ASSESSMENT OF 2003-04 PROGRESS ON OUR STRATEGIC PLAN FOR EXCELLENCE

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EXECUTIVE SUMMARY

Fiscal year 2004 (7/1/03-6/30/04) was the first year of implementation of a five-year strategic plan for the College of Engineering and Applied Science in the University of Colorado at Boulder. The plan has broad objectives of excellence in research, education and resources, with specific action items and goals for each objective. Nearly all of the proposed action items for the first year were undertaken as planned, and many but not all of the goals were met.

Highlights in research progress during FY04 include the formation of new research centers in cybersecurity and unmanned vehicles, and the launching of campus initiatives in biotechnology and nanotechnology. New research awards in the college were up by 14% from the previous year, while the number of proposals submitted and the number of PhD degrees granted also increased but by less than the 10% goal. Highlights in educational programs during FY04 include piloting the Discovery Learning Program and the Earn-Learn Program, aimed at involving more undergraduate students in research and service, respectively. Outreach and recruiting efforts were increased, and the entering undergraduate class in Fall 2004 has more diversity than in Fall 2003, without a decline in quality measures. Progress in resource excellence during FY04 includes hiring 11 new faculty, including four women and four persons of color, the elections of George Born and Kaspar Willam to the National Academy of Engineering, and the selections of Frank Barnes for the NAE Gordon Prize and Kristi Anseth for the NSF Waterman Award. The initial steps for improved institutional funding, after experiencing substantial cuts in the prior year, were made primarily by approvals of enterprise status, the first year of a campus-wide tuition increase for Quality for Colorado in FY04, and the first year of an engineering tuition differential in FY05.

Looking ahead to FY05 and beyond, major efforts in research will be devoted to creating new centers and initiatives and to encouraging and supporting faculty in enhanced individual and cooperative efforts. In education, the Discovery Learning and Earn-Learn Programs will be expanded, as will be outreach efforts to introduce more K-12 students and teachers to engineering, and new programs in Engineering Honors, Engineering Advising, and Professional Learning will be initiated. For resource excellence, private fundraising, near-term and long-term facilities planning, increased institutional support for faculty startup packages, and establishment of a Faculty Excellence Program will be among the top priorities.

INTRODUCTION

In December 2003, the College of Engineering and Applied Science at CU-Boulder published *A Strategic Plan for Excellence 2003-2008*, to provide guidance over the five-year period of FY04-FY08, so that we make wise use of limited resources and focus on high-quality education and research programs that attract additional resources. Our broad vision is to be widely recognized for excellence and leadership in research and education with an emphasis on active, discovery and service learning. The plan includes three broad objectives for the college:

- *Through interdisciplinary research excellence, develop new knowledge at the forefront of engineering and technology that enhances the well-being of individuals and society*

- *Through active engagement in discovery and service learning, provide educational excellence to recruit and prepare students for outstanding leadership and service*

- *Through outstanding faculty and staff, and enhanced facilities and funding, build resource excellence for supporting continued advancement in research and education*

Each of these objectives is accompanied by measurable goals and by action items to achieve these objectives and goals. An assessment of progress made on the proposed action items and quantifiable goals during FY04, covering the period 7/1/03 – 6/30/04, is provided in this report.

RESEARCH EXCELLENCE

Our vision of excellence in research is supported by initiatives to enhance both core and emerging areas of research distinction. Progress on FY04 action items in support of this vision is described first, followed by an assessment of outcomes on stated research goals.

***Action**: Increase total number and value of research grant proposals by 10% per year, from the FY03 baseline of 554 proposals for $273M.* The number and total value of proposals increased in FY04, but by less than the goal:

FY03: 554 (baseline) proposals totaling $273M (baseline)
FY04: 577 (+4%) proposals totaling $274M (+ 0.4%)

***Action**: Increase multi-investigator grant proposals of $1M or more by 10% per year, from the FY03 baseline of 57 proposals.* This action was not completed, as the number and total value of grant proposals of $1M or more decreased in FY04:

FY03: 57 (baseline) proposals totaling $160M (baseline)
FY04: 53 (-7%) proposals totaling $146M (-9%)

***Action**: Provide seed funding of $10K each for new interdisciplinary research centers in cybersecurity and unmanned aerial vehicles.* This action was taken and two new centers were formed:

1. Computer and Communications Security Research and Education Center
2. Research and Engineering Center for Unmanned Vehicles

***Action**: Recruit faculty leaders in strategic research areas.* While most searches focused on junior candidates, more experienced candidates were considered where needed, leading to one senior and two mid-career hires:

David DiLaura, Professor, Civil, Environmental & Architectural Engineering, Lighting (previously Senior Instructor)
Diane Sieber, Associate Professor, Herbst Program of Humanities, Spanish Literature (transfer from Spanish & Portuguese)
Jeff Thayer, Associate Professor, Aerospace Engineering Sciences, Remote Sensing (previously at SRI International)

***Action**: Fund a new college program at $35K per year for faculty travel to funding agencies.* This program was established in FY04 and had 8 applicants for an average of $425. At least a doubling of the number of applicants will be sought in FY05.

