



GUEST WORKER PROGRAMS and the SCIENCE, TECHNOLOGY, ENGINEERING, MATHEMATICS (STEM) WORKFORCE

The United States' guest worker visa programs are a flashpoint in the ongoing immigration debate. **With a fallible reporting process and no unified government agency to provide oversight, the U.S.'s panoply of guest worker visa programs are overly complicated, lack accountability, have lax tracking enforcement and are a prime example of why U.S. immigration policy needs to be reformed.** Three factors are especially important to consider when assessing guest worker visa programs, such as the H-1B: the program itself, the condition and demand of the domestic U.S. labor market and the situation faced by qualified individuals displaced by such programs.

Guest Worker Visas—In Need of Repair & Reform

FACT: An H-1B visa is a nonimmigrant visa used by a foreign worker who will be employed temporarily in a specialty occupation or field.¹ This is renewable for up to six years.

FACT: The L-1 visa, often discussed along side the H-1B, is for intra-company transferees who, within the three preceding years, have been employed abroad by that company continuously for one year, and who will be employed by a branch, parent, affiliate, or subsidiary of that same employer in the U.S. in a managerial, executive, or specialized knowledge capacity.² This is renewable for up to seven years.

FACT: Under current law, at least four different U.S. government agencies and various parties may be involved in the visa application process. Take, for example, the H-1B program mentioned above:

- An employer interested in hiring a worker on an H-1B visa must first file a Labor Certification Agreement (LCA) with the Department of Labor (DOL). This and subsequent steps in the process is often done on the employer's behalf by a third party vendor;
- Once the conditions of an LCA have been approved by the DOL, a certified copy will be sent to the employer, who then must file a petition for an H-1B visa through U.S. Citizen and Immigration Services (USCIS);
- If the prospective employee is outside the United States, the U.S. Department of State must be notified via the appropriate consulate office;

- The Department of Homeland Security is responsible for the maintenance of the H-1B visa once approved, but not for ensuring visa recipients update their information or depart once their visa expires;
- Petitions are accepted for a given fiscal year (for example, 2010) in April of the preceding year (April 2009). H-1B recipients are not allowed to enter the U.S. for employment until October of that same year (in our example, October 2009);
- Additionally, the number of H-1B visas allotted is determined by Congress, not by any of the previously mentioned bodies;
- The maintenance of documentation to defend the validity of statements about wages, working conditions and location made in an LCA rests with the employer. This must be made available to the DOL upon request, although such requests are extremely rare. Employers are also responsible for advertising their intent to hire an H-1B worker via a U.S. government site, a provision that did not exist in the law until early 2009.³

No single government body is currently responsible for these employment-based visa programs in their entirety or their oversight.

FACT: In 2006, the Government Accountability Office (GAO) issued a report entitled, “H-1B Visa Program: Labor Could Improve Its Oversight and Increase Information Sharing with Homeland Security”. This report focused on the need for quality assurance controls within the program:

- “Labor’s oversight of the H-1B program is limited, even within the scope of its existing authority. Labor’s review of employers’ H-1B applications is limited by law to identifying omissions and obvious inaccuracies, but we found that it does not consistently identify all obvious inaccuracies [...] For example, although the overall percentage was small, we found 3,229 applications that were certified even though the wage rate on the application was lower than the prevailing wage for that occupation in the specific location.”⁴
- “Additionally, Labor does not identify other errors that may be obvious... We found 993 certified applications with invalid employer identification number prefixes. In other programs, Labor matches the application’s employer application number with valid employer identification numbers. However, they do not formally do this match with H-1B applications because it is an attestation process, not a verification process.”⁵

FACT: The current H-1B program depresses pay across the tech industry. An ongoing 2009 study shows that H-1B admissions at current levels are associated with about a 5-6% drop in wages for computer programmers and systems analysts.⁶ This is despite laws stating that H-1B recipients be paid the ‘prevailing wage’. If that were the case and there was a genuine shortage of qualified workers, no wage decrease should be seen.

