SUMMARY AND RECOMMENDATIONS FROM THE 10/24/2014 MEETING OF THE CU-BOULDER ENGINEERING ADVISORY COUNCIL

This report provides a summary of the 10/24/2014 meeting of CU-Boulder Engineering Advisory Council (EAC), with key recommendations collected in *italics* near the end of the report. This summary, presentations, prior reports and other EAC information are posted on the EAC website at [http://www.colorado.edu/engineering/about/engineering-advisory-council](http://www.colorado.edu/engineering/about/engineering-advisory-council)

1. **Strategic Progress**

   *People:* Dean Davis updated the EAC on the College’s progress toward the goals established in the strategic plan. Undergraduate and master’s enrollments are ahead of plan, while PhD enrollment is behind the plan’s projection. Student persistence and graduation rates are improving, with about 85% of freshmen enrolled in the College returning for their 2nd fall semester. About 60% of our freshmen graduate from our college within 6 years, and 75% graduate from CU-Boulder in 6 years, the highest persistence rate on campus. Of those who do graduate from Engineering, 50% do so within 4 years, and 93% within 5 years – part of the delay is due the combined BS/MS students who receive both degrees in 5 years.

   *Places:* The *Idea Forge* in the *Fleming Law Building* opened in September 2014. Classes are now being taught and the Durning Machine Shop has been moved to the Idea Forge. Additional teaching space in the *Biotech Building* will be finished in November 2014, and the 5th wing is expected to be completed in 2016. The *Sustainable Energy and Environmental Complex (SEEC)* is under construction, and faculty from the Environmental Engineering program are expected to move into new offices in Fall 2015; additional laboratory facilities will be completed in early 2016. The new *Aerospace Building* has moved up on the State of Colorado’s funding list, with design expected to start in 2015 or 2016 and construction to follow based on state appropriations. The space formerly occupied by the Chemical and Biological Engineering Department in the *Engineering Center* has been selected by campus for major renovation. This work will start in 2015 and provide re-purposed space.

   *Programs:* Last year, the College began to offer a Bachelor of Arts in Computer Science degree in partnership with the College of Arts and Sciences. This new degree program already has over 450 students. *Catalyze CU-Boulder* is a cross-campus business accelerator that was launched by our college last summer with 6 teams completing an 8-week course that provided mentoring and business advice in a co-working space to enable these students to take their start-up businesses to the next level; it will continue in future summers in the *Idea Forge*. The *Engineering Leadership Program* now includes over 150 students and expanded its course offerings. There have been several special speakers who came to campus to address these students. The *General Engineering Plus* degree has 42 students in its second
year, including 27 first-year students. And, the Pre-engineering Program has over 600 new freshmen and has already brought over 90 students into the College after satisfactory completion of their first year science and math courses.

2. **Research Update** – Associate Dean of Research, Scott Palo, was introduced as a new member of the Dean’s staff, and updated the EAC on research activities, funding and progress toward the college’s strategic goals. Research funding was $73 million for FY14 and continued its upward trend, increasing 70% since FY08. Small research awards less than $150K continue to dominate the portfolio, and ADR Palo outlined several strategies that he plans to implement to improve success on larger funding pursuits. These new strategies include early identification of large proposal opportunities, cross-department cooperation and coordination, staff and funding support for large proposal pursuits, and additional training for faculty.

3. **Departmental Presentations on Strategic Progress and Planning** – Each of the six department chairs in the College presented slides that detailed his or her department’s progress toward meeting the goals of the College’s strategic plan, assessment of strengths and weaknesses in the department, goals for 2020+, and strategies to meet those goals. While all chairs embraced the goals of the strategic plan, some were more confident than others in meeting the goals for enrollment, faculty growth and research funding. Non-incremental strategies to meet the goals include the *Space Grand Challenge* of campus, a new *Aerospace Building*, new degree programs, large research centers, a co-op program, and on-line learning.

4. **Catalyze CU-Boulder Student Presentations** – Assistant Dean Doug Smith introduced Catalyze CU-Boulder as a cross-campus summer accelerator that took 6 teams through extensive mentoring and business training aimed at launching their business to the next level. Three teams presented their companies and business propositions to the EAC: SolVia Solar will use solar powered pumps for irrigation in Nicaragua and transform the lives of farmers who currently use diesel powered pumps; Dynamic Measurements showed how to fit prosthetic limbs more effectively with the use of ProPS; Mallinda Plastics showed how a new malleable plastic polymer can be used for body armor, sports equipment and orthotics.

