UW Bothell/UW Tacoma, Seattle College/School Name: College of Engineering

1. Please provide a **1-2 page description with visualizations if possible of how you intend to grow or contract over the next five years**. Please provide these strategic plans at the college or departmental level, if you so choose. Where significant growth is anticipated, please provide specific fund source names and projections (in dollars). If these plans assume additional Provost Reinvestment Funds (supplement), please make that clear. If you wish to include a summary of growth plans, services or activities supported by sources other than GOF/DOF, please do so. If cross subsidy is required from other sources, please summarize the extent of that subsidy.

See attached growth plan.

2. **Please identify significant administrative, academic or other obstacle(s)** present in achieving the growth or strategic plans identified as part of Question 1. **Please plan to discuss these with the Provost.** If applicable, please summarize any operational risks that the UW must work to mitigate over time from your perspective.

Space is the major constraint and obstacle to growth. COE comprises a variety of academic activities including basic research, applied research, research opportunities for undergraduates, collaborative learning, project-based and laboratory-based learning and traditional lecture-based learning. COE is currently assigned approximately 600,000 asf to conduct these activities. However using the 2011 UW COE Precinct Plan and current degree total, COE is 44% short on space. Although the COE is leading two new building projects (NanoES and CSE Phase 2), it still lacks the space to educate students and conduct basic and applied research. In addition, the COE has no student-focused collaborative space. This lack of space becomes a more pressing concern as we work to increase freshmen admissions, grow degrees and faculty.

3. Using the **"Tuition Rec Worksheet" tab of the "Worksheets and Reference Materials –Academic" Excel workbook** (http://opb.washington.edu/sites/default/files/opb/Budget/Worksheets_and_Reference_Materials_Academic.xlsx) please identify proposed changes to current tuition rates in FY16 (2015-16) and FY17 (2016-17).

   If you are recommending the creation of a **new tuition category, please describe those changes below and be sure to identify the original tuition category, the proposed category, a suggested tuition rate for FY16 and (if applicable) a percentage increase for FY17**. If you plan to move only a subset of your programs into a new category, please identify those programs by major name, pathway, level, and type.

   Do you have any long-term plans for tuition that warrant discussion? If yes, please describe them below.

COE supports the addition of a new tuition category for the Bioengineering MS in SOM.

4. Please **describe your school or college's emerging or changing faculty needs**, including information about faculty hiring trends and the recruitment and appointment of lecturers.

COE has received approximately $7.0M in proviso funding to support increased access and enrollment growth. The student experience at COE includes participation in research on emerging technologies of critical national need (such as clean energy, e-science, sustainable engineering, smart cities and global health) through undergraduate research projects and capstone design projects. This allow student to become innovators and take leadership roles after graduation. To maintain this vibrant research-oriented student experience, a majority of new funding is being used to support the hiring of new faculty. Additionally, lecturers and TA's are also used to provide support to core COE service courses and to provide access beyond COE students.

In FYE 2013, COE made 32 offers and had 18 acceptances for new tenure-track faculty positions. In FYE 2014, COE made 31 offers and had 21 acceptances for new tenure-track faculty positions. In FYE 2015, we anticipate hiring approximately an additional 20 new faculty. The average startup costs for these hires are approximately $550,000. The increasing costs associated with faculty hires, both for startup and space renovation are some major challenges. Since 2009 Engineering has increased by about 35 faculty, or at about ½ the rate of increasing BS degrees. With the two proviso funding cycles for engineering growth, the CEI funds and the efforts in the departments to generate funds through additional students with ABB, PMP and other sources, COE is in a position for modest faculty growth beyond this year.

5. In the event that state funding for compensation adjustments in FY16 is not available, **all units** should have plans to **cover GOF/DOF salary increases out of other fund sources**. Should no tuition revenue be available, Provost Reinvestment Funds may be dispatched to provide support for increases. Please provide your units' plans to cover expenses associated with salary increases. A salary and tuition revenue model is available on the OPB website at http://opb.washington.edu/content/fy16-budget-development; this model is designed to give you a sense of the magnitude of the support that will be required at various percentage increases.