FACT: The H-1B program is out of control and unmanageable. The current system of employment-based immigration, according to former Secretary of Labor Ray Marshall, is “rigid, cumbersome, and inefficient; do[es] too little to protect the wages and working conditions of workers (foreign or domestic); do[es] not respond very well to employers’ needs; and give[s] almost no attention to adapting the number and characteristics of foreign workers to domestic

labor shortages.”⁷ In addition, a 2008 study conducted by the USCIS found that 13% of H-1B petitions filed by employers were fraudulent and a further 7% had some form of violation.⁸

FACT: Half of the top 20 companies that used L-1 visas in 2006 were IT outsourcing firms based in India, many of whom are also among the top users of the H-1B program.⁹ Senator Richard Durbin (D-IL) has called for reform of both the L-1 and H-1B visa programs saying these visa programs are “plagued with fraud and abuse and [are] now a vehicle for outsourcing that deprives qualified American workers of their jobs.”¹⁰

FACT: Forty to forty-five percent of illegal immigration can be attributed to immigrants who have overstayed their legally obtained visas.¹¹

FACT: Many business interests argue that guest worker programs like the L-1 and H-1B allow U.S. firms to remain “innovative”,¹² recruit and retain “the best and the brightest”,¹³ but the U.S. system, unlike many European and Asian states, does not have a points system or other means of assessing the abilities of these visa candidates. The current system allots visas like H-1Bs via a lottery, the number of which is set by Congress.

FACT: Effective employment-based immigration reform is necessary. Both the AFL-CIO and Change to Win labor federations have adopted immigration framework similar to that developed by former Secretary Marshall and the Economic Policy Institute. This framework has five major interconnected pieces: 1. An independent commission to assess and manage future flows, based on labor market shortages that are determined on the basis of actual need; 2. A secure and effective worker authorization mechanism; 3. Rational operational control of the border; 4. Adjustment of status for the current undocumented population; and 5. Improvement, not expansion, of temporary worker programs, limited to temporary or seasonal, not permanent, jobs.¹⁴

Demand—Labor Market Conditions

FACT: The U.S. DOL estimates that between 2006 and 2016 computer and mathematical science occupations will add 820,000 jobs and grow the fastest out of the eight main professional subgroups.¹⁵ However, expert studies have shown that globalization has caused a leveling off of IT job growth with this trend continuing across the sector, making job growth in computer and mathematical science occupations difficult to predict.¹⁶

FACT: DOL estimates that there will be approximately 82,000 new jobs created per year between 2006 and 2016 in the computer and mathematical sciences.¹⁷ Yet between 2002 and 2005, more than 100,000 H-1B applications for computer and programming related industries were reviewed and certified.¹⁸

FACT: According to the GAO, the Department of Homeland Security follows the H-1B cap, which is currently set at 65,000 but has been as high as 125,000 in the recent past. However, a previously approved uncapped exemption for educational institutions, non-profits and other entities allows more foreign workers to come in to the U.S. In 2004, another exemption created still another cap loophole by adding an additional 20,000 annual allotment for U.S.-educated foreign workers with advanced degrees. More than 31,000 applications were received in 2009 for H-1B visas under this exemption.¹⁹ Furthermore, since the “temporary” H-1B visa is good for up to six years, according to government data some 125,000 existing visa holders renew annually. As a result, under current law over 267,000 foreign professionals get new or renewed

guest worker visas, as occurred in FY 2005.²⁰ Currently, there is no single government agency that can confirm this number.

FACT: DOL expects that job growth in the computer industry will decline as the software industry matures and moves overseas.²¹ This scenario supports earlier warnings that the H-1B and similar programs were forcing U.S. workers to “train their replacements”,²² as trained guest workers return to their home countries. The U.S. tech industry has, in large part, followed these workers overseas where the standard of living and expected compensation for professionals is far lower. Many of the largest and most powerful supporters of guest worker programs, such as Microsoft, Intel and GE, now have research and development centers abroad in countries such as China, India and across Eastern Europe.

FACT: Between 2000 and 2008, the median weekly earnings for computer systems analysts and scientists increased from \$881 to \$1,242 (in current dollars).²³ After adjusting for inflation, this represents an annual average increase of 1.4%. This slight increase in median weekly earnings is not indicative of a labor shortage.

FACT: For computer operations and systems researchers and analysts—an occupational category that was 52% female in 2008—the median wages increased from \$929 weekly to \$1,259, from 2000–2008.²⁴ After adjusting for inflation, this is an annual average increase of less than 1%. While the current numbers increased overall during this period, the rate was unstable and fluctuated considerably. Such a small increase, with fluctuations taken into account, is not indicative of a labor shortage.

