

**Summary & Recommendations of the 10/8/04 Meeting  
of the Engineering Advisory Council  
College of Engineering & Applied Science  
University of Colorado**

- 1. Introductions and Announcements** – George Sissel introduced the six new EAC members (Jean Becker, Scott Donnelly, Pam Drew, Frank Figueroa, Mike Herriage, and Betty Irvine). Gary Anderson introduced a returning RDC member (Joe Negler) and an RDC visitor (Joe Stearns, from HP).
  
- 2. Dean's Report** – Rob summarized the vision and objectives of the College's strategic plan and then gave highlights of progress made in the past year toward the objectives of research excellence, educational excellence and resource excellence. These highlights include increases in research grants and PhD degrees, over 600 undergraduates involved in discovery, service and/or professional learning experiences, diversity improvements in the entering class of students and in new faculty, numerous faculty and student awards, and several projects to add or improve research and education facilities. Rob then described budget progress. State support has declined and is among the lowest (per student) in the nation, while tuition has increased (including a differential tuition for engineering) but is still much lower than average among public institutions. Gift funds of \$56 M (plus in-kind support) were raised for the College during the past campaign (FY97 – FY03), exceeding the goal by one-third. In FY04, \$4 M in gifts (not including in-kind donations) plus \$1.6 M in new pledges were received, pointing the need to increase fundraising activities to meet the five-year, \$60 M goal of the strategic plan.
  
- 3. Earn-Learn Challenge** – Gary Anderson described progress on the Earn-Learn Program, with 15 students participating in the Spring 2004 pilot, one in Summer 2004, and 28 currently in Fall 2004. Individual donors contributed nearly \$95,000 in current funds last year, two endowments totaling over \$140,000 were established, and two bequests for future endowments at an estimated total of \$750,000 were also made. The long-term goal is to raise \$5 million in endowments, which would yield a spendable annual income of \$225,000 (4.5% payout). Together with matching funds from the College and departments, this total will support about 10% (300) of the college students for one semester each year. While the endowment is being raised over the next several years, Gary proposed a second (and final) challenge to raise one-time funds to support this growing program. He and Linda will match 50 cents on the dollar for the first \$50,000 raised, and George and Mary Sissel will do a similar match for the next \$50,000. Pledges must be made by 12/31/04, but payments may be made through 12/31/08. If this goal is met, Rob and Shirley Davis will add \$25,000 of their personal funds, and Associate Dean John Bennett and his wife Penny agreed to do the same. Rob also noted that the departments and programs will match gift support one to one with university funds, and that a portion of the engineering differential tuition income has been set aside to help grow the program. Rob noted that the college development efforts will focus more on major gifts and endowments

in the future, but that he supports the current challenge because the Earn-Learn Program is a high priority that i) supports students, ii) provides them with valuable learning experiences and contact with faculty, and iii) helps the departments and programs. Faculty and staff will be included in the challenge, and details on making pledges and payments will be sent.

4. **Earn-Learn Student** – Scott Enberg, a senior in Mechanical Engineering, shared about his experience in Spring 2004 as an Earn-Learn Apprentice and why it was valuable to him. Scott was the Lead Teaching Assistant for Computer-Aided Design and Fabrication under the direction of Professor Larry Carlson in the Department of Mechanical Engineering.
  
5. **Development Update** – Carolyn Whitehead, the CU Foundation’s Interim Vice President (since August 2004) for the Boulder campus, shared changes in the CU Foundation, including that Myrna Hall (the former VP for the Boulder campus) has moved to a more central role as Senior VP and Chief of Staff. Carolyn also reported on changes in Engineering Development. Marc Thompson resigned last month as Director of Development, and Alli Angulo did not return to her position as Development Officer after taking maternity leave last spring. Three new members joined the team in the past few months: Elise Patkay as Development Associate, John Quigley as Development Officer, and Rick Buckman as Senior Development Officer. Carolyn will oversee the team, which also includes Nancy Ollanik and Pat Sullivan, while there is a search for a new Director of Development. Information on the available position can be found at [www.cufund.org](http://www.cufund.org), and suggestions of potential candidates are encouraged.
  
6. **State Legislature & Higher Education** – Todd Saliman, former state representative and current Policy Advisor in the University of Colorado’s Office of State and Federal Government Relations, introduced current state representative Jack Pommer. Rep. Pommer noted that the total state budget of \$13 billion includes \$5.5 billion for the general fund, with the rest being mandated federal passthroughs such as highway funds. Much of the general fund, such as Medicare payments and K-12 education, is outpacing inflation, resulting in a reduction of state funding of higher education, to now only about 10% of the general fund. The state has a projected deficit of \$260 M for next year (due to the TABOR limit on spending and the mandated increase in K-12 funding). This deficit might be split between K-12 and higher education, as the constitutionality of amendment 23 (requiring increases of inflation plus 1% for K-12 funding) has been challenged. Another possibility is for the state to generate one-time revenue by selling its tobacco settlement, but it would not provide a long-term solution. Instead, TABOR reform is needed so that more tax revenue (or spending authority) is generated, but polls show that most citizens are not aware of cuts/issues and that TABOR reform would fail.

