

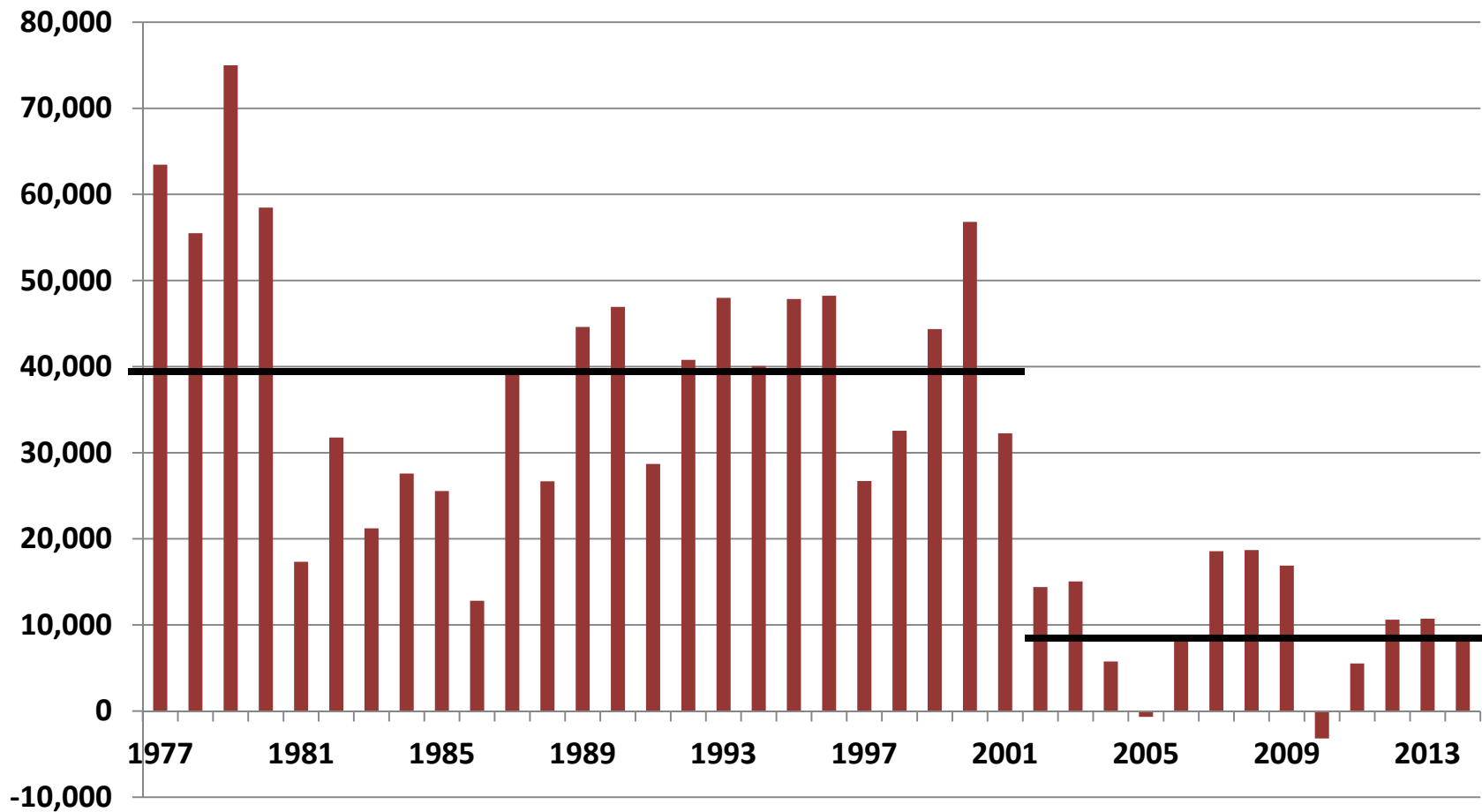
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American Council of Engineering Companies of Minnesota

