

**Summary and Recommendations from 4/22/05 Meeting of the
Engineering Advisory Council and Resource Development Committee
Robert H. Davis, Dean**

**College of Engineering & Applied Science
University of Colorado at Boulder**

1. Resource Development Committee – Pre-breakfast Meeting

Dean Rob Davis opened the meeting by describing his vision for change in the RDC, including (i) increasing his involvement in the RDC, (ii) integrating the RDC with the EAC, including a transition so that RDC members who continue beyond their current terms become EAC members, (iii) focusing the RDC on assistance with cultivation of major gifts and bequests, and (iv) developing a strong EAC and RDC to help guide the college. Rob noted that the RDC members will attend the entire EAC meeting, with the RDC serving as one of the three breakout committees during lunch.

Rob then introduced John Mabley, the new Director of Development, who briefly shared his background and excitement for his new position. John was most recently at Florida State University, completing a PhD in higher education, and he has 25 years of experience in development and advancement of higher education in Canada.

Rob noted that the start of the next campaign has been delayed, perhaps until 7/1/06, due to changes in CU leadership. The college goal, not including in-kind gifts, is tentatively set at \$105 million over seven years—an average of \$15 million per year—nearly double that raised (\$8 million per year) in the prior campaign. The current strategic plan for the college includes gifts of \$12 million per year. Year-to-date (7/04 – 2/05) gifts received stand at \$4 million, essentially equal to the amount in the entire prior year, but short of the goal.

Rob reported good news on endowed chairs and professorships, with six new endowed faculty positions becoming available this year. Three (Seebass Chair, Schelke Chair, Slade Professor) are based on bequests being honored upon the donors' deaths, while the other three (Roubos Chair, Clark Professor, Look Professor) are being awarded with the donors' permission during their lifetimes. The Earn-Learn challenge from this past fall was also successful, with \$325K in current gifts raised between last year and this year—enough for about 50 students per semester for the next four years. The long-term goal is to raise a \$5 million endowment for the Earn-Learn Program, enough to support 150 students/semester in perpetuity, with about \$1 million raised so far in gifts or bequests. Rob also reported on progress made for Engineering for Developing Communities. In addition to college and campus support for a coordinator (Robyn Sandekian) to help faculty expand the program, the Engineering Excellence Fund Committee made two awards totaling \$30,750 to support EDC projects and an EDC advisory committee has been formed. The Dean has pledged \$20,000 to EDC from the Engineering Dean's Fund, to match donations raised in the next two years by the EDC advisory committee.

2. Introductions and Announcements

Chair George Sissel introduced three visitors, who were in attendance as prospective (and, later, elected) new members: Bruce Buckland, Merc Mercure and Lucy Sanders.

3. Discussion of EAC/RDC Changes

Dean Rob Davis opened by saying he needs the strongest possible EAC and RDC to help guide and build the college, especially as CU faces reputation challenges and uncertain budgets. To support this objective, his goals are (1) to increase his involvement with the RDC, (2) to integrate the RDC with the EAC, and (3) to focus RDC on cultivation of major giving. Actions recommended to meet these goals are:

- *Make the RDC a formal subcommittee of the EAC, with a transition in the next 1-2 years to fewer members (10-12) who are all members of the EAC.*
- *Create two additional EAC subcommittees—one on Education and Outreach and one on Research and Corporate/Federal Relations, each with 10-12 members. Together with the RDC, these subcommittees support the three primary objectives of the college strategic plan (excellence in education, research and resources).*
- *Each EAC member is expected to join one of the subcommittees; two-year renewable terms are suggested.*
- *Each subcommittee will have a chair and vice-chair.*
- *The subcommittees will meet during breakout sessions at the EAC meetings, with additional meetings or communications as needed. These groups should pick 1-2 projects each year, for focus and action.*
- *The subcommittee chair or other spokesperson will give a summary report to the entire EAC after the breakout groups.*

These recommendations received the general support of the EAC and RDC members.