COE would fund compensation adjustments from reserves as retention of faculty and staff is a major priority. Engineering has sufficient reserves to fund 4% raises provided state budget cuts do not seriously compromise our reserves.

6. This summer, the UW has been the sole subject of a state-required audit of net operating fee (tuition) and local fund accounts. This audit has revealed the importance of monitoring expenditures against budgets on a biennial basis, ensuring that colleges, schools and administrative units have plans to spend fund balance in a reasonable and mission-driven manner and that these plans are acted upon. As such, we ask that colleges and schools provide itemized obligations against fund balance, as estimated by OPB for the close of FY14. These obligations may be categorized by the following general classifications in the example provided, but greater detail is expected and will be relevant in discussions with the Provost.

See Schedule Attached.

7. **Though we believe that few, if any, state funds will be available and any new Provost Funds may be dispatched for mitigating cuts or providing salary increases, please indicate what Provost Reinvestment Funds are being requested**. Requests for funds should be identified by a unique title, accompanied by the amount requested, the year funding is requested, whether the request is for permanent or temporary funds, the number of years funding is needed in the case of a temporary request and a brief description, not to exceed 500 words. **Successful requests will provide better experiences for students and faculty, contribute to the long-term financial health of the University, and/or reduce institutional risk**[1].

   Importantly, requests for new funding will be considered alongside carryover spending plans. Schools or colleges with growing temporary fund balances will be asked to explain why new funding is needed to support program enhancements.

1. Title	Funding	FY	P/T	Years Needed (If Temp)	DOF Requested (Y/N)
Student Innovation Space	$300,000	FY16	P		

The College of Engineering is a major driver of innovation at UW. Despite representing only 6% of UW faculty, based on C4C data, Engineering produces 47% of the patents filed and 53% of the startup companies. Engineering and its students are the innovation engine of the campus and community. Engineering, and the university as a whole, needs to invest to provide the resources and programs to fully engage our students in innovation. Engineering requests $300,000 per year to remodel, equip and operate innovation space and programs for our students. Our first strategic plan goal is to educate our students to be leaders and leading in innovation is critical to fulfilling this goal. We understand that investments may be planned at the university level and we would look forward to partnering with others on a larger effort to serve even more students.

[1] Please refer to the FY16 Budget Development web page at http://opb.washington.edu/content/fy16-budget-development for more information about the University's Sustainable Academic Business Plan goals and top institutional risks.

College of Engineering Plans for Growth

The College of Engineering plans to continue its growth over the next decade. Our goal is to reach 1400 BS degrees and 1000 graduate degrees per year.