Steve Hine, Research Director
Labor Market Information Office
November 5, 2015

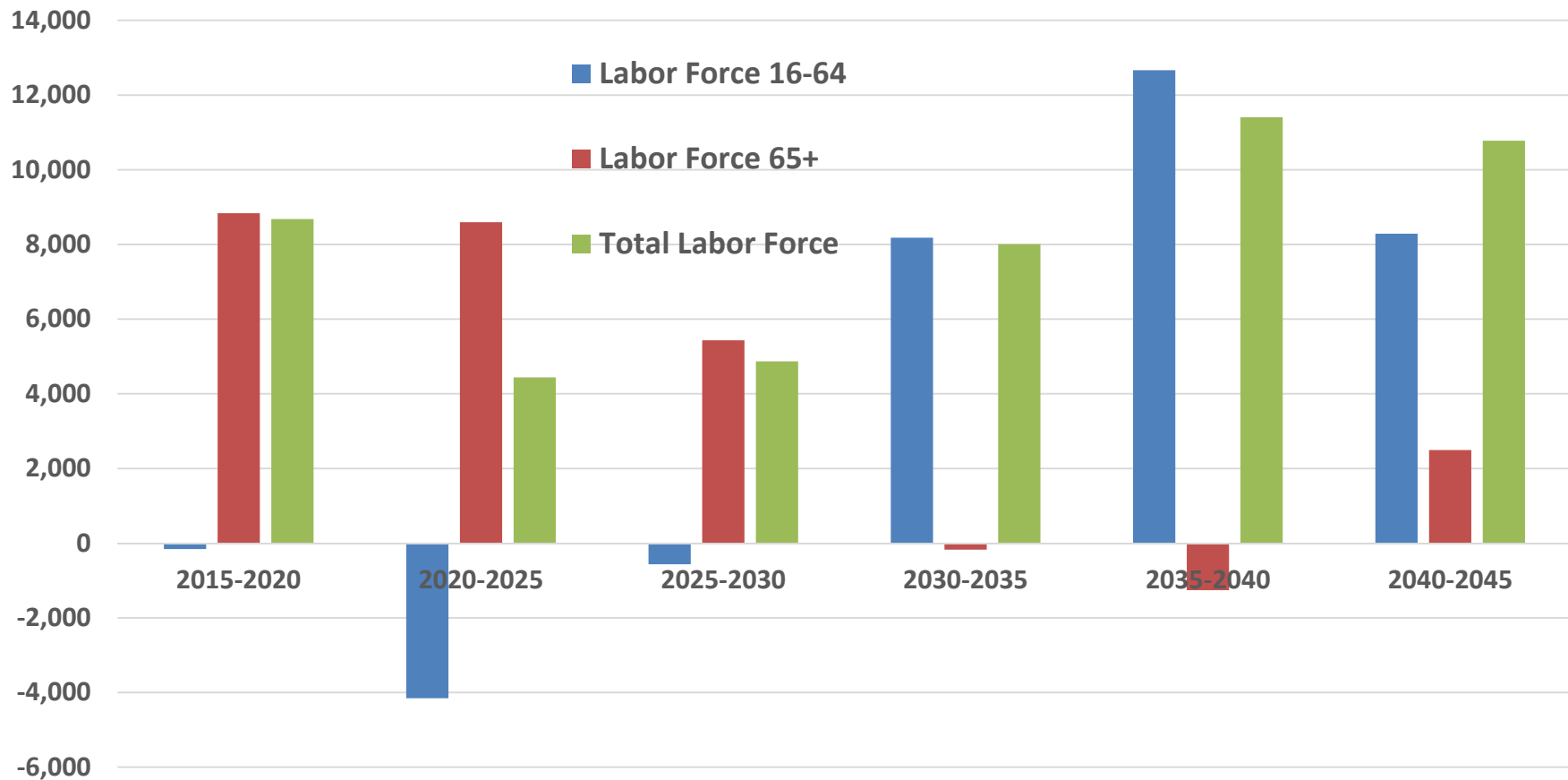
Labor Force Growth In Minnesota has Slowed



