

Engineering and Technology Industry Council Campus Investment Proposal Biennium from July 1, 2009 to June 30, 2011

Campus: Portland State University
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Summary of Proposal:

This proposal reflects our ETIC funding request for the FY09-11 biennium. The ETIC Baseline request is \$8,030,000, which was cut to \$6,929,992.

In addition, to the Baseline cut, there will be no Policy Option Package. And so consequently, no additional investment, such as ETIC faculty hiring will occur in this biennium.

Vision Statement

The Maseeh College of Engineering and Computer Science at Portland State University creates an inspiring educational and research environment for students, faculty, and staff to expand knowledge and improve lives through innovation in research and engineering education.

The hallmark of the college is locally relevant and globally significant impact, as demonstrated by:

- A diverse portfolio of collaborative and cross-disciplinary research;
- Exceptional students who apply cutting edge research to current issues and who are sought after in the global market; and
- Strong partnerships with industry, government, and non-profit organizations that promote economic opportunities and contribute to the economic development of the region.

Aspirational Peers

The Colleges of Engineering that we have chosen as aspirational peers are public urban universities. They are similar to MCECS but are larger and perform better on the metrics that ETIC is using. But they also represent realistic goals for us to pursue:

- University of Virginia, Faculty: 191, Annual research expenditures: \$54M, BS: 410, MS + PhD: 245, US News and World Report rank: 37/199;
- New Jersey Institute of Technology, Faculty: 189, Annual research expenditures: \$32M, BS: 466, MS + PhD: 408, US News and World Report rank: Not Ranked;
- University of Texas – Arlington, Faculty: 180, Annual research expenditures: \$19M, BS: 247, MS + PhD: 602, US News and World Report rank: Not Ranked; and

- And for comparison purposes, MCECS (FY09 metrics): Faculty: 90, Annual research expenditures: \$7.7M, BS: 232, MS + PhD: 217.

Because we have not had a PhD program in all departments, we have been unable to participate in the US News and World Report ranking of US Colleges of Engineering. As our MME department puts its PhD program in place we will then be involved in the ranking process.

MCECS Strategy Process

The Maseeh College has engaged in an extensive strategy discussion with numerous groups both inside and outside the college. As a result of these efforts we have crafted a set of strategic goals.

Strategic Goals

1. Concentrate our growth to distinguish ourselves in collaborative and cross-disciplinary research;
2. Be a leader in rigorous, experiential engineering education by engaging industry and using the urban environment as a laboratory;
3. Have a faculty and student body whose engagement with industry, government, and non-profit institutions promotes economic opportunity and quality of life;
4. Recruit and develop faculty who will be leaders in their disciplines, who can seed new collaborative activities and who are eager to engage the world; and
5. Become the Engineering School of Choice for a diverse population of high achieving students. Strengthen our internal capacity to collaborate, educate, engage, and attract quality faculty.

Also as a part of this process we did an in-depth analysis of our strengths and weaknesses, which is critical information for any plan for the college:

Strengths

- ETIC – few if any of the remaining strengths would have happened had it not been for the support ETIC has provided the college.
- Successful programs with significant visibility, including transportation (OTREC), technology management (PICMET), electromagnetics & acoustics (NEAR-Lab), environmental monitoring, urban climate sensing & modeling, wind power, water systems especially with regards to the Columbia basin, applied formal methodologies of technology management, design & test of integrated circuits, systems and networking/wireless, database technologies, computer security, innovative engineering education, and biomedical;
- Complementary areas of research that can be leveraged into larger programs;
- Success in hiring high quality faculty;
- Space for the research mission and undergraduate/graduate student growth;
- SCH focused allocation; and
- Harnessing limited resources to focus on only the most promising global initiatives.

Weaknesses

- Insufficient critical mass in faculty and students, which limits visibility, industry involvement, and alumni giving;
- Uneven preparation and achievement of incoming students with a long tail distribution;

- Insufficient number of scholarships for undergraduate and graduate students;
- Financial constraints continue to limit growth;
- Faculty are stretched, which is detrimental to each and every goal of the college;
- Insufficient staff support;
- Insufficient funding for teaching and research equipment;
- Unimproved lab space;
- Insufficient first year graduate student support; and
- Modest TA (Teaching Assistant) support. We are, for example, not really able to use TA positions very effectively to recruit graduate students.

Based on our analyses and our strategy process, we have developed a set of long term goals, these goals were chosen, primarily, according to these criteria:

- They represent areas that have important societal impact and a higher moral imperative;
- They are key areas where Portland and Oregon need expanded capabilities and commercial¹ stimulus, and as such are in line with the governor's (primarily via the Oregon Innovation Council), the Oregon University System's, legislature's, and Portland State University's priorities;
- They represent areas where the college already has faculty and momentum;
- There is complementary work at other Oregon universities, creating collaborative opportunities; and
- They are not mutually exclusive and promise significant synergy.