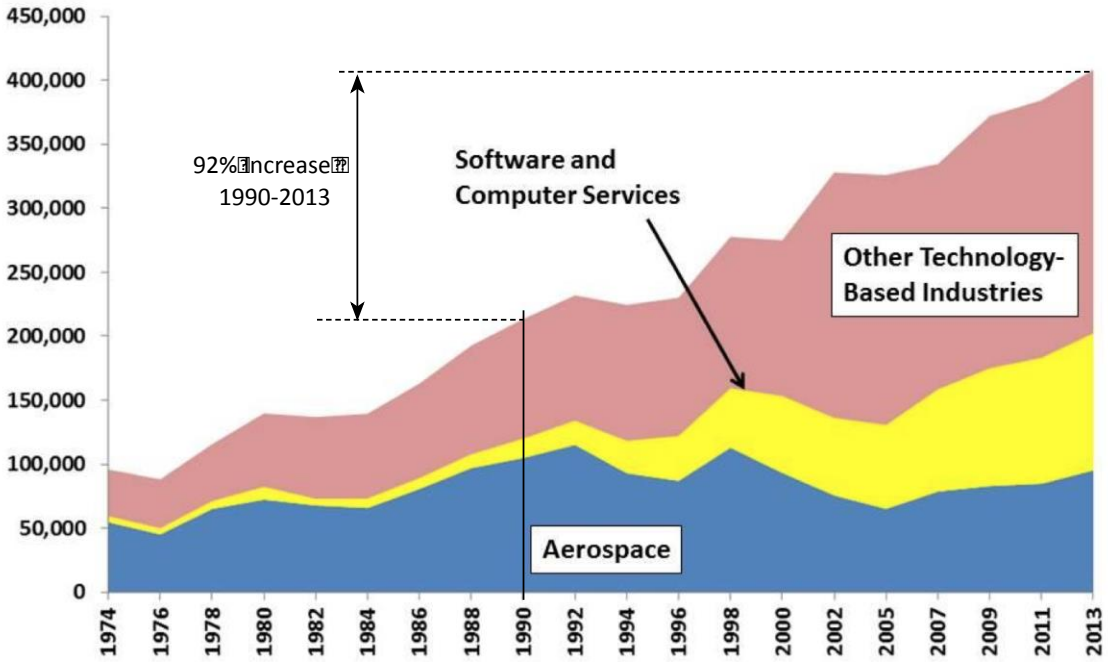
The College of Engineering, CoE, produced about 700 BS degrees per year from 1985 to 2009 despite a rapidly growing technology industry in Washington State and increased state population of students who wanted tech degrees. There are attractive, high-paying jobs for these students in the state of Washington. The overall employment in the Washington State technology industry has seen enormous growth in the last 30 years as seen in Figure 1. Growth in the technology sector grew from just fewer than 100,000 jobs in 1974 to over 400,000 jobs in 2013. Today Washington State is second in the country in percentage of engineering and computer science jobs per population, yet below average among all the states in the production of these degrees per capita. The Information industry is booming in Washington and a recent report showed a shortfall of over 2700 employees per year in this sector and over 1000 new engineers needed per year. Clearly in Washington, as in much of the rest of the country, there is the need for more engineers and computer scientists.

Over the last few years CoE has increased its production of BS degrees in engineering and computer science supported by two infusions of Proviso funding. The first Proviso funds helped increase BS production to 865 degrees and the second funded increased production to 955 degrees per year. This last year the College of Engineering awarded 927 BS degrees and exceeded the 601 graduate degrees promised as part of the second Proviso by graduating 643 MS and Ph.D. students. This year we project that we will exceed the 955 BS degrees promised in Proviso 2.

Students continue to come in large numbers to UW to be educated as engineers and computer scientists. Figure 2 shows the demand from incoming freshman to be engineering and CS majors almost doubling since 2009. Figure 3 summarizes our applications and admissions process as primarily sophomores at UW and community college students compete for the existing slots in the college. Since 2006 the number of individual students applying for department admission has more than doubled while the percentage of students offered admission has dropped from 80% to approximately 55%. These are all students who are qualified, and have worked hard to be prepared to be engineering and CS majors, but are turned away due to lack of capacity.

To accomplish this growth we need additional facilities and additional Proviso funds (or other source of funds such as differential tuition) to provide the increased cost of educating an engineer. The NanoES and new CSE building will be an important step forward in providing room for growth. However, while the new CSE building will provide the needed space for CSE growth, NanoES alone does not nearly address the needs of

the rest of Engineering. In 2013-2014 undergraduate applications to CSE numbered 708, while 1765 applications were received for the other 9 Engineering Departments. There is enormous student demand across the entire college. Addressing the need for additional engineering and CS degrees will require support from tuition, the state, internal funds, and the generosity of alumni and friends to fund the additional facilities and provide the instructional funds needed to accomplish our goals.



Sources: U.S. Census Bureau County Business Patterns, Washington State Employment Security Department

Figure 1: Historical technology industry employment in Washington State highlighting 92% increase from 1990-2013.