4. Dean's Report

Copies of the slides used by the Dean in his report were included with the meeting materials. In brief, he gave updates on the new Engineering Fellows Program, Engineers Without Borders, and a spring-break trip with Habitat for Humanity. He reported that the Earn-Learn Challenge raised \$235K this past fall, surpassing the \$200K goal (including the challenge gifts). This semester, there are 60 earn-learn apprentices and 23 discovery learning apprentices, doubling the size of these programs for undergraduate students. Recent faculty honors include the Norm Augustine Award from AAES to Bernard Amadei, the Newmark Medal from ASCE to Dan Frangopol, the ASME Stroughton Award to Ken Gall, NSF CAREER Awards to Ryan Gill and Scott Palo, and the election of Mike Lightner as the IEEE President. *U.S. News and World Report* ranked the college 33rd, at both the undergraduate and graduate levels, among approximately 200 PhD-granting engineering colleges, with three college graduate programs in the top 20 of their respective disciplines: Aerospace (13th), Chemical (19th), and Civil (20th). The Dean's Report also included a resource update: the state appropriation to CU in FY06 is expected to be the same as in FY05, private gifts are up slightly from last year, there are six new endowed chairs and professorships (see RDC report), and freshmen applications are down campus-wide, but confirmations are nearly even with last year in engineering (added note: confirmations as of 5/22/05 in the college are up about 3% from last year). Diversity measures of the entering class appear to be slightly ahead of last year. The Dean credited Kristin Germain for organizing an Explore CU-Engineering Day to help with enrollments, and thanked EAC volunteers for calling prospective students.

5. Chemical & Biological Engineering

Chair Chris Bowman gave an update on the Department of Chemical & Biochemical Engineering. In many ways, this department is very strong, with excellent faculty and students, many awards, and strong research funding. A new undergraduate degree in chemical and biological engineering is being explored, which is expected to attract more students. However, limited space is a problem, and the Department is proposing a new building on east campus, in cooperation with the campus-wide biotechnology initiative. Undergraduate student Janna Martinek, the College's Silver Medalist, described her senior project on ceramic membranes, and graduate student Danielle Benoit discussed her PhD research on cell and tissue engineering.

6. Provost's Remarks

Susan Avery took the position of Interim Provost in March. She is also the Associate Vice Chancellor for Research, Dean of the Graduate School, and Professor of Electrical and Computer Engineering. She shared that she has been at CU-Boulder for over 20 years and is committed to the campus and helping it advance. She noted that the preliminary investigation of Professor Ward Churchill concluded he had not violated academic freedom, but some issues of professional conduct had been raised and the case is now referred to the standing committee on research

misconduct, which reports to her. She also shared some of her ideas for the campus, including an initiative in alternative energy. Suggestions from the EAC members included:

- *Hiring a national PR firm for CU*
- *CU needs a revised focus, showing that it is a serious place*

7. Breakout Groups

Over lunch, three breakout groups met, each including both college personnel and EAC/RDC volunteers. The charges to these groups included (1) to review progress since the prior meeting, (2) to discuss potential topics, (3) to pick 1-2 topics and make recommendations and plans, and (4) to recommend a chair and vice-chair and/or select a member to report on progress and plans to the rest of the EAC/RDC. Results from these breakout groups are given later in this report.

8. University Update

Leonard Dinegar, Chief of Staff for President Betsy Hoffman, gave an update on several CU issues that have been in the news. A state committee has been appointed to review tenure proceedings, following concerns over the process by which Professor Ward Churchill received tenure. An open-records bill related to the CU Foundation has been passed. The lawsuit on the use of sex in CU football recruiting was recently dismissed, but changes are still needed. Hank Brown, former U.S. Senator and President of the University of Northern Colorado, has been appointed Interim President of CU, starting the beginning of August, and the press and legislature have responded positively. The CU-Boulder chancellor search is tentatively planned to start in August. Freshmen enrollments at CU-Boulder for next fall are projected to be 4700 (a more recent projection is 4900), down from 5200 last year but up from 4200 projected earlier. The loss of students, primarily from outside Colorado, is thought to be due high nonresident tuition and negative publicity, and may lead to a reduction of \$10 million in revenue next year (a more recent projection is \$6 million). The state funding for higher education is expected to be the same next year as this year, but state funding to the CU system has been reduced from \$225 million to \$150 million in the general fund since 2002, while enrollments have increased by 6500 students during this time, plus \$120 million per year in building funds have been eliminated.