***Action**: Submit campus-wide proposals to the Provost and Chancellor in emerging areas of biotechnology and micro/nanotechnology.* These actions were taken, with Kristi Anseth taking the college lead in biotechnology and Roop Mahajan taking the lead in micro/nanotechnology.

***Action**: Host at least 15 corporate visits per year to enhance partnerships and interdisciplinary research.* The number of corporate visits to campus, involving the Dean's office and Engineering Development, exceeded the goal for FY04:

FY04: 20 corporate visits

The visits included Silicon Graphics, BP, McData, Boeing (2x), HP (4x), Lockheed Martin (2x), Qualcom, Xcel Energy, Shell, Agilent (2x), Microsoft (2x), IBM, and ChevronTexaco.

***Action**: Develop a culture of excellence, with expectations and incentives for increased faculty research productivity.* In FY04, written expectations and guidelines on meritorious and excellent performance were provided to the faculty, along with procedures for annual and promotion reviews. Fellowship, recognition and awards programs are still needed.

***Goal:** Increased contract and grant awards by 10% per year, to $60M by FY08.* This goal was exceeded in FY04, with a record of $42.8M in new funding. These funds include only contracts and grants rostered in the college, and not those rostered in other units but involving college faculty, and it does not include private gifts or awards.

FY03: $37.5M (baseline) contract and grant awards
FY04: $42.8M (+14.1%) contract and grant awards

Goal: *Increased annual PhD degrees by 10% per year, to 100 by FY08.* The number of PhD degrees awarded increased in FY04, but by less than the target amount:

FY03: 71 (baseline) PhD degrees
FY04: 74 (+ 4%) PhD degrees

Goal: *Establishment of three major initiatives during FY04-FY08 in areas of emerging distinction aligned with campus-wide or system-wide efforts*. An excellent start was made in FY04, with two initiatives begun:

Biotechnology: Under the leadership of Leslie Leinwand (MCDB), Kristi Anseth (ChBE) and Natalie Ahn (Chem & Biochem), this initiative focused in FY04 on the hiring of three biotechnology faculty (including Melissa Mahoney in ChBE) in growth positions provided by the Provost and Deans.

Nanotechnology: Under the leadership of Roop Mahajan (ME), this initiative focused in FY04 on obtaining the first phase of federal funding ($0.6M in FY04, with another $4.4M pending) and university support ($1.5M over the next three years) to establish a Nanotechnology Laboratory and Characterization Facility.

Goal: *Addition of at least five interdisciplinary research centers during FY04-FY08.* A good start was made toward this goal, with two centers established in FY04:

1. Computer and Communications Security Research and Education Center (approved June, 2003; Alex Wolf, Director)
2. Research and Engineering Center for Unmanned Vehicles (approved October 2003; Brian Argrow, Director)

Goal: *Increased contracts and grants from industry by 10% per year, to $6M in FY08.* An increase was achieved, but it is less than the goal:

FY03: $4.2M (baseline) contracts and grants from industry
FY04: $4.5M (+ 7%) contracts and grants from industry

Goal: *Increased faculty involvement in research, as measured by increases of 10% per year of the numbers of regular faculty with over $50K and over $150K in annual research expenditures.* The results for 2003 do not show substantial improvement over 2002, with only about one-half of the faculty having over $50K in research expenditures and about one-third having over $150K in research expenditures.

2002: 86 of 168 over $50K (baseline), and 49 over $150K (baseline)
2003: 82 of 160 over $50K (-5%), and 53 over $150K (+8%)

Goal: *Increased average number of peer-reviewed publications by 5% per year, from 2.4 journal papers and 2.0 proceedings papers per faculty member in 2002 to 3.0 and 2.5,*

respectively, in 2007. This goal was not met in 2003 (publications are counted on a calendar-year basis, as part of the annual faculty review):

2002 averages: 2.39 journals (baseline) and 1.99 proceedings (baseline)
2003 averages: 2.32 journals (-3%) and 1.93 proceedings (-3%)

Discussion:
Good progress was made during FY04 in launching new research centers and major initiatives, and these efforts will be continued in FY05. The goal to increase new contracts and grants by 10% per year was exceeded, with a record $42.8M received in FY04. The number of grant proposals also increased in FY04, but by less than the goal, and a large fraction of faculty still needs stimulation in research (e.g., almost half of the faculty had less than $50K in research expenditures as project manager in 2003). Thus, major efforts will be undertaken in FY05 to enhance faculty research, including fellowship and recognition programs, travel to funding agencies, faculty training programs, and salary or other incentives.