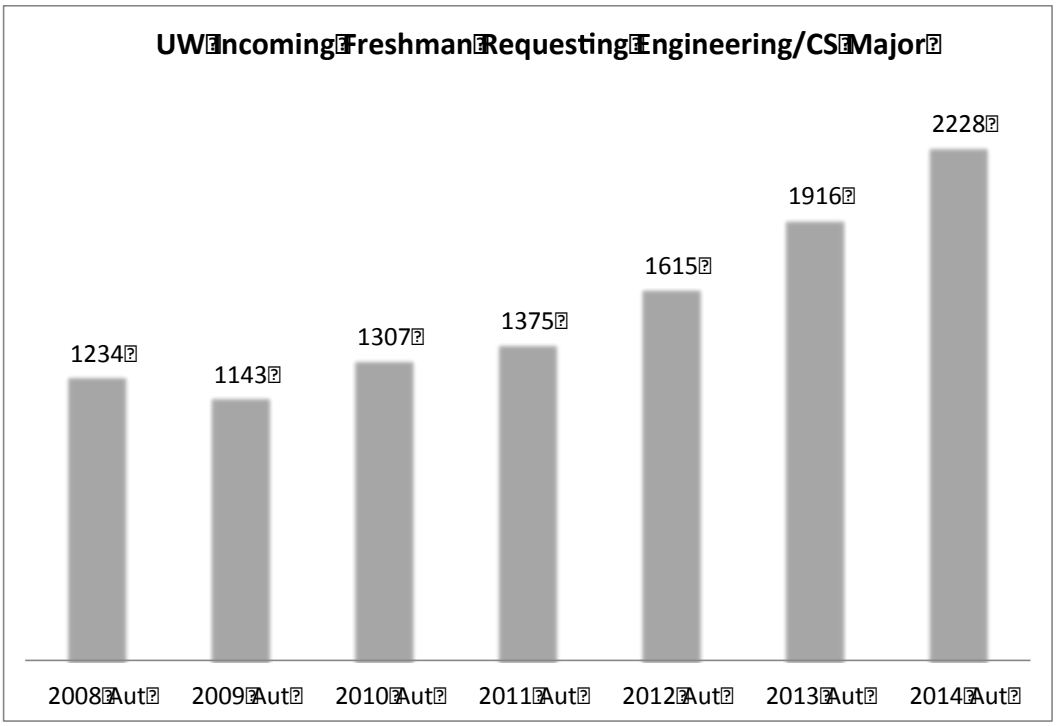


Figure 2: Recent UW incoming freshman data showing increase in number of entering students requesting engineering and computer science majors.

