THE UNIVERSITY OF UTAH

February 3, 2015

Ruth V. Watkins
Senior Vice President for Academic Affairs
205 Park Bldg.
Campus

RE: Graduate Council Review
Department of Civil & Environmental Engineering

Dear Vice President Watkins:

Enclosed is the Graduate Council's review of the Department of Civil & Environmental Engineering. Included in this review packet are the report prepared by the Graduate Council, the Department Profile, and the Memorandum of Understanding resulting from the review wrap-up meeting.

After your approval, please forward this packet to President David Pershing for his review. It will then be sent to the Academic Senate to be placed on the information calendar for the next Senate meeting.

Sincerely,

David B. Kieda
Dean, The Graduate School

Encl.

XC: Michael Barber, Chair, Department of Civil & Environmental Engineering
Tatjana Jevremovic, Director, Nuclear Engineering Program
Richard B. Brown, Dean, College of Engineering

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The Graduate School – The University of Utah

GRADUATE COUNCIL REPORT TO THE SENIOR VICE PRESIDENT
FOR ACADEMIC AFFAIRS AND THE ACADEMIC SENATE

September 29, 2014

The Graduate Council has completed its review of the Department of Civil and Environmental Engineering. The External Review Committee included:

Tunc Aldemir, PhD
Professor and Chair, Nuclear Engineering Program
Department of Mechanical and Aerospace Engineering
Ohio State University

Steven A. Margulis, PhD
Professor and Vice Chair of Graduate Studies
Department of Civil and Environmental Engineering
University of California, Los Angeles

Charles J. Werth, PhD
Professor and Associate Head
Department of Civil and Environmental Engineering
University of Illinois, Urbana-Champaign

The Internal Review Committee of the University of Utah included:

Keith Bartholomew, PhD
Associate Professor of Urban Planning
Associate Dean, College of Architecture + Planning

Teneille R. Brown, JD
Associate Professor
S.J. Quinney College of Law

M. Kim McCarter, PhD
Professor
Department of Mining Engineering

This report of the Graduate Council is based on the self-studies submitted by the Department of Civil and Environmental Engineering and Nuclear Engineering Program, the reports of the internal and external review committees, the OBIA profile, and the Department Response letter dated July 16, 2014 in response to the internal and external review committee reports. The dean of the College of Engineering submitted a response following the Graduate Council's discussion and approval of the report.

DEPARTMENT PROFILE

Program Overview

The Department of Civil and Environmental Engineering (hereafter the Department) has a long history at the University of Utah, beginning as a program within the Department of Mining in 1891 and becoming a department in 1919. It is currently one of seven departments within the College of Engineering. The Department self-study states that the Department is "committed to educating engineers on how to 'imagine, innovate, design and build' projects and to provide long-term solutions for both the developed and the developing world." The Department offers programs leading to BS, MS, and PhD degrees, and its faculty and students conduct research across a wide swath of engineering specialties, including structural, earthquake, environmental, water resource, construction materials, geotechnical, nuclear, transportation, engineering management, and water, energy, and infrastructure sustainable-engineering. As a result, the Department provides faculty and students with the space to explore interdisciplinary engineering solutions demanded by a rapidly changing world, including aging infrastructure, growing populations, climate change, and connected ecosystems.

The Department also contains a small but expanding Nuclear Engineering Program that was established over 40 years ago and was initially administered by the Department of Mechanical Engineering until 1997. At that time, it moved to the Department of Civil and Environmental Engineering. The Nuclear Engineering Program currently shares administrative support with the Department, but maintains a separate budget and curriculum.