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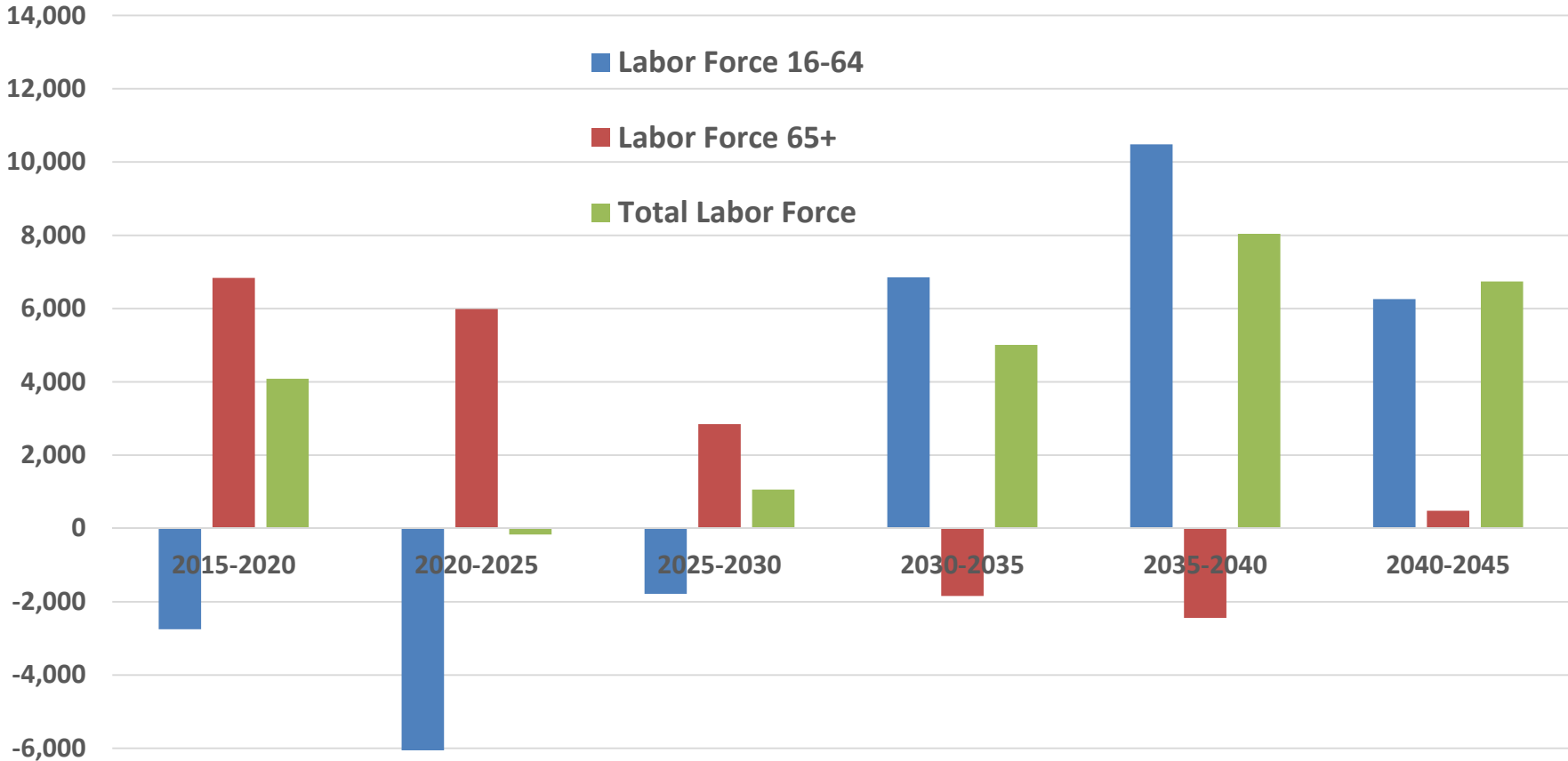
And is Projected to Slow Further



