences used 2009/10 to regroup after the recent economic upheaval and reestablish a strong foundation from which it can take the next steps in its transformation into a 21st-century school focused on the study of planet Earth: its mantle and crust, atmosphere, climate, oceans, land and water systems, and energy resources. The next phase in the school's evolution will begin in 2010/11. Despite limited funding, momentum will be gained on key strategic goals. Particular areas of focus will be providing adequate funding for graduate students; responding to the increased demand for an Earth Sciences education; continuing efforts to diversify student, faculty, and staff populations; and continuing efforts to improve use of school space.

#### Impact of Budget Reductions & Strategic Goals

In 2009/10, Earth Sciences had no choice but to respond to the budget crisis aggressively because of its reliance on endowment payout to support core activities. With income expected to drop 25% over two years, budget cuts were made in many areas. The primary impact was a severe reduction in graduate financial aid allocated to departments. This resulted in an unfortunate but necessary drop in admissions at a time when the quality and size of applicant pools are at record levels. For 2010/11, university resources have been allocated to mitigate the loss in endowment payout, allowing the school to resume its normal admissions levels.

Faculty recruitment was also impacted by the budget crisis. Plans for up to five new searches from 2009/10 to 2011/12 were put on hold (although two that were in process did come to completion). The change in hiring plans was required by the large drop in endowment income in combination with the base salary increase and, more importantly, the significant investment needed for start-up packages and lab renovations. Because the school has invested many resources in the new faculty hired in the last five years, school reserves are low. However, based on current endowment assumptions for 2010/11 and beyond, and thanks to a base increase in general funds, Earth Sciences will be able to initiate at least one search in 2010/11. This will be in the field of energy and water resources, bringing new expertise in fields critical to the school's mission: to be a world leader in earth and environmental sciences, creating knowledge to help provide energy, water, and a safe and sustainable planet.

Budget reductions have also impacted staff. The school reduced its workforce by 10% in late 2008/09, weakening an already lean administrative infrastructure. Some of the reductions allowed for effective reorganizations, but several are not sustainable. This is principally true in the departments where new faculty have been hired, bringing with them new students, incremental postdocs, and active (and demanding) research agendas. In 2010/11, the school will welcome two junior faculty, and those additions will likely force the reinstatement of at least one staff position.

## PROGRAM GOALS

### Education in Environment and Sustainability

As part of its 2004/05 strategic plan, Earth Sciences set a goal to increase its educational reach to students across the university. Since then it has implemented measures that have dramatically increased the number of students taking introductory courses and the number of majors (both up 50% since 2006). These measures have included improved course quality, revamped curricula, and the addition of field components to many courses. While all of these changes required substantial faculty time, they could not have been achieved without the assistance of a school wide undergraduate coordinator, a school wide field education coordinator (50% FTE), and an educator leading courses on sustainable agriculture. In addition, with help from president's funds, Earth Sciences hired an environmental journalist to teach and develop programs that train students (and faculty) to communicate scientific information more effectively, so as to have a greater impact on decision making. This individual is teaching courses for Earth Sciences and the Journalism program, and has led workshops for or consulted with a wide range of campus groups. Another new aspect of the environmental education program is field-based education in sustainable agriculture. The program has outgrown the small allocation of land at the Stanford community garden, and Earth Sciences hopes to establish an educational farm to better serve the needs of students. In 2010/11 these activities will continue, supported by one-time funds from a number of sources, with the hope that base funding can be secured by 2011/12.

### Diversity Program

In 2008/09 Earth Sciences committed to developing a diversity program, with the first phase aimed at its graduate population. Despite tough economic times, Earth Sciences has made steady progress on its diversity efforts. Through the use of reserves and corporate gifts, in 2010/11 the school plans to expand its diversity graduate and postdoctoral fellowship programs, increase targeted recruiting activities, and develop a summer program for non-Stanford minority undergraduates and a university-to-university exchange program.

## CONSOLIDATED BUDGET OVERVIEW

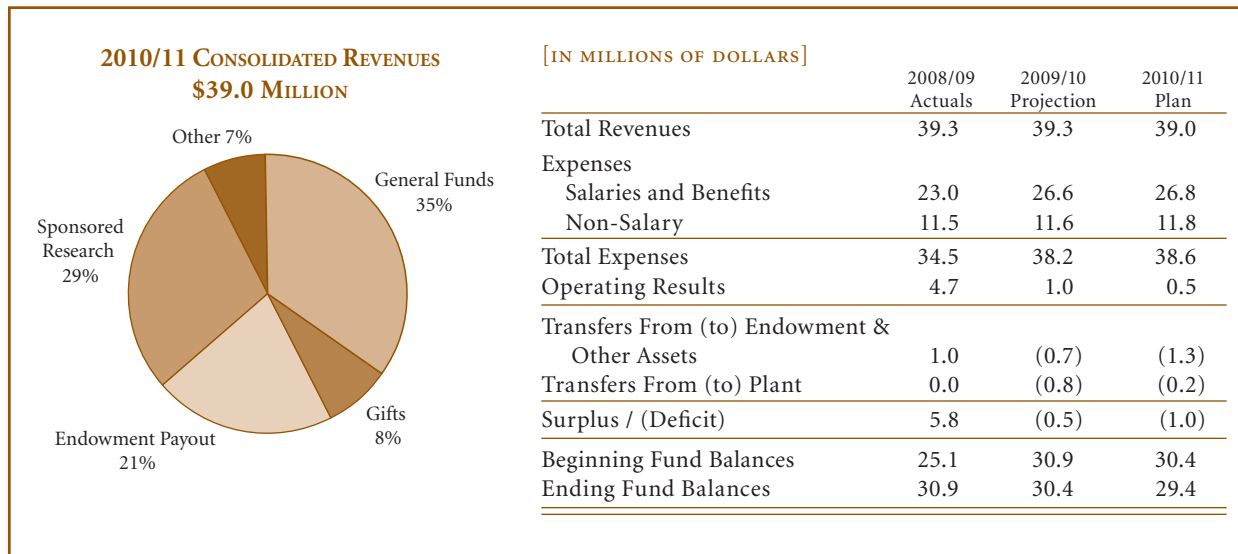
The year-end projection for 2009/10 shows a reserve fund balance of \$39.5 million, with a net increase of \$1.6 million across all fund types. The largest increase is in endowment, with a \$900,000 surplus in graduate aid, reflecting school efforts to build a reserve to be applied to the income shortfall anticipated in 2010/11. Another \$800,000 comes from increased endowment payout due to the change in payout restrictions on a number of funds. An \$870,000 increase is expected in expendable funds, due to the continued fulfillment of faculty start-up commitments from school sources and Terman Fellows awards. Offsetting these increases is a \$320,000 drawdown of operating funds, due to the completion of a number of commitments, and a \$660,000 drawdown of designated funds, which are being tapped to make up for the loss in graduate aid endowment.

For 2010/11, Earth Sciences projects consolidated expenses of \$45.1 million, a modest increase of \$400,000 from 2009/10. Balancing a rise in costs is a decrease in capital project outlays due to completion of several lab renovations. Year-end projections show a fund balance of \$38.8 million, a decrease of \$681,000. A large drawdown of endowment balances (\$1.6 million) is mitigated by increases in other fund categories, particularly expendable funds, due primarily to funding for faculty start-up from the Terman Fellows program. Earth Sciences expects to end the year in a modestly healthy financial position.

## CAPITAL PLAN

Earth Sciences continues to implement its 2008 space master plan. The overall goals of the master plan are to reduce the school's space charge and improve efficiency; accommodate planned growth, including laboratory needs; and fix long-standing problems in each building. The school has made significant progress, particularly in creating better student space and more conference and public gathering spaces. For 2010/11, the primary goals include completion of the renovation of Geology Corner, which will improve space use, bring office sizes into compliance with university standards, and create several teaching labs; laboratory renovations and consolidations in Green, to accommodate new faculty; improved space utilization in Mitchell; and improvements to the Branner Earth Sciences Library.

## SCHOOL OF EDUCATION



### PLANNING DIRECTIONS

The work of the School of Education faculty continues to grow around a network of interrelated centers. The campus K–12 Initiative has spawned three new initiatives: the Center for the Support of Excellence in Teaching (CSET), the Center for Education Policy Analysis (CEPA), and the Stanford Center for Leadership in Education (SCLE). School faculty also direct the Policy Analysis for California Education (PACE) center, the Stanford Center for Opportunity Policy in Education (SCOPE), the Stanford Center for Philanthropy and Civil Society, the John W. Gardner Center for Youth and Their Communities, the Center for Research on the Context of Teaching, and the Center on Adolescence.

These centers, along with the Stanford East Palo Alto Charter School, bring together faculty and students with common interests from across the university. All are committed to engaging in research that can inform policy and practice. CSET, SCLE, and the charter school embed research in innovative programs designed to improve education leadership, teaching, and learning. The goals are to provide direct service to the community, develop models of effective programs to improve leadership and teaching, and develop and disseminate new knowledge. These new activities are earning Stanford's School of Education a reputation as a leader in education reform.

One notable programmatic development this year is the creation of the new undergraduate education minor, which encourages and gives official credit to undergraduates who are interested in learning how to apply the knowledge they gain in their majors to the diverse field of education.

For 2009/10, the School of Education absorbed a general funds cut of \$1.7 million (roughly 14%). This, coupled with the sharp decline in endowment payout, has forced the school to rein in some of its plans, reduce staff, suspend faculty billets, and shift resources planned for other purposes to cover ongoing operational needs. In addition, all units were required to significantly reduce their discretionary spending. Nonetheless, the School of Education is emerging from this severe economic challenge in a relatively strong position. Even with the recent suspension of two and one-half faculty billets, the faculty has grown substantially; in the last three years the school has filled five vacant slots and added three and one-half incremental faculty billets.

While the centers are funded almost entirely with external funds, they do add to the school's administrative burden. Their activities will be supported through increased efficiencies without increasing the Dean's Office staffing level.

The two-year 25% decline in endowment payout has put stress on the graduate aid budget. Over the past year the school has worked with donors to make

previously unusable funds available and to allocate fellowship funds more strategically in order to use the most restricted sources of funding first. The cumulative impact of these efforts, along with the mitigation provided by the provost, is that there will not be cuts to the graduate aid budget.

The School of Education, which has always taken a prudent approach to expansion by requiring that new sources of funding be secured before it makes commitments to move into new areas, continues to grow in spite of discretionary funds constraints. More than ever, the school is not in a position to allocate existing funds in support of new activities, so growth will need to come from external funding. The centers are good examples of new endowment and expendable gift revenue expanding research opportunities.

Recent annual surpluses have led to a relatively healthy reserve that will be used to address a number of one-time needs in the coming years. In addition to funding several facilities projects, planned uses of this unrestricted reserve include:

**FACULTY RECRUITMENT** — Traditionally the school has had no lab-related expenses. However, three of its most recent faculty hires have had significant lab needs, putting pressure on both space and finances. As the field of educational research continues to expand into the sciences, additional base funds may need to be budgeted for faculty start-up packages.

**SHORTFALL IN ENDOWMENT PAYOUT** — Some accumulated reserve will be used to support the operating budget until the endowment payout returns to past levels. In particular, restricted graduate aid balances will provide bridge funding to maintain the current level of student support.