EDUCATIONAL EXCELLENCE
Our vision of excellence in education is supported by initiatives to enhance student learning through both coursework and extracurricular enrichment experiences of discovery learning, professional learning, and service learning. Progress on FY04 action items in support of this vision is described below, followed by an assessment of outcomes on our stated education goals.

Action*: Develop effective marketing tools for the college to its constituents.* In addition to ongoing publications (such as *CUEngineering*, *Alumni Focus*, and *Corporate Partner*), several new or revised marketing tools were introduced in FY04:

- Undergraduate Program Brochure and Poster (provided to high school teachers and prospective students)
- Undergraduate Reputational Flier (sent to Deans in advance of ratings survey, and also to admitted students)
- Marketing Pieces (8 one-page marketing fliers on college programs were produced for distribution to donors)
- Web site (the college web site was reorganized and made more attractive and user-friendly)

Action*: Establish a college-wide Discovery Learning Initiative to expand undergraduate research.* The Discovery Learning Program was piloted in Spring 2004, with 12 undergraduates doing research in the Discovery Learning Center and receiving support from the Dean's Fund for Excellence. The first Discovery Learning Symposium on undergraduate research was held in April 2004. A Director of Academic Programs and Assessment, Terry Mayes, was hired in February 2004 to coordinate discovery, service and professional learning.

***Action**: Establish a college-wide Service Learning Initiative to expand undergraduate involvement in K-12 outreach, engineering for developing communities, course assistance, etc*. The Earn-Learn Program was piloted in Spring 2004, with 15 undergraduates doing service learning in the college and receiving support from donations raised by the Resource Development Committee and matching funds from departments and programs. A program coordinator, Robyn Sandekian, was hired in March 2004 to expand student involvement in Engineering for Developing Communities throughout the college.

***Action:** Establish a faculty subcommittee to consider the appropriate role of biology in the undergraduate curriculum, and make recommendations to the college faculty for implementation.* This action will be undertaken in FY05.

***Action:** Improve student recruiting efforts to enhance the quality and diversity of entering students, through a proactive role of college personnel.* A survey was performed in summer of 2003 of those students who turned down admission offers for Fall 2003; timely communications and financial aid were cited as having the most need for improvement. Starting in FY04, the Dean's Office is receiving applicant information each week from the campus admissions office, and following up with each prospective student through phone, email, and mail. A program has been initiated for college personnel to visit high schools in Colorado, starting with those that are major feeders to the college. To help attract outstanding graduate students with broad interests, a college-wide visitation day was held in Spring 2004, with a research poster session in the afternoon. Efforts to increase financial aid for both undergraduate and graduate students are part of the resource portion of the *Strategic Plan*.

***Action**: Establish an Engineering Outreach Program to K-12 students and teachers.* A Director of Outreach and Education, Kristin Germain, was hired in October 2003 to coordinate this effort. A $1.9M GK-12 grant from NSF to our ITLL was renewed for five years for support of graduate students to introduce engineering curricula in middle and high schools, a $500K gift was provided by J.D. Abrams to establish an on-campus summer program for Native American High School students, $60K was provided by the Daniels Fund and Dorr Foundation to create curricula for the *TeachEngineering Digital Library* for K-12 teachers, and a $100K award was received from the Bechtel Foundation to pilot a rural outreach program. Jackie Sullivan, Co-Director of the ITLL, led a national effort in FY04 to establish a precollegiate division of the American Society for Engineering Education. Other outreach activities during Summer 2004 included *Creative Engineering – Go For It* (for 9th graders entering pre-engineering or technology schools), *Girls Embrace Technology* (six-week summer internship at the ITLL for high-school girls), *High School Honors Institute* (four-day college program for top juniors and seniors in high school), *Kids Invent Toys* (program for elementary school kids offered at the Western Colorado Math and Science Center in collaboration with the ITLL), *Success Institute* (multiday workshop for underrepresented students entering the 9th grade), *Summer Bridge* (five-week summer program organized by the Multicultural Engineering Program to prepare incoming first-year engineering students for college), *Colorado Space Grant Community Relations Outreach* (day-long programs for projects such as

balloon satellites), and a variety of professional development workshops for K-12 teachers.

***Action**: Increase graduate training support by submitting at least ten graduate training proposals per year.* In FY04, six proposals were submitted for graduate training programs, plus another 17 for individual graduate fellowships.