Rep. Pommer noted that enterprise status gives CU the ability to issue revenue bonds for buildings and removes tuition from the TABOR spending limit. However, the Governor’s view is that large tuition increases are widely visible to the public

whereas cuts to higher education have more narrow impact. He also does not want to raise taxes. Betsy Hoffman is working hard to show the value of higher education, but all other higher-education governing boards in the state are appointed by the Governor and so the heads of those institutions are less critical in public of the current status of state funding for higher education.

Rep. Pommer also expressed concern that the state trust fund for controlled maintenance had been eliminated. He noted that it will cost taxpayers more to maintain and replace aging buildings later, if we don't spend adequate funds to maintain them now.

Rep. Pommer also commented on the performance contracts that the state is negotiating with institutions of higher education. He said enterprise status may not lead to greater autonomy, but rather that the Governor may use performance contracts to exert greater control and gut core curricula. It also may mean that more public money is shifted from CU to smaller schools, causing further increases in CU tuition.

Scott Donnelly asked why not let CU go fully private now versus later, noting that we could then recruit more students paying nonresident tuition. Rep. Pommer said that he wants to see state support to continue so that Colorado kids can attend if qualified, even if poor. Vern Norviel also noted that state subsidy of higher education is a basic tenant of civilization, to educate the poorest students. Scott pointed out the pitfall of CU being caught in the middle (state support, but at a low level) when it should be like Stanford (private, with no state support) or U. Michigan (public, with high state support). There was discussion that CU is being used as a poster child for what is wrong with the state. There was also discussion of the importance of CU to attracting and retaining corporations in Colorado. Gary Jacobs noted that most of the voters in Colorado don't care about higher education, and that TABOR must be fixed.

7. **Breakout Groups** – Breakout groups met to discuss *State and Federal Support* (led by JoAnn Zelasko & Tim Fritz), *Outreach & Recruitment* (led by John Bennett & Jean Becker), and *Technology Transfer* (led by Stein Sture & Gary Jacobs). Their reports are summarized later.
8. **Capstone Student Project** – Dave Wolpoff, a senior majoring in Electrical Engineering, described his group's senior project, called 'Blimpage.' Blimpage is a modular, general-purpose drone controller for unmanned vehicles.
9. **Discovery Learning Student** – Nick Willett, a senior majoring in Mechanical Engineering, described his Discovery Learning Apprenticeship, under the direction of Professor Ken Gall. His project, for which he won the first-place award at the first-ever Discovery Learning Symposium last spring, involves the development of shape-memory polymers for biomechanical applications such as stents.
10. **Waterman Award Talk** – Professor Kristi Anseth, of the Department of Chemical & Biological Engineering, gave a lunch-time talk on her research in tissue engineering

for biomedical applications such as cartilage repair, replacement heart valves, and overcoming neurological disorders. Kristi won the 2004 Waterman Award from the National Science Foundation for this research.

**11. AES Department Update** – Professor Lee Peterson, the newly elected Chair of Aerospace Engineering Sciences (AES), provided an overview of the AES Department. AES has the highest national ranking and greatest external research funding among the six departments in the College. A significant portion of the faculty research takes place in four centers: BioServe Space Technologies, Center for Aerospace Structures, Colorado Center for Astrodynamics Research, and the newly formed Research and Engineering Center for Unmanned Vehicles. AES is also known for educational excellence. Its curriculum 2000 emphasizes hands-on laboratories and active learning throughout the undergraduate curriculum, making extensive use of the Integrated Teaching & Learning Laboratory. This curriculum is resource-intensive, and the faculty are considerably stretched due to a substantial increase in enrollments (doubling in the past eight years).

**12. Senior Project Team** – Lauren Kanner, a senior majoring in Aerospace Engineering, and her teammates described their senior project. It is titled Multidisciplinary University of Colorado High-Altitude Student Rocket (MaCH-SR1) and involves designing, building and testing a high-thrust engine that will be used for high-altitude delivery of research payloads.