In spite of the significant financial challenges of the past eighteen months, the school continues to engage the Stanford community in its efforts to generate new knowledge, to train educational researchers and practitioners, to improve educational practice, and to influence policy. Given the extraordinary challenges public education faces in the state and beyond, the contribution of the Stanford University School of Education has never been more essential.

## CONSOLIDATED BUDGET OVERVIEW

The school projects a consolidated budget deficit of \$465,000 in 2009/10. However, this includes a \$750,000

transfer to plant in support of several large capital projects. Adjusting for this unusually large one-time commitment, the 2009/10 forecast reflects a slight surplus. Endowed payout fund balances are expected to grow, due primarily to a delay in the distribution of student loan funds. Accumulated expendable gift balances will likely decrease as several recent large gifts are used in support of the new centers and other activities.

In 2010/11, restricted revenue is expected to decrease by about \$1.0 million, due almost entirely to the 15% drop in endowment payout, while the general funds allocation—base and one-time—will increase by about \$900,000. With expected expenditure growth of nearly \$500,000 (or 1.4%), the school's bottom line is projected to worsen in 2010/11.

The projected \$1.0 million deficit in 2010/11 reflects:

- A \$150,000 transfer from reserves for capital improvements;
- \$300,000 in net distribution to student loans from endowment (in excess of 2010/11 payout); and
- \$250,000 in support of an unusually large doctoral cohort for 2010/11.

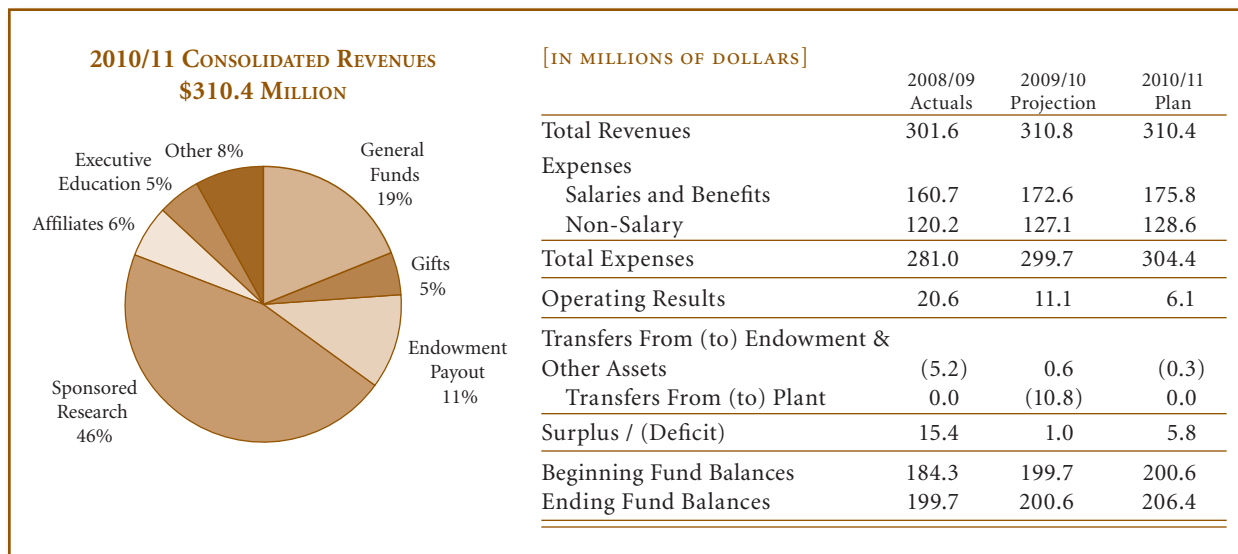
In addition, balances in restricted gift and faculty-designated funds are expected to be spent down somewhat. The remaining slight operating deficit will be eliminated by 2011/12 through a combination of additional cost cutting, endowment payout growth, and incremental unrestricted gift revenue.

Overall grant and contract activity is expected to decline slightly in 2010/11 as non-federal grants, which represent about two-thirds of school awards, decrease somewhat while federal awards remain flat.

## CAPITAL PLAN

To provide leadership in academic programs and to attract outstanding students, staff, and faculty, the School of Education is upgrading and improving its existing spaces. In 2010/11 the school plans to invest funds to transform an aging 150-seat lecture hall into a state-of-the-art auditorium. It also is committed to improving staff and student space configurations as the demands of new centers and faculty labs necessitate more efficient use of space. These projects will be funded from university and school reserves.

## SCHOOL OF ENGINEERING



### PLANNING DIRECTIONS

While managing the budget reductions that impacted the School of Engineering (SoE) and Stanford during 2008/09 and 2009/10, Engineering's goals were to protect the core mission of the school and to ensure decisions made during times of constraint minimized any adverse effect on the school's long-term health and strategic position. Engineering met these goals in part by allocating income from unrestricted endowments to permanently support the operating budget, repurposing endowment funds (with donor permission) to redirect endowment income into the operating budget, funding commitments using Engineering reserves and Venture Fund, and operating at significantly-reduced staffing levels.

In 2009/10, Engineering froze 16 vacant faculty billets, which represents approximately 6.7% of the roughly 240 Engineering faculty billets. With an average of three faculty retirements per year in recent years, the 16 frozen billets represent approximately five years worth of retirement billets that would otherwise be available for new hires. Since bringing in new junior faculty with cutting edge research interests is critical to Engineering's strategy, the loss of these billets is a major concern. Engineering's graduate fellowship program is strongly dependent on endowment income. Engineering was able to spend down reserve balances in these funds to help with 2009/10, although the school did reduce the number of fellowships by 13, or about

10% (\$660,000). Encouraged by improved external market conditions, Engineering's development efforts are refocused on raising funds for faculty billets and graduate fellowships.

A concern for the school is that staffing levels in 2009/10 are back to 2001/02 levels, following budget cuts which resulted in a headcount reduction of 35.5 (-8%). Staff levels within Engineering have only grown at a compound annual growth rate (CAGR) of 1.2% or 13% over the past decade, much lower than the growth rates of tenure-line faculty, graduate students, and research expenditures. Engineering is currently redesigning several administrative functions – most notably in sponsored project research administration – in order to streamline infrastructures, gain efficiencies and economies, and avoid any permanent degradation of services to Engineering faculty and students.

Faculty within Engineering continued throughout 2009/10 to be highly productive. With only 13% of Stanford's faculty, Engineering educated 20% of Stanford's undergraduates and almost 40% of the university's graduate students. Furthermore, Engineering faculty carried the heaviest teaching loads of any school at Stanford (student units taught per faculty member), and at the same time Engineering faculty brought in the highest level of research funding per faculty member of any school at Stanford.

Over the past decade, Bioengineering, the Design Institute, Institute for Computational and Mathemati-



cal Engineering (iCME), and the Stanford Technology Ventures Program (STVP) were created by the school, and continue to epitomize Engineering's strategic focus on interdisciplinary research, innovative teaching techniques, and the strengthening of core competencies. Throughout 2009/10, Engineering made progress in further developing world-class programs in information technology, nanoscience and nanotechnology, and energy and environment. In sum, Engineering's strategic initiatives directly address broad university initiatives and provide a foundation for robust collaboration across engineering and other disciplines.

### **CONSOLIDATED BUDGET**

For 2010/11, Engineering's forecasted consolidated expenses will total \$304.4 million, which is \$4.7 million (2%) greater than the 2009/10 year end projection. Revenues and transfers are forecast to decrease slightly by \$360,000 (less than .1%) from the projected 2009/10 results. This is mainly due to the reduction in endowment income and the expectation that sources of income (e.g. affiliate programs, the Stanford Center for Professional Development, and expendable gift income) will remain flat as a result of the soft economy and challenging fundraising climate.

Engineering anticipates less than \$300,000 in local funds to be transferred to assets in 2010/11, due to the slowdown in Engineering's capital plan. This permits a modest rebound in fund balances of approximately 3% over the beginning balance for the year. However, Engineering does anticipate needing \$15 million from

the Venture Fund to support buildings and \$10 million to match gifts to endowment principal.

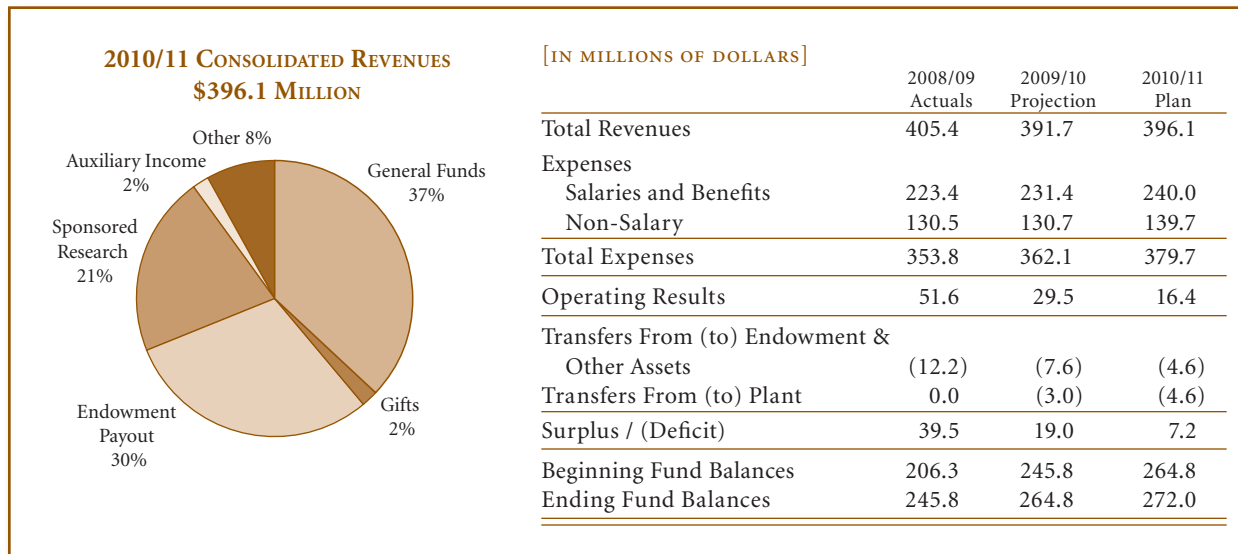
In 2010/11, the school anticipates a \$5.8 million surplus, leading to ending fund balances of \$206 million. Approximately 52% of expendable and designated fund balances are controlled by faculty; 27% of expendable, designated, and endowment funds are controlled by departments, divisions, and laboratories, with 21% of those funds controlled by the school.

### **CAPITAL PLAN**

Engineering has an ambitious strategic objective to house all of its departments in "21st-century" facilities by 2012. The Jerry Yang and Akiko Yamazaki Environment and Energy Building (completed in 2007), the Jen-Hsun Huang Engineering Center and Center for Nanoscale Science and Engineering building (both completing in 2010), and the planned Bioengineering/Chemical Engineering building are major elements in meeting this objective.

Regretfully, the school has had to suspend a number of capital projects due to the economic downturn and corresponding loss in market value of Venture Funds intended to finance construction. The suspended projects include the new Mechanical Engineering building and several Panama Mall renovation projects (including Durand). Though the Green Dorm continues to be delayed, the school is revisiting a feasibility study in summer 2010.