As of Fall 2013, there were 17 full-time and 1 part-time faculty in the Department, evenly distributed among full, associate, and assistant professors. Since the time of the review, three additional faculty members have been hired: Dr. Luther McDonald, Assistant Director of the Nuclear Program; Dr. Azaree Lintereur, assistant professor in the Nuclear Engineering Program; and Dr. Dan Fagnant, assistant professor in the Transportation area. The most notable change in the Department is expanding student enrollment since the previous review in 2006-7. Students entering the BS program increased from 130 in 2006 to 250 in 2012; those entering the MS program increased from 25 in 2006 to 32 in 2012; and those entering the PhD program increased from 4 in 2006 to 8 in 2012. The Nuclear Engineering Program has also witnessed similar growth, with those awarded the undergraduate minor increasing from 0 in 2011 to 10 in 2013; those awarded the MS degree increasing from 1 in 2007 to 6 in 2013; and those awarded the PhD increasing from 0 in 2007 to 3 in 2013. Other impressive achievements since the previous review include the expansion/renovation of a $5.5 million facility, strong faculty hires at junior and senior levels, and increased gender equity and racial/ethnic diversity among its faculty and students

Faculty

The faculty of the Department is committed to the excellent and innovative education of its undergraduate and graduate students, and has maintained this charge through recent turnovers. Since the previous review, the Department has hired a new Department Chair, Michael Barber, and a new Head of the Nuclear Engineering Program, Tatjana Jevremovic (Dr. Jevremovic has joint 0.5 FTE appointments in the Civil and Environmental Engineering Department and the Chemical Engineering Department). In addition, the Department has hired 5 tenure-track faculty members and 2 career-line faculty members. During the same period, the Department has had 1 retirement and 6 faculty members leave the University. Overall, the faculty has brought in considerable external funding amounting to a total of $62,475,657 in the period between 2007 and 2013. The faculty has also won numerous University teaching awards, including the University Distinguished Teaching Award (Evert Lawton, 2012) and the University of Utah Early Teaching Award (Steven Burlan, 2011). The quality of faculty instruction is further underscored by the external reviewers, who report that undergraduate and graduate students praised the faculty for their accessibility and excellent mentoring.

The external reviewers also report that the assistant professors they met seemed actively engaged in research and interested in building research groups. However, they also reported that the faculty expressed a need to clarify the criteria for evaluation and support at all levels. For example, one junior faculty member commented that it would have been helpful to have advice from the third-year review communicated after the first year to maximize potential for tenure. They also reported that several mid-career and late-career faculty members had stopped bringing in research funds and rarely published in peer-reviewed journals. It was suggested that research inactive faculty might have a negative impact on morale, and that finding ways to reengage them with research or to shift their duties to increased teaching and service might be a solution. Finally, the issue of the Dean of Engineering and the Department Chair measuring faculty performance according to PhD production rather than undergraduate and MS degree production warrants further scrutiny and possible conciliation. While the external and internal reviewers recommend that a bias toward funding and producing PhDs might not serve the best interests of the Department and students, the Department's lengthy and adamant response is that this perceived bias toward PhD production does not fully reflect the Department's position that "an integrated education and research program is the primary goal" and that, moreover, an emphasis on PhD education and production remains the means by which programs are ranked, external funding is obtained, and cutting-edge knowledge is transmitted to undergraduates.

Students

The growing number of students enrolled in the Civil and Environmental Engineering Program and the Nuclear Engineering Program attests to the success of the Department in student recruitment, although the external reviewers urge the Department to look more closely at the retention rate. For example, the Department has significantly expanded student enrollment since the previous review, with the number of students entering the BS program increasing from 130 in 2006 to 250 in 2012. However, the retention rate may be of concern: the number of BS degrees awarded was 76 in

2007 and 71 in 2013 – despite the spike in number of entering students. While the challenge of retaining undergraduates with family commitments is not unique to this Department at the University of Utah, the external reviewers encourage the Department to compare itself against peer institutions to determine whether more proactive measures are needed to retain "high risk" undergraduate students.

