SUMMARY AND RECOMMENDATIONS FROM THE 10/16/2015 MEETING OF THE CU-BOULDER ENGINEERING ADVISORY COUNCIL

This report provides a summary of the 10/16/2015 meeting of CU-Boulder Engineering Advisory Council (EAC), with key recommendations collected in italics at various locations in 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.

1. College Update – Dean Davis provided an update on several college activities:
   a. **EAC Member Recognition and Organizational Updates** – Dean Davis recognized several EAC members for awards and service, and introduced new college leaders (see presentation).
   b. **Undergraduate Enrollment Update** – Dean Davis presented data on undergraduate enrollment from the fall 2015 census showing it has increased by 42% since 2007 and now numbers over 4260 students; female enrollment is up 90% in that same period, and women are 32% of the incoming class; underrepresented minority (URM) student enrollment is up 145% in the same period and is 18% of the incoming class. The quality of incoming students has continued to improve, with ACT scores above our peer schools and on par with our aspirational schools.
   c. **Undergraduate Persistence** – Dean Davis presented data related to student persistence and retention, showing a second-year persistence rate in our college of 86%, compared to 80% six years ago. The six-year graduation rate (standard metric for higher education) is 60% in our college, up from 55% several years ago but lower than our goal of 70%.
   d. **Graduate Programs** – Dean Davis reported that graduate student enrollment has increased by 48% since 2007. Keith Molenaar, Associate Dean for Graduate Programs, addressed the need to further improve graduate student recruitment, especially for PhD students, and to provide for program innovation and community enrichment.
   e. **Research Update** – Scott Palo, Associate Dean for Research, noted that research awards for FY15 are a record $83 million - up $10 million over the previous year. Four departments in the College are among the top five departments on campus, and all six of our departments are among the top ten departments on campus, for research awards in FY15. Scott also provided an update on the Grand Challenge – *Our Space, Our Future*. The two initial key elements of the Grand Challenge will involve our college: IRISS – using remote sensing to integrate air and space, and Earth Lab, using data observed from space for earth purposes.
   f. **Program and Places Updates** – Dean Davis reported on progress with several new majors and minors that have been established in the past couple of years. Space for growth is expected from the Sustainability, Environment and Energy Complex (SEEC) to be completed spring 2016, a fifth wing added to the Biotechnology Building (construction to start spring 2016), renovation of the former ChE wing of the Engineering Center during 2016-2017, and construction of an Aerospace Building (design to start in summer or fall 2016).

2. Student Persistence – Meeting the Challenge of Retaining Students in Engineering – Dean Davis presented some additional facts on student persistence and highlighted findings that 59% of students who received a D, F, or W in Calculus 1 left the college within 2 years and that 77% of students who enroll in the college graduate from CU-Boulder (any school or college) within 6 years—approaching the Chancellor’s goal of 80%. Assistant Dean Mary Steiner reported on progress toward recommendations made in 2012 by a Blue Ribbon Panel of the EAC to improve student persistence,
with almost all aspects of the EAC recommendations implemented. The EAC then broke into five discussion groups, which reported out to the entire group with the following recommendations:

(i) Gather comparable data from peer and aspirational colleges on student persistence and examine best practices.

(ii) Let students know where they stand in the gateway classes and make clear paths to help.

(iii) RAPs and peer mentoring have proved successful—do more of them. Increase engineering density in dorms that are not RAPs, to provide engineering communities.

(iv) Mandate math course assignments based on math proficiency tests.

(v) Make Orientation Week a big deal for the College, and use it to prepare students for time management and freshman perception of workload.

3. Advancement Team Report – Deb Coffin was introduced as the new Vice Chancellor for Advancement at CU-Boulder, and Anne Shoup as the new Assistant Dean for Advancement in the College of Engineering and Applied Science. Deb updated the EAC on her organization and philosophy of development and alumni relations. She emphasized her 15-year commitment to CU-Boulder and collaborative style of management. Anne reported on fund-raising results for the College for FY15 of almost $10 million and the big impact that our corporate and foundation partners have on the College.