***Goal**: Improved ranking of our undergraduate program to the top 30 in 2005 and the top 25 in 2007*. Using the *U.S. News & World Report* rankings, the initial goal was achieved in FY04, but the ranking subsequently slipped in FY05:

8/02 Undergraduate Program Ranking: 31 (17 among publics)
8/03 Undergraduate Program Ranking: 29 (17 among publics)
8/04 Undergraduate Program Ranking: 33 (18 among publics)

***Goal**: Improved ranking of our graduate program to the top 30 in 2007 and the top 25 in 2009.* Good progress toward the initial goal was achieved in FY04, using the *U.S. News & World Report* rankings:

4/03 Graduate Program Ranking: 37 (21 among publics)
4/04 Graduate Program Ranking: 33 (19 among publics)

***Goal**: Expanded opportunities for extracurricular enrichment experiences, with the fraction of undergraduate students participating in discovery, professional or service learning each year reaching one-third by FY08.* FY04 is the first year that these metrics have been determined; even with the low number of professional-learning activities (internships and coop experiences in industry) reported, good progress is being made toward the goal.

Year	FY04	FY05	FY06	FY07	FY08
Discovery Learning	492				
Professional Learning	137				
Service Learning	265				
Total Participating	618				
Total Undergraduates	2667				
% Participation	23.2%				

The total participating is less than the sum of discovery, professional and service learning, because students participating in two or more activities are counted only once in the total.

***Goal:** Enriched curricula so that all undergraduate students take at least two courses in which oral and written communication constitutes a significant learning objective, two courses where team-based learning is emphasized, and a meaningful capstone design experience.* All 11 undergraduate degree programs, except Engineering Physics, reported in FY04 that they have at least two required courses where communication is emphasized, at least two required courses where team-based learning is emphasized, and at least one required course with a capstone design experience. The quality and depth of

these experiences will be examined during FY05 as part of the accreditation preparation and review process.

***Goal**: Improved quality of undergraduate advising, as measured by surveys of graduating seniors, with a goal of 100% rating their advising experiences as satisfactory or better within three years*. A Senior Survey done by campus in 2001 showed students in the College of Engineering and Applied Science rated their advising experiences higher than students in other schools and colleges, but the mean score was only 3.3 (with 1 = very dissatisfied and 5 = very satisfied). We are awaiting the results of a more recent survey done in FY04. A Director of Academic Programs and Assessment, Terry Mayes, was hired by the college in Spring 2004, and she has surveyed Department Chairs and Advising Coordinators on what improvements are needed.

***Goal**: Increased diversity of student population by 10% per year, to 7.5% and 10% underrepresented minorities (black, Hispanic, Native American) and 30% and 25% women at the graduate and undergraduate levels, respectively, by Fall 2007*. The Fall 2003 baseline data for these metrics are shown below, along with corresponding data for diversity of regular faculty. Also provided are data for Fall 2004, which show increases in diversity of both faculty and new students, though overall diversity measures of the undergraduate student population declined. National trends also show a slight decline in the diversity of engineering undergraduates.

Year (Fall)	2003	2004	2005	2006	2007
% women ugrads	17.5%	17.2%			
% women 1st yr	14.1%	17.1%			
% women grads	23.6%	21.8%			
% minority ugrads	7.3%	7.1%			
% minority 1st yr	5.7%	6.5%			
% minority grads	5.0%	5.6%			
% women faculty	9.3%	10.4%			
% minority faculty	5.5%	6.1%			

***Goal**: Increased number of undergraduate applicants by 5% per year, without increased enrollments, and with improved quality of the entering class.* The Fall 2003 baseline data for these metrics are shown below, as well as data for Fall 2004. Both applicants and enrollments are up 3-4%, with quality measures approximately steady.

Year (Fall)	2003	2004	2005	2006	2007
Tot. BS students	2667	2736			
# applied	2154	2212			
# offered adm.	1890	1956			
# new enrolled	610	633			
Avg. HS gpa	3.72	3.73			
Avg. class rank	84%	85%			
ACT Math	29	29			
ACT English	28	28			
SAT Math	670	660			
SAT Verbal	610	600			

***Goal**: Increased PhD enrollments by 5% per year, to 600 by Fall 2007, with MS enrollments holding steady, and improved quality measures of incoming graduate students to 3.6 average undergraduate GPA and 765 average quantitative GRE, while increasing applicant pool so that 30% or less are offered admission.* The Fall 2003 baseline data for these metrics are given below. The Fall 2004 data show a 3% increase in PhD students. The number of MS students also increased, but this increase is due to including the distance-education students of Engineering Management (57 students) and Interdisciplinary Telecommunications (63 students) starting in Fall 2004. The number of new graduate students is down about 20%, while quality measures show small improvements.

Year (Fall)	2003	2004	2005	2006	2007
Tot. PhD students	485	500			
Tot. MS students	627	658			
# applied	2260	1769			
# offered adm.	1272	1008			
# new enrolled	364	290			
Avg. ugrad. GPA	3.47	3.53			
Avg. quant. GRE	753	758			

***Goal**: Increased number of instructor ratings (by students via the Faculty Course Questionnaire) above 3.0/4.0 and decreased number of instructor ratings below 2.0/4.0, to more than 75% above 3.0 and less than 3.5% below 2.0 by FY08.* The fraction of instructor ratings above 3.0 increased from 2003 to 2004, but that below 2.0 also increased.