The Department has a clearly articulated approach to student recruitment at the undergraduate level in which outreach is conducted at local middle and high schools as well as other institutions of higher education within the state. This undergraduate recruitment is bolstered by a system of close advising and mentoring once the student is admitted. For example, the Department takes advantage of the University's Mandatory Advising Program (MAP), which requires freshmen to meet with an academic advisor before being able to register for their second semester, a procedure that is repeated during their sophomore year and before graduation. Undergraduates are also assigned a faculty advisor who assists with career goals.

At the graduate level, recruitment begins during the Department's undergraduate program through the Director of Graduate Studies, and extends out of state when faculty reach out to potential students at national and international conferences. The recruitment of graduate students appears to be effective, and the Department attracts high quality students with an average GPA of 3.34 and an average GRE score of 166 Q for Civil and Environmental Engineering; and with an average GPA of 3.48 and an average GRE score of 152 Q for the Nuclear Engineering Program. Once admitted, the Department supports graduate students as Graduate Research Assistants, Graduate Assistants, Teaching Assistants, and Fellows. There are also separate fellowships provided by the Nuclear Regulation Commission to fund MS and PhD students in the Nuclear Engineering Program. Graduate students also are provided with both a faculty advisor and an academic advisor. Each gives the student close mentoring in different capacities: the faculty advisor offers guidance related to career and industry questions, while the academic advisor helps in managing degree requirements.

Curriculum

The curriculum and programs of study are clearly and thoroughly articulated in the self-study. The Department offers a BS in Civil Engineering, an undergraduate minor in Nuclear Engineering, an MS in Civil and Environmental Engineering and in Nuclear Engineering, and a PhD in Civil and Environmental Engineering, Environmental Engineering, and Nuclear Engineering. Faculty areas of emphasis in engineering include structural, earthquake, environmental, water resource, construction materials, geotechnical, nuclear, transportation, engineering management, and water, energy, and infrastructure engineering. The undergraduate curriculum is rigorous, with clearly stated prerequisites, minimum grades, and monitored advancement from pre-Civil Engineering to intermediate major status to full major status. At the MS and PhD levels, the curriculum is also clearly laid out and shows the requirements for the MS and PhD supervisory committees; coursework and research for both professional and research tracks (MS degrees); course requirements defined by subject emphasis; English proficiency; qualifying exams needed to advance to candidacy; and the number of journal quality publications that constitute an MS thesis (1) and PhD dissertations (3, with explanatory materials and appendices).

The internal reviewers note, however, that faculty profiles indicate that 12 faculty members specialize in water/environment and structures, while only two each are indicated in geotech, materials, nuclear, and transportation. This poses the potential problem that if a given faculty member in the less represented specialties were to leave the University, students might be left without adequate advising. Even with the existing faculty, both undergraduate and graduate students expressed concern over the availability of required coursework and the scheduling of similar-level courses at the same time. The external reviewers recommend that the Department develop a two-year course-offering plan and make efforts to avoid potential scheduling conflicts through improved communication between different subject emphases. The internal reviewers also recommend that the Department improve curriculum coordination by creating a more flexible schedule for required courses and designing a sequential ordering of essential courses.

A notable curricular innovation pursued by the Department is distance education, a part of the Department's strategic plan that is facilitated with the completion of the new 42-seat auditorium housed in the Civil Engineering Building. In Fall 2011, 2012, and 2013, the Department offered courses to its students that were taught by instructors from the University of Nevada-Reno, New Mexico Tech, and Utah State University. Prior to Peter Martin departing the University, he used the Transportation Learning Network to instruct students at North Dakota State, University of Wyoming, South Dakota State, and Colorado State University, a practice that the Department would like to continue in the future.

Program Effectiveness and Outcomes Assessment

The Department acknowledges that assessment at the graduate level has been less formal than at the undergraduate level, which must undergo regular and rigorous accreditation through the Accreditation Board for Engineering and Technology (ABET). Indeed, the Department response acknowledges that at the graduate level "it has been generally accepted practice that as long as our graduate students are passing their courses, getting good jobs, completing our research projects, and publishing in peer-reviewed journals, we are accomplishing our goals."