FACT: For computer programmers, the average weekly wage increased from \$944 in 2000 to \$1,218 in 2008, which after adjusting for inflation amounts to a 3% change.²⁵

FACT: In June of 2009, the U.S. Department of Justice opened an investigation to assess whether the U.S.’s largest technology companies—such as Google, Apple and the biotechnology firm Genetech—negotiated the recruitment and hiring of one another’s employees, including those employed under H-1B visas. Such an action would be a violation of U.S. antitrust laws and would serve to suppress worker wages across the sector.²⁶

FACT: In a Congressionally-mandated study released soon after Congress passed S. 2045, the National Research Council—the principal operating arm of the National Academy of Sciences and the National Academy of Engineering—found that, “**the current size of the H-1B workforce relative to the overall number of IT professionals is large enough to keep wages from rising** as fast as might be expected in a tight labor market”. Further, it also found, “no analytical basis on which to set the proper level of H-1B visas, and that decisions to reduce or increase the cap on such visas are fundamentally political”.²⁷

Supply—The Educational Pipeline

FACT: According to information available from the U.S. Department of Education and the Computing Research Association, between 2006 and 2007 **U.S. colleges and universities graduated more than 203,000 students with bachelors, masters or Ph.D.s in the core disciplines that are critical to this industry**—computer/information science, math and engineering/engineering technology. At current graduating rates, the supply of graduates will exceed the DOL’s projections for average yearly high-tech job creation over the next eight years.²⁸

FACT: According to the DOL, a bachelor's degree is the most significant source of postsecondary education or training for many high-tech workers. Among computer software engineers (both applications and systems software) and computer systems analysts, completion of a bachelor's degree is generally a minimal requirement and more essential than an associate degree, master's degree, or on-the-job training.²⁹

FACT: These graduation statistics do not include any of the tens of thousands of community college students who either: 1) graduate with two-year, Associate degrees in IT disciplines, which numbered nearly 60,000 in 2006–2007,³⁰ or 2) are enrolling in IT-certification courses, as well as other continuing education curricula designed to help them transition into high-tech careers. Both of these talent pools would certainly seem to qualify for employment in a significant number of professional, entry-level high-tech jobs, yet they **appear to be largely ignored by the industry.**

FACT: The supply of U.S. graduates qualified to work in high-tech occupations has declined from a peak, but has remained strong over the past five years. The pattern of bachelor's degrees conferred shows a sustained interest in the field, despite the “bust” of the technology sector bubble in the early 2000s³¹ and student concern over the availability of jobs after graduation.³² Between 1996–1997 and 2006–2007, the number of engineering degrees conferred declined by 1%, but then rose 10% between 2001–2002 and 2006–2007 and the number of mathematics degrees declined by 16% and then rose by 11%. Meanwhile, degrees in computer and information sciences first increased 25% from 1993–1994 and 1998–1999 and then grew by 98% from 1996–1997 and 2001–2002. The number of degrees in computer and information sciences decreased 16% between 2001–2002 and 2006–2007.³³

FACT: Undergraduate and graduate enrollment in computer science programs has remained strong despite fluctuations in the economy and job market. In the Fall of 2008, there were more than 12,000 new undergraduate students enrolled in computer science programs across the U.S. U.S. Ph.D. production and Ph.D. enrollment in the field has also drastically increased between 2002 and 2008.³⁴

FACT: More than half of the students currently enrolled in Masters or Ph.D. programs in computer science or computer engineering are nonresident aliens.³⁵

FACT: The H-1B program is making it worse, not better. Highly qualified U.S. students are citing uncertainty in the future of domestic science and engineering resulting from an increasing H-1B workforce and increased outsourcing as a motivating factor in causing them to pursue other career opportunities.³⁶

FACT: These statistics indicate that the current supply of college graduates is sufficient to satisfy current and future STEM industry needs.

Supply—Incumbent Workers

FACT: This industry has an abysmal record of hiring minority workers. Presently, a paltry 5.1% of this industry consists of Hispanic Americans—less than one-half their rate of total employment in the U.S. economy—and only 7.2% are African Americans.³⁷

FACT: A major study done by the Urban Institute shows that the industry claims of widespread and pervasive shortages of qualified workers are just not true:

- Labor market indicators do not demonstrate a shortage of supply.
- The evidence suggesting a need for more H-1B workers is anecdotal.

