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Education and Training Funded by the H-1B Visa Fee and Labor Market Conditions for Information Technology (IT) Workers

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Summary

Congress has repeatedly turned to immigration as a means of immediately alleviating a perceived shortage of U.S. workers with information technology (IT) skills. The 105th and 106th Congresses temporarily raised the ceiling on newly approved H-1B professional specialty visas in 1998 and in 2000, from the level of 65,000 set by the Immigration and Nationality Act of 1990. The 106th Congress exempted some temporary foreign workers from the H-1B visa limit as well. After the elevated cap reverted to 65,000 on October 1, 2003, which coincided with the delayed rebound in the labor market from the 2001 recession, the H-1B visa ceiling was reached earlier in each year. In the FY2005 appropriations act (P.L. 108-447), the 108th Congress responded by exempting from the cap 20,000 aliens with at least a master's degree from U.S. institutions of higher education.

When the 105th Congress raised the H-1B visa ceiling, it also initiated what was intended as a longer term strategy to remedy the seeming mismatch between the qualifications of U.S. workers and the skill requirements of U.S. employers: the imposition of a user fee on employers who file petitions to bring into the country, to extend the stay of, or to hire from other U.S. employers nonimmigrant professionals to fund programs that prepare U.S. students and workers for computer-related and other high-skilled fields. Like the elevated H-1B visa cap, the fee expired on October 1, 2003. The 108th Congress permanently reauthorized the education and training user fee in P.L. 108-447 and raised the amount to at least $1,500 effective December 2004. It also modified the allocation of the fees, which are deposited in the H-1B Nonimmigrant Petitioner Account prior to disbursal, to principally the National Science Foundation (NSF) and the U.S. Department of Labor (DOL). Most of the fees had gone to the NSF's Computer Science, Engineering, and Mathematics Scholarship program and to the DOL's Technical Skills Training Grant program. Based upon modifications in P.L. 108-447, the scholarship program has been renamed the NSF Scholarships in Science, Technology, Engineering, and Mathematics, and DOL intends to utilize the H-1B user fees to support the President's High Growth Job Training Initiative.

Despite the further loosening of the H-1B visa ceiling in P.L. 108-447, U.S. Citizenship and Immigration Services announced in August 2005 that it had received more than 65,000 visa petitions. This marked the first time the H-1B visa cap was exhausted before the start of a fiscal year (FY2006). The business community has encouraged, thus far unsuccessfully, the 109th Congress to again change the visa limit to allow additional skilled temporary workers to enter the country annually. Although labor market conditions for IT workers have been improving over the past year, the workers and their supporters assert that the jobs of IT professionals are now not only being threatened by the importation of foreign workers with H-1B visas but also by U.S.-based companies outsourcing IT and IT-enabled work offshore to India and Eastern European, among other, nations. This report will be updated to reflect the activities of the education and training programs funded by the H-1B user fee and to examine the labor market situation of IT workers.

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The economic boom that characterized much of the 1990s was particularly true among companies in "high tech" or information technology (IT) industries (e.g., electronics manufacturing, telecommunications, and software services). The demand for workers with IT skills (e.g., computer systems analysts and programmers, data communications and network personnel, and computer systems technical support) also was expanding rapidly outside the high tech sector as firms increasingly utilized computer-based technologies.

In response to a perceived shortage of persons with IT skills,[1] the 105th and 106th Congresses were motivated to raise for five years the limit on H-1B visas. (The visa category allows employers to temporarily import alien workers to fill professional specialty occupations.[2]) Congress also initiated a user fee that funded education and training activities of the National Science Foundation (NSF) and the Department of Labor (DOL) to further augment the supply of workers with IT among other skills and thereby reduce the future reliance of U.S. firms on temporary foreign workers.

The 108th Congress came to the intertwined H-1B visa cap and user fee issues in a much-changed economic environment. The economy experienced a recession in 2001, with the labor market subsequently staging a historically slow recovery. IT workers were especially hard hit both by cyclical and other factors.[3] This was reflected in the number of approved H-1B visas for new admissions falling below the elevated cap from FY2001 through FY2003.

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[1] For information on the debate about the presence of an IT worker shortage, see CRS Report RL30140, *An Information Technology Labor Shortage? Legislation in the 106th Congress*, by Linda Levine.

[2] In the Immigration and Nationality Act of 1990, a professional specialty occupation is defined as one that requires the application of a body of highly specialized knowledge, the attainment of at least a bachelor's degree (or its equivalent), and the possession of a license or other credential to practice the occupation if required.

[3] See, for example, Snigdha Srivastava and Nik Theodore, *America's High Tech Bust,* A Report to the Washington Alliance of Technology Workers, Communications Workers of America, conducted by the Center for Urban Economic Development, University of Illinois at Chicago, Sept. 2004; and Richard Ellis and Lindsay Lowell, *The Outlook in 2003 for Information Technology Workers in the USA*, sponsored by the Alfred P. Sloan Foundation, Commission on Professionals in Science and Technology, and the United Engineering Foundation, Aug. 28, 2003.