Year	FY03	FY04	FY05	FY06	FY07	FY08
# courses	597	582				
>3.0	401 (67.7%)	404 (69.4%)				
<2.0	26 (4.4%)	27 (4.6%)				

***Goal**: Full accreditation of undergraduate engineering programs, with effective assessment strategies and continued improvement, including preparation for professional*

licenses where appropriate. Our Environmental Engineering major was accredited in FY04, so that 8 of 11 undergraduate majors are accredited by the Accreditation Board for Engineering Technology (ABET). The exceptions are Applied Mathematics, which is not eligible for accreditation through ABET, and Computer Science and Engineering Physics, which have not sought accreditation. In the most recent ABET general review (FY99), one program received accreditation until the next general review (best), two were required to submit interim reports, three were required to have interim visits, and one required a show-cause visit (worst). The next general review is in FY06, with a visit expected in Fall 2005. A Director of Academic Programs and Assessment, Terry Mayes, was hired in Spring 2004 to assist with preparing degree programs for accreditation review.

Discussion:
Substantial progress was made on marketing of our undergraduate and graduate programs in FY04, and additional reputational fliers for the college graduate program and for each department will be produced in FY05. Piloting of the Discovery Learning Program and the Earn-Learn Program in FY04 was very successful, and these programs will be expanded in FY05. Nearly a quarter of our undergraduate students participated in one or more discovery, professional and service learning experiences in FY04. The diversity of our undergraduate population declined slightly in FY04, while diversity of graduate students and faculty is up. Efforts to enhance the quality and diversity of recruited students are expected to bring long-term benefit, and improvements have already been seen in the diversity of the first-year undergraduate class. Improvements in faculty quality and diversity are also expected to help with student recruitment. Outreach programs to Native American students and rural students will be expanded in FY05. Other educational efforts that will need attention in FY05 include academic advising, faculty teaching training, and preparations for the accreditation review in FY06.

RESOURCE EXCELLENCE
Our vision for resource excellence is to generate the necessary supporting resources and employ them with wise stewardship to facilitate our ambitious goals and plans for educational and research excellence. Progress on FY04 action items in support of this vision is discussed first, followed by an assessment of outcomes on stated resource goals.

Action*: Hire outstanding and diverse faculty through targeted recruitment, competitive salaries and startup packages.* During FY04, 13 searches were undertaken for regular faculty, resulting in 11 hires, including four women and four persons of color. The average starting salary for the nine Assistant Professors hired is $72.9K (compared to the national average of $73.3K in 2003), and the average startup package is $308K (national data not available). Two of the hires are part of the campus-wide biotechnology initiative.

Action*: Retain top faculty through merit-based raises, endowed faculty positions, research support, and building communities of scholars with common interests.* Faculty raise pools in the college were 2.6% for FY04, and 2.8% for FY05, despite low inflation (1.9% for 2002 and 1.1% for 2003) and reductions in state funding, and the average faculty salaries in the college exceeded the AAU averages in FY03 by 4.0, 1.0 and 1.3%

at the Assistant, Associate and Full Professor levels, respectively. Nevertheless, our top faculty continue to receive attractive offers from other institutions. In FY04, retention packages were offered to eight such faculty members, and four of these offers were accepted.

***Action**: Form an Engineering Awards Committee, in addition to departmental awards committees, and actively nominate top faculty for campus and national awards.* Awards liaisons were identified for each department, and the Dean's office provided information on various opportunities to these liaisons. Starting in FY05, the Faculty Research Council will serve in the role of an awards committee.

***Action**: Develop a culture of excellence through high standards in hiring, annual reviews, appointment/promotion/tenure reviews, and post-tenure reviews, and by establishing a New Faculty Program in FY04*. Faculty search committees and the Dean's office carefully reviewed finalists for openings, with offers made only to those showing excellent potential in both teaching and research. The performance standards for annual faculty reviews were revised in FY04 by the Administrative Council. The updated document on *Policies, Procedures and Criteria for Reappointment, Promotion and Tenure* was approved by the Administrative Council in Fall 2003, and a new document on *Advice for Reappointment, Promotion and Tenure* was issued by the Dean's office in Spring 2004. A *New Faculty Program* was also established in FY04 and includes workshops on career planning mentoring, research, teaching, and reappointment, promotion and tenure.