- o Surveys have shown that managers' complaints about an inability to hire qualified workers do not rest in a lack of qualified applicants but in unrealistic expectations to hire workers who have lots of specific work experience.
- o These surveys have shown that there are plenty of applicants who meet the educational requirements of open positions.
- The overall science and engineering field workforce is about 4.8 million while 15.7 million workers hold science or engineering degrees.
- From 1985 to 2000, 435,000 U.S. residents graduated with science or engineering degrees while job growth in those fields was just 150,000 annually.³⁸

FACT: The high turnover caused by the industry's extensive use of short-term personnel requires workers to constantly move from job to job. This churning in the workforce creates reports of job openings that are cited as proof of shortages. But most of these reported job opportunities remain open for only short periods of time before they are filled. This employment strategy also serves to keep wages artificially low and stymie workers from maturing in their career.

Timeline of a Cyclical 'Crisis' ^{39,40}

1980's: National Science Foundation (NSF) predicts "looming shortfalls" of scientists and engineers through a series of "studies".

1990: The H-1B program is created when President Bush signs the "Immigration Reform and Control Act of 1990".⁴¹

1992: NSF "studies" discredited through Congressional investigation and no shortfalls materialize. Congress criticizes NSF for its carelessness and warns that an important lesson should have been learned.

1996: The "American Business for Legal Immigration" lobby is established and funded by high-tech companies (now known as Compete America).⁴²

1997: The Information Technology Association of America (ITAA) produces a series of reports claiming mass shortages of IT workers. These reports did not rely on market indicators, but rather used monitoring of job openings.⁴³

1998: The General Accounting Office (GAO) issues criticism of the ITAA reports citing the weak methodology and lack of empirical data.⁴⁴

2000: ITAA report citing 843,000 unfilled jobs is used as motivation to triple the size of the H-1B visa cap despite continued GAO criticism of the ITAA conclusions.⁴⁵

2000: Vernon Briggs, Professor of Industrial and Labor Relations, Cornell University, warns that the increase in H-1B visas will dissuade Americans from pursuing IT careers by suppressing wages.⁴⁶

2003: A RAND study collected data from the National Science Foundation, the Bureau of the Census, the Bureau of Labor Statistics, the National Research Committee and others in a comprehensive report concluding: "neither earnings patterns nor unemployment patterns indicate [a science and engineering] shortage".⁴⁷

2003: Bureau of Labor Statistics releases data showing high unemployment for scientists and engineers.

2005: A report led by the Business Roundtable, “Tapping America’s Potential”, calls for increased science and engineer immigration and a doubling of science graduates by 2015. The report cites anticipated job shortfalls.⁴⁸

2006: A National Academies report, “Rising Above the Gathering Storm”, calls for increased science and engineer immigration, citing impending shortfalls.⁴⁹

2007: A wide variety of professional studies are released critiquing and refuting the claims of educational gaps in science and engineering and shortfalls in available workforce:

- Harold Salzman, Ph.D., The Urban Institute: “the United States’ education system produces a supply of qualified [science and engineering] graduates in much greater numbers than jobs available”.⁵⁰
- Michael S. Teitelbaum, Vice President, Alfred P. Sloan Foundation: “First, no one who has come to the question with an open mind has been able to find any objective data suggesting general “shortages” of scientists and engineers.”⁵¹
- Urban Institute study Into the Eye of the Storm: “Recent policy reports claim the United States is falling behind other nations in science and math education and graduating insufficient numbers of scientists and engineers. Review of the evidence and analysis of actual graduation rates and workforce needs does not find support for these claims.”⁵²

2009: The annual Taulbee Survey of Computing Degree and Enrollment Trends shows that enrollment in U.S. computer science programs is 6.2% higher than the 2006–2007 period. Degree production at the Ph.D. level is also up 5.7% from 2006–2007.⁵³

2009: The Marshall Report is released by the Economic Policy Institute. Similar reform structures are adopted by the AFL-CIO and Change to Win and the commission framework is endorsed by organizations such as the Migration Policy Institute.

¹ U.S. Department of Homeland Security, Citizen and Immigration Services, “What is an H-1B?”, last updated June 5, 2009. Available:

<http://www.uscis.gov/portal/site/uscis/menuitem.5af9bb95919f35e66f614176543f6d1a/?vgnnextoid=bac7d92e8003f010VgnVCM1000000ecd190aRCRD&vgnnextchannel=1847c9ee2f82b010VgnVCM10000045f3d6a1RCRD>

² U.S. Department of State, Bureau of Consular Affairs, “Temporary Workers”, last updated 2009. Available: http://travel.state.gov/visa/temp/types/types_1271.html#1

³ U.S. Department of Labor, Employment & Training Administration, “H-1B Specialty (Professional) Workers”, last updated 2009. Available: <http://www.foreignlaborcert.doleta.gov/h-1b.cfm>

⁴ U.S. Government Accountability Office, Report to Congressional Requesters, “H-1B Visa Program: Labor Could Improve Its Oversight and Increase Information Sharing with Homeland Security”, June 2006.