4. GOLD Board – Amy Kramer, ChE ’06 and Co-Chair of the GOLD (Graduates of the Last Decade) board, presented the board’s mission and strategy to recognize the accomplishments of recent graduates and give them opportunities to be engaged in the College. Recommendations from the EAC included:

(i) Keep former GOLD members engaged, such as mentoring young alumni and participating in career fairs or presentations.

5. Student Persistence – Provost Russ Moore presented an update on the Chancellor’s goal to graduate 80% of incoming freshmen within six years by 2020. Russ described the difficult balance of retention and attracting out of state and A&S students whose tuition helps fund the campus. He also reported that, although the engineering RAPs (Residential Academic Programs) have been highly successful for student retention, not all RAPs have demonstrated that same success and have additional costs that are absorbed by the campus. Hence, he said there us a moratorium on new RAP’s and restructuring is needed.

6. Recruiting Outstanding and Diverse Students – Assistant Dean Sarah Miller described the success of the current recruitment program in light of the extraordinary improvement in gender and URM diversity over the past few years, and Amanda Parker presented the key elements in the high-touch recruitment strategy. Chris Anderson presented a new strategy for recruiting from community colleges in Colorado. Recommendations from the EAC breakout groups are:

(i) Create a Mocktail-type event for diverse prospective students to feel ‘like they could see themselves here.’

(ii) Map out a clear route for students to go from high school to community college (CC) to CU Engineering. Should we look at CCs outside of the metro area?

(iii) Create an emotional connection and differentiators for students to come to Boulder, like Space Grant and the Be Boulder campaign, especially for out-of-state students.

(iv) Houston Jr. Achievement used a pre-job fair to create interest in engineering careers by having engineering employers present examples of what engineers do—create something similar at CU-Boulder and use GOLD alumni.

(v) Provide more scholarships.
7. **Preparing Students to be Global Leaders** – Marie Pecoraro presented an update on the Business Minor, which currently has 750 students total and 130 engineering students. The program is highly valued by the industry partners who are sponsoring it (Arrow, P66, SpectraLogic, Zayo and Ball), and by the students who have completed the program. The biggest barrier is arranging the students’ schedules to make it work. Christy Bozic presented an update on the undergraduate Engineering Management program, which currently has almost 670 course enrollments per year. Both programs are focused on creating ‘T-shaped’ professionals who are capable of technical excellence and collaborative cross-discipline behavior. Students from both programs testified to the enrichment provided by the programs. Key findings from the breakout groups include:
   (i) **Engineering economics should be required of all engineering students.**
   (ii) **Combine business and legal training as an elective.**
   (iii) **Allow students to use business and management courses for social science electives.**
   (iv) **Provide business minor courses in summer session or virtually.**
   (v) **Provide early advising so that students have maximum flexibility to accommodate class schedules and see the value in their offerings.**

8. **Executive Session and Wrap-up** – Feedback provided to the dean is that the college is doing well and the day’s meeting was engaging and effective. Recommendations include:
   (i) **Send a little homework or reading materials in advance of the EAC meetings.**
   (ii) **The breakout concept was good, but pick fewer topics (2 vs. 3), with longer breakout sessions.**
   (iii) **At the spring 2016 meeting, do a deeper dive on student persistence, including causes of loss and results of exit interviews.**
   (iv) **Find ways to keep EAC and GOLD members engaged when their terms end.**

9. **Upcoming Meetings** – The next EAC meetings will be 4/22/2016, 10/14/2016, and 4/28/2017 in Boulder.

10. **EAC Members in Attendance** – Dana Andersen, Scott Donnelly, Pam Drew, James Gallogly, Lisa Glatch, Carin Knickel, Chakib Loucif, Mike McAtee, Jo Anne Miller, John Mollenkopf, Jeff Osterkamp, Joe Pettus, Jeff Richardson, Nathan Seidle, Ali Siahpush, Doug Smith, Ashok Srivastava, Tony Vento and Mike Wirth. Emeritus member George Sissel also attended.