

Semi-annual Report: Progress on Recommendations From the 4/20/07 Engineering Advisory Council Meeting

College of Engineering and Applied Science Prepared 10/3/07 by Robert H. Davis, Dean & Tisone Chair

This report summarizes progress made on the recommendations from the 4/20/07 Engineering Advisory Council (EAC) meeting. The recommendations and other archived materials are at http://engineering.colorado.edu/overview/advisory_boards.htm.

1. College Update

There are several personnel changes of note in the past six months. Brian Argrow started as Associate Dean for Education in August 2007. Former Associate Dean John Bennett was appointed as Director of the Alliance for Technology, Learning and Society (ATLAS) for CU-Boulder, and is continuing his college leadership of the Engineering Fellows Program and the Rural Engineering Education Program as Faculty Director of Educational Initiatives. Chris Bowman started as Associate Dean for Research in August 2007. Former Associate Dean Victor Bright has been appointed as Faculty Director of Discovery Learning for the College. Finally, John Mabley stepped down as the Senior Director of Engineering Development in May 2007. Art Dawson has led the engineering development team in an interim role, while also overseeing the campus biotechnology fundraising efforts.

There are several improvements in college performance measures. Research grant awards in FY07 (7/1/06-6/30/07) are up 16% over FY06. Freshman applications for Fall 2007 are up 18% over Fall 2006, and freshman enrollments are up 12% over this period, with increases in both quality and diversity. The number of PhD degrees granted increased to 92 in FY07 from 76 in FY06.

2. Strategic Planning

A final draft of the campus *Flagship 2030 Strategic Plan* has been completed and is posted at <http://www.colorado.edu/chancellor/flagship2030>. Some key themes of this plan are:

- Talented & diverse students
- Increased faculty & staff
- Residential academic programs
- Skills & experiences
- Global perspectives
- Regional partnerships
- Improved physical plant
- Year-round calendar

The College of Engineering and Applied Science is in its final year of its Strategic Plan for Excellence 2007-2008. This plan, as well as annual progress reports, may be found at http://engineering.colorado.edu/facultystaff/Strategic_Plan.htm. A new strategic-planning process, *Engineering 2020*, will be undertaken this year.

3. Biotechnology Initiative and Building

The biotechnology building did not receive state funding for FY08, due to the glut of other capital projects in the queue. However, a lead gift of \$20 million by Professor Marvin Caruthers was announced in September 2007, and several other substantial gifts are under cultivation. State approval and funding will be requested again in Spring 2008. Responses to specific recommendations are given below.

Form an advisory board, including industry representatives – the Faculty Director of the Colorado Initiative in Molecular Biotechnology (CIMB), Professor Leslie Leinwand, has established an external Resource Development Committee, which is working to secure private funding for the building and an operating endowment. Members include Steve Brett, Jane Butcher, Ginger Graham, Jim Linfield, Larry Gold, Marv Caruthers, Leslie Leinwand, Don Elliman and Art Dawson. Informational dinners, with Nobel laureate Tom Cech as the featured speaker, have been held in Denver, New York and Silicon Valley. A scientific advisory board will be formed in 2008.

Involve all undergraduates in research – Our current objective is to involve each undergraduate in at least one semester-long or summer interactive learning experience. These experiences could be research, service, or an internship.

Articulate what differentiates the CU biotechnology initiative from others – Promotional materials for CIMB completed in August 2007 describe this differentiation. Besides a unique combination of faculty expertise, the initiative emphasizes interdisciplinary collaboration in research and education, brings together a breadth of scientific and engineering disciplines, and awards internal grants to collaborative teams.

Make a sales pitch on how a donation to the biotechnology building facilitates a concept – The promotional materials referred to earlier include a special focus on how the building will be designed and constructed to facilitate a collaborative environment. We emphasize the success of the Discovery Learning Center and the idea that we have learned much about designing facilities to support collaboration since its construction.

4. Subcommittees

Progress made on recommendations from the three subcommittees of the EAC is described in the following subsections.

4.1 Education and Outreach Committee (EOC)

The Honors Program has added 45 first-year students to go along with its 24 second-year students. Honors students as well as Engineering Fellows will be invited to participate in the Industry Night with EAC members, 5:15-7:00 PM on 10/18/07 at John Bennett's home.

Relationships with the Denver School of Science and Technology and the Lafayette Centaurus Pre-Engineering Academy continue to flourish. Fourteen PEA students enrolled in our college this fall, representing a 100% yield of those admitted, and four received the inaugural I-CUE scholarships. About 60 students in the first DSST senior class have selected the engineering/physical-science emphasis, and our college continues to teach engineering elective courses at DSST.