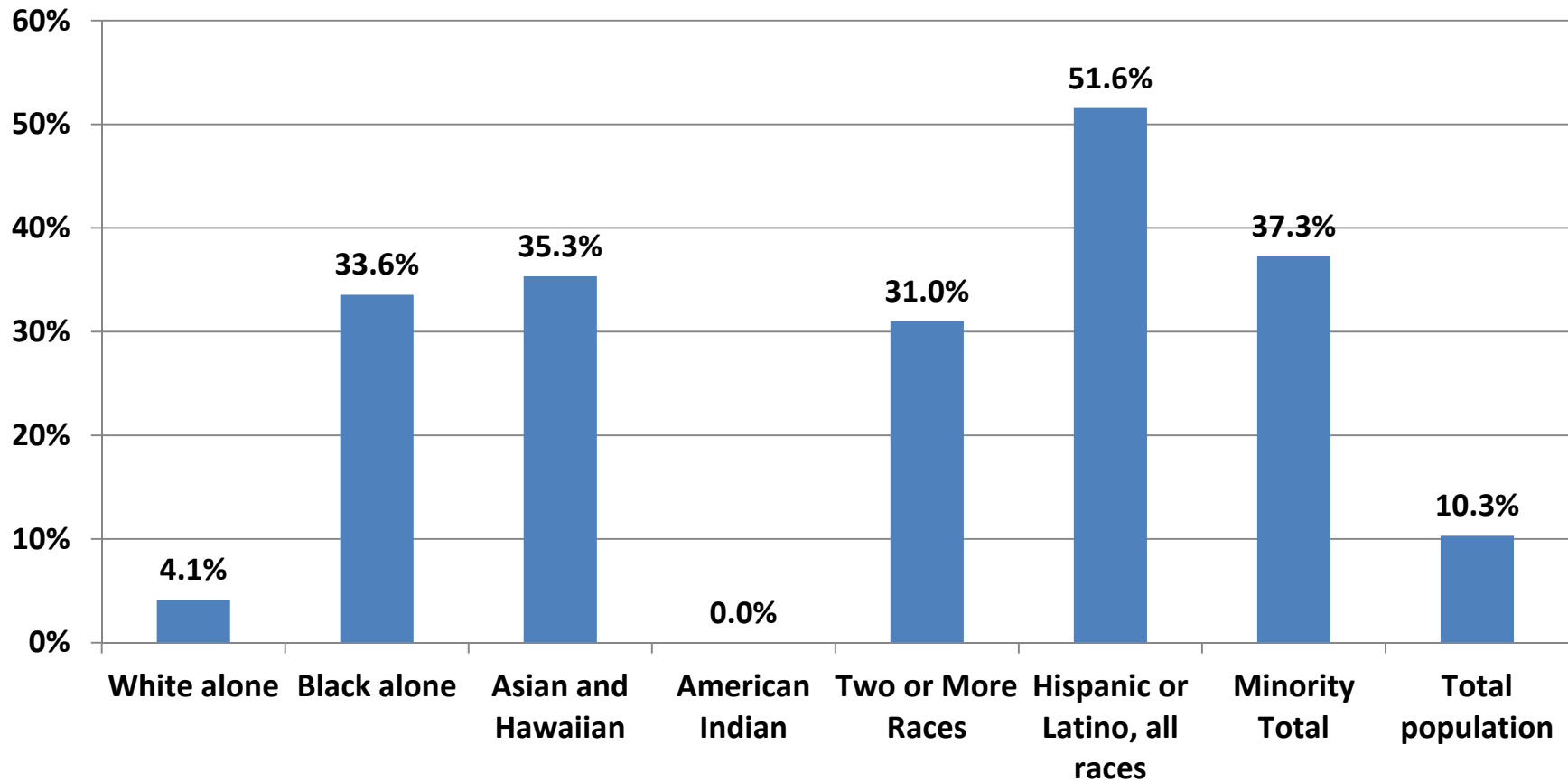
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It May Even Shrink



Growth we will see will be from Minorities (Pop Projections, 2015-2030)



Example of Trends to Come (American Community Survey, 2013 to 2014)

	Change from 2013 to 2014	
	White alone or in combination with one or more other races	Black or African American alone or in combination with one or more other races
TOTAL POPULATION	10,668	13,762
Under 18 years	(3,038)	2,474
18 to 34 years	(2,086)	4,148
35 to 64 years	(4,532)	6,063
65 years and over	20,324	1,077
EMPLOYMENT STATUS		
Population 16 years and over	13,599	12,472
Civilian labor force	(1,921)	9,499
Employed	12,879	12,256
Unemployed	(14,801)	(2,757)
Not in labor force	15,520	2,973

What About STEM?

- Numerous definitions of STEM
- We use Standard Occupational Classification (SOC) system and select those in the life and physical science, engineering, mathematics and information technology groups
- We then identify STEM industries as any industry having a concentration of these occupations greater than 2.5 times the national average
- This approach was developed by the Bureau of Labor Statistics 10 years ago and recently updated by the Workforce Information Council

Top 20 Largest STEM Occupations (Seven are from Engineering Group)