However, the internal reviewers expressed concern that despite the carefully instated procedures to measure program effectiveness and outcomes assessment at the graduate level – including biannual assessments by the committee chair prior to student registration (beginning Fall 2014), preliminary examinations, qualifying examinations, and final oral examinations – the student handbook uses ambiguous wording that allows for different standards in passing qualifying exams. More specifically, students are unsure of whether coursework alone or coursework and research are needed for exam preparation. Students are also unclear about how different subject areas conduct these exams. Other areas which the internal reviewers believe need assessment clarification include determining firm norms for evaluating the written and spoken English proficiency of non-native speakers and establishing criteria for evaluating the quality of journal publication that the Department has closely linked to the completion of MA theses and PhD dissertations.

Diversity

At the time of the last review in 2006-7, there were 13 males and 1 female out of 14 tenured/tenure-track (T/TT) faculty members. In 2013, there were 12 males and 6 females out of the 18 T/TT faculty members. This marks considerable improvement toward gender equity in the Department. In terms of racial/ethnic diversity, at the time of the previous review there were 5 non-Whites (1 male Hispanic and 4 male Asians) out of the 14 T/TT faculty members. In 2013, there were 6 non-Whites (2 male Hispanics, 1 female American Indian, 2 male Asians, and 1 female Asian) out of the 18 T/TT faculty members. Given the overall expansion of the faculty lines from 14 to 18, the increase by 1 non-White faculty member in 2013 is a minor decrease in the overall percentage of ethnic diversity within the Department. Nevertheless, the Department has expressed commitment to increasing faculty diversity through active engagement with organizations such as the Society of Women Engineers (SWE) and the Society for the Advancement of Hispanics/Chicanos and Native Americans in Science (SACNAS).

The Department has also expressed concern that despite the increased diversity of BS graduates since the last review, the diversity of MS and PhD graduates has decreased since 2006-7. However, the Department's self-study states that "one of the 5-year benchmark goals set forth by the faculty in the 2013-18 Strategic Plan is to reach 30% female student population and 10% Hispanic/African American/American Indian student populations." More specifically, in 2006-7 the BS graduates included 2 Hispanic/Latino males, 1 American Indian male, 1 Black male, 52 White males, and 10 White females. In 2012-13, the BS graduates included 2 Hispanic/Latino males, 1 Hispanic/Latino female, 5 Asian males, 2 Native Hawaiian/Pacific Islander males, 54 White males, and 6 White females.

BS graduates in 2006-7:	6.06% non-White	15.15% female
BS graduates in 2012-13:	14.29% non-White	10% female
	7.14% Hispanic/African American/American Indian	

In terms of MS/PhD graduates in 2006-7, the Department graduated 6 Asian males, 3 Asian females, 21 White males, and 8 White females. In 2012-13, the MS/PhD graduates included 1 Hispanic/Latino male, 4 Asian males, 2 Asian females, 17 White males, and 8 White females.

MS/PhD graduates in 2006-7:	23.68% non-White	28.95% female
MS/PhD graduates in 2012-13:	21.88% non-White	31.25% female

Facilities and Resources

The Department's expanded and renovated facilities that were completed in 2010 have improved the Department's research and educational goals, while providing a showcase for student and faculty recruitment. These new facilities include state-of-the-art laboratories, offices, conference rooms, community spaces, and a 42-seat auditorium.

The external reviewers also praise the reactor in the Nuclear Engineering Program as a powerful teaching and research tool (only 20 out of 43 US programs have one), and they commend the

nuclear engineering program for licensing the reactor to meet stricter procedures, which provides opportunities to train students for careers in nuclear utilities and the growing niche specialty of nuclear forensics. However, the control panel of the reactor requires updating and it needs regular dedicated maintenance. Nuclear Regulatory Commission policy "requires two licensed operators to be present in the control room when the reactor is in operation." However, "there is no support for yearly operational and maintenance cost of the facility, which ranges between $40,000-$60,000 per year." Given the potential liabilities that the reactor poses to the University, the Department is urged to work with the administration to establish a level of baseline annual support for operation and maintenance.