## SCHOOL OF HUMANITIES & SCIENCES



### PLANNING DIRECTIONS

Humanities & Sciences (H&S) faced challenges in 2008/09, dealing with projections of a \$19 million reduction in general funds and a \$30 million decline in endowment income during 2009/10 and 2010/11. The school took decisive action to balance the budget and made additional cuts and changes to better align resources with academic priorities. Approximately half of the school's faculty searches were canceled or postponed, 25 billets were returned to the provost, graduate aid funding was frozen, 30 staff positions were eliminated, and lecturer and nonsalary funding was cut. The Division of Literature, Cultures & Languages is being merged into a single department, and the school has eliminated the Interdisciplinary Studies in the Humanities program. Additional changes to streamline administrative cost structures are under study. Departments and programs have responded quickly and collaboratively to make cuts at their levels, in many cases implementing cuts earlier than required and making additional cuts to better position themselves for the long term.

These actions have successfully dealt with the immediate need to reduce expenditures, but faculty recruitment and graduate aid reductions will impede the realization of the school's goals over the long term. Its top priority for 2010/11 and 2011/12 is to increase faculty hiring to replacement rate—about 25 faculty

per year. Faculty shrinkage has been minimized through joint appointments with other schools and opportunistic use of restricted fund balances that can support salaries and start-up packages, but this has not allowed the school to address top hiring priorities in some areas. H&S will allocate a projected operating surplus to recruitment, and the provost will provide \$1.5 million of additional base funding in 2011/12, which is projected to allow hiring at the full replacement rate.

Funding to increase diversity in the graduate student population continues to be a priority for the school. Over the past several years, it has slowly expanded this program, increasing the numbers of fellowships and years supported. In 2010/11 the provost will provide \$250,000 of incremental base funding for this program, allowing the school to maintain the current number of fellowships offered.

The school-imposed freeze on graduate aid funding will require departments to rely more heavily on restricted funds and accumulated balances and/or to adjust admission rates. The Dean's Office is working with departments where reserves are not available or where admit rates would be significantly affected to ensure that graduate programs are not significantly harmed. Restoring graduate aid funding will be a priority as the economic crisis resolves and resources begin to grow in the school.

Faculty retention cases are down significantly from historic levels, a function of both the economic crisis and lower hiring rates at competing institutions. The provost has provided incremental base funding in 2010/11 to support salary increases above the regular merit pool for key departments.

The school's reduction plan appears to have been successful, and there is optimism that H&S will emerge stronger and more focused. Longer-term concerns about reduced faculty recruitment are being addressed through reallocation of resources and incremental provostial funding. Additional strategic priorities (salaries, graduate and diversity student funding, core research and teaching) have been clearly identified and will be first in line as incremental resources become available.

### CONSOLIDATED BUDGET OVERVIEW

H&S projects a \$7.2 million consolidated budget surplus for 2010/11 after transferring \$4.6 million to plant. As described in the preceding chapter, the school is saving significant amounts on recruitment and retention and in Dean's Office and departmental budgets as expense levels are reduced and projects postponed. The second and final year of budget reductions will see general funds decrease by \$2.1 million in 2010/11 (following the \$16.3 million reduction in 2009/10). This decrease will be partially offset by the \$2 million incremental base funding described above. While endowment payout will decline by \$18 million (following a \$10 million decline during 2009/10) as a result of the economic downturn, those declines will be partially offset by \$10 million of general funds mitigation from the provost. Endowment declines disproportionately affect the Dean's Office (\$13.5 million from Dean's Office endowments and \$4.5 million from department/program endowments), which holds all endowed chairs and the majority of other endowments.

Accumulated endowment balances are projected to increase by \$7.3 million during 2010/11. This rate of growth has slowed dramatically as restricted funds have

offset general fund reductions. Usable endowment flows have been significantly increased during 2008/09 and 2009/10 by adding chair holders to restricted endowed chairs and converting endowments from Merged Endowment Pool A to Merged Endowment Pool B. The large growth in Dean's Office unrestricted reserves seen in 2008/09 and 2009/10 is projected to end in 2010/11 as usable endowment flows are fully used to offset payout and general fund reductions.

### CAPITAL PLAN

H&S is involved in a variety of initiatives across the campus.

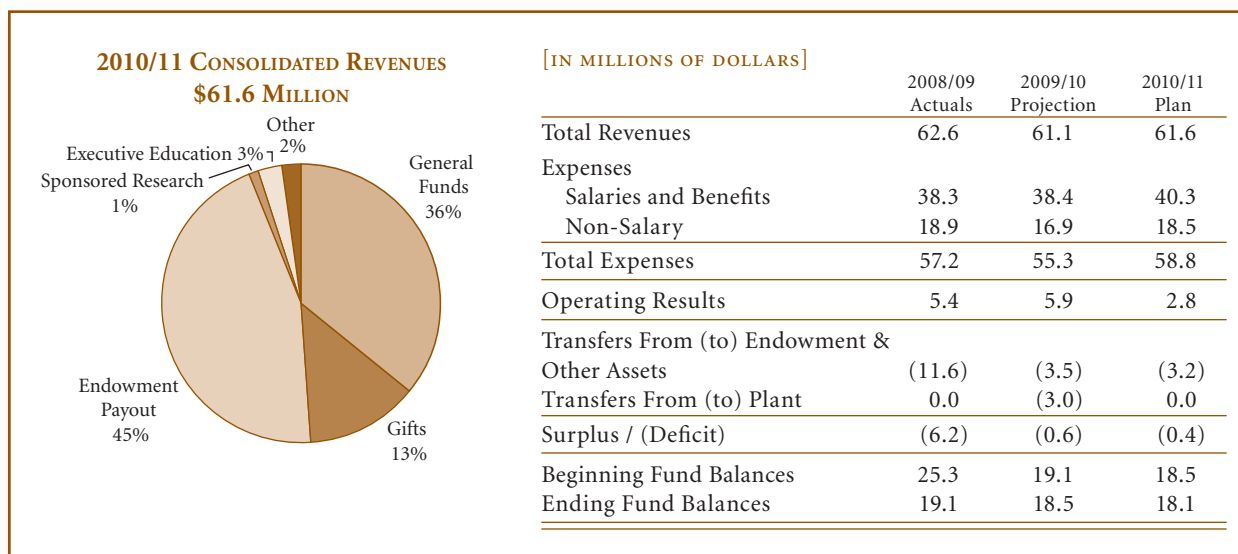
As part of the Arts Initiative, the Art and Art History Department (including the newly incorporated Film and Media Studies Program) will move to a new facility on the site of the old Anatomy Building adjacent to the Cantor Arts Center. This project will be fully funded by gifts. H&S is partnering with the president's office in planning the new Bing Concert Hall. These new facilities support significant academic initiatives of the Stanford Challenge.

The school will provide up to \$5 million from reserves and partner with the president (who will also provide up to \$5 million) on a project to renovate space within Jordan Hall for the Psychology Department to house the new Cognitive and Neurobiological Imaging Center. The center will include an MRI scanner, associated equipment, and support spaces. It will open in early 2011 and will provide critical resources for imaging and methods in cognitive and neurobiological sciences.

The school has initiated a significant facilities planning effort for the Biology and Chemistry departments, including a new biology building and undergraduate teaching labs. Both of these projects are currently delayed due to funding constraints.

Finally, the school continues to undertake a range of laboratory and other renovations each year in support of new faculty recruitment, program growth and development, and ongoing needs.

## SCHOOL OF LAW



### PLANNING DIRECTIONS

The Stanford Law School (SLS) has undertaken a series of major reforms in the past five years. Curricular and structural changes, including the calendar shift from semesters to quarters; the new joint degree programs; the opening of SLS doors to students from around the university; the expansion of team-oriented, problem-solving courses; the development of an evolutionary legal clinical program; the creation of opportunities to study and work abroad; and the new grading and exam system, are transforming the second- and third-year law student experience.

Completing the clinical program and securing adequate financial aid resources are challenges the Law School can and must resolve over the next few years. From a consolidated budget perspective, the solution does not appear to be complicated. SLS should and will take responsibility for solving the clinic and financial aid problems through fundraising. These are the two biggest remaining needs in the “Stanford Challenge,” and the school plans to raise money from alumni and friends. It may take a few years, but fortunately these problems do not need to be solved immediately.

While pressure on the clinic budget challenges an important curricular aspiration and diminished financial aid resources threaten the Law School’s ability to compete for students, faculty hiring is an area where a rare, maybe historic, opportunity exists to enhance

the school’s global and national reputation. Stanford now has what is arguably the best young cohort of any law school in the country. Nevertheless, reputations are made or broken in the lateral-hiring and retention markets, where law schools show strength by bringing in or holding onto established faculty with extraordinary talent.

While SLS’s main peer law schools (Harvard and Yale) have routinely recruited numerous faculty from Stanford over the years, SLS has never achieved the same levels of success in recruiting faculty from these institutions. However, perceptions of Stanford Law School have begun to change. The legal community is coming to recognize that SLS is not just good but, more importantly, different: that there may be unique opportunities at Stanford that do not exist at other academic institutions.

To hire faculty away from the main peer or other top law schools would signal a significant change in relative school strength that could reap tremendous benefits in recruiting faculty and students for years to come. In short, there is an opportunity to pull off a truly rare hiring coup, the kind of hiring that can, colloquially but accurately, be called a true game changer. Success is by no means assured, much less achieved. SLS is, rather, at a genuine tipping point: make this all work, and succeed in making Stanford Law School the new model for legal education.

## CONSOLIDATED BUDGET OVERVIEW

Though it appears the economy has somewhat stabilized in recent months, the situation is still far from ideal. While the global economic downturn resulted in myriad financial problems for SLS, without question the two most daunting issues from a budget management perspective were the university-prescribed general funds reduction of 15% and the two-year endowment payout decrease of 25%.

SLS absorbed the entire 15% general funds reduction in 2009/10 and is still coming to terms with the drop in endowment payout, which had covered 56% of the operating budget. The general funds reduction totaled just under \$2.5 million, while the reduction in endowment income supporting the operating budget totaled \$5.9 million, for a total operating budget reduction of \$8.4 million. Initial 2010/11 mitigation funds provided \$2.8 million, leaving an operating budget shortfall of \$5.6 million.

Drastic expense reduction measures, including the shutting down of two legal clinics and three research centers, cut \$4.2 million from the operating budget, leaving a \$1.4 million deficit. To reduce this gap, SLS needed to supplement the expense cuts with various income enhancements.

A three-year phase-in of larger JD and graduate student classes beginning in 2009/10 will generate additional net income of \$750,000 in 2010/11. Also, Law School tuition will increase by \$2,000 over two years (\$1,000 per year), meaning that if the university increases tuition by 3.5% each year, Law School tuition will increase by 5.9% in 2010/11 and 5.7% in 2011/12. This tuition increase will provide additional 2010/11 net income of \$400,000.

Overall, SLS is projecting a consolidated operating surplus of \$2.8 million. Combined with transfers to assets of \$3.2 million, this yields a 2010/11 consolidated budget deficit of \$376,000. The 2010/11 operating surplus is down more than \$3 million from 2009/10 projected year-end results, mostly as a result of steep declines in endowment income payout. Consolidated revenues are \$61.6 million, up marginally from \$61.1 million in 2009/10, principally as a result of an increased general funds allocation. Consolidated

expenses are increasing to \$58.8 million from \$55.3 million, in large part due to increased academic salaries and benefits (\$1.6 million) and financial aid obligations (\$1.3 million).