Occupational Title	Employment	Median Wage
Total STEM Occupations	176,980	
Computer Systems Analysts	12,880	\$38.70
Computer User Support Specialists	11,710	\$23.02
Software Developers, Applications	11,260	\$44.14
Computer and Information Systems Managers	9,160	\$56.43
Computer Occupations, All Other	8,780	\$34.47
Software Developers, Systems Software	8,690	\$46.47
Network and Computer Systems Administrators	8,060	\$35.85
Industrial Engineers	7,380	\$38.77
Mechanical Engineers	6,660	\$38.88
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	6,310	\$40.77
Computer Programmers	5,700	\$35.21
Engineering Managers	3,920	\$59.85
Civil Engineers	3,800	\$37.95
Computer Network Architects	3,790	\$44.64
Electrical Engineers	3,400	\$40.98
Computer Network Support Specialists	3,290	\$28.83
Industrial Engineering Technicians	2,790	\$24.55
Database Administrators	2,690	\$40.78
Web Developers	2,630	\$32.17
Mechanical Drafters	2,570	\$26.49

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Projected Change in Top 20

Occupational Title	Projected Change in Jobs, 2012-2022	Projected Total Job Openings, 2012-2022
Total, All Occupations	7.0%	901,620
Total, STEM Occupations	6.8%	49,640
Computer Systems Analysts	17.0%	4,290
Computer User Support Specialists	11.0%	2,910
Software Developers, Applications	10.7%	3,030
Computer & Information Systems Managers	9.5%	2,240
Computer Occupations, All Other	9.5%	1,830
Software Developers, Systems Software	6.4%	1,660
Network & Computer Systems Administrators	4.3%	1,730
Industrial Engineers	4.7%	2,650
Mechanical Engineers	3.4%	2,310
Sales Representatives, Wholesale & Mfg., Technical & Scientific Products	2.0%	1,700
Computer Programmers	-2.2%	1,640
Engineering Managers	2.3%	1,370
Civil Engineers	15.4%	1,430
Computer Network Architects	6.1%	820
Electrical Engineers	3.1%	1,030
Computer Network Support Specialists	1.7%	580
Industrial Engineering Technicians	0.5%	620
Database Administrators	11.6%	780
Web Developers	11.5%	680
Mechanical Drafters	-4.0%	380

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Engineering Occupations Ranked by Employment

Occupational Title	Employment	Median Wage
Industrial Engineers	7,380	\$38.77
Mechanical Engineers	6,660	\$38.88
Civil Engineers	3,800	\$37.95
Electrical Engineers	3,400	\$40.98
Industrial Engineering Technicians	2,790	\$24.55
Mechanical Drafters	2,570	\$26.49
Civil Engineering Technicians	2,450	\$27.36
Electrical and Electronic Engineering Technicians	2,410	\$25.80
Engineers, All Other	2,220	\$42.73
Architectural and Civil Drafters	1,730	\$23.85
Computer Hardware Engineers	1,660	\$47.14
Mechanical Engineering Technicians	1,420	\$25.27
Electronics Engineers, Except Computer	1,380	\$37.40
Biomedical Engineers	1,040	\$51.64
Engineering Technicians, Except Drafters, All Other	1,000	\$28.40
Surveyors	840	\$29.90
Surveying and Mapping Technicians	630	\$25.42
Drafters, All Other	610	\$21.56
Electrical and Electronics Drafters	550	\$26.22
Environmental Engineers	530	\$38.15
Chemical Engineers	520	\$43.12
Cartographers and Photogrammetrists	300	\$28.43
Electro-Mechanical Technicians	270	\$29.48
Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	250	\$43.08
Aerospace Engineers	250	\$41.92
Materials Engineers	240	\$42.26
Environmental Engineering Technicians	210	\$23.91
Nuclear Engineers	190	\$48.26
Mining and Geological Engineers, Including Mining Safety Engineers	140	\$41.93
Aerospace Engineering and Operations Technicians	60	\$27.46
Agricultural Engineers	20	\$39.04

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Projected Growth Rates in Engineering Occupations