While the current Department budget is enough to maintain things as they are, resources are needed for staff support in several areas ranging from technicians, administrative staff, and new faculty lines. The external reviewers have also highlighted the most needed human resources, and recommend that the training of a staff member dedicated to faculty proposal preparation is of utmost priority. Since the efficient and timely preparation of proposals is key to increasing research funding, it is crucial that this person is brought up to speed regarding budgets, paperwork, and documentation. Equally important, faculty must be trained to best utilize this staff member. They also recommend that the Department seek staff support to accommodate the expanding number of undergraduate and graduate students, currently counted at 400 and 150, respectively. The predicted growth of the Nuclear Engineering Program with two more tenure-track lines focusing on nuclear forensics will also put pressures on existing staff support.

COMMENDATIONS

1. The Department has completed a major expansion/renovation of their facilities that serve research, teaching, and recruitment goals.

2. The Department has made strong faculty hires at junior and senior levels; in particular, reviewers praise the Department Chair, Michael Barber, and the Head of the Nuclear Engineering Program, Tatjana Jevremovic, as strategic hires with leadership and vision.

3. The Department has significantly expanded student enrollment in both its undergraduate and graduate programs since the previous review.

4. The Nuclear Engineering Program has a rare, licensed on-site reactor, and provides the potential to train students for careers in nuclear utilities and the growing niche specialty of nuclear forensics.

5. Since its last review, the Department has significantly improved the gender equity of its faculty and has maintained the racial/ethnic diversity of its faculty through recent faculty expansion. Since the last review, the Department has also increased the racial/ethnic diversity of its BS graduates from 6.06% non-White to 14.29% non-White (including 7.14% Hispanic/African American/American Indian).

RECOMMENDATIONS

1. The control panel of the nuclear reactor requires updating and two licensed personnel must be secured to maintain it as per Nuclear Regulatory Commission policy. Given the potential liabilities that the reactor poses to the University, the Department is urged to work with the administration to establish a level of baseline annual support for operation, maintenance, and related staff support estimated at $40,000-$60,000.

2. The Department is urged to engage in conversations with the Chair to address perceived discrepancies in valuing PhD over MS and Professional MS degree production.

3. The Department should review criteria and improve support for faculty performance at all levels. This would include formalizing procedures to mentor junior faculty toward tenure and assisting stalled tenured faculty to reengage in research and/or increase their teaching and administrative duties.

4. The Department needs to improve the assessment of graduate students. This would include clarifying the expectations of qualifying exams; establishing criteria for the quality of journal publications linked to thesis and dissertation completion; and determining consistent norms for evaluating the English proficiency of non-native speakers.

5. The Department should develop a more comprehensive and/or flexible course-offering plan that outlines the availability of required courses and avoids potential scheduling conflicts between similar-level courses in different subject emphases.

6. The Department should engage in more proactive and quantitative measures toward undergraduates that explore reasons for their low retention rates as well as track their employment history, rates, and prospects.

7. The Department needs additional staff support to accommodate the expanding number of undergraduate and graduate students, currently counted at 400 and 150, respectively. The predicted growth of the Nuclear Engineering Program with two more tenure-track lines focusing on nuclear forensics will also put pressure on existing staff support.

8. The Department must prioritize the training of a staff member dedicated to helping proposal preparation, since effective proposals are crucial to increasing research funding.