In 2008/09, SLS fund balances went from \$25.2 million to \$19.1 million. This drop was primarily attributed to \$4.1 million in plant transfers and \$1.5 million in student loan transfers. Though balances will continue to go down for a third consecutive year, 2010/11 will mark the smallest reduction, \$400,000, compared to a projected \$650,000 for 2009/10.

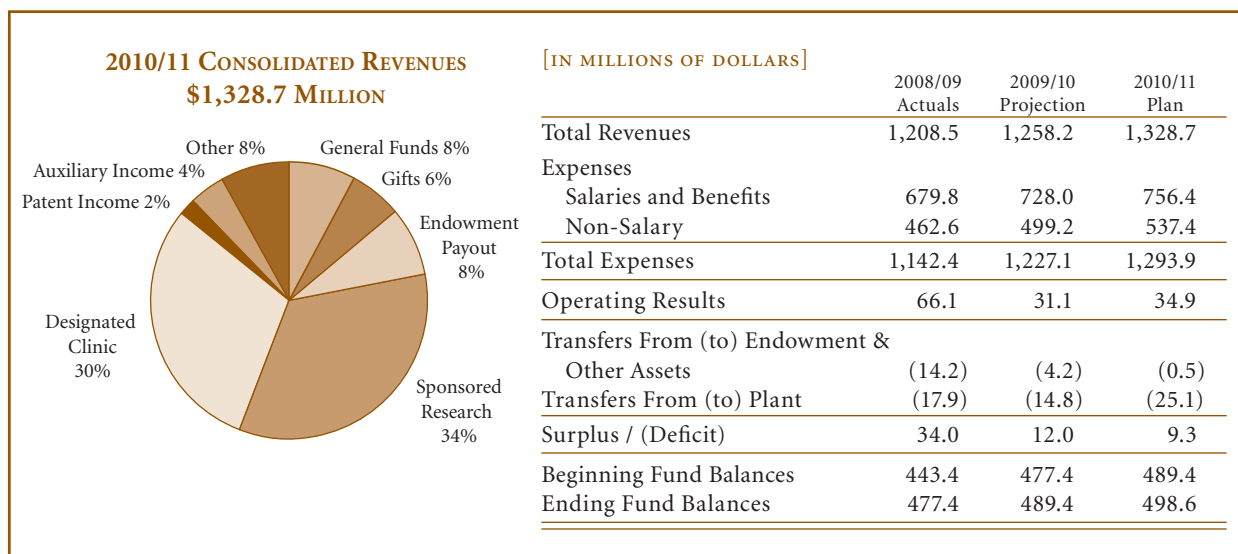
## CAPITAL PLAN

SLS began construction of the William H. Neukom Building, formerly the Law School Clinics and Faculty Office Building, in summer 2009. This facility will provide specialized space needed for planned expansion of both the Law School's clinical activities and work in the expanding field of empirical legal studies. This three-story building will cost approximately \$64 million, which includes expenses associated with enabling projects such as the demolition of Kresge Auditorium and the construction of a connective quad and site elements. Funding for this project consists of \$44 million from donor gifts and school reserves, and \$20 million in long-term debt. The building project is currently on time and under budget, and occupancy is expected to commence in December 2010.

The design for the Neukom Building incorporates natural light and exterior views along with exterior courtyards to maximize day lighting. Energy conservation features include operable windows, lighting, and HVAC controls. Sun-shading options are integral to the project design, as are water conservation measures. The project design team's objective is to meet or exceed the university goal of a 30% reduction in energy demand.

Finally, as space will become available in the Crown Quadrangle beginning in early 2011, the school is currently developing a phased strategy for the renovation of Crown. This will allow SLS to repurpose its facilities and maximize space efficiencies; the space will be used in part by a number of centers and programs that are now housed in other parts of the university.

## SCHOOL OF MEDICINE



### PLANNING DIRECTIONS

The year 2010/11 will be marked by the opening of the Li Ka Shing Center for Learning and Knowledge (LKSC) and its transformative row of stately palms designating the new front entrance to the School of Medicine on Campus Drive. This new building provides a hub for learning activities with technology-enabled classrooms, two 100-seat lecture halls, a 300-seat conference facility, numerous meeting rooms, and individual study spaces. The entire ground floor is devoted to clinical simulation learning spaces.

The Lorry I. Lokey Stem Cell Research Building (Lokey Building) will also open in 2010/11, under budget and ahead of schedule. Funded through generous donor support and a \$40 million grant from the California Institute of Regenerative Medicine (CIRM), the building will provide 200,000 square feet of critically needed research laboratory space for more than 33 principal investigators and 1,000 scientists.

The opening of the LKSC will support many of the school's education initiatives, including the revised medical student curriculum launched in the fall of 2003, a new Master's in Medicine program for PhD students, the Advanced Residency Training at Stanford program for clinical fellows pursuing PhDs, expansion of the MD/PhD program, joint degree programs, and the 2009/10 initiated Stanford Society of Physician Scholars program, which connects medical residents with one another and with medical students to foster

their involvement in research and academic mission outside their activities in hospital settings.

On research, CIRM awarded the school three \$20 million disease planning grants for stem cell therapies development. The NIH awarded faculty more than \$94 million in research funds through the American Recovery and Reinvestment Act (ARRA). These funds, for projects lasting less than two years, have generated significant increases in postdoctoral fellows and research staff employment. A future challenge is accommodating to a reduced level of research funding at the end of the ARRA period in 2011/12.

Clinical programs and relations with the school's major affiliates, Stanford Hospital and Clinics and the Lucile Packard Children's Hospital (LPCCH), have expanded and been complemented by important relations with the VA Palo Alto Health Care System and the Santa Clara Valley Medical Center. Faculty physicians from five programs are delivering patient care in their new home at the Stanford Medicine Outpatient campus in Redwood City, opened in February 2009.

Many difficult budget choices were made in both 2008/09 and 2009/10: a hiring freeze, curtailment of certain capital expenditures, and reduction of vacation accruals and expenditures on food and alcohol. Except for equity purposes or promotions, salary for faculty and staff was held flat and, in some cases, voluntarily reduced. The school's central units reduced

expenditure nearly 15% and laid off or reduced effort levels for 40 staff members.

A new funds flow methodology for payment for physician services performed at LPCH will be implemented in 2010/11. The scope and magnitude of impact on healthcare programs of the healthcare reform vote in Congress are unclear. The riskiest area of funding in the near term appears to be Medicare, where cost reductions seem likely and will affect the hospitals and in turn the school. The school will launch a new Center for Clinical Cost and Effectiveness in 2010/11, focusing on local improvements at affiliate hospitals and leadership in the national debate in these key areas.

### CONSOLIDATED BUDGET OVERVIEW

In 2010/11, the school is projecting an overall surplus of \$9.3 million, compared to a projected \$12.0 million in 2009/10. Surplus from operations will be \$34.9 million in 2010/11, a 12.2% increase from \$31.1 million in 2009/10. Transfer to plant and endowment will be \$25.6 million, 34.0% higher than the 2009/10 projection of \$19.1 million.

#### Revenue Growth

Revenue and transfers for 2010/11 are projected to increase 5.6% over the projected 2009/10 results, from \$1,258.2 million to \$1,328.7 million.

- Federal and non-federal sponsored-research revenue growth of 4.4% from 2009/10 to 2010/11 continues to reflect the effect of ARRA incremental funding, the higher indirect-cost rate on NIH grants, incremental faculty, and new awards from CIRM.
- Clinical professional service agreement and service payment revenues are projected to grow 8.2% from 2009/10 to 2010/11, primarily a result of clinical programs expansion, change in LPCH's funds flow payments, and a one-time accounts receivable contribution due to the funds flow change.
- The school is projecting an expendable funds pool payout of \$18.3 million in 2010/11, compared to zero in 2009/10, based on the board policy on zero-interest fund balances. Gift revenue is projected to grow 9.0% between the two fiscal years.
- These increases are offset by a projected decline in endowment income of 13.5% from 2009/10, reflecting a 15% payout decrease on existing assets offset by a modest influx of new gifts.

#### Expense Growth

The school's 2010/11 plan includes the projected net recruitment of twelve incremental faculty—three from the Medical Center line and eleven from the university tenure line—and associated expenses, including program and staff support. The faculty will be recruited primarily for the interdisciplinary institutes, Bioengineering, genetics/genomics, and the cancer center, as well as to support growth in the clinical practices.

Expenses are projected to increase 5.4% in 2010/11 from projected 2009/10 results, from \$1,227.1 million to \$1,293.9 million.

- Compensation for faculty and staff will grow by 3.9%, primarily from the modest salary program effective September 2010, the recruitment of incremental faculty, and clinical program growth, as well as the corresponding increase in benefits.
- A \$31.0 million increase in non-compensation expenditures, primarily driven by incremental sponsored-research expenses; increases in operations and maintenance project expenses due to the opening of LKSC and the Lokey Building; increased long-term and backstop debt service payments for capital projects; and rent, operating expenses, and debt payments associated with leased facilities.

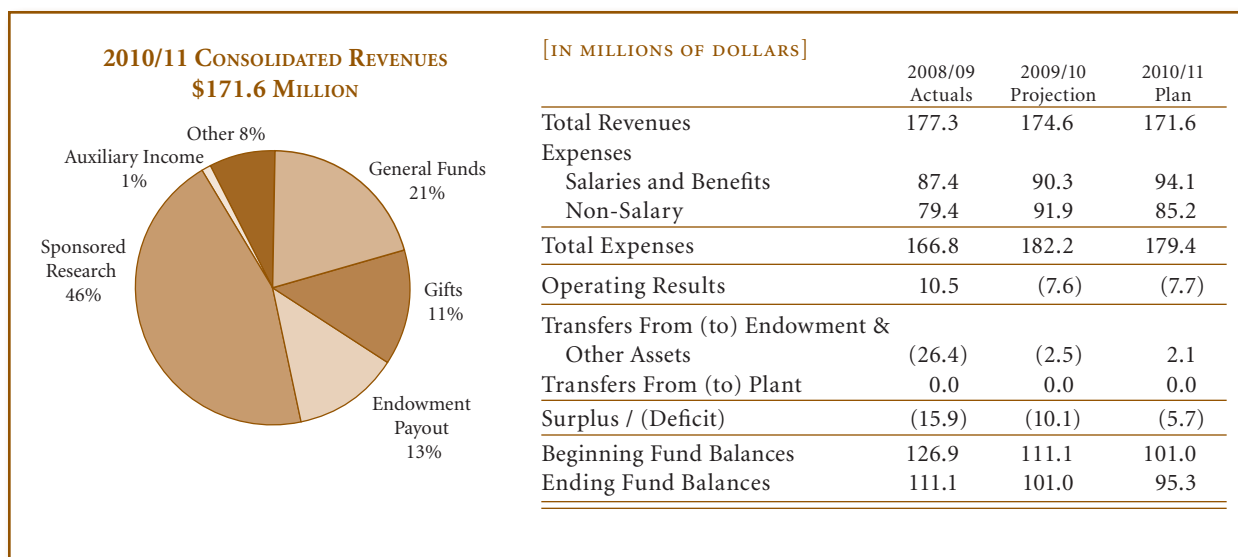
#### Transfers to Plant, Endowment, and Other Assets

The projected transfers to plant of \$25.1 million include \$7.5 million for tenant improvements for off-campus laboratory space, \$5.0 million for the Bioengineering building, \$3.5 million for the Jill and John Freidenrich Center for Translational Research (FCTR), \$2.3 million for LKSC and Lokey Building fit-out, and \$1.5 million to fund strategic capital projects.