ETIC Investment Focus Areas

Since there is no option package and a cut to our Baseline, no additional investment will be made during this biennium, our primary goal will be to minimize the damage that the combined PSU and ETIC cuts do to the college.

Private Support

In the last few years our private support was roughly 2x of our public support. Much of this was associated with the new Engineering Building. As we move into the post-Building stage we are estimating a reduced private to public ratio of approximately 1:1.

We are targeting some private donation to enhance our privately endowed scholarship programs. For example, the Massiah Foundation (alumnus Fariborz Maseeh) is currently funding 5 students per year and we hope to expand that with other donors over time. In addition, the ECE department has received a private donation of a scholarship in Design Automation.

¹ State business clusters were outlined in "Cluster Resource Guide – Moving Forward, 6th Annual Leadership Summit" (Dec. 3, 2007): Agriculture, Biofuels, Bioscience, Creative Services, Defense, Education Technology & Services, Energy Efficiency, Environmental Technology & Services, Food Processing, Forest & Wood Products, Green Development, Heavy- Lift Helicopters, High Tech, Manufacturing, Nursery, Software, Solar Energy, Tourism & Hospitality, Wave Energy, and Wind Energy. Though we do not address all clusters our focus areas fit into several.

We have also put in place an aggressive program for soliciting equipment donations, including the publication of a college equipment “wish” book. MCECS External Development is working closely with the college advisory board on this equipment, which will complement the faculty investments we make.

Results

The table at the end of this proposal contains estimated metrics that we believe are possible for the reduced ETIC baseline for this biennium. The projected results are approximate and require estimating the per FTE productivity for graduates, SCH (Student Credit Hours), and research funding. We used existing ratios (primarily FY07 and FY09), which are quite noisy, as a starting point.

The 2013 and 2020 goals are from earlier ETIC reports. The projected numbers assume the hiring investment outlined above. **These outcomes meet ETIC’s goals of 2x enrollment at 2013 from 1999, and 5x research revenue at 2020 from 1999.** And since the ETIC program was established, MCECS has consistently met the SCH, graduates and research funding goals.

Now that we have an approved PhD program in MME (Mechanical and Materials Engineering) we will be able to join the national ranking of engineering schools when the first graduates appear in 2010 or 2011 and such ranking information will be shown in future metric tables. We do not yet have a baseline data for these metrics.

Budget Cut Impact

It is difficult to measure the impact on the ETIC and University budget cuts that MCECS faces this coming year. Also, we believe that the bigger impact will come in future biennia as the full impact of the cuts begins to effect the college. Consequently, we have used mostly conservative estimates for the 09-11 biennium as well as further out.

Proposed Investment and Private Support Forecast (\$M) w/15% cut from EBL

		Level 0 Base Budget	Level 1 Policy Option	Level 2 Policy Option	Level 3 Policy Option
1	Sources of funds				
2	all sources except ETIC allocation & private support	\$ 25,333,396			
3	Proposed allocation from ETIC budget (\$M) (3) PSU Note A	\$ 6,929,992			
4	Expected private support (\$M) (4) PSU Note B	\$ 6,929,992			
5	Total (\$M)	\$ 39,193,380	\$ -	\$ -	\$ -
6	Personnel supported (FTE) (5)				
7	Existing faculty (1) PSU Note C	16.4			
8	New faculty(2) PSU Note D	0.0			
9	Existing staff (1)	5.1			
10	New staff(2) PSU Note D	0.0			
11	Total	21.5	0.0	0.0	0.0
12	New positions created (6)				
13	Faculty (2)	0.0			
14	Staff (2)	0.0			
15	Total	0.0	0.0	0.0	0.0
16	Uses of ETIC funds in line 3				
17	New facilities	\$ -	\$ -	\$ -	\$ -
18	Improvements to facilities (7)	\$ -			
19	Laboratory equipment (7)	\$ -			
20	Other equipment (7)	\$ -			
21	Other one-time expenses	\$ -			
22	Existing faculty salaries & benefits (1)	\$ 4,845,734			
23	New faculty salaries & benefits (2)	\$ -			
24	Existing staff salaries & benefits (1)	\$ 790,732			
25	New staff salaries & benefits (2)	\$ -			
26	Services & supplies	\$ 842,761			
27	Other PSU Note E	\$ 450,765			
28	Total (8)	\$ 6,929,992	\$ -	\$ -	\$ -
	(1) Hired through June 2009 that will be supported by ETIC funds during 2009-11 biennium.				
	(2) To be hired with ETIC funds during 2009-2011 biennium.				
	(3) Include any Certificates of Participation to be issued during 2009-2011 biennium.				
	(4) Consistent with ETIC Private Support Policy dated 1-23-02.				
	(5) FTE expressed as percent of full time over 2 years of biennium. For instance, a new full-time faculty member hired on 7/1/10 would be counted as 0.5 because he/she joined half way through the biennium.				
	(6) FTE on an ongoing basis. For instance, if a new half-time position is created but not expected to be filled until the last month of the biennium, it would still be counted as 0.5.				
	(7) Include improvements and equipment to be purchased with ETIC funds and any Certificates of Participation to be issued during the biennium.				
	(8) Totals on line 3 and line 28 should match.				