***Action**: Cultivate alumni involvement through advisory boards, development visits, alumni events, project and seminar courses, and professional-learning opportunities.* In FY04, the college had 22 advisory boards, and a total of 291 volunteer members, with another 300 volunteers participating in other activities. These volunteers participated in a total of 936 volunteer activities with the college. A total of 250 face-to-face development visits were made with alumni by engineering development staff and college leadership. Alumni events included

- Scholarship Dinner (9/7/03, Boulder, 19 alumni, 144 total)
- ChBE Alumni Dinner (11/16/03, San Francisco, 23 alumni, 26 total)
- ME Alumni Day (5/6/04, Boulder, 19 alumni, 39 total)
- MEP Awards Banquet (4/2/04, Boulder, 20 alumni, 225 total)
- Golden Reunion Lunch (5/6/04, Boulder, 10 alumni, 20 total)
- Engineering Awards Banquet (4/16/04, Boulder, 34 alumni, 189 total)

***Action**: Review, reallocate and renovate research and educational space in the Engineering Center for more effective use*. In FY04, $1.5M was allocated by the college (including campus and departmental matching funds) for a total of 20 remodeling and renovation projects, including

- Creation of a college-wide research computing facility in the ECE sub-basement
- Additional cooling capacity for an AES computational laboratory
- Conversion of an ME storage room to office space for ME graduate students

- Remodeling of office space formerly occupied by CADSWES to an integrated area for our MEP and WIEP student programs
- Remodeling of space formerly occupied by UNIX Ops to create office space for ChBE faculty, staff and postdocs
- Completion of an infill in ChBE and remodeling to create a tissue-engineering laboratory
- Completion of a clean room in the ME wing for nanotechnology research
- Reassignment and renovation of laboratories for AES research on unmanned vehicles
- Upgrades to the CEAE fluids and computing laboratories
- Remodeling of CS common areas

***Action**: Move two college tenants to the nearby Exabyte building*. In June 2004, the Center for Advanced Decision Support for Water & Environmental Systems (CADSWES) and the Hydroclimate Laboratory from CEAE moved to 7000 sq. ft. of remodeled space in the Exabyte building (about one mile northeast of the main campus).

***Action:** Develop feasibility assessments, program plans, and fundraising efforts to expand at least three wings of the Engineering Center by 10,000-30,000 sq. ft. each.* Formal feasibility studies were done in cooperation with Facilities Management in FY04 for two expansions (CS and ChBE). The cost estimates are much higher ($400-$500 per square foot) than expected. An alternative of building on the east campus (about a half mile away) at about 25% less cost per square foot was proposed. The CS Department has expressed a strong preference to stay on the main campus, while the alternatives are still being evaluated by the ChBE Department.

***Action:** Complete needs assessment and plans for at least two college research facilities.* In FY04, progress was made on two college research facilities:

- *Nanotechnology Laboratory and Characterization Facility* – Under the leadership of Roop Mahajan, $0.6M in federal funding was obtained in FY04, another $4.4M request is pending, and $1.5M has been tentatively committed by the college and campus over the next three years. A college committee has designed a facility of 2000 sq. ft. and selected the initial equipment purchases. The facility, planned for the DLC sub-basement, is expected to open in Fall 2004.

- *High-Performance Computing Facility* – During FY04, plans were made to remodel 1400 sq. ft. of the ECE sub-basement (ECEE 2B80) as a college research computing facility, with the necessary power, cooling and security. $200K for remodeling was provided by the college and campus. This facility is expected to open in Spring 2005.

***Action/Goal:** Promote Quality for Colorado and differential tuition and lab fees, to increase continuing annual institutional support to the college by $7M by FY08 (from $23M in FY03, after a 6% cut).* The first installment of Quality for Colorado was approved for FY04, representing a campus-wide tuition increase of $140 (per year) for

each resident student and $300 for each nonresident student. Quality for Colorado was not approved for FY05, but the first installment of $300 per student for differential tuition in the College of Engineering and Applied Science was approved for FY05. The University of Colorado was also granted enterprise status, starting in FY05, so that its tuition increases are no longer subject to the state spending limits. The continuing budget for FY04 increased by 5.7% from that at the end of FY03 (after cuts), with about one-third of the increase being a change in accounting for the nonresident tuition differential for graduate teaching assistants.