Responses to specific recommendations made at the 4/20/2007 meeting are given below.

The MEP and WIEP spring event will be planned at the Fall EAC meeting – MEP and WIEP Directors favor a spring event similar to the fall Industry Night, but with student invitees from the MEP and WIEP programs. However, there is concern that it would add to a full agenda in spring (dessert reception, EAC meeting, awards banquet). Associate Dean Argrow proposed that diversification of the fall event might be an option. However,

after discussion with former Associate Dean John Bennett, both agree that the purpose of the fall Industry Night event is to allow the College's top students, those in the Engineering Fellows and Honors Programs, to mingle with the EAC members and industry representatives. It is suggested that there be more discussion of the purpose and necessity of a spring event, considering the impact upon EAC members' schedules from an additional EAC function that would occur a day in advance of the meeting. Possible alternatives include holding the MEP/WIEP event on campus during lunch or late afternoon of the EAC meeting.

EAC members are sought who are willing to speak to the MEP leadership class – David Aragon welcomes opportunities to schedule EAC members to speak to the leadership class, and encourages members to inform him when opportunities arise. Such interaction with EAC members would be of great benefit to the course content. The Leadership class meets weekly on Tuesday afternoons (fall and spring). Interested EAC members are encouraged to contact Dave at 303-492-2944 or aragond@colorado.edu.

All incoming engineering freshmen will be required to take an online calculus pretest; those students who score below a certain threshold will be advised to take the 2 semester calculus 1 class – This past summer, incoming freshmen were instructed to take a mandatory, online Calculus Pre-Test prior to fall semester registration on 7/25/07. 93% of the students complied. Based on their scores, students were directed (though not required) to enroll in the proper level of calculus. 88% of the students who took the test were deemed ready for Calc 1. 10% were instructed to enroll in Calc 1 with Algebra (i.e., the two-semester sequence). 2% scored sufficiently low that they were encouraged to enroll in algebra and trigonometry, before attempting calculus. Several faculty members in the Department of Applied Mathematics believe the students enrolled themselves in the appropriate level of math class, more so than in the past. We plan to continue this math assessment in the future, and we are investigating ways to address the needs of students who may be ready for higher levels of calculus.

At the fall EAC meeting the EOC will take up the topic "is there a need for biology as a core class for all engineering?" – An ad hoc committee that represents the College's departments and programs may be formed, pending the recommendations that may follow the upcoming subcommittee discussion. In AY03-04, the College Committee on Bioengineering considered this possibility, and recommended that a decision to require biology as a core requirement be left to each department.

A survey of EAC members about the Honors Program is to be sent out electronically – A draft survey was composed by Honors Program Director Scot Douglass and circulated to the subcommittee for comment. Scot is working with Terry Mayes, Director of Academic Programs and Assessment, to prepare a final survey for distribution. The goal is to have the survey posted online prior to the fall meeting.

Pilot Rural Engineering program and propose 2 + 2 program to Mesa State – The necessary funds have been raised to pilot the Rural Engineering Education Program starting this year. It will be coordinated by the Western Colorado Math and Science Center in Grand Junction, CO, and will be a partnership between our college and the local school district. The plan is to place 3-6 CU students in Grand Junction starting with the Spring 2008 semester.

A formal proposal for a “2 + 2” transfer program was submitted by our college leadership to Mesa State College (MSC) in summer 2007. However, Mesa State has responded that it is seeking to establish a 4-year engineering program for students in residence in Grand Junction, with the idea being that the degree be issued by one of the front-range colleges (CU, CSU or CSM). With encouragement from the CU President and Chancellor, a revised proposal has been submitted wherein students from MSC would enroll in our college after two years and we would hire faculty to teach junior and senior classes at MSC, provided that there is a sufficient number of qualified students enrolled to provide for a high-quality academic experience.

4.2 Research and Corporate/Government Relations Committee (RCRC)

Research grant awards increased to \$40.3M in FY07 from \$34.8M in FY06. The number of proposals submitted increased from 478 to 507 over this same period. There is a broad distribution of funding sources, led by \$10.1M from the National Science Foundation and \$9.5M from industry. The latter represents a 37% increase in industry funding from \$6.9M in FY06. Major new activities include the DARPA-funded center on Integrated Micro/Nano-Electromechanical Transducers (iMINT) and the Colorado Center for Biorefining and Biofuels (C2B2), both with industrial sponsors. Remarkably, three out of four proposals submitted by our college to the National Science Foundation for Engineering Research Centers were selected for full proposals (due 12/10/07), whereas only 34 of 143 proposals were chosen nationwide.