Submitted by the Ad Hoc Committee of the Graduate Council:

Winston C. Kyan, PhD (Committee Chair)
Assistant Professor, Department of Art and Art History

Krishnan S. Anand, PhD
Associate Professor, Department of Operations and Information Systems

Susan S. Johnston, PhD
Professor, Department of Special Education

Gerrie V. Barnett, PhD (Undergraduate Council Representative)
Associate Professor (Clinical), College of Nursing

Civil & Environmental Engineering

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
FACULTY: With Doctoral Degrees Including MFA and other terminal degrees							
Full Time Tenured Faculty	8	8	8	10	11	11	10
Full Time Tenure Track	6	6	6	6	6	8	7
Full Time Auxiliary Faculty	14	14	15	14	13	11	13
Part Time Tenure/Tenure Track	0	1	1	2	1	1	1
Part Time Auxiliary Faculty	3	4	7	5	4	4	4
With Masters Degrees							
Full Time Tenured Faculty	0	0	0	0	0	0	0
Full Time Tenure Track	0	0	0	0	0	0	0
Full Time Auxiliary Faculty	0	0	0	0	0	0	0
Part Time Tenure/Tenure Track	0	0	0	0	0	0	0
Part Time Auxiliary Faculty	0	0	0	0	0	0	0
With Bachelor Degrees							
Full Time Tenured Faculty	0	0	0	0	0	0	0
Full Time Tenure Track	0	0	0	0	0	0	0
Full Time Auxiliary Faculty	0	0	0	0	0	0	0
Part Time Tenure/Tenure Track	0	0	0	0	0	0	0
Part Time Auxiliary Faculty	0	0	0	0	0	0	0
Total Headcount Faculty							
Full Time Tenured Faculty	8	8	8	10	11	11	10
Full Time Tenure Track	6	6	6	6	6	8	7
Full Time Auxiliary Faculty	14	14	15	14	13	11	13
Part Time Tenure/Tenure Track	0	1	1	2	1	1	1
Part Time Auxiliary Faculty	3	4	7	5	4	4	4
FTE from A-1/S-11/Cost Study Definition							
Full-Time Salaried	18	21	14	18	20	18	17
Part-Time or Auxiliary Faculty	1	2	2	2	1	2	2
Number of Graduates							

Civil & Environmental Engineering

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Number of Graduates							
Bachelor's Degrees	76	67	81	54	44	73	71
Master's Degrees	40	38	33	34	39	25	40
Doctoral Degrees	0	1	9	7	8	10	8
Number of Students Based on Fall Third Week Semester Data							
Undergraduate Pre-Majors	78	80	101	122	163	198	170
Undergraduate Majors	193	178	178	159	169	180	207
Enrolled in Masters Program	81	79	74	82	74	61	88
Enrolled in Doctoral Program	20	31	34	42	43	51	45
Department FTE Undergrad	157	143	137	131	146	158	142
Department FTE Graduate	72	75	75	88	84	80	84
Department SCH Undergrad	4,696	4,288	4,120	3,936	4,372	4,732	4,272
Department SCH Graduate	1,434	1,493	1,500	1,762	1,682	1,590	1,674
Undergraduate FTE per Total Facul	8	6	9	6	7	8	7
Graduate FTE per Total Faculty FT	4	3	5	4	4	4	4
Cost Study Definitions							
Direct Instructional Expenditures	2,303,218	2,464,355	2,573,918	2,607,253	2,691,398	2,929,608	2,556,619
Cost Per Student FTE	10,091	11,327	12,123	11,887	11,711	12,350	11,307
Funding							
Total Grants	1,220,948	1,475,295	2,216,680	1,911,656	1,933,215	1,360,822	1,816,397
Appropriated Funds	1,935,699	2,102,250	2,366,558	2,427,092	2,322,650	2,489,249	2,435,615
Teaching Grants	6,149	80,477	138,814	151,393	125,520	53,179	7,258

THE UNIVERSITY OF UTAH

Memorandum of Understanding
Department of Civil and Environmental Engineering
Graduate Council Review 2013-14

This memorandum of understanding is a summary of decisions reached at a wrap-up meeting on December 9, 2014, and concludes the Graduate Council Review of the Department of Civil and Environmental Engineering (CvEEN). Ruth V. Watkins, Senior Vice President for Academic Affairs; Richard B. Brown, Dean of the College of Engineering; Michael E. Barber, Chair of the Department of Civil and Environmental Engineering; Tatjana Jevremovic, Director of the Nuclear Engineering Program; David B. Kieda, Dean of The Graduate School; and Donna M. White, Associate Dean of The Graduate School, were present.