Leonard cited four options facing the state of Colorado with respect to higher education:

1. Make higher education a priority for increased funding
2. Reduce the number of institutions and programs
3. Raise private support to make up loss in public funding
4. Change TABOR so that more tax revenue can be spent.

He noted that the short-term solution is to raise tuition. A mid-term solution is for voters to pass ballot referendum C in November, allowing surplus revenues to be spent. A longer-term solution would require permanent reform of TABOR (taxpayers' bill of rights) and Amendment 23 (mandated increases for K-12 funding).

Leonard noted that CU-Boulder currently receives \$9500 less per resident student in tuition and state funds than peer institutions. The legislature has approved \$42M in new tuition authority for the CU system, with \$9M going to financial aid, and the details of how this increase will be distributed is to be decided by the Regents in June. The new class of nonresident students has been given a guarantee that their tuition will not be raised over the next four years.

9. Student Presentation

Alex Demidovich, President of the student chapter of the Architectural Engineering Institute, and his colleagues described the spring break trip that they took to Oakley, California. The team of 15 students built fences with Habitat for Humanity for six low-income houses.

10. Facility Tours

Melinda Channel, recent ChBE graduate, gave a tour of the chemical engineering undergraduate laboratory, which was recently renovated with support from the Engineering Excellence Fund. Graham Faulknor and Caitlin Goetz, mechanical engineering undergraduates, gave a tour of the Formula SAE race car lab. The CU team had its best finish in national competition last year.

11. Research & Corporate/Government Relations Committee

EAC Participants: Kevin Coyne, Scott Donnelly, Pam Drew, Frank Figueroa, Ray Kolibaba, Bob Krebs, Tom Marsh, Merc Mercure, Vern Norviel and Jim Voss.

CU Participants: Victor Bright, Lee Peterson, Ted Randolph and Stein Sture (Facilitator)

I. Brief Review of Recent Progress

The members reviewed progress made on earlier recommendations, which were described on slides provided in the packet of meeting materials on in the Semi-Annual Report on the Fall, 2004 EAC meeting, specifically actions and recommendations prepared by the *State & Federal Support Breakout Group*, which comprised of many of the same members. Several members had comments and questions related to the report, which were answered.

II. Brief Discussion of Potential Topics

The group reviewed the list of the four topics, which were listed on the agenda for this breakout group, and decided (consensus) on the following priorities for the College and EAC to address over the next six months:

1. *In-depth discussion/dialog of industry's view on emerging areas for university research.*
- 2a. *Development of "win-win" approaches to enhancing university-industry research collaboration.*
- 2b. *Potential topics and funding sources for university-industry center proposals.*

The group did not differentiate between 2a and 2b and noted that both are equally important. A summary of the discussion is given below:

- While the group (committee) did not devote much time to discussing emerging areas of research that the College should focus on, the discussion centered on the next for increased efforts in areas of health and biotechnology research, aeronautical and space engineering, materials science and engineering, computational science and engineering, and telecommunications.
- The group discussed that it is very important to obtain state support for large initiatives, especially NSF ERC's, to be competitive. Federal funding agencies (NSF, etc.) expect state support, both in terms of matching on equipment, personnel, etc. as well as providing building or laboratory space. The group discussed recent data, and it was agreed that EAC or a subset of EAC, such as this new committee, will write letters jointly or as separate members to the Colorado State Legislature as well as the Governor, explaining the importance of college (university) research to the State, especially local industry. The discussion also centered on the workforce issue, and the fact that related industries (esp. aerospace) in the State need access to far more engineers, especially graduate-level trained engineers.
- The group discussed the importance of having a senior person, preferably at the (University) Vice-President level, as a chief lobbyist in Washington, DC. Members of the group related examples of how industry as well as other universities typically involve senior level and highly experienced people in lobbying, and how these persons are in continuous contact with key staff members to various congressional committees as well as Senators and

Representatives. While a key task of lobbyists or liaisons is to communicate back to their constituencies, they need also to directly engage in the lobbying effort and have authority to make immediate decisions on important (funding) budget issues and not continuously refer back to the home institution for advice.