⁵ *Ibid.*

⁶ Tambe, Prasanna and Lorin Hitt. “H-1B Visas, Offshoring, and the Wages of U.S. Technology Workers”, Working Paper, NYU, Stern School of Business and University of Pennsylvania, Wharton School of Business, April 14, 2009.

⁷ Marshall, Ray. “Immigration for Shared Prosperity: A Framework for Comprehensive Reform”, Economic Policy Institute, April 2009.

⁸ Herbst, Moira. “High Rate of H-1B Visa Fraud”, *Business Week*, October 8, 2008. Available: http://www.businessweek.com/bwdaily/dnflash/content/oct2008/db2008108_844949.htm?chan=top+news_top+news+index+-+temp_technology

⁹ Kolbasuk McGee, Marianne. “Senators Release List of Top L-1 Visa Employers”, *Information Week*, June 26, 2007.

¹⁰ Durbin, Richard. “Durbin, Grassley Introduce Legislation to Reform H-1B Visa Program”, [press release], April 23, 2009. Available: <http://durbin.senate.gov/showRelease.cfm?releaseId=311910>

- ¹¹ Marshall, Ray. “Immigration for Shared Prosperity: A Framework for Comprehensive Reform”, Economic Policy Institute. April 2009.
- ¹² Fontana, John and Denise Dubie. “Bill Gates Stumps for H-1B as Debate Rages”, *Network World*, March 12, 2008. Available: <http://www.networkworld.com/news/2008/031208-gates-h1b.html>
- ¹³ Goldfarb, Sam. “Immigration Cap is Taking ‘Best, Brightest,’ Gates Says”, *The Seattle Times*, Business and Technology Section, March 8, 2007. Available: http://seattletimes.nwsourc.com/html/business/technology/2003606830_billgates08m.html
- ¹⁴ Marshall, Ray. “Immigration for Shared Prosperity: A Framework for Comprehensive Reform”, Economic Policy Institute, April 2009.
- ¹⁵ U.S. Department of Labor, Bureau of Labor Statistics, “Occupational Employment Projections to 2016”, *Monthly Labor Review*, November 2007.
- ¹⁶ Salzman, Harold. “Globalization of R&D and Innovation: Implications for U.S. STEM Workforce and Policy”, Statement submitted to the Subcommittee on Technology and Innovation, November 6, 2007.
- ¹⁷ U.S. Department of Labor, Bureau of Labor Statistics, “Occupational Employment Projections to 2016”, *Monthly Labor Review*, November 2007.
- ¹⁸ U.S. Government Accountability Office, Report to Congressional Requesters, “H-1B Visa Program: Labor Could Improve Its Oversight and Increase Information Sharing with Homeland Security”, June 2006.
- ¹⁹ U.S. Department of Homeland Security, U.S. Citizenship and Immigration Services, “USCIS Update: USCIS Releases Preliminary Number of FY 2009 H-1B Cap Filings”, [press release], April 10, 2008.
- ²⁰ U.S. Government Accountability Office, Report to Congressional Requesters, “H-1B Visa Program: Labor Could Improve Its Oversight and Increase Information Sharing with Homeland Security”, June 2006. U.S. Department of Homeland Security, U.S. Citizenship and Immigration Services, “Report on H-1B Petitions, Fiscal Year 2005”. Available: http://www.uscis.gov/files/nativedocuments/H1B05Annual_08_7.pdf
- ²¹ U.S. Government Accountability Office, Report to Congressional Requesters, “H-1B Visa Program: Labor Could Improve Its Oversight and Increase Information Sharing with Homeland Security”, June 2006.
- ²² Tax, Richard F. “Fighting Back—Training Your Replacement”, *American Engineering Association Online*. Accessed on June 5, 2009. Available: <http://www.aea.org/fightingback.htm>
- ²³ U.S. Department of Labor, Bureau of Labor Statistics, *Current Population Survey*, 2008.
- ²⁴ *Ibid.*
- ²⁵ *Ibid.*
- ²⁶ Kang, Cecilia. “Federal Antitrust Probe Targets Tech Giants, Sources Say”, *The Washington Post*, June 3, 2009. Available: <http://www.washingtonpost.com/wp-dyn/content/article/2009/06/02/AR2009060203412.html>
- ²⁷ National Research Council, *Building a Workforce for the Information Economy*, 2001.
- ²⁸ U.S. Department of Education, *Digest of Education Statistics 2008*.
- ²⁹ U.S. Department of Labor, Bureau of Labor Statistics, *Occupational Outlook Handbook. 2008–2009*.
- ³⁰ U.S. Department of Education, *Digest of Education Statistics 2008*.
- ³¹ Markoff, John. “Computer Science Programs Make a Comeback in Enrollment”, *The New York Times*, March 16, 2009. Available: <http://www.nytimes.com/2009/03/17/science/17comp.html>
- ³² Vegso, Jay. “Enrollments and Degree Production at U.S. CS Departments Drop Further in 2006–07”, *Computing Research News*, Volume 20, No. 2, March 2008.
- ³³ U.S. Department of Education, *Digest of Education Statistics 2008*.
- ³⁴ Computing Research Association, *Annual Taulbee Survey, 2007–2008*. Available: <http://www.cra.org/statistics/>
- ³⁵ *Ibid.*
- ³⁶ Salzman, Harold. “Globalization of R&D and Innovation: Implications for U.S. STEM Workforce and Policy”, Statement submitted to the Subcommittee on Technology and Innovation, November 6, 2007.
- ³⁷ U.S. Department of Labor, Bureau of Labor Statistics, *Current Population Survey*, 2008.
- ³⁸ Salzman, Harold. “Globalization of R&D and Innovation: Implications for U.S. STEM Workforce and Policy”, Statement submitted to the Subcommittee on Technology and Innovation, November 6, 2007.
- ³⁹ Teitelbaum, Michael. “Do We Need More Scientists?”, 2003.
- ⁴⁰ Testimony of Michael Teitelbaum, Vice President, Sloan Foundation, before Subcommittee on Technology and Innovation, United State Congress, November 6, 2007.
- ⁴¹ Briggs, Vernon. “American Unionism and U.S. Immigration Policy”, August 2001.
- ⁴² <http://www.competeamerica.org/>
- ⁴³ <http://www.itaa.org/>
- ⁴⁴ General Accounting Office, Letter to the Honorable John D. Dingell and the Honorable George E. Brown, Jr. “Information Technology Workers: Employment and Starting Salaries”, May 12, 1998. Available: www.gao.gov/corresp/he98159r.pdf