On October 1, 2003, however, the reversion of the H-1B visa ceiling from 195,000 to 65,000 meant that employers of workers in professional specialty occupations faced heightened competition for visas. The coincident expiration of the user fee also meant that certain NSF scholarship and DOL training programs would cease to operate. Some asserted that the programs were no longer needed because they thought an adequate supply of already qualified workers existed to fill employers' demand for IT and other professional specialty workers. Others countered that this was only a temporary situation reflecting the "jobless recovery," which would end at some point and cause employers to renew their pressure on Congress to raise H-1B visa levels. And, indeed, the delayed rebound in the labor market from the recession that ended in November 2001 occurred at about this time.[4]

With the H-1B visa ceiling being reached even earlier in FY2005 than in FY2004, the 108th Congress responded in late 2004 by keeping the cap at 65,000 but exempting from it up to 20,000 aliens with at least a master's degree from U.S. institutions of higher education. P.L. 108-447 also reimposed and authorized permanently the H-1B user fee for education and training activities.

Despite the latest loosening of the H-1B ceiling, U.S. Citizenship and Immigration Services announced in August 2005 that it had received more than 65,000 H-1B visa petitions. This was the first time the cap was met before a fiscal year (FY2006) began. Consequently, the business community has encouraged (thus far unsuccessfully) the 109th Congress to reexamine the H-1B visa limit. IT workers and their supporters contend, however, that IT and IT-enabled jobs are now not only being threatened by the importation of foreign workers with H-1B visas but also by U.S.-based companies outsourcing work offshore to India and Eastern European, among other, nations.[5]

This report begins by discussing the user-fee funded education and training provisions of the relevant immigration legislation passed in 1998, 2000, and 2004. It then examines the NSF and DOL programs funded through the H-1B education and training user fee. The report closes with an examination of changes in the labor market conditions faced by IT workers from 1989 through 2005.

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[4] CRS Report RL32047, *The "Jobless Recovery" From the 2001 Recession: A Comparison to Earlier Recoveries and Possible Explanations*, by Marc Labonte and Linda Levine. (Hereafter cited as CRS Report RL32047, *The "Jobless Recovery*.")

[5] See, for example, the Information Technology Association of America, *ITAA Says H-1B Cap Needs Significant Increase*, Aug. 12, 2005, and *ITAA Supports Provision Allowing H-1B Visa Recapture*, Oct. 13, 2005, available at [http://www.itaa.org]; and letter from the American Federation of Labor — Congress of Industrial Organizations (AFL-CIO) to Senators in opposition to the recapture proposal, available at [http://www.aflcio.org/issues/legislativealert/].

Legislative Activity

During the 105th Congress

Concern about an IT labor shortage culminated during the 1998 congressional debate over raising the ceiling on H-1B visas for skilled temporary alien workers. The 105th Congress chose, in Title IV (the American Competitiveness and Workforce Improvement Act of 1998, ACWIA) of P.L. 105-277 (the FY1999 Omnibus Consolidated and Emergency Supplemental Appropriations Act), to raise the cap from 65,000 on new admissions of nonimmigrant professionals who work in specialty occupations to 115,000 annually in FY1999 and FY2000, and to 107,500 in FY2001.[6]

The legislation also imposed a user fee on employers that filed petitions to bring into the country, to extend the stay of, or to hire from other U.S. employers nonimmigrant professionals from December 1, 1998 through September 30, 2000. The cap, then, relates to visas approved for initial employment of temporary aliens, while the user fee relates to visa petitions for initial and continuing employment of temporary aliens.

The fee of $500 per H-1B visa petition was to be used largely to fund mathematics, engineering, or science education and to fund technical skills training in order to better match the supply of qualified U.S. workers with the nature of employer demand. Most fees deposited into the H-1B Nonimmigrant Petitioner Account were allocated to activities carried out by the NSF and the DOL as follows:

- ACWIA authorized and funded, through 28.2% of the user fees, the Computer Science, Engineering, and Mathematics Scholarships (CSEMS) program to provide awards to low-income, academically talented students enrolled in undergraduate and graduate degree programs.
- The NSF received an additional 8% of all fees, with half going to award merit-reviewed grants under the National Science Foundation Act of 1950 (Section 3(a)(1)) for programs that provide year-round K-12 academic enrichment courses in mathematics, engineering, or science and half going to carry out systemic reform activities in K-12 education under Section 3(a)(1) of the 1950 Act.
- Congress directed that the majority of the user fees (56.3%) go to the DOL to fund a demonstration program under Section 452(c) of the Job Training Partnership Act (JTPA) or under Section 171(b) of the Workforce Investment Act (WIA), which replaced JTPA. The grant program was to provide training in technical skills to both employed and unemployed workers.

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[6] In addition to computer-related jobs, employers in recent years have obtained relatively large numbers of H-1B visas for such occupations as electrical and electronic engineers; accountants and auditors; and college and university faculty.