### CAPITAL PLAN

In 2010/11, the school will begin construction of the FCTR, a three-story, 32,500-gross-square-foot building to house 250 clinical researchers in close proximity to the hospitals and patient subjects. The ground floor will house the Clinical Trial Research Unit for subject/researcher interactions in examination and interview rooms. Two upper floors will be work space for clinical researchers, biostatisticians, and research nurses who support clinical and translational research as part of SPECTRUM and the Stanford Comprehensive Cancer Center. The project is estimated to cost \$24.0 million and to open in summer 2012.

## VICE PROVOST AND DEAN OF RESEARCH



The Office of the Vice Provost and Dean of Research (DoR) is responsible for the development and oversight of research policy; oversight of the independent laboratories, institutes, and centers; and management of the offices of Environmental Health & Safety, Research Compliance, Technology Licensing, Science Outreach, and Sexual Harassment Policy.

### PLANNING DIRECTIONS

The programs of the independent laboratories, institutes, and centers continue to make important contributions to multi-disciplinary research and scholarship at Stanford. DoR, through its independent laboratories and shared facilities, is developing exciting new programs in nanosciences and energy research.

Many of Stanford's leading researchers are working in one of the most promising areas of science and engineering today: the study and manipulation of matter at the nanoscale. The ability to create materials and devices at the scale of one-billionth of a meter will have many applications that will improve our lives, from more effective medicines to ultrafast communications and cleaner fuels.

Since this work cuts across so many fields of study and requires equipment far beyond the resources of any single faculty member or department, Stanford is constructing a new Center for Nanoscale Science and Engineering. The "Nano Center," which is scheduled to open in summer 2010, will house a shared facility to

provide access to major equipment and space for the entire network of hundreds of Stanford faculty and students working at the nanoscale. In this facility, students and faculty will soon be able to share state-of-the-art equipment in an environment specially shielded from vibrations, noise, electromagnetic interference, and temperature fluctuations. Industry scientists will also benefit from this resource. The facility will complement the two existing facilities that support science at the nanoscale and will strengthen Stanford's leadership role in this important research.

Energy use and supply—along with availability of fresh water and food production, both of which are closely linked to energy—offer critical challenges for this century. Several independent laboratories are involved in energy-related research. The newly established Precourt Institute for Energy brings together existing energy research efforts across campus. The institute is an organizational home for two key existing programs, the Global Climate and Energy Project and the Precourt Energy Efficiency Center. It provides a framework for interactions of strong faculty research groups in many departments in the schools of Engineering, Earth Sciences, and Humanities & Sciences, along with independent lab programs such as the Program on Energy and Sustainable Development in the Freeman Spogli Institute for International Studies and SIMES, a Department of Energy sponsored collaboration between Stanford and SLAC National Accelerator Laboratory.



The independent labs are supported by various funding sources, including externally sponsored research, endowment payout, gifts, and base general funds. To address the \$5.2 million decline in endowment payout and \$1.4 million general funds reduction over two years, while sustaining core missions, beginning in 2008/09 the independent labs reduced staffing through attrition or layoffs; restructured positions and responsibilities; and reduced the number of fellows (faculty and student), symposia, workshops, conferences, and other nonsalary expenses. Where possible, some units shifted expenses to alternate funding sources or reserves. As always, the independent laboratories, institutes, and centers are actively fundraising and submitting sponsored-research proposals to support new and existing programs. Fund balances are used on an ongoing basis, since funds are often received in one year but expended over multiple years. For example, the Center for Ocean Solutions received funding for a ten-year period beginning in fiscal year 2007/08.

The compliance units under the cognizance of DoR are responsible for minimizing risks related to research activities. These units experienced a \$1.5 million general funds reduction in 2009/10. With incremental general funds and the use of some reserves, fiscal year 2010/11 budgets are adequate to support these important risk reduction programs.

Based on the significant endowment decline, DoR will receive mitigation funding beginning in 2010/11. The funds will be used to support faculty salaries, faculty fellowship programs, research administration, and other critical needs.

### CONSOLIDATED BUDGET OVERVIEW

DoR units are projecting a planned deficit of \$5.7 million in 2010/11. This is primarily due to expenditure of funds received by the independent labs in prior fiscal years, and by the nanosciences shared facility, which will pay for large equipment in installments over multiple fiscal years. Also contributing to the planned deficit are the multiyear multidisciplinary research awards distributed to Stanford faculty by independent labs such as Bio-X, the Freeman Spogli Institute, the Human Sciences and Technologies Advanced Research Institute, the Precourt Institute for Energy, and the Woods Institute for the Environment.

Total revenue is projected to decrease approximately 2% to \$172 million in 2010/11, primarily due to a decrease in endowment payout. Offsetting this decrease is a projected increase in externally sponsored research

activity, due in part to ARRA research awards. For example, DOE awarded \$5 million to Professor Byron Reeves to develop software and interactive programs to facilitate sharing ideas for reducing energy consumption using games, social networking, school programs, and communication networks.

Although there are fluctuations between units and fund types, total expenses are projected to decrease approximately 2% to \$179 million in 2010/11. Compensation expenses are projected to increase approximately 4% as a result of the projected increase in sponsored-research expenses and the ramping up of the Precourt Institute for Energy and other programs. Non-compensation expenses are projected to decrease 8%, largely because there were significant equipment expenses in 2009/10 that are not expected to recur in 2010/11.

Federally sponsored research expenses are projected to increase 6% to \$49 million in 2010/11, while expenses on non-federally sponsored research awards are projected to remain stable at \$31 million.

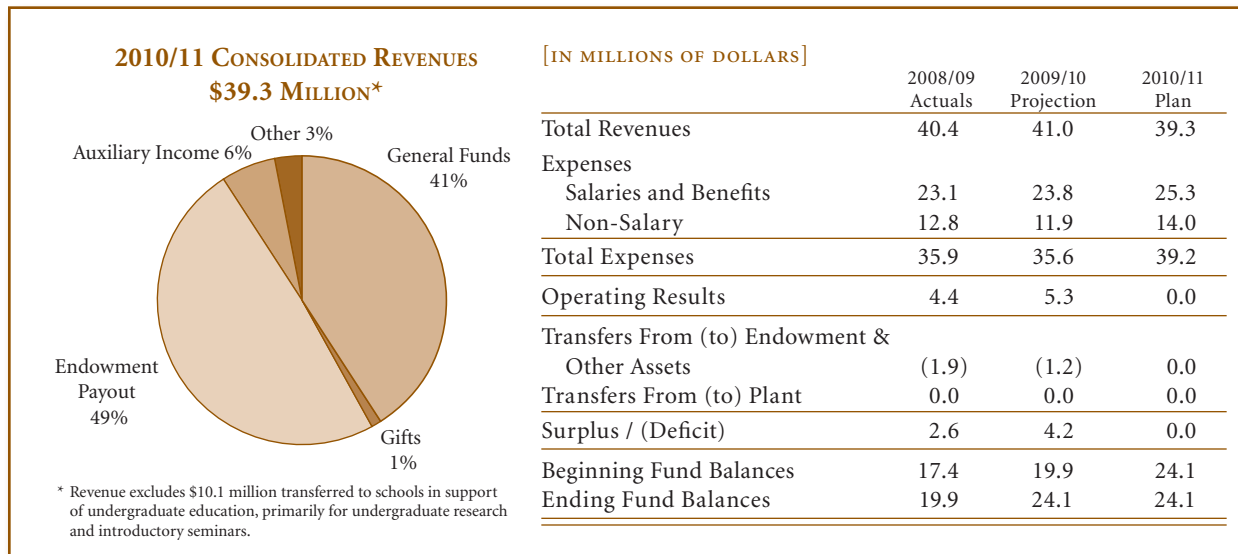
### CAPITAL PLAN

Capital facilities play a key role in DoR's support of Stanford's research goals. In addition to being integrally involved in the development of Science and Engineering Quad 2 (SEQ 2), DoR is working on a Stanford in China Center (due to open in 2010/11) and a range of laboratory infrastructure and academic space renovations for more efficient space utilization. The Nano Center will house the Ginzton laboratory and shared facilities to support multidisciplinary research teams using the most advanced equipment available for investigations at the nanoscale.

Incorporation of sustainability goals has been a key design criterion for SEQ II. For example, the Nano Center is designed to reduce peak energy demand by a minimum of 18%, dependent upon the extent of equipment plug loads. The building will rely upon natural ventilation to reduce the size of mechanical ventilation units for non-laboratory spaces. Utility systems will be rightsized to reduce energy consumption in the laboratories, and potable water consumption will be reduced 65% by using lake water for irrigation and recycled ("blowdown") water from the university's Central Energy Facility for plumbing fixtures.

The impact of the economic downturn on funding and budgets has resulted in a delay of the renovation of the Encina Hall complex, which was a goal of the International Initiative.

## VICE PROVOST FOR UNDERGRADUATE EDUCATION



The Office of the Vice Provost for Undergraduate Education (VPUE) looks toward 2010/11 with an eye to both maintaining the core general education requirements and enhancing the academic experiences, including freshman seminars and undergraduate research, that have become hallmarks of a Stanford undergraduate education. However, VPUE also looks to the future with the launch of the Study of Undergraduate Education at Stanford (SUES), charged by the provost with reexamining Stanford's general education curriculum. The committee is still in the early stages of its work, but VPUE anticipates outcomes that will keep Stanford on the leading edge in educating the next generation of undergraduate students.

### PLANNING DIRECTIONS

In 2009 VPUE implemented a major reorganization and significantly reduced the operating budget in response to recessionary economic conditions. This work included eighteen layoffs with a net loss of eleven staff positions, targeted programmatic reductions of several million dollars per year, and expense minimization throughout every unit. Undergraduate research budgets and various seminar programs, some of them at the heart of Stanford's renaissance in undergraduate education, bore the brunt of programmatic reductions. However, VPUE worked exhaustively to minimize the overall impact on the undergraduate experience; for instance, the freshman seminar and large-course enhancement programs were held harmless. Because

of these efforts, the budget plan shows stable and generally acceptable fund balances for the next several years despite continued financial pressures on some VPUE units, most notably the Bing Overseas Study Program (BOSP).

### Projected Long-Term Deficits

VPUE financial projections for 2012/13 and beyond show significant operating deficits. To immediately close these deficits, significant reductions of existing programs would be necessary. Fortunately, the VPUE reserve position allows a timely approach to any such reductions. VPUE will continue to monitor the performance of its endowments and respond appropriately to future changes in revenue.

### Bing Overseas Studies Program

BOSP has substantial endowments that will eventually provide the bulk of funding to support all overseas programs. At the moment, however, two of the largest funds remain underwater. Additionally, a majority of the expenses for BOSP are paid in local foreign currencies. VPUE estimates of BOSP expenses assume a continued and gradual weakening of the dollar; this is the primary source of the BOSP funding gap. To the extent that it does not eventuate, these conservative assumptions will be relaxed.

VPUE has decided not to take immediate action to close projected deficits in the BOSP budget. Although BOSP dedicated reserves are not adequate to absorb

large negative currency fluctuations, overall VPUE reserves are sufficient to allow time for general economic conditions to develop further. If conditions deteriorate significantly, VPUE may have to close overseas centers to balance the budget, and the work to identify and prioritize potential cuts has begun. Given the complexity, time frame, and costs of closing or opening centers, however, action at this time is not prudent.

