

TO: Robert McMaster, Vice Provost and Dean of Undergraduate Education  
FROM: Peter M. Radcliffe, Executive Director of Planning and Analysis  
DATE: Wednesday, November 6, 2013  
SUBJECT: Mandated report on STEM programs at the Twin Cities Campus

The University of Minnesota is required by Minnesota Laws 2013, Chapter 99, Article 2, Section 27, Subdivision 2 to report the following:

*The Board of Regents of the University of Minnesota must report, by November 1, 2013, to the legislative committees and divisions with primary jurisdiction over higher education finance and policy with respect to its undergraduate science, technology, engineering, and mathematics programs on the Twin Cities campus the following information:*

- (1) the number of applicants seeking admission to those programs for the academic term commencing in the fall of 2013 and the number admitted;*
- (2) the percentage of students that graduate from the programs who remain in Minnesota both historically and projected into the future; and*
- (3) plans to expand the capacity of the programs.*

*The report must include the most recent and accepted analysis of the projected need of employers within the state for graduates of science, technology, engineering, and mathematics programs in the future, including times frames of five, ten, 15, and 20 years.*

#### Section 1: Admissions to STEM programs for Fall Semester 2013

Although STEM programs are found in many colleges at the University of Minnesota Twin Cities, students are recruited and admitted to individual colleges rather than directly into major programs. For the purposes of this report, therefore, STEM applicants will be defined as those who applied for admission to the College of Biological Sciences (CBS) or the College of Science and Engineering (CSE) for Fall Semester 2013. These two colleges have the largest concentration of STEM programs on the Twin Cities campus.

For Fall Semester 2013, there were 18,602 new freshman applicants to CBS or CSE. Of these, 5,440 were admitted, and 1,558 enrolled as freshmen in Fall Semester 2013.

#### Section 2: STEM graduates retained in Minnesota

Over the past five years, the College and Biological Sciences and the College of Science and Engineering have awarded baccalaureate degrees to a combined total of 7,519 students. Of those students, 5,282 or 70.2% still have a Minnesota address based on the latest records available from the University of Minnesota Alumni Association. Given the growth in these colleges and their continued improvement in graduation rates, those numbers should continue to grow in future years. Based only on the increased number of freshmen admitted to these colleges over the past five years, the number of recent graduates living in Minnesota would be expected to increase by more than 200 per year by 2018.

### Section 3: Plans to expand the capacity of STEM programs

Freshman enrollment has been expanded in both the College of Biological Sciences and the College of Science and Engineering. Over the past five years, the number of new freshmen entering these two colleges has grown from 1,256 to 1,448, a 24% increase. In each college, the University believes it is at capacity based on laboratory space, advising, and other support services. However, across the Twin Cities campus, student interest in STEM fields is increasing. Over the last ten years, the greatest growth in baccalaureate degree awards have been in biological and biomedical sciences, social sciences, and engineering (as coded by the federal classification of instructional program or CIP categories). Through its commitment to Operational Excellence, the University will continue to identify internal resources that can be redirected to academic programs to continue supporting these efforts.

### Section 4: Projected state needs in STEM fields

Although individual programs and colleges work with industry and community partners to understand employment trends and needs, the University of Minnesota does not assemble a comprehensive analysis of industry needs across STEM fields. However, the Department of Employment and Economic Development produces short and long-term employment projections as part of its “Employment Outlook” report, drawing on local data and the federal Bureau of Labor Statistics. Below are the Employment Outlook Minnesota growth projections in the four categories of the Standard Occupational Classification most closely related to science, technology, engineering, and mathematics.

#### **Department of Employment and Economic Development Long-Term Employment Outlook**

<b>SOC Category</b>	<b>2010 Employment</b>	<b>2020 Projected Employment</b>	<b>Percent Change</b>	<b>Total Change</b>	<b>Replacement Hires</b>	<b>Total Hires</b>
<b>Computer and Mathematical Occupations</b>	81,140	92,181	13.6	11,041	14,700	25,760
<b>Architecture and Engineering Occupations</b>	48,087	52,001	8.1	3,914	10,680	14,770
<b>Life, Physical, and Social Science Occupations</b>	24,100	27,407	13.7	3,307	6,790	10,110
<b>Healthcare Practitioners and Technical Occupations</b>	157,667	195,606	24.1	37,939	31,870	69,810

#### **Department of Employment and Economic Development Short-Term Employment Outlook**

<b>SOC Category</b>	<b>Q2 2013 Estimated Employment</b>	<b>Q2 2014 Projected Employment</b>	<b>Percent Change</b>	<b>Total Change</b>	<b>Replacement Hires</b>	<b>Total Hires</b>
<b>Computer and Mathematical Occupations</b>	87,951	89,693	1.9	1,742	1,417	2,764
<b>Architecture and Engineering Occupations</b>	49,508	50,212	1.4	704	1,063	1,779
<b>Life, Physical, and Social Science Occupations</b>	24,372	24,770	1.6	398	670	1,108
<b>Healthcare Practitioners and Technical Occupations</b>	156,198	159,352	2	3,154	2,814	5,665