PSU Notes for Proposed Investment and Private Support Forecast

PSU Note A	EBL \$7,595,436 + \$434,564 (adjustment to cover salary and benefit increases) = \$8,030,000; less a 15% cut of \$1,100,008 for a new EBL of \$6,929,992.
PSU Note B	Expected Private Support is 1:1
PSU Note C	Cuts have not been finalized yet, however the preliminary reduction plans includes the elimination of two faculty positions. This may change when the college is asked by the university to implement its budget reductions.
PSU Note D	No new faculty or staff positions.
PSU Note E	Ongoing costs such as graduate assistants

Graduation Rates, Additional Detail:

For a number of reasons, graduation rates are complex to interpret. In the following Metrics tables (for each of the investment levels) the actual data for 2007 is used as a starting point for extrapolation to the following biennia. However, since it represents the results of a 6 year pipeline, it is difficult to have too much of an influence except over a fairly extended period.

And there are other issues. The data cited for 1999 and 2007 represent those students who declared as an MCECS major their freshman year and then within 6 years received a BS from MCECS. Another relevant data point is that for 2007 another 16% of those students who declared an MCECS major as a freshman received a PSU degree but outside of MCECS.

Another useful piece of information is that 80% of the students who declare an MCECS major as a junior receive an MCECS BS within 4 years of that declaration. This is important because of the number of students who transfer PSU at the junior year (such as community college students).

FTE Growth for the 2011 – 2020 Biennia

For consistency we assumed that whatever funding received in the 09-11 biennium was repeated for all biennia up to 2020.

Metrics Forecast (for programs/departments receiving ETIC funding):
ETIC Baseline Only, with 15% cut.

	Actuals (1)			Projected (2)	
	AY 99	AY07	AY11	AY13	AY20
Undergraduate student credit hours	20785	28518	29040	29040	29040
Graduate student credit hours	8685	12357	12320	12320	12320
Graduation rate, 6-year (3)	21.0%	23.0%	24.0%	24.0%	24.0%
Bachelor's degrees granted	157	210	202	202	202
Master's degrees granted	105	189	185	185	185
PhD degrees granted	4	7	8	8	8
Women graduating (4)	55	95	93	93	93
Minorities graduating (5)	76	99	87	87	87
Externally-funded research expenditures (6)	\$1.65M	\$5.77M	\$7.9M	\$8.8M	\$9.7M
Invention disclosures (7)	0	0	4	4	4
License/options (8)	0	0	1	1	1
License income received (9)	\$0	\$0	\$2	\$2	\$2
Spin-off Companies (10)	0	0	0	0	0
National ranking of <program or department> (11)	NA	NA	NA	NA	NA
National ranking of <college>	NA	NA	NA	NA	NA
Notes/instructions. (Delete these notes and replace with your own in the document you submit.)					
(1) Actuals for 12-month period ending in June of the year shown.					
(2) Forecast for the 12-month period ending in June of the year shown.					
(3) Percentage of students who started ETIC-related program six years earlier who have completed					
(4) From engineering, computer science, and other programs directly benefiting from ETIC funding, stated as percent of all those graduating.					
(5) Racial and ethnic minorities who are US citizens or permanent residents, stated percent of US citizens or permanent residents graduating.					
(6) Total external dollars spent by ETIC-related departments towards research during academic year.					
(7) See Association of University Technology Managers (AUTM) survey definitions.					
(8) Number of license or option agreements executed during the year. See AUTM survey definitions.					
(9) License issue fees, payments under options, annual minimums, running royalties, termination payments, the amount of equity received when cashed in, and software end-user license fees equal to \$1000 or more, but not research funding, patent expense reimbursement, valuation of equity not cashed-in, or end-user license fees less than \$1000. See AUTM survey definitions.					
(10) New companies that were dependent on the licensing of your program's technology for their initiation. See AUTM survey definitions.					
(11) Forecasts for multiple programs and departments are encouraged. Each ranking should be footnoted with the ranking body or ranking methodology.					