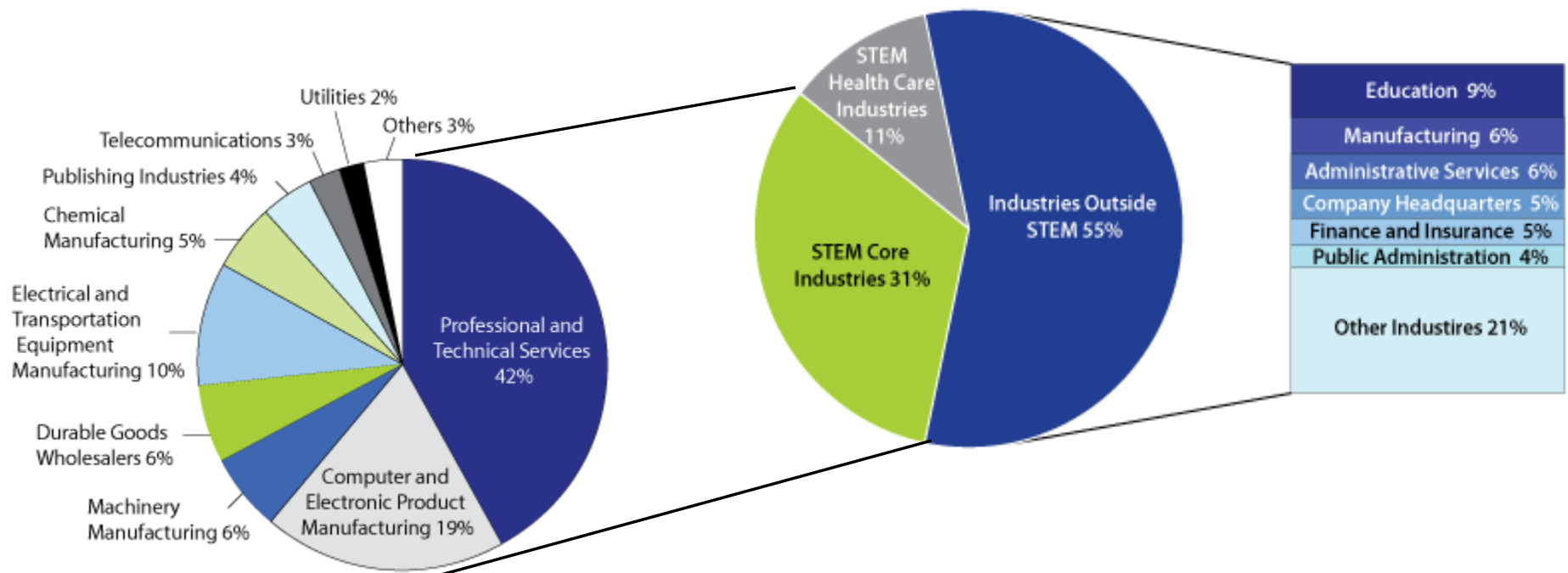
Occupational Title	Projected Growth Rate
Mining and Geological Engineers, Including Mining	21.7
Drafters, All Other	16.6
Civil Engineers	15.4
Biomedical Engineers	12.2
Environmental Engineering Technicians	12.1
Environmental Engineers	11.5
Surveyors	8.4
Surveying and Mapping Technicians	8.3
Cartographers and Photogrammetrists	6.8
Chemical Engineers	4.9
Aerospace Engineers	4.8
Industrial Engineers	4.7
Health and Safety Engineers, Except Mining Safety	4
Mechanical Engineers	3.4
Electrical Engineers	3.1
Engineers, All Other	2.5
Mechanical Engineering Technicians	2.1
Engineering Technicians, Except Drafters, All Other	1.9
Industrial Engineering Technicians	0.5
Architectural and Civil Drafters	0.3
Materials Engineers	0
Nuclear Engineers	0
Electrical and Electronics Drafters	-0.8
Electro-Mechanical Technicians	-1.2
Agricultural Engineers	-2.7
Mechanical Drafters	-4
Computer Hardware Engineers	-4.2
Aerospace Engineering and Operations Technicians	-4.2
Civil Engineering Technicians	-5.1
Electronics Engineers, Except Computer	-7.3
Electrical and Electronics Engineering Technicians	-7.4