Responses to specific recommendations from the 4/20/07 meeting are given below:

Provide Breakdown of Research Funding by Source at the Fall 2007 EAC Meeting – The Associate Dean for Research (ADR) has worked with engineering college staff to break down funding sources in a variety of manners. For FY 2006 and FY 2007 the new grant awards received by the Engineering College have now been subcategorized both by department and by funding agency. A complete report on this information will be provided at the upcoming EAC meeting; however, one interesting fact is that in FY 2007 NSF was the largest source of funding in the college at 25%, followed closely by industrial funding at 23%. The third largest funding agency was the Department of Defense at 10%. Only one department had a majority of its funding derived from a single source, with most departments having quite diverse funding sources.

TTO and the College need to consider how and who should market IP-discussions with campus administration on the topic is encouraged – To date, no discussions of this nature have occurred. Prior to the upcoming EAC meeting, the ADR will take the lead in meeting with the new Associate Vice Chancellor for Research and the Technology Transfer Office to develop ideas on how college and university IP could be better marketed.

RCRC members will help with the job description, skill requirements and identification of appropriate candidates for the federal advocate position – Several members of the RCRC have been active in setting up several meetings between the ADR and their respective federal advocates. These meetings are primarily to occur October 11 in Washington, D.C. Following these meetings and prior to the October 19 EAC meeting, a draft position description will be developed for discussion at the EAC meeting. In addition to the federal advocate position, the College has established a new Coordinator of Research Activities staff position, where the primary role of this individual is to facilitate improved research funding and performance by college faculty. This position is currently open and applications are being evaluated.

4.3 Resource Development Committee

Since the 4/20/07 RDC meeting, several major fundraising milestones were achieved. The College received two major pledges totaling \$2.3 million. One of the donors pledged an additional \$1.5 million to another campus initiative, largely due to cultivation efforts from our college. The campus received a \$20 million gift to support the new Systems Biotechnology Building (to be renamed the Jennie S. Caruthers Biotechnology Building) from CU Distinguished Professor, Marvin Caruthers. This gift has already encouraged subsequent donors whose verbal commitments total more than \$5 million.

Since the Spring 2007 RDC meeting, the Development Team completed an internal restructuring effort to enhance its focus on major donor prospects (people, companies and foundations capable of making gifts of \$50,000 or more). Each development officer created a personal plan identifying a "Top 20" list of prospects and matched each of them against specific fundraising goals for the college. Those goals for the 2007-2008 fiscal year include Faculty Support (Chairs, Professorships, Fellowships), Student Support (Fellowships, Apprenticeships, Scholarships, MEP, WIEP), Hands-On Learning (ITLL, Solar Decathlon, Engineering for Developing Communities, etc.) and the Dean's Fund for Excellence. With I-CUE covering most of the "people" support areas, a special emphasis will be placed on the I-CUE challenge, including presenting it to all major donor prospects, the letter-writing campaign suggested by the RDC in Spring 2007, and as an option in the script for the student callers staffing the Annual Campaign.

Responses to specific recommendations from the 4/20/07 RDC meeting are given below:

Development team to engage RDC members in I-CUE fundraising – A letter was sent to RDC members in June suggesting several levels of support they could provide to their development team liaison to further the I-CUE fundraising cause. Response was sparse, and some of those who did respond suggested that their time was better spent helping to identify and cultivate major donor prospects. This response is a reminder that we must carefully blend the needs of the College with the expectations of our volunteers, which should be a primary discussion point for the RDC at its next meeting.

Send an I-CUE appeal letter from the Dean to a select list of alumni in June – This action item was delayed due to staff turnover. A letter was sent in September to approximately 500 alumni who have given \$500-5,000 over the last five years. The intent is to use the incentive of the matching funds to motivate people to raise their giving levels to \$1,000/yr or higher. Preliminary responses will be reviewed at the 10/19/07 RDC meeting.

Send the I-CUE letter to a broader distribution later in the year – A flier on I-CUE was sent in September to approximately 2,500 alumni who are age 70, or above, along with a description of how they can make tax-free IRA gifts.

Consider regional events in support of I-CUE – An alumni lunch with the Dean was held in June in the Los Angeles area, at which I-CUE was promoted. However, the development team has concluded that a more effective approach is a combination of mail/phone appeals and individual cultivation. Alumni events will be expanded under the leadership of Carrie Goldin, our new Director of Alumni Relations, with the focus more on building relationships with alumni (especially younger ones) than on direct fundraising. Regional events in Houston and Washington, DC will be held this October.