- DOL was awarded an additional 6% of the user fees to reduce the processing time of visa applications and for enforcement activities.[7]

During the 106th Congress

The then-Immigration and Nationalization Service (INS) announced that the increased cap of 115,000 H-1B visas for FY1999 was reached in June 1999, however. The 115,000 limit for FY2000 was reached even earlier in the year (March 2000).

The 106th Congress responded with passage of the American Competitiveness in the Twenty-First Century Act of 2000 (P.L. 106-313). The act raised the cap on newly approved H-1B visas to 195,000 annually between FY2001 and FY2003 while making additional visas available for FY1999 and FY2000. P.L. 106-313 also exempted from the higher limit on admissions for initial employment aliens temporarily employed by institutions of higher education, nonprofit research organizations or governmental research organizations. Professional specialty workers seeking extensions or modifications to their initial H-1B employment also no longer count against the cap (i.e., the cap does not apply to continuing employment).

In addition, P.L. 106-313 amended ACWIA's allocation of H-1B fees for education and training programs as follows:

- The share going to NSF's CSEMS program was lowered to 22.0% from 28.2%. The amount of the scholarships was raised from $2,500 to $3,125. In addition, scholarships could be renewed for up to four years.
- The share provided to the NSF for K-12 activities almost doubled (to 15%). The funds were to be expended to carry out a direct or matching grant program to support private-public partnerships in K-12 education and to continue to carry out systemic K-12 reform activities.
- The share going to DOL's Technical Skills Training Grants was lowered slightly to 55.0% from 56.3%. The act stated that although the training did not have to develop skill levels commensurate with a four-year college degree, it did have to prepare workers for a wide range of positions along a career ladder. It mandated that at least 80% of the grants be awarded for training employed and unemployed workers in skills required in high technology, information technology and biotechnology.[8] No more than 20% of the grants could be awarded to train persons for a single specialty

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[7] The remaining 1.5% went to the Attorney General to reduce the processing time of H-1B petitions and to improve the enumeration of nonimmigrant workers.

[8] As stated in the legislation, these fields included software and communications services, telecommunications, systems installation and integration, computers and communications hardware, advanced manufacturing, health care technology, biotechnology and biomedical research and manufacturing, and innovation services.

occupation. P.L. 106-313 further directed the Secretary of Labor, in consultation with the Secretary of Commerce, to award 75% of the grants (which had a 50% matching requirement) to WIA's local workforce investment boards or consortia of such boards in a region.[9] The remaining 25% of grants (with a 100% matching requirement) were to go to partnerships consisting of at least two businesses or a business-related nonprofit organization that represents more than one business (e.g., trade association).

- The 6% that went to DOL under ACWIA for reducing the processing time of H-1B applications fell to 4%.[10]

Separate legislation (P.L. 106-311) raised the user fee to $1,000 effective December 18, 2000. It extended the life of the fee through September 30, 2003, as well.

During the 108th Congress

The subsequent reduced demand for IT workers — a product of the 2001 recession and burst high-tech bubble, among other things — was evident in the number of approved new H-1B visas falling short of the elevated cap in FY2001 through FY2003. Once the limit dropped by two-thirds (from 195,000 to 65,000) on October 1, 2003, however, competition among employers for professional specialty visas intensified. At about the same time, firms began to expand employment as well, marking an end to the "jobless recovery" on a national basis.[11] The cap on H-1B visas was then reached earlier in each year: February 2004 for FY2004, and October 2004 — the very first month of the fiscal year — for FY2005.

The 108th Congress addressed the situation in Title IV (the H-1B Visa Reform Act of 2004) of H.R. 4818, the FY2005 appropriations act (P.L. 108-447). In addition to exempting from the 65,000 cap 20,000 aliens with at least a master's degree from a U.S. institution of higher education and instituting a $500 fraud-prevention-and-detection fee, the act reauthorized permanently a user fee to fund education and training activities for U.S. students and workers. Specifically, effective December 2004, employers that file petitions to bring into the country, to extend the stay of, or to hire from other U.S. employers nonimmigrant professionals must pay a fee of $1,500 (up from $1,000), except for employers with 25 or fewer full-time equivalent workers employed in the United States who must pay a filing fee one-half as large ($750).

The act also changes the allocation of the user fee among the agencies (effective on the date of enactment) and revises their associated education and training programs (effective 90 days after the date of enactment) as follows:

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[9] Under ACWIA, 100% of the grants went to these bodies.

[10] The Attorney General received the remaining 4% to reduce the processing time of H-1B petitions and to improve the enumeration of nonimmigrant workers.

[11] CRS Report RL32047, *The "Jobless Recovery."*

- The share going to NSF's CSEMS program rises to 30.0% from 22.0%. The value of the scholarships increases substantially (from $3,125 to $10,000). Eligibility for low-income students is expanded from those enrolled in programs leading to a degree in mathematics, engineering, or computer science to "mathematics, engineering, computer science, or other technology