The discussion centered on but was not limited to the recommendations contained in the review summary report presented to the Graduate Council on September 29, 2014. At the wrap-up meeting, the working group agreed to endorse the following actions:

Recommendation 1: The control panel of the nuclear reactor requires updating and two licensed personnel must be secured to maintain it as per Nuclear Regulatory Commission policy. Given the potential liabilities that the reactor poses to the University, the Department is urged to work with the administration to establish a level of baseline annual support for operation, maintenance, and related staff support estimated at $40,000-$60,000.

With substantial support from the College, much progress has been made on reviving the Nuclear Engineering Program (UNEP) and the nuclear reactor since 2009, when the new director was hired. Currently, two main urgencies remain: 1) securing stable funding for annual maintenance, and 2) installing a newly designed control panel. All parties acknowledged the high level of importance of these items. In addition to the current funding model of using returned overhead and course fees to maintain the reactor, the Dean and Director are seeking a donor to provide more stable funding for the annual maintenance. Additionally, the Director is working with the Nuclear Regulatory Commission to have a new panel approved prior to installation, an external safety expert will be brought in as a consultant, and the Director is pursuing the possibility of obtaining recharge center status. Core facility status has recently been approved. Having this joint status will clear the way for additional funding necessary to address this recommendation. The UNEP Director continues to work hand-in-hand with the CvEEN Chair, College of Engineering Dean and the UNEP Industrial Advisory Board in seeking the best solutions long-term. In his response, the Dean stated, “The best way for the Program to increase its resources is for the faculty to bring in more funded research

projects." The Chair and Director will make regular progress reports to The Graduate School on this recommendation to include a feasibility plan for ongoing operations as a recharge center within a year and including discussions of potential risks and mitigation strategy. It is estimated that notable progress on funding could be made in one to three years.

Recommendation 2: The Department is urged to engage in conversations with the Chair to address perceived discrepancies in valuing PhD over MS and Professional MS degree production.

Discussions have taken place on this topic and the Dean and Chair are aligned in their view that it is important to have a strong, self-funded MS program. There are no discrepancies in valuing the PhD over the MS and Professional MS degree production. The degrees are distinct and hold different purposes, all of which are valued. As stated in the Chair's response, "Many (most) faculty understand and support this view." The Dean expressed his support of the new Chair, Michael Barber, and noted the outstanding progress the Department has made since the last review.

Recommendation 3: The Department should review criteria and improve support for faculty performance at all levels. This would include formalizing procedures to mentor junior faculty toward tenure and assisting stalled tenured faculty to reengage in research and/or increase their teaching and administrative duties.

The Chair agreed that a more formalized mentoring process is needed and he has taken action to enlist the Department's Executive Committee to review best practices and move forward on this part of the recommendation. It was stated that implementing more formal mentoring will require "changing the culture" in the Department, and although that will take some time, the Chair is committed to the process and outcome. As for faculty review criteria and the completion of regular reviews, the RPT document is updated and the review process is happening consistently and regularly. As a part of post-tenure reviews, the Chair has designed and implemented a formula for calculating increased teaching and administrative loads for faculty who are "stalled" in their research endeavors. The Chair has been transparent and clear about this change and the Dean is supportive.

Recommendation 4: The Department needs to improve the assessment of graduate students. This would include clarifying the expectations of qualifying exams; establishing criteria for the quality of journal publications linked to thesis and dissertation completion; and determining consistent norms for evaluating the English proficiency of non-native speakers.