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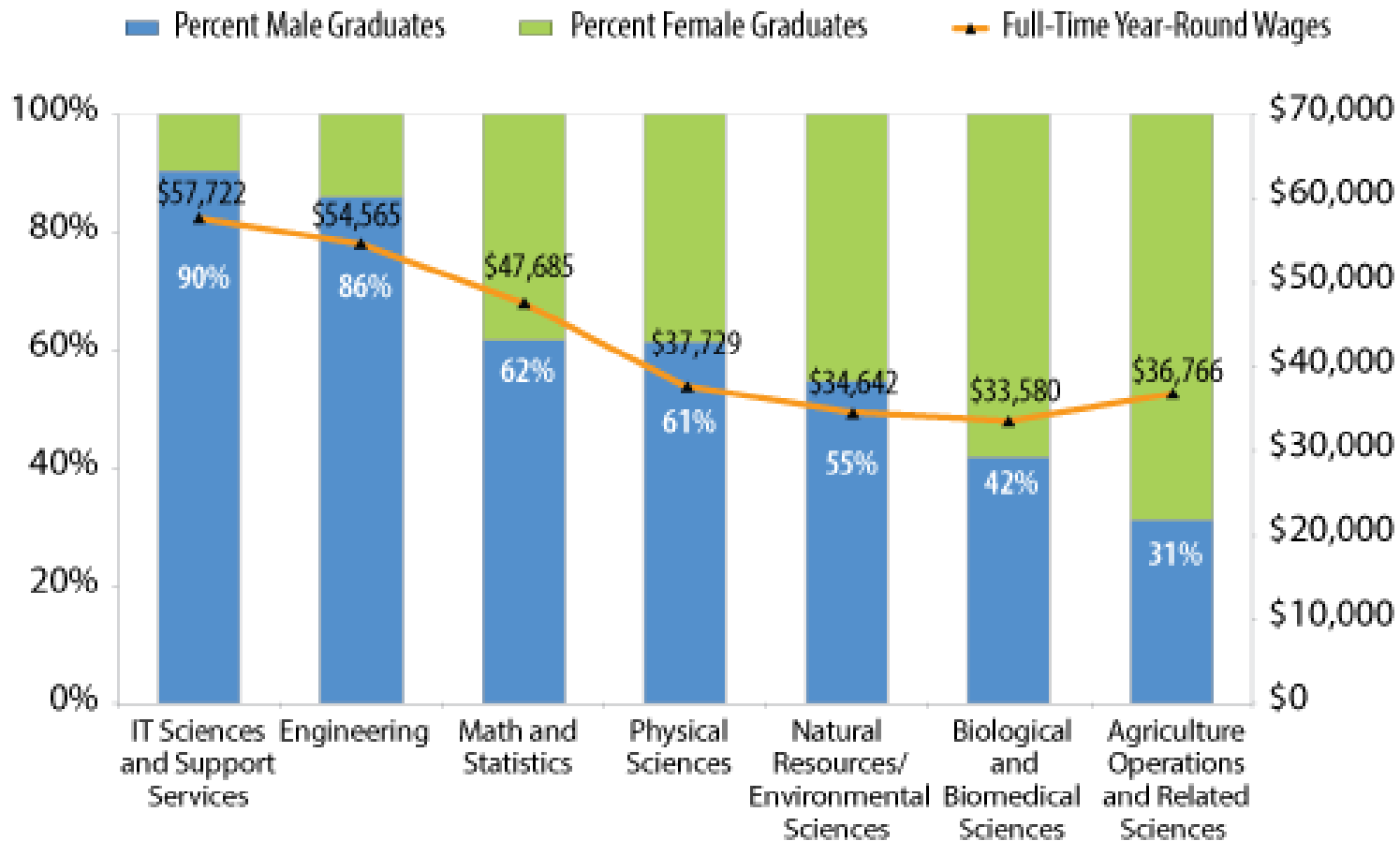
Top 15 STEM Industries

Industry	NAICS	Employment	Establishments
Total, All Industries		2,729,679	165,217
Total, STEM Industries		211,212	15,526
Computer Systems Design and Related Services	5415	33,824	4,906
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	3345	25,203	203
Architectural, Engineering, and Related Services	5413	20,174	1,900
Management, Scientific, and Technical Consulting Services	5416	15,871	3,085
Professional and Commercial Equipment and Supplies Merchant Wholesalers	4234	13,340	1,075
Electric Power Generation, Transmission and Distribution	2211	12,039	294
Wired Telecommunications Carriers	5171	9,078	431
Semiconductor and Other Electronic Component Manufacturing	3344	9,031	135
Computer and Peripheral Equipment Manufacturing	3341	8,754	58
Electrical and Electronic Goods Merchant Wholesalers	4236	8,425	577
Scientific Research and Development Services	5417	8,351	507
Data Processing, Hosting, and Related Services	5182	7,786	413
Software Publishers	5112	6,580	331
Electrical Equipment Manufacturing	3353	5,261	66
Other Information Services	5191	4,822	756

STEM Graduates are not all taking STEM Industry Jobs (55,355 Graduates from MN Colleges, 2006-2011)



STEM Graduates are Predominantly Male



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Conclusions

- STEM Careers provide high pay, decent growth prospects in some areas
- Most do require significant schooling
- Faced with shrinking workforce, businesses looking to fill STEM openings will need to plan, promote and compete.
- Also recognize that the workforce of the future will be more diverse