**13. State & Federal Support** – Tim Fritz gave recommendations from the breakout group on State & Federal Support:

- *The Dean and faculty should focus on federal support, including travel to Washington, DC and large, interdisciplinary proposals and initiatives*
- *CU leadership should head efforts to increase state support, and EAC members should be kept informed*
- *College should communicate cooperative research and center opportunities to corporate members*
- *Link between corporate workforce needs and top-caliber talent from higher education should be emphasized*
- *Consider a legislative briefing on the College and include students*

**14. Undergraduate Outreach and Recruiting** – Jean Becker gave a summary of completed and ongoing efforts in K-12 outreach and recruiting of prospective students. These efforts in the past year have included hiring of a Director of Outreach and Education (Kristin Germain), creating a prospective-student database, surveying students who declined admissions offers, increasing contact with students and teachers, soliciting outside funding for new initiatives such as the Rural Engineering K-12 Program, and offering about 20 targeted programs and activities related to outreach and recruitment. Additional efforts underway include improving promotional materials, establishing an honors program, increasing scholarship funds,

and working with the campus administration on reduced tuition for students from neighboring states. Recommendations include

- *Develop PR strategy to market programs and include a catalog of successful alumni*
- *Improve the environment by increasing faculty diversity, including minority students in publications and outreach, and moving the DEAA photo wall*
- *Provide prospective-student contacts monthly to EAC/RDC members for calling*
- *Benchmark best-in-class universities*
- *Continue brainstorming with breakout group via email*

**15. Technology Transfer** – Gary Jacobs presented summary data from the CU-Boulder Technology Transfer Office. CU-Boulder still lags its peers in this arena (e.g., \$3.1 million revenue last year vs. \$5.3 million peer average), but performance metrics such as invention disclosures and intellectual-property revenue have risen steadily over the past few years. Recommendations include

- *CU's opening proposal to companies that might license intellectual property should not be offensive – consider hiring an individual with experience in such negotiations*
- *Develop an organized process for exploiting technology once it is developed and patented*
- *CU's legal expenditures are low (\$0.2 million) compared to peers (\$1.1 million) – use top firms*

**16. RDC Report** – Gary Anderson gave a report on the meeting that day of the Resource Development Committee. Concern was expressed about turnover in the development staff, and the need to rebuild relationships. Gary reported that \$95 K in current gifts, \$140 K in endowments, and an estimated \$750 K in endowment bequests had been raised to-date for the Earn-Learn Program from individual donors. It is less clear if the Earn-Learn Program is as good a fit for corporations. Gary also reported that Prof. Bernard Amadei made a good presentation on Engineering for Developing Communities and provided a wish-list for support. Recommendations include

- *Make a DVD to market the Earn-Learn Program*
- *Create a link for on-line giving*
- *Integrate Engineering for Developing Communities with the Dean's priorities*
- *Form a PR subcommittee for Engineering for Developing Communities*

**17. Campus Update** – Senior Vice Chancellor and Chief Financial Officer for CU-Boulder, Ric Porreca, made a presentation on CU-Boulder priorities and funding strategies. He noted that the campus is critical to Colorado's future. Priorities include enhancing quality, avoiding state budget cuts, gaining approval to raise tuition to meet needs and compete with peers, supporting outstanding faculty, attracting students with greater selectivity and diversity, and investing in the necessary infrastructure. Ric reviewed data showing that state support for higher education has

dropped from 20% to 10% of the Colorado general fund since 1990, that Colorado per capita personal income is \$2500 above the national average while resident tuition is \$1500 below the national average, and that the combined annual revenue (tuition, fees, state support, private giving) per student for CU-Boulder is the lowest among AAU public institutions. He presented a multi-year plan to bridge the resource gap, including increases in private fundraising and resident tuition. Ric also described Senate Bill 189 passed last year, which includes new performance contracts with the state (hopefully with increased management flexibility), vouchers from the state for undergraduate students and fee-for-service funds from the state for graduate/professional education, and enterprise status (removing tuition revenues from state TABOR limits, and authorizing bonding authority for academic facilities). He does not recommend that CU become private, as he is committed to public education and service. Instead, CU has the opportunity to be a national leader in higher education, if not overregulated by the state. Provost Phil DiStefano also spoke briefly, noting that higher tuition can help assure access and student quality through increased financial aid.

**18. Wrapup & Future Items** – Rob Davis reminded the group that the next meeting is 22 April 2005, and that the Engineering Awards Banquet would be that evening. He asked for recommendations for the next meeting, and they include

- *Provide feedback on prior recommendations, with a list of recommendations made and a list of actions taken and results achieved*
- *If time allows, include tours of facilities/programs on the agenda*
- *Continue with presentations by students and faculty*
- *Continue with breakout groups*
- *Leave time for discussion*

George Sissel made a personal plug for the value of retirement and opportunities to serve. He noted that he plans to work with the Boy Scouts Council of Denver after he is done with his responsibilities at CU.

**EAC members in Attendance:** J. Becker, K. Coyne, A. Dawson, S. Donnelly, P. Drew, F. Figueroa, T. Fritz, K. Gilles, M. Herriage, B. Irvine, G. Jacobs, F. Kitson, R. Kolibaba, R. Krebs, J. Liebman, C. Maher, V. Norviel, G. Sissel

**RDC members in Attendance:** E. Ablowitz, G. Anderson, M. Davis, A. Dawson, D. Hernandez, N. Joesten, K. Larson, J. Negler, L. Pinchuk, D. Richmond, A. Sanders, G. Smith, J. Stearns (visiting)