FY03: $23,179,295 (baseline) continuing institutional support
FY04: $24,499,249 (+ 5.7%) continuing institutional support

Action/Goal*: Intensify private fundraising efforts by adding three development staff, making 1500 face-to-face contacts, 40 dean/leadership visits to donors, and 12,000 mail/email/phone contacts with alumni each year, targeting efforts toward foundation and corporations, and assigning a development officer and setting fundraising goals for each department and program, to increase gift support to $12M per year (not including in-kind donations), a 50% increase from the prior campaign.* One new development staff person was added in FY04, and two more in early FY05, but a Development officer and the Director of Development left, leaving two openings to fill during the remainder of FY05. About 200 face-to-face visits were made by engineering development staff in FY04, and the Dean made 70 visits to donors and potential donors in FY04. With the aid of an outside firm, hired by the CU Foundation, the engineering alumni mailing list was increased to 21,461 individuals. Each of these individuals was mailed a fundraising letter in Fall 2003 and the *CUEngineering* magazine in Spring 2004, and 10,712 of these alumni were contacted by students via phone for the annual fund drive. In addition, the engineering development staff recorded about 450 individual donor contacts by mail/email/phone in FY04. The total amount of support received in FY04 is down 2% from FY03, while the total new commitment (sum of new support plus pledges) is up 26%. The latter total of $10.7M is short of the $12M goal, especially when considering that the $5.1M gifts-in-kind (primarily software) are included in the support amount but not in the goal.

Year	Support from Prior Pledges	New Support	Total Received	New Pledges	Total New Commitment	Portion In-Kind
FY03	$1,045,396	$8,256,046	$9,301,443	$215,000	$8,471,046	$5,400,614
FY04	$84,035	$9,048,945	$9,132,980	$1,640,011	$10,688,956	$5,145,810
FY05						
FY06						
FY07						
FY08						

Goal*: $1.0M in new continuing annual institutional funds by FY08 for an average of two faculty growth lines per year during FY04-FY08.* One faculty growth line was filled in FY04 (in AES), and another has been filled for FY05 (in ChBE), at about $75K each.

Growth positions at 50% time were also filled in the Computer Science Department and the Herbst Humanities Program for FY05.

***Goal**: \$1.5M in new continuing annual institutional funds by FY08 for faculty startup support.* Campus funds provided to the college for faculty startup support are still on a temporary basis (i.e., new transfer each year), and declined from FY03 to FY04:

FY03: \$502,378 startup funds from campus
FY04: \$400,000 startup funds from campus

Nevertheless, the college increased its funding of startup packages in FY04, and a portion of the differential tuition funds will be used for faculty startup support in FY05.

***Goal**: \$1.0M in new continuing annual funds (post inflation) by FY08, to provide for competitive faculty salaries, requiring annual raise pools of inflation plus 1.5%.* The college faculty and professional exempt raise pools totaled \$418,258 for FY04, or 2.6% of the \$16.0M base. With an inflation rate of 1.9% for the prior year, the 0.7% increase above inflation falls short of the goal. The data for FY05, however, meet the goal.

Year	FY04	FY05	FY06	FY07	FY08
Base	\$16.0M	\$16.6M			
Raise %	2.6%	2.8%			
Inflation %	1.9%	1.1%			
Net Increase	\$110K	\$280K			

***Goal**: \$20M in additional faculty endowment gift funds by FY08, including two full chairs @ \$4M, four partial chairs @ \$1.5M, eight professorships @ \$500K, and eight faculty fellowships @ \$250K, with at least half of these funds received by FY08 versus pending as bequests or pledges.* In FY04, \$12,417 was received to enhance existing chairs or professorships, and \$138,599 in gifts plus a pledge of \$1,240,011 were received toward establishing the Seebass Chair in Aerospace Engineering Sciences. Thus, only about one-third of the annual goal was met.

***Goal**: At least three faculty elected to the National Academy of Engineering in the next five years, and at least one major national or international society award received by a faculty member in each department each year.* Excellent progress was made on this goal in FY04, with two faculty (George Born and Kaspar Willam) elected to the National Academy of Engineering and one or more major awards (not including several NSF CAREER and other new investigator grants) received by faculty in five of the six departments. The Gordon Prize to Frank Barnes and the Waterman Award to Kristi Anseth are of particularly high distinction.

Selected Faculty Awards in FY04

Aerospace Engineering Sciences

George Born, Elected to the National Academy of Engineering
Bill Emery, IEEE GRS-S Education in Remote Sensing Award
Dave Klaus, American Society for Gravitational and Space Biology Young Investigator Award

Chemical & Biological Engineering

Kristi Anseth, AIChE Colburn Award
Kristi Anseth, NSF Waterman Award

Civil, Environmental & Architectural Engineering

Keith Molenaar, Society of American Military Engineering Toulmin Medal
Kaspar Willam, Elected to the National Academy of Engineering
Kaspar Willam, ASCE Newmark Medal

Electrical & Computer Engineering/Interdisciplinary Telecommunications Program

Frank Barnes, NAE Gordon Prize
Frank Barnes, IEEE Education Society Achievement Award
Tim Brown, Global Wireless Education Consortium Educator of the Year

Mechanical Engineering

Ken Gall, SAE Ralph Teeter Award
Roop Mahajan, ASME Charles Russ Richards Memorial Award

***Goal**: 10% increase per year in number of alumni or friends donating time or funds to the college*. The number of donors increased by 10% from FY03 to FY04, at least in part due to expanded efforts in the annual fund campaign.