### **Remaining VPUE Programs**

Undergraduate programs delivered by Stanford Introductory Studies (SIS) and Undergraduate Advising and Research (UAR) comprise both required academic coursework and programs that fundamentally enhance the undergraduate educational experience, primarily by connecting students with faculty in close academic settings. VPUE cannot close projected budget gaps through further administrative streamlining or staff reductions. Moreover, further incremental reductions in remaining programs are not viable. Some program structures are dictated by Faculty Senate mandates; greater cuts to others would leave programmatic shells lacking substance or capacity to meaningfully affect the undergraduate student population. However, VPUE's strong reserve position negates the need for dramatic reductions to the nonmandated programs that so enhance the undergraduate educational experience. Furthermore, the recommendations from SUES are reasonably expected to substantially affect VPUE programs. These factors lead VPUE to conclude that changes to undergraduate programming are currently unwarranted.

## **CONSOLIDATED BUDGET OVERVIEW**

### **2009/10 Budget Execution**

The endowment shortfall mitigation put in place to ease the transition to a leaner budget structure will allow VPUE to operate with a balanced budget

again in 2009/10. Established units like the Center for Teaching and Learning and UAR continue their efforts to control expenses in light of reduced budgets. On the other hand, VPUE's newest unit, SIS, has struggled at times as it matures organizationally while continuing to deliver outstanding programs to Stanford undergraduates. It has already delivered significant financial savings. A large budgetary variable played out positively when BOSP was able to lock in extremely favorable currency exchange rates during a brief dollar rebound on the currency markets. This will help reduce BOSP expenses on a one-time basis, but the long-term outlook for the dollar remains a significant question for VPUE.

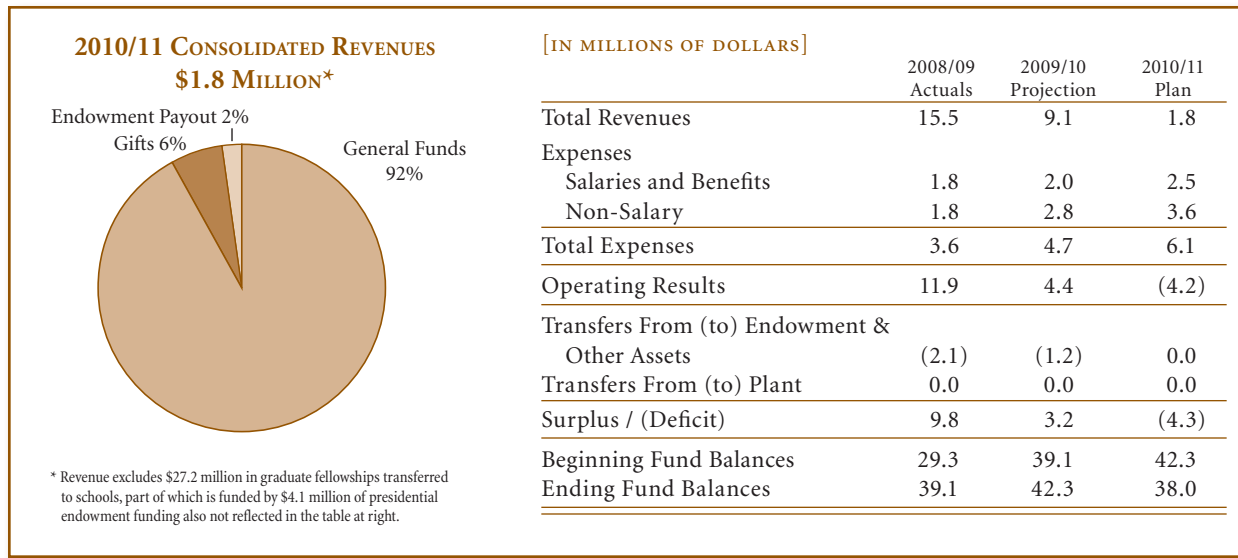
### **2010/11 Bottom-Line Projection**

VPUE projects a consolidated surplus of \$41,000 in 2010/11 when endowment shortfall mitigation is reduced somewhat. In real terms, the VPUE budget remains flat while a conservative estimate of currency exchange rates and the staff salary program drive nominal growth. VPUE reserves should remain healthy at approximately \$24 million at the end of 2010/11. Reserves of this magnitude are required to offset projected deficits in future years driven by conservative estimates of currency exchange rates and the end of one-time programmatic start-up funding. Forty-nine VPUE endowment funds with a book value of \$131 million (36% of the total book value of VPUE endowments) remain underwater. To accelerate their recovery, VPUE will selectively reinvest endowment payout in these funds and use accumulated reserve balances to fund current operations.

## **CAPITAL PLAN**

VPUE will begin two exterior projects at Sweet Hall in summer 2010, with completion anticipated at the beginning of 2010/11. The combined cost for these projects is \$140,000.

## VICE PROVOST FOR GRADUATE EDUCATION



### PLANNING DIRECTIONS

The Office of the Vice Provost for Graduate Education (VPGE) has completed its third year of work to ensure Stanford's preeminence in graduate education. The inherent flexibility of this relatively young unit enabled VPGE to weather cuts in general funds. Through selective program changes (e.g., cost cutting, postponing), immediate 20% cuts were taken in 2008/09 to minimize the impact of the 14% cut to the VPGE operating budget in 2009/10. Endowment payout will decrease as well, but a healthy reserve will assist in maintaining graduate student funding at current levels.

VPGE continues to play a crucial leadership role, working collaboratively across the university's seven schools to enhance the quality of graduate education for more than 8,300 students pursuing degrees in 70 programs and departments. Resources are used for the most pressing challenges that affect the quality of graduate students' educational experiences. With guidance from the provost as well as deans and departmental leaders, the top priority is to address three programmatic areas cited by the Commission on Graduate Education as the most critical university priorities: advancing diversity, facilitating cross-school learning (i.e., interdisciplinary and leadership development), and fostering innovation to strengthen the quality of graduate programs. Persistent needs for direct graduate student funding have also become a major focus.

Programmatically, VPGE has been able to maintain—and, in some areas, even gain—momentum, reaching even more graduate students by developing lower-cost pilot programs. The impact in sheer numbers is noteworthy:

- VPGE-sponsored initiatives reach ~ 2,500 graduate students annually.
- VPGE administers seven fellowship programs. In 2009/10, over 1,000 students will receive over \$29 million in direct funding (up from 430 receiving \$14 million in 2006/07).

Still in its early years, VPGE continues to focus on intensive planning. There are far more great ideas than resources and staff time to pursue them—a tension common to high-energy start-ups. As VPGE extends its reach, it keeps in mind a longer-term agenda for change while pursuing short-term goals, adopting a spirit of exploration and experimentation in its pilot programs. As the university recovers from the budget reductions, VPGE will continue to advance the university's critical graduate education priorities by resuming the selective rollout of programs that were part of the initial five-year plan.

Below is an overview of developments in each priority area. These areas are described separately, even though some VPGE programs address more than one. For example, DARE (Diversifying Academia, Recruiting

Excellence) advances diversity, cross-school learning, leadership, and professional development.

### **Diversity**

Supplementing school activities, VPGE develops university-wide programs for recruiting, enhancing the educational experiences of current students, and cultivating interest in academic careers to diversify the academic pipeline.

The largest expenditure of general funds in this priority area goes to the direct funding of graduate students: tuition and stipends for DARE fellows and graduate fellows in the Center for Comparative Studies in Race and Ethnicity, and bridge funds to support students in science and engineering. The remaining funds go to programming.

### **Cross-School Learning: Interdisciplinary and Leadership Development**

VPGE develops interdisciplinary opportunities that encourage graduate students' intellectual exploration beyond their disciplines, with the rationale of better preparing them for their work lives after graduation. These programs enable students to reach out across schools, engaging in cross-disciplinary dialogues and professional networking.

The Stanford Graduate Summer Institute, in its fourth year, provides the opportunity for graduate students to attend weeklong courses at no cost to them. Topics have been wide ranging, including global warming, team management, design, and music and human behavior. Also in its fourth year, the Summer Institute for Entrepreneurship is a four-week course offered by the Graduate School of Business (GSB) to more than 60 graduate students in non-business fields.

### **Strengthening Core Quality in Graduate Programs**

VPGE provides resources to faculty and students in graduate degree programs for innovation and improvement in educational practices. The SCORE (Strengthening the Core) Innovation Fund helps departments respond to changes within their disciplines and among their graduate students. SPICE (Student Projects for Intellectual Community Enhancement) is an innovation fund that enables students to undertake projects to expand and sustain the intellectual community of their department or field of study.

### **Prioritizing Graduate Student Funding**

Most graduate student support is in the form of doctoral fellowships (full tuition and stipend) paid from one of seven VPGE-administered fellowship programs, with the largest being the Stanford Graduate Fellowship Program.

Through the year 2012, VPGE allocates central support (including endowed funds restricted to student aid) to help close tuition gaps on National Institutes of Health (NIH) Training Grants and National Science Foundation Fellowships. The goal is twofold: to alleviate pressure felt by schools, departments, and faculty on these two federally funded programs; and to identify income from endowed funds that can replace general funds.

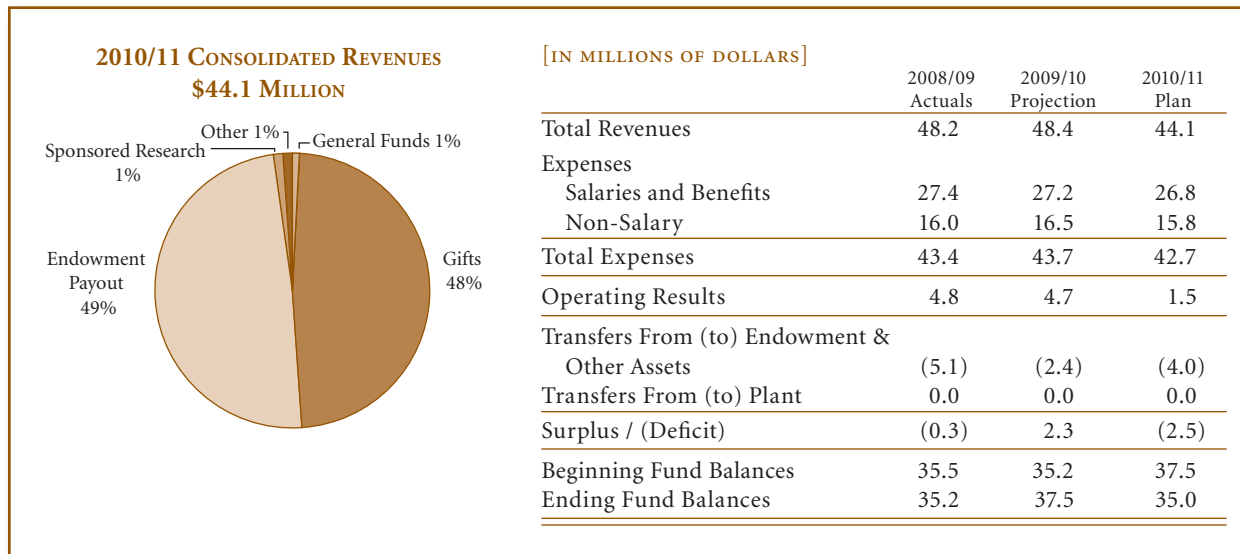
### **CONSOLIDATED BUDGET OVERVIEW**

The ending balance for 2009/10 is expected to be a surplus of \$3 million. Adding this to the fund balance of \$39 million, the new fund balance for 2010/11 will be \$42 million. Of that amount, \$11 million is unrestricted. VPGE is using the unrestricted fund balance to resume its five-year start-up plan by expanding pilot programs in the priority areas, and to maintain a small reserve for responding to emerging needs.