- The College, perhaps in collaboration with the office of the Provost and/or Vice Chancellor for Research, should organize regularly scheduled “legislative breakfast” meetings, where faculty and students meet with legislators and highlight achievements, recent innovations, etc. and how these developments may have positive economic impacts on the State of Colorado. (The first legislative breakfast meeting was held soon after the EAC meeting, on April 26, and included Al Weimer (ChBE), Leslie Leinwand (MCDB) and Bill Lewis (CIRES) and was a great success). The College should develop broad statistics on start-up firms, employment of graduates in local Colorado companies, estimates on economic impacts, etc., which will resonate with the legislature.
- In view of the current research funding climate, where applied research with specific outcomes appears to be valued higher than basic and fundamental research, the College is strongly encouraged to team with industry as well as other universities on large proposals. It was commented that federal mission agencies, such as DARPA, nowadays essentially require that universities collaborate with industry, and that often the industry partner serves as lead on proposals rather than having the university (faculty) serve as lead.
- It was frequently mentioned that it takes time to create partnerships, especially with industry. Partnerships need nurturing to find optimal combinations, which develop teams for winning proposals. It was commented that we (the College) may have fewer industrial research partners and collaborators than do our peers.
- The group recommended that the College strengthen its collaboration with CU Health Sciences Center, specifically in the areas of bioengineering, bioscience, and biotechnology, and pursue large grants at NIH. It was mentioned that “they need us, and we need them”, i.e. the “win-win” collaborative paradigm also holds for intra-university, multi-discipline research.
- The group raised a concern related to recently proposed US Department of Commerce export restrictions, which may impact the College (and University) if new rules are approved. These new rules may adversely impact foreign graduate students, who may not be able to work in certain laboratories. (Recent e-mail dated May 9 from Susan Avery also brought this concern to the faculty, who are asked to write letters and cite examples of detrimental impacts.)
- The group discussed positive and negative sides of congressional “ear-marked” funding. While some states and universities have been very successful in obtaining special or ear-marked funding for buildings or research projects, it is realized that these funds often come from pools of funds that normally support peer-reviewed research activities, and thus earmarking has an adverse effect on the normal peer-review process. President Hoffman has repeatedly stated to our congressional delegation that the University prefers to obtain funding through the normal peer-review process, but there are occasions when ear-marking may be the only way of obtaining resources.
- Once the group or committee becomes formalized as a standing “Research & Corporate/Government Relations Committee”, the Associate Dean for Research (Stein Sture) will stay in frequent e-mail contact with the members, especially the Chair and Vice Chair of the Committee. It was agreed that frequent communication between the College and Committee members regarding new initiatives, especially large research announcements, is key to success.

- A Chair and Vice-Chair were not selected at the meeting, but individual members have expressed interest. It is expected that the subcommittee Chair and Vice-Chair will be appointed prior to the next meeting.

Vern Norviel briefly reported on the groups' discussions to the full EAC.

12. Education & Outreach Committee

EAC Participants: Jean Becker, Mike Herriage, Betty Irvine, Jon Liebman, Peter Mannetti, Chuck Robertson, Lucy Sanders, Kristy Schloss.

CU Participants: Dave Aragon, John Bennett, Dave Clough, Kristin Germain, Bev Louie, Terry Mayes, Zoya Popovic.

I. The committee convened and selected its leadership:

- CU Facilitator: John Bennett
- Committee Chair: Jean Becker
- Committee Associate Chair: Kristy Schloss

II. The committee reviewed progress on actions recommended at the Fall 2004 EAC meeting:

- See slides included in meeting materials packet.