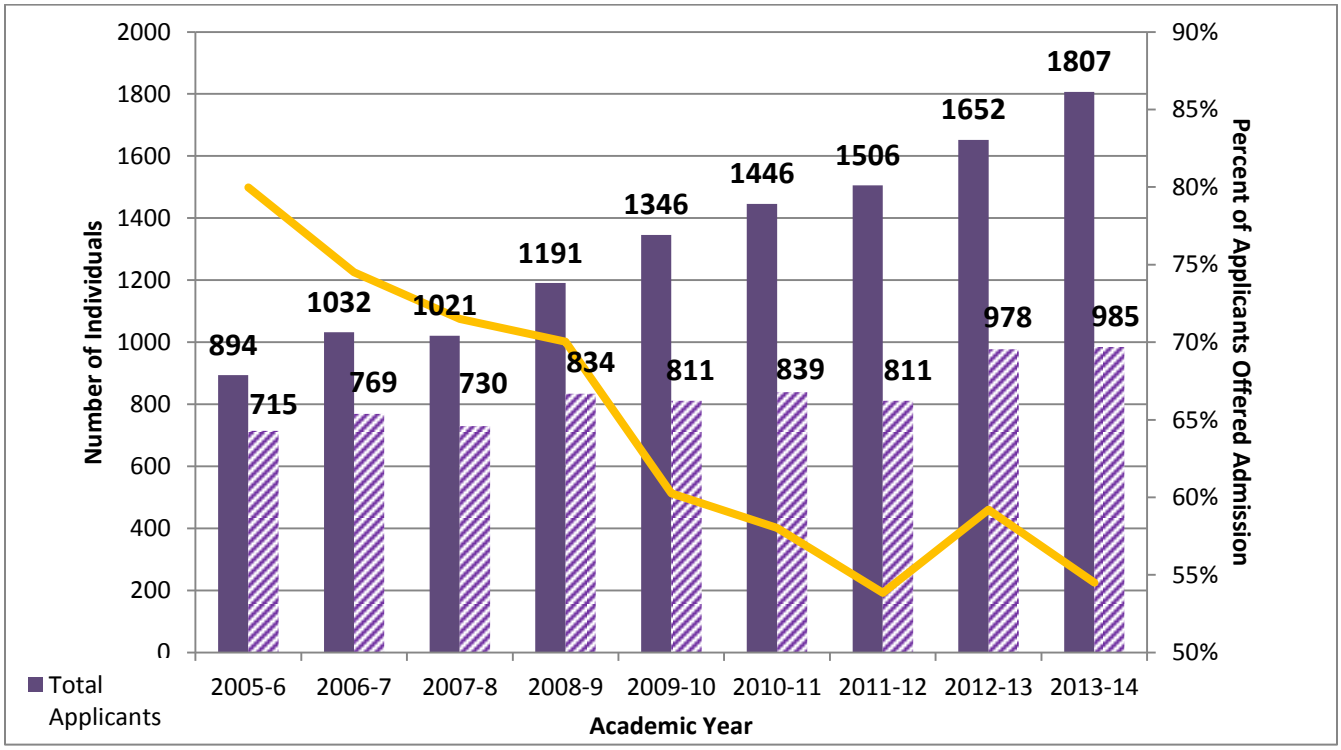


Figure 3: Internal and Community College undergraduate applicants to the UW College of Engineering trends showing the rapid increase in applicants and the decreasing percentage that can be admitted. (Solid bar is total number of applicants, hashed bar is number of applicants offered admission and solid line is percentage of applicants offered admission.)

COLLEGE OF ENGINEERING
CARRYOVER - GOF, DOF, RCR
FYE 6/30/14

DEPARTMENT	GOF	DOF	RCR	FYE 2014 TOTALS	% OF TOTAL
A&A	-	415,815	614,728	1,030,543	2.2%
BIO E	-	1,630,635	558,105	2,188,740	4.7%
CHEM E	-	947,382	2,276,691	3,224,073	6.9%
CEE	-	1,450,394	624,353	2,074,747	4.4%
CSE	372,505	6,134,263	8,772,299	15,279,067	32.7%
EE	201,507	1,429,542	1,321,176	2,952,225	6.3%
HCDE	121,807	310,890	563,860	996,557	2.1%
ISE	-	231,783	295,677	527,460	1.1%
MSE	-	1,472,110	632,837	2,104,947	4.5%
ME	-	1,193,276	940,436	2,133,712	4.6%
DEAN	5,074,181	6,802,905	2,406,843	14,283,929	30.5%
TOTALS	5,770,000	22,018,995	19,007,005	46,796,000	100.0%

COMMITMENT SUMMARY

Start Up Commitments	995,819	7,575,091	5,977,547	14,548,457	31.1%
Financial Aid/Waivers	-	150,000	250,000	400,000	0.9%
Temporary Salary Commitments	250,000	250,000	250,000	750,000	1.6%
Deferred Maintenance/Capital	3,000,000	5,000,000	1,000,000	9,000,000	19.2%
Planned Equipment Purchases	250,000	500,000	250,000	1,000,000	2.1%
Strategic Initiatives	500,000	1,350,000	734,601	2,584,601	5.5%
Unit Reserves	774,181	7,193,904	10,544,857	18,512,942	39.6%
TOTALS	5,770,000	22,018,995	19,007,005	46,796,000	100.0%