The 2010/11 consolidated expense budget for VPGE comprises 88% direct graduate student support, 7% programmatic non-compensation expenses, and 5% compensation and benefits. The total incoming funding expected for 2010/11 is \$29 million; expenses and transfers are expected to total \$33 million. Current fund balances will be used to make up the \$4 million shortfall, leading to an expected 2010/11 ending balance of \$38.0 million.

The plan for the remaining \$27 million in restricted funds is to increase slightly the number of new fellowships, resulting in a decrease in that fund balance over the next five years. Since the fellowships are mostly three-year awards, funding adjustments can be made only in awarding new fellowships. Within five years, the goal is to fund a steady-state number of fellowships with the yearly payout and maintain a smaller fund balance as a reserve to cover unanticipated fluctuations. By the close of 2010/11, there will be an ending balance in restricted funds of \$26 million, which is expected to decline to \$19.5 million in 2011/12, then to \$15 million in 2012/13, by which time it is projected that endowment income will support the steady-state number of VPGE Fellowships.

## HOOVER INSTITUTION



### PLANNING DIRECTIONS

The Hoover Institution is a public policy research center, library, and archive devoted to the advanced study of politics, economics, and political economy, as well as international affairs. A world-renowned group of scholars and an extensive archival collection promote ongoing programs of policy-oriented research that make the institution a prominent contributor to the world marketplace of ideas defining a free society. Hoover fellows focus on how society balances the concerns of the collective with the demands of freedom and order. The library and archives strive to create an accessible historical record of this balance.

The institution has been substantially impacted by the recent recession. Nearly 95% of institutional revenues come from expendable gifts and endowment income. Both gifts and payout have declined 25% from fiscal 2008 levels. The institution’s financial plans rest on the assumption that the market correction of 2008/09 is a permanent one-time wealth reduction from which only moderate recovery can be expected. Achieving a balanced budget sooner rather than later provides a measure of insurance should the projections of modest future revenue growth prove optimistic. Thus, the budget plan calls for reducing the budget projected for 2011/12 by \$10 million, representing a 20% reduction. Approximately 95% of the cuts will have been made by the end of 2010/11.

While cuts have been substantial, the institution has targeted reductions that allow the programmatic focus to remain unchanged. Reductions should be viewed as changes in scale rather than termination of any one area or program.

### Personnel and Program Restructuring

Personnel costs account for 70% of Hoover’s expenses; thus, staff and fellows were necessarily targeted directly by the budget reduction plans. Additionally, for some time growth in fellows has outstripped growth in staff. Over the last decade, for instance, fellows receiving some form of compensation have increased 50%, while staff have increased only 15%. Thus, the budget reductions fell disproportionately on the fellows.

Several senior fellows have elected to participate in the university’s incentive program for faculty retirement. Some term research appointments were not renewed. Associated support staff positions were reduced via layoffs or attrition. In addition, the visiting and media fellow programs were reduced.

An evaluation of the projects and priorities of the library and archives has resulted in changes in the pace of work rather than its cessation. Some opportunities to further integrate operations were realized. For instance, processing and administrative assistance have been centralized, rather than being distributed across the curators. Savings are expected to be approximately 13% of the library and archives budget.

Finally, the communications department has been substantially restructured; this effort included a reorganization of the public affairs office. Order fulfillment and distribution of Hoover Press books and Hoover journals (*Hoover Digest*, *Education Next*, *Policy Review*, and *Defining Ideas*) have been outsourced. The outsourcing will result in budget savings and improved service. Two Web products, *Focus on Issues* and *Facts on Policy*, were eliminated.

While adjusting to reduced revenues was difficult, the institution stands well positioned to continue its core mission of being a contributor to ideas defining a free society. Within the research arena, the institution will continue to utilize its existing intellectual assets to convene scholars willing to combine their efforts in task forces or working groups. These groups are seen as “virtual faculties” with specific research and dissemination objectives. They represent a new way to organize the research being conducted at the institution with goals of synthesizing current thinking, offering new perspectives, and conveying research to a broad constituency. A new journal, *Defining Ideas*, has been started to highlight the work of the task forces and working groups. These groups were designed to sunset after a fixed term unless research output and donor interest dictate otherwise. They therefore allow the institution to expand into new areas of research while still reducing core expenses to accommodate fiscal realities.

In the library and archives, key recent investments have continued to pay dividends. Intensive collecting efforts in Taiwan and China led to the addition of the H. H. Kung papers this year. These papers complement those of Chiang Kai-Shek and T. V. Soong as well as the Kuomintang party archives. These recent additions to the institution’s Modern China archives continue to attract large numbers of visiting researchers. Investments in digital imaging and recorded sound have enabled the library and archives to develop the political poster collection online as well as preserve valuable recordings of Radio Free Europe/Radio Liberty, the Commonwealth Club, and *Firing Line*.

### CONSOLIDATED BUDGET OVERVIEW

The Hoover Institution is projected to end 2009/10 in a relatively strong position, with reserves continuing to

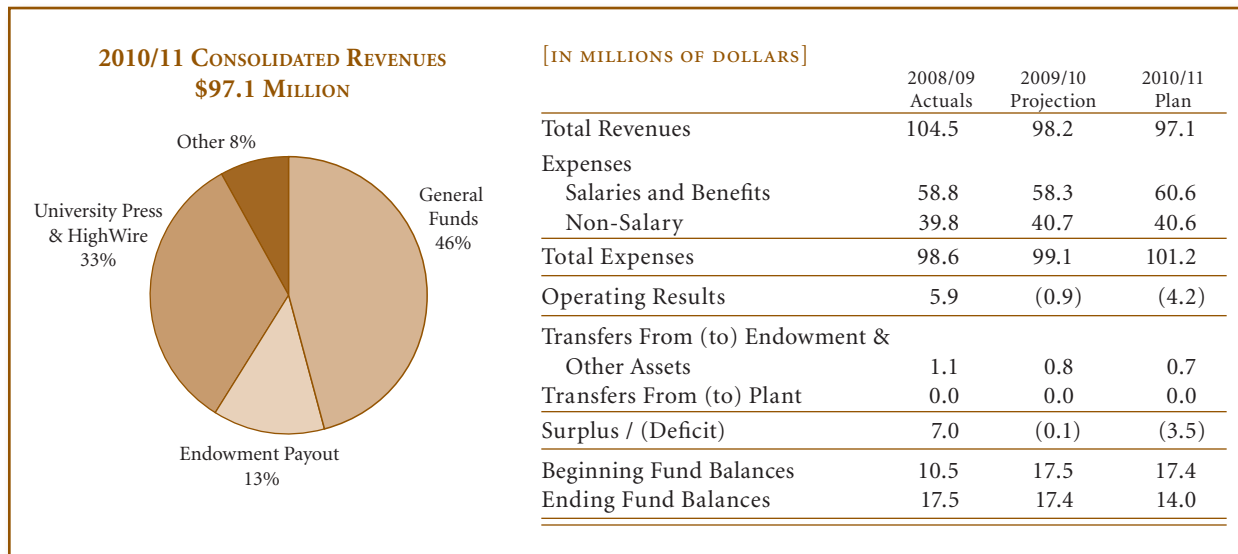
be robust. Revenues are expected to increase slightly from 2008/09 actuals to \$48.4 million, more than \$2 million over budget, due to increased expendable gifts. Several projects, such as the task forces and working groups, are prefunded, and several outstanding multiyear pledges were paid ahead of schedule. Year-end expenses are expected to be \$43.7 million, lower than budget by nearly \$1 million. Expenses under the base budget are expected to be on target, but expenses on multiyear projects did not occur as expected. Accordingly, while the institution had planned to draw on reserve balances for one-time costs and prefunded projects, fund balances are expected to increase more than \$2 million to \$37.5 million. Most of this increase will be in restricted project funds, but the institution expects to maintain a healthy unrestricted cash reserve of more than \$15 million.

The institution’s budget outlook for 2010/11 reflects further economic discipline. Revenues are expected to decline to \$44.1 million, primarily due to the projected decline in endowment payout. Expendable giving for base budget operations is projected to grow modestly, but expendable gifts are budgeted to decline \$1 million from 2009/10 due to the prepayment of pledged gifts for multiyear projects. Expenses for ongoing operations are expected to be in balance with these lower revenues, declining by almost \$2 million over 2009/10. Overall, expenses are expected to be \$1 million less than in 2009/10, or \$42.7 million, due to increased expenses on multiyear projects. As no capital projects are anticipated in 2010/11, the institution expects to transfer \$4 million to endowment principal targeted for use on capital projects. As a result of these factors, fund balances will be reduced by more than \$2.5 million in 2010/11 to \$35 million. Taking 2009/10 and 2010/11 together, the institution anticipates only a slight decline in overall fund balances. The institution also does not foresee any draw on unrestricted reserves to cover ongoing expenses in 2010/11.

### CAPITAL PLAN

Though currently delayed, the Cummings replacement building will provide office space and technology-enhanced conference and meeting spaces once completed. The timing of this project is dependent upon the construction and occupancy of the new Art Building.

## STANFORD UNIVERSITY LIBRARIES &amp; ACADEMIC INFORMATION RESOURCES



## PLANNING DIRECTIONS

### Collections

This year as always, SULAIR will play closest attention to the allocation of the Library Materials Budget (LMB), in order to address the expectations and needs – whether or not expressed – of current faculty and students and anticipated requirements of their successors. The day has not dawned when one can safely assume materials not purchased now will be within reach when needed in future. The digital revolution – in which SULAIR participates assertively – has not yet significantly reduced the scholarly world’s dependency on paper-based monographs, though the revolution is far along in the scholarly journal arena. That revolution has created new opportunities for scholarship and new responsibilities for libraries. For many reasons, then, purchasing power of is a key concern for SULAIR.

A study in 2008 showed that progressive increase in journal prices in recent years has left the hard sciences underfunded by almost \$1.5 million. With this in mind, and thanks to some protection of the LMB through the recent budgetary turbulence, SULAIR has rebalanced the LMB by reallocating \$1M to the hard sciences. Reduced endowment payouts, which fund a significant portion of acquisitions, will continue to constrain spending power, and SULAIR will continue to husband available resources, most notably by declining to purchase large sets of monographs, as well as by coordinating collection development as practical

with other institutions, notably Berkeley. Collection development in the humanities and social sciences will correspondingly focus on immediate needs and primary areas. SULAIR remains dedicated to finding and acquiring material from around the world in a profusion of disciplines and geographical and cultural foci, commensurate with the global attention and involvement of Stanford’s research in the critical issues of our time.