III. The committee reviewed additional undergraduate outreach and recruiting activities:

- Note: Since the EAC meeting, we have additional data indicating that the "Explore CU Engineering Day" for admitted students was a stunning success. For the 246 prospective students who attended (about 400 family members and friends also attended), 72% overall confirmed their admission to CU Engineering, 81% of the women who attended confirmed, and 92% of the non-Asian minority students who attended confirmed.

IV. The committee discussed four potential topics:

- Honors Program
- Educational objectives/resources in the Strategic Plan
- K-12 outreach initiatives & partnerships
- Diversity initiatives

V. The committee chose to focus its discussion on the Honors Program, as summarized below:

Objectives

- Attract highly qualified & outstanding students to CU Engineering
- Retain those students in the college
- Offer those students a challenging & intellectually enriching program tailored to their abilities and interests
- Offer faculty the opportunity to work closely with those students
- Distinguish CU Engineering through this program
- Enrich the entire college

Guiding Principles

- Benchmarked other university honor's programs both at CU and other engineering programs
- Four-year program with summer elements
 - Can get on the bus [join the program] after high school and at the beginning of each subsequent semester
 - 1st stop is end of 1st semester of Freshman year

- Last stop is beginning of Junior year
 - Harder to get in than to stay in
- Plan for completing humanities requirements
 - Summer program for humanities classes with financial aid (Earn-Learn, etc.)
- Courses will offer either accelerated combinations of two or three semester-long courses OR courses with significantly enriched content
 - Class structure is highly independent study
 - If completion of satisfactory complete the work, the expected grade is an A or B so that participating in the program will not lower student's grade point average
- Prestige in the program
 - HONR for class designation so stands out on college transcripts
 - Design program so that non-engineering student's will want to be part of this program
 - Establish reciprocal relationships with other campus honors programs

Course of Study

- Summer Component – paid internships or financial aid will be made available
 - 1st Summer - Hands on internships
 - 2nd Summer - Service Project, Research Internship or Study Abroad
 - 3rd Summer - "Leadership Shadow" or Research Internship
- Two tracks to pick, depending on student's long term objective
 - If on the industry track – service project after sophomore year and leadership project after junior year
 - If on the research track – leadership project after sophomore year and research project after junior year
- Look for companies to sponsor multi-year internship program for students
- Seminar topics:
 - Intellectual property, entrepreneurial skills
 - Guest lectures from senior executives from industry

Diverse Program Population

- Target this program to students who are difficult to attract because they represent academic capability and cultural diversity – this is CU's differentiator
- Target to student populations who are not exposed to AP credit classes
- Need help from MEP and WIEP
- Model class or cohort of desired population
- Don't have quotas, but target a diverse profile
- Look harder to find a diverse group of students and also a diverse mentor group
- Students will have access to king/queen pins of industry

13. Resource Development Committee

EAC/RDC Participants: Enid Ablowitz, Gary Anderson, Hans Brunner, Bruce Buckland, Mike Davis, Dan Hernandez, Karl Larson, Jim McAnally, Joe Negler, Lanny Pinchuk, Dave Richmond, Al Sanders, George Sissel, Greg Smith, Jill Tietjen

CU/CUF Participants: Rick Buckman, John Mabley, Elise Patkay, John Quigley, Pat Sullivan, JoAnn Zelasko

I. Introduction

RDC Chair Gary Anderson re-introduced the newly announced Director of Development for the College, John Mabley, and recognized other development staff in attendance. He then summarized the Dean's charge to the committee delivered at an earlier breakfast meeting, with particular attention to ramping up development efforts in preparation for a university-wide capital campaign now in the formative stages.

II. Discussion of Potential Fundraising Projects

Gary invited members of the Committee familiar with the College's successful capital fundraising for the Integrated Teaching and Learning Laboratory (ITLL) and the Discovery Learning Center (DLC) to draw lessons from their experience for application to the next campaign program. Several comments were offered, fundamentally linked to the need for a visionary fact-based case statement to construct, as one member said, an "air tight" argument for generous giving. Another maintained it was the persuasive "vision" behind the ITLL and DLC projects that guaranteed their ultimate success in a competitive fund-raising environment.