Year	FY03	FY04	FY05	FY06	FY07	FY08
# donors	2664	2935 (+10%)				
# volunteers	n/a	591				

***Goal**: $300K in new continuing annual institutional funds by FY08, to provide a doubling of matching funds for research equipment and proposals.* No new continuing funds were obtained for this purpose in FY04. Nevertheless, the college changed in FY04 its policy on providing equipment matching funds to ¼ college, ¼ department, ½ graduate school (from 1/6 college, 1/3 department, ½ graduate school). The amount of institutional matching funds provided from just the college portion is given below.

FY03: $290,464 matching funds
FY04: $286,075 matching funds (includes $75K for nanotech lab)

***Goal**: $800K in new continuing annual institutional funds for FY08 for curriculum-based program enhancements, including support for instructional faculty and teaching assistants ($400K), laboratory equipment and materials ($300K), Engineering Honors Program ($25K), and Engineering Advising Program ($75K).* In FY04, $225K in new continuing funds were provided toward this goal for teaching assistants ($75K stipend, $150K tuition). Additional funds are expected in FY05 from the engineering differential tuition.

***Goal**: $700K in new continuing annual institutional funds by FY08 for extracurricular student programs, including Discovery Learning ($325K), Service Learning ($175K), Professional Learning ($50K) and Outreach ($150K).* No new funds were allocated for these programs in FY04, but additional funds are expected in FY05 from the engineering differential tuition.

***Goal**: $10M in new endowed student gift support by FY08, for undergraduate scholarships ($6M), graduate fellowships ($2M), and earn-learn assistantships ($2M).* The total gifts of $1.0M received in FY04 for new or existing student endowment accounts is about half of the annual amount required to meet the goal, with most of the support focused on undergraduate scholarships. Not included in this total are approximately $100K raised by the Resource Development Committee in current funds to establish the Earn-Learn Program and $150K in current funds received from Agilent for graduate fellowships.

Year	FY04	FY05	FY06	FY07	FY08
Scholarships	$933,475				
Fellowships	$29,234				
Earn-Learn	$50,000				
Total	$1,012,709				

***Goal**: Doubling of the annual giving support for the Dean's Fund for Excellence, to $500K in FY08.* Annual giving to the college increased by 28% in FY04, primarily due to hiring a firm to coordinate mail and phone solicitations.

FY03 Annual Giving: $232,155
FY04 Annual Giving: $296,769

***Goal**: $10M in current and endowment gifts over the next five years for educational and research support*. Not including the Dean's Fund for Excellence and the endowed faculty and student support noted above, $1,837,715 in current gifts and $526,518 in endowment gifts were received in FY04 for educational and research support of departments and programs, exceeding the annual goal of $2M.

***Goal**: $300K in new continuing annual institutional capital funds to combine with existing funds to invest a total of $2M by FY08 for renovations of teaching and research space.* While no new continuing funds were received for this purpose in FY04, $1.5M in existing and temporary funds were allocated for a college space renovations in FY04. Additional, continuing funds are expected in FY05 from the engineering tuition differential.

***Goal**: Expansion of the Engineering Center by 40,000-60,000 square feet by FY08, requiring approximately $20M in private funds and $6M in institutional funds.* Feasibility studies for two wing expansions were done in FY04, but fundraising for these projects has not been initiated. The college gained 7,000 square feet of space in FY04 in the

Exabyte building (about 1 mile from the Engineering Center), and 4,000 square feet were made available for other purposes in the Engineering Center by moving CADSWES to the Exabyte building and UNIX Ops to the stadium.

Discussion:
Progress in FY04 on increasing the financial resources of the college was mixed. Approval of the first year of the campus-wide Quality for Colorado tuition increase for FY04, and of enterprise status and the first year of an engineering differential tuition increase for FY05, represents the important first steps in increased institutional funding. However, the long-term picture depends on whether the subsequent three years of Quality for Colorado and engineering differential tuition are approved and whether the decline in the state appropriation for higher education is arrested. Private fundraising was less than half of the goal for FY04, and so enhanced efforts to increase private giving will be needed in FY05. On the other hand, faculty hiring was very successful in FY04, with both high quality and diversity. A culture of excellence is being promoted through a *New Faculty Program* established in FY04. A *Faculty Excellence Program* (aimed at helping faculty at all levels with teaching, research, and leadership) will be piloted in FY05. Other faculty highlights of FY04 include two college faculty members elected to the National Academy of Engineering and college faculty members receiving the prestigious Gordon Prize and Waterman Award. Good progress was also made on physical resources, by undertaking several remodeling projects, initiating shared research facilities in computing and nanotechnology, and moving two programs to space outside of the main Engineering Center. In FY05, options and fundraising will be investigated for one or two major expansion projects.