### Programs

Several of SULAIR’s endowment funds were converted in 2008 from Merged Pool A to Merged Pool B Unlimited. One fund in particular, which is designated for special collections, is expected to have a significantly increased payout. This has enabled SULAIR to begin several undertakings in support of special collections. Of particular note will be the development of an enhanced geo-spatial and map program, incorporating a map room to house and provide access to several significant donations of maps, landscape images, and related research materials, as well as to build up the burgeoning acquisition of digitized antiquarian maps as “digital philanthropy”; these efforts will culminate in a world-class center for historical cartography at Stanford. The newly released special collections funds will also cover technology updates for two labs dedicated to special collections imaging. SULAIR will also undertake several catalog remediation projects advocated by the Faculty Senate Committee on Libraries, with emphasis on improving intellectual access to collections now likely to reside off campus.



SULAIR continues to build out its digital library infrastructure incrementally. Features requested by users are a high priority; call-number browsing is a good example of a requested feature that was implemented in early 2010. Call-number browsing makes it possible to virtually browse collections that may be dispersed among multiple physical locations. Stanford Digital Repository (SDR) v2.0 is expected to be released in late 2010; it will provide both more sustainable infrastructure and more user-friendly public-facing features.

Google Books remains in legal limbo, but the digitizing of SULAIR's books continues apace, with well over 1.7 million books already scanned. In coming years, SDR will ingest copies of millions of SULAIR books for advanced research, with far-reaching potential for new scholarship in many fields.

The Parker on the Web project is nominally complete, but SULAIR staff continues to work with scholars and technologists at multiple institutions to explore how digital access to medieval manuscripts can be improved and can transform Medieval Studies. The closely related Digital Humanities program works with internal clients throughout SULAIR and serves as a bridge to a spectrum of faculty, including members of the French, English, Art & Art History, and History departments. Though prospective acquisitions may be constrained in the Humanities, the creative interaction with faculty and innovative use of collections through digital means remain vibrant and active through this program and through collaboration with SULAIR subject specialists and the Academic Technology Specialists.

Academic Computing continues to provide vital services to students, via its facilities and consulting services in Meyer Library as well as through Residential Computing. The student Senate's March 2010 endorsement of an increase in the student communications fee confirms students' appreciation of these services. Faculty are supported through the Academic Technology Specialist (ATS) program within Academic Computing, and it remains popular, as evidenced by continued cost-sharing from many academic departments.

### CONSOLIDATED BUDGET

SULAIR's 2010/11 Consolidated Revenue is expected to total \$97.1 million and consists of \$44M in General Funds, \$32.8 million in Auxiliary Revenue and \$20.3 million in Restricted Funds. Compensation expenses

are projected to be \$60.6 million, with operating expenses budgeted at \$20.2 million and library materials acquisitions at \$20.4 million, resulting in a planned operating deficit of \$4.1 million. The planned deficit has the following components:

SULAIR will allocate \$1.5 million of its expendable and endowed fund balances to library materials selectors to help offset the reduction in purchasing power caused by the decrease of 25% in endowment payout over 2009/10 and 2010/11.

HighWire continues to invest in staff and out-sourcing in order to stage the migration of its approximately 140 publisher clients and more than 1,300 websites to a new technology platform (HighWire 2.0, aka H2O). That investment will be funded by \$1.9 million of HighWire Reserves.

Stanford University Press will continue to fund operating expenses with transfers from the Press Sustaining Fund and expects to use \$.7M in 2010/11.

Fund balances at the end of 2010/11 are expected to be \$14.0 million, consisting of \$3.2 million in Designated (including \$2.2 million in LOCKSS Auxiliary Reserves), \$1.6 million in Expendable Funds and \$6.4 million in Endowed Funds, both of which are heavily restricted by donor purpose, and \$2.8 million in Auxiliary Funds.

### CAPITAL PROJECTS

The new Engineering Library in SEQ2 will open in the summer of 2010. Both the Physics Library and the Computer Science collection will be consolidated into Engineering. SULAIR anticipates much improved customer services from this new arrangement, with significantly more professional support for Engineering and related disciplines.

Stanford Auxiliary Library 3 (SAL3), the remote storage facility in Livermore, will reach capacity in late 2010. Designed and intended to grow modularly, SAL3 is a primary element in SULAIR's long-term storage strategy, however its next module is not projected to come on-line before 2014 under the current capital plan. SULAIR continues to work with Land, Buildings & Real Estate (LBRE) to address the interim challenge. The relocation of the East Asia Library (EAL) remains problematic and of tremendous concern to faculty; not only is its current home in Meyer slated for demolition, it has already outgrown available shelf space there as it pursues an aggressive acquisition program, in fulfillment of its comprehensive collection scope.

## SLAC NATIONAL ACCELERATOR LABORATORY

### PLANNING DIRECTIONS

As a National User Facility and a multiprogram laboratory of the Department of Energy (DOE), SLAC continues to provide world-class, state-of-the-art electron accelerators and related experimental facilities to about 3,000 scientists from all over the world in research programs on photon science, astrophysics, particle physics, and accelerator science.

SLAC will be operating two major DOE Basic Energy Sciences (BES) user facilities: the Linac Coherent Light Source (LCLS) and the Stanford Synchrotron Radiation Lightsource (SSRL). SSRL provides x-rays from the SPEAR3 storage ring and associated beam lines with advanced instrumentation that serve research needs in many areas of science, engineering, and technology. Applications range from energy storage and environmental remediation to drug discovery and magnetism in thin films. In 2010, SPEAR will operate with improved performance with high current, up to 500 mA. The new Beam Line 14 with two branch lines will become available for users; one of the lines is designed to enhance drug discovery through rapid screening.

LCLS, the world's first x-ray free electron laser, will continue experimental operations through this year. A suite of four instruments specifically designed for LCLS ultrafast science is being built, the first of which became operational in the fall of 2009. The 2009 stimulus funding will accelerate the completion of the instruments and fund an additional instrument for study of matter in extreme environments. The LCLS science program is complementary to that of SSRL and will open completely new frontiers of scientific discovery in areas that include atomic physics, imaging of nonperiodic nanoscale materials, ultrafast structural and electron dynamics, and matter under extreme conditions. Novel techniques using LCLS x-ray laser beams will for the first time enable the simultaneous investigation of the electronic and structural properties of matter on the size (subnanometer) and time (femtosecond) scales that determine the function and properties of nanostructured materials.

The photon science program at SLAC will see growth in the multidisciplinary research areas driven by the capabilities of SPEAR3 and LCLS. The Photon Ultrafast Laser Science and Engineering Center (PULSE), the

Stanford Institute for Materials and Energy Science (SIMES), and structural biology are growing interdisciplinary areas at SLAC.

Stimulus funding also provides for the construction of FACET (Facilities for Accelerator Science and Experimental Test Beams), which uses the SLAC linac to provide unique high-energy high-peak current electron and positron beams. These ultra-intense beams will enable an experimental effort in advanced accelerator R&D to study the beam-driven plasma and dielectric acceleration of both electrons and positrons and focusing with plasma lenses, as well as studies of beam instrumentation for ultra-bright beams and studies of THz radiation resulting from the extremely high beam fields. The experiments with plasma acceleration are expected to begin in 2011.

SLAC is also a leading contributor to R&D on the accelerator and detector for the International Linear Collider, a planned future facility for colliding electrons and positrons at TeV energies as a precision instrument for elucidating properties of physics at the high-energy frontier. SLAC performs this R&D in close collaboration with other laboratories and universities as a partner in major international scientific ventures.

SLAC has been a member of the ATLAS (A Toroidal LHC Apparatus) experiment and the Accelerator R&D program associated with the Large Hadron Collider (LHC) at CERN, the European High Energy Physics Laboratory in Switzerland. First physics data are expected in spring 2010. The LHC will be the flagship high-energy frontier facility for the next decade, with opportunities for major discoveries that could fundamentally change our understanding of nature. SLAC will also serve as a Tier 2 ATLAS Physics Analysis Center in the western United States.

The Kavli Institute for Particle Astrophysics and Cosmology is involved with the Fermi Gamma-ray Space Telescope (FGST) and the R&D efforts for proposed dark energy experiments, the ground-based Large Synoptic Survey Telescope (LSST) and the Joint Dark Energy Mission (JDEM), and the Super Cryogenic Dark Matter Search (CDMS) experiment. The FGST has embarked on a decade long program of space-based gamma-ray observations that will transform our understanding of the high-energy universe. SLAC hosts the Instrument Science Operations Center for the FGST–Large Area Telescope. LSST and JDEM have been designed to probe the properties of dark matter

and dark energy, allowing us to better understand the “dark” universe and its dominant components. Super CDMS will be the next-generation underground experiment seeking to observe directly relic dark matter from the Big Bang.

## CONSOLIDATED BUDGET OVERVIEW

The DOE Office of Science provides 97% of the funding for SLAC, primarily from the offices of BES and High Energy Physics.

From the 2010 Omnibus Appropriations Bill, SLAC is expected to receive funding of about \$292 million. This decrease of close to 9% is mainly attributable to decreased construction funding following completion of LCLS.

ARRA provided an additional \$90 million in 2008/09. In 2009/10, SLAC expects to receive the remaining ARRA funding of \$6.5 million from DOE. The stimulus funding is going toward research equipment, research facilities, infrastructure upgrades, and research proposals targeted at young scientists.

For 2010/11, SLAC has not received the details of its budget within the U.S. government’s proposed budget. The expectation is that it will be about \$312 million. The increase is due to the start of a construction project and initial funding for the Research Support Building (RSB).

## CAPITAL PLAN

### Linac Coherent Light Source

The DOE-funded construction of the world’s first x-ray electron laser will be completed in July 2010. The total estimate at completion for the project is \$420 million, with final funding of \$15 million in 2009/10. The project includes experimental halls, beam line tunnels and facilities, service buildings, utilities, and the technical components.

### PULSE Building Renovation of Central Lab

SLAC has initiated an \$11 million renovation, funded by DOE, of the two-story wing of the Central Laboratory Building to house offices and laser laboratories for

the PULSE Center. The renovation will be completed in February 2011.

### SIMES Laboratories

SLAC is designing a project to renovate 11,750 square feet of existing space in the Central Laboratory Building for laboratory research space for SIMES. The expected completion date is February 2012.

### Research Support Building and Infrastructure Modernization

As part of the DOE Office of Science’s goal to modernize the infrastructure of its labs, SLAC has received funding in 2009/10 to begin designing a new 58,000-square-foot modern office building and renovating ~60,000 square feet of existing space in three major buildings. Approximately 35 trailers and substandard buildings will be demolished. The RSB project is estimated to cost \$96 million and will be completed in 2014.

### ARRA-Funded Infrastructure Projects

#### ■ Substation Replacement Project

Three electrical substations critical to laboratory operation will be modernized and seismically stabilized. Two of the substations were installed over 40 years ago and no longer meet performance specifications.

#### ■ Infrastructure Modernization

This project will replace infrastructure that is beyond its useful life and represents an operational risk. The main site air compressor will be replaced with an oil-free unit, and all of the underground air system piping will be replaced. Site-wide hot and chilled water will be replaced, and the Cooling Tower-101 piping will be increased to fully utilize the chiller plant capacity.

The obsolete fire alarm system will be replaced. Sanitary lift stations will have remote level sensors installed.

#### ■ Seismic Upgrade Infrastructure Modernization

This project will enhance SLAC’s ability to mitigate the impacts of a major earthquake, as the site is adjacent to the San Andreas Fault. It will improve the seismic strength of several important research and infrastructure facilities, including SSRL’s SPEAR3 enclosure.