Gary also acknowledged the support of RDC members for the "Earn-Learn" project adopted by the committee for particular focus in 2004-2005. He noted that the project was a success and it is time to move on to something else. He then raised the College's "Engineering for Developing Communities" (EDC) as an example of the kind of "social conscience" that he believed to be uniquely reflective of a CU engineering education. A discussion ensued, with those familiar with EDC contributing generally approving comment. In the course of the discussion it was explained that EDC is rooted in the CU engineering program while "Engineers Without Borders"--with a student branch on campus--is now a national organization with somewhat similar purpose but incorporated separate and apart from CU Engineering.

A capital campaign for a biotech building was also discussed, but it was noted that a marketable concept should be developed first. Regenerative cell technology or tissue engineering was suggested as an example.

III. Recommendations and Plans

Gary invited members to indicate by raised hands their future participation preferences, if any, for the EDC project or biotechnology building development, with the following response:

Volunteers interested in the building project: Bruce Buckland, Mike Davis, Joe Negler, Lanny Pinchuk, Greg Smith.

Volunteers interested in fundraising on behalf of EDC: Hans Brunner, Dan Hernandez, Joe Negler, Larry Pinchuk, Dave Richmond, Al Sanders, Jill Tietjen

Dean Davis joined the committee meeting at its conclusion. He congratulated the Chair and the committee for their service and their giving on behalf of CEAS and welcomed the structural transition of the RDC to a sub-committee of the EAC. He also noted that an RDC Vice-Chair would be selected prior to the next EAC meeting.

14. Business Meeting

The EAC Executive Committee approved five new members of the EAC: Gary Anderson, Bruce Buckland, Merc Mercure, Lucy Sanders, and Roger Zimmerman. An election was held by the entire EAC membership for new officers: Peter Mannetti was elected as EAC Chair and Vern Norviel was elected as EAC Vice-Chair, for two-year terms effective immediately. Carolyn Maher, whose EAC term is ending, was recognized for her service. Other members whose EAC terms are ending, but who were not in attendance are: Art Dawson, Charlotte Field, David Weiss, David Webster and Jack Woodhull.

15. Wrapup and Future Items

Dean Rob Davis reminded the group about the Engineering Awards Banquet later that evening, and that the next EAC meeting is on Friday, 10/7/05. He also announced that the Engineering Management Program has an endowed faculty opening, due to the departure of Doug Hensler to be Dean of Business at UC Riverside.

Rob also asked for feedback and recommendations, with the following replies:

- *More time is needed for the breakout groups, including the logistics of getting lunch.*
- *Subcommittees are good and help provide continuity.*
- *Students are wonderful—can't get enough of them at the meetings.*
- *Are there strategic plans for the university, and can we influence them?*
- *If needed, we can bring a cadre of EAC members to see the Provost and Chancellor to help get a new initiative done.*
- *Al Sanders noted some CU strengths (astronauts, Peace Corps volunteers, Engineers Without Borders, study abroad, service abroad) and recommended there be a campus-wide, coordinated effort to capitalize on and energize these activities around the theme of our students as world citizens.*

16. Attendance

EAC members: G. Anderson, J. Becker, B. Buckland, K. Coyne, S. Donnelly, P. Drew, F. Figueroa, M. Herriage, B. Irvine, G. Jacobs, R. Kolibaba, B. Krebs, J. Liebman, C. Maher, P. Mannetti, T. Marsh, M. Mercure, V. Norviel, C. Robertson, L. Sanders, K. Schloss, G. Sissel, J. Voss, J. Tietjen (B. Buckland, M. Mercure)

RDC members: E. Ablowitz, G. Anderson, H. Brunner, B. Buckland, M. Davis, D. Hernandez, G. Larson, J. McAnally, J. Negler, L. Pinchuk, D. Richmond, A. Sanders, K. Schloss, G. Smith, J. Tietjen