5. **Idea Forge Tour** – Following the lunchtime presentations, the EAC removed to the *Idea Forge* for a tour of the newly renovated facilities by Daria Kotys-Swartz. The EAC was able to see the Durning Machine Shop, the makerspace, classrooms, teleconference room and the RECUV flying bay.
6. **BOLD and Diversity Update** – Assistant Dean Sarah Miller presented a renewed vision and mission for the BOLD center and our college. The College seeks to graduate outstanding students that mirror the diverse population of Colorado. The College has a host of outreach and engagement activities that nurture and recruit future diverse students. Solid gains continue to be made on diversity statistics, performance and graduate rates.

7. **Chancellor’s Update** – Phil DiStefano, Chancellor of CU-Boulder, shared his goals for the Boulder campus around student success, enhancing the reputation of the University and diversifying revenues for our campus. He lauded the growth of the College of Engineering and Applied Science and thanked the EAC for their continued support of the College and campus. He went on to speak of the *Grand Challenge* in which the entire campus will rally around the theme of *Space*. He is intending this challenge to enable CU-Boulder to differentiate itself from other institutions, and build on the strengths of our campus by becoming the top university in space science and applications. He noted that a top priority for the challenge, and for the campus, is the proposed *Aerospace Building*.

8. **Breakout Discussion Reports** – Four breakout groups met for brief discussion of how our college, alumni and industry could better engage with certain campus and college programs, as listed below along with key recommendations in *italics*.

*Global Engineering* – Global engineering is one of the key values articulated in our *Engineering 2020* strategic plan. Recommendations from the breakout group include:

1. Brand CU for its global engineering, capitalizing for example on our Global Engineering Residential Academic Program (RAP).
2. Focus our relationship on a few countries of mutual benefit, and take advantage of relationships with companies that have global opportunities in these countries.

*Catalyze CU-Boulder* - Students made powerful emotional connections with EAC members. The 50:50 mix of engineering and non-engineering students is about right. Students with *Catalyze* experience are differentiated and valuable hires. Key recommendations include:

3. Invite industry and alumni to visit as prospective sponsors.
4. Tie Catalyze CU-Boulder to senior capstone projects as a source of projects and industry sponsors, and consider a full-year program.
5. Communicate the different college programs and how they fit together with a diagram.

*Grand Challenge* – The Grand Challenge is expected to include research, education, and industry. Key recommendations include:
6. Identify three key initiatives at the intersection of CU and industry competencies, with technology, policy, marketing and public opinion components. Examples might include drones, cybersecurity, natural disaster data, sensors, and technology readiness.

7. Move the Aerospace Building forward as a top campus priority.

8. Promote a professional aerospace master’s degree, offered on-line.

Idea Forge - EAC members were “blown away” by the Idea Forge and what it can do for students. Recommendations include:

9. Link the Idea Forge to industry, and encourage industry to pitch projects and to support capstone projects that continue into Catalyze CU-Boulder and perhaps even use company facilities or provide an industry mentor in residence at the idea Forge.

10. Create a culture of caring, professionalism and safety, while also valuing creativity and a focus on outcomes.

9. Executive Session and Wrap Up – The EAC members met in executive session and then reported back to the Dean with the following observations and recommendations:

11. The EAC is highly appreciative of all department chairs presenting their plans, but concern was expressed that not all are comfortable with and have ownership of their goals and plans. A suggestion was to consider a department “head” model instead of a rotating “chair” model, which might provide more continuity in setting and pursuing goals, and another suggestion was for the dean’s office to provide more help to the departments in setting and achieving goals.

12. A gap analysis was recommended, which would focus on what is missing for the departments to achieve their goals and could be presented at the next EAC meeting.

13. It was also recommended that we recruit faculty at all levels, and not just junior faculty.

10. Upcoming Meetings – Upcoming EAC meetings are scheduled for 24 April 2015, 16 October 2015, and 22 April 2016, all on Fridays and in Boulder.