⁴⁵ The Information Technology Association of America (ITAA). “Bridging the Gap: Information Technology Skills for a New Millennium”, 2000.

⁴⁶ Frauenheim, Ed. “The Scourge of Silicon Valley”, October 19, 2000.

<http://dir.salon.com/tech/feature/2000/10/19/matloff/index.html>

⁴⁷ “Is There a Shortage of Scientists and Engineers? How Would We Know?”.

http://www.rand.org/pubs/issue_papers/IP241/IP241.pdf

⁴⁸ http://www.uschamber.com/publications/reports/050727_tap.htm

⁴⁹ http://www.nap.edu/catalog.php?record_id=11463

⁵⁰ Salzman, Harold. “Globalization of R&D and Innovation: Implications for U.S. STEM Workforce and Policy”, statement submitted to the Subcommittee on Technology and Innovation, November 6, 2007.

⁵¹ Testimony of Michael S. Teitelbaum, Vice President, Sloan Foundation, before Subcommittee on Technology and Innovation, United State Congress, November 6, 2007.

⁵² Lowell, Lindsay and Harold Salzman. “Assessing the Evidence on Science and Engineering Education, Quality and Workforce Demand”, Urban Institute, October 29, 2007.

⁵³ Zweben, Stuart. “Computing Degree and Enrollment Trends from the 2007–2008 CRA Talubee Survey”, *Computing Research Association*, April 2009. Accessible at: http://www.cra.org/taulbee/CRA_TaulbeeReport-StudentEnrollment-07-08.pdf

For further information on professional workers, check out DPE’s Web site: www.dpeaflcio.org.

The Department for Professional Employees, AFL-CIO (DPE) comprises 24 AFL-CIO unions representing over four million people working in professional, technical and administrative support occupations. DPE-affiliated unions represent: teachers, college professors and school administrators; library workers; nurses, doctors and other health care professionals; engineers, scientists and IT workers; journalists and writers, broadcast technicians and communications specialists; performing and visual artists; professional athletes; professional firefighters; psychologists, social workers and many others. DPE was chartered by the AFL-CIO in 1977 in recognition of the rapidly-growing professional and technical occupations.

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June 2009

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