The Chair has charged the Graduate Studies Committee with reviewing the current assessment practices for graduate students. As of the time of the wrap-up meeting, policies have been updated; evaluations for each graduate student, written by their advisors, are being implemented twice each academic year; and exam clarifications are being made for each area of study in the Department. The UNEP Graduate Handbook has recently been updated, and the equivalent handbook for CvEEN will be reviewed and updated to include the new policies and other information mentioned in this recommendation. The Chair and Director will assist program advisors to be more clear with the information they are disseminating to students and will also give consideration to holding regular "Town Hall" meetings to underscore important information and make updates. There are evaluative resources for graduate students who are non-native English speakers through the International Teaching Assistant Program in The Graduate School (Directed by Diane Cotsonas) and also the Writing Center in the Marriott Library.

Recommendation 5: The Department should develop a more comprehensive and/or flexible course-offering plan that outlines the availability of required courses and avoids potential scheduling conflicts between similar-level courses in different subject emphases.

A four-year curricular plan is now available on the Department Website, and the Chair is working with the faculty to make alternative course options available for technical electives. Action on this recommendation is related to Recommendation 3 in that less productive faculty will be assigned to teaching these extra courses each semester. Advisors will let students know that taking courses out of sequence will likely create scheduling problems for them as they progress through the program and could actually extend their time to degree. The Sr. VP stated that the University is strategizing with departments on ways to make required basic science courses more available to students who need to take them at specific times. The Chair will work with the Chair of the Department of Mathematics to make more sections of CvEEN math requirements available. The Department will report progress back to The Graduate School in regular updates.

Recommendation 6: The Department should engage in more proactive and quantitative measures toward undergraduates that explore reasons for their low retention rates as well as track their employment history, rates, and prospects.

Recommendations 6, 7, and 8 are all related to the need for additional advising and staff support for the Department given the significant growth in student numbers (both undergraduate and graduate) since the last review.

The Chair, Director, and Dean do not believe that overall retention rates are particularly low and they are reviewing the data to fully understand that perceived issue. There does seem to be a more concerning attrition between the pre-civil and intermediate status in the program. More effective advising and tracking would likely have a positive impact on retention, but more advisors are needed in order to address this recommendation. The Dean and Chair have applied to the Utah Engineering Initiative for funding to support more advisors and staff. The Chair will also work with the University College to try to leverage resources that might be shared to provide bridge funding for additional advisors.

Recommendation 7: The Department needs additional staff support to accommodate the expanding number of undergraduate and graduate students, currently counted at 400 and 150, respectively. The predicted growth of the Nuclear Engineering Program with two more tenure-track lines focusing on nuclear forensics will also put pressure on existing staff support.

The Chair and Director are clear that to accommodate the substantial expansion in numbers and to support the new faculty in the UNEP, additional staff are necessary. The Dean has requested funding support for two additional staff members from the Engineering Initiative.

Recommendation 8: The Department must prioritize the training of a staff member dedicated to helping proposal preparation, since effective proposals are crucial to increasing research funding.

One new staff member to assist in proposal preparation has been hired at the College level. Still more staff support is needed, particularly in relationship to Recommendation 1 and the Dean's urging for the faculty to grow their research profiles. The AVP for Research does provide regular workshops and general assistance for proposal preparation (targeted to junior faculty). The Chair will provide regular updates to progress on Recommendations 6, 7, and 8 to The Graduate School.

This memorandum of understanding is to be followed by regular letters of progress from the Chair of the Department of Civil and Environmental Engineering to the Dean of The Graduate School. Letters will be submitted until all of the actions described in the preceding paragraphs have been completed.

Ruth V. Watkins
Richard B. Brown
Michael E. Barber
Tatjana Jevremovic
David B. Kieda
Donna M. White

David B. Kieda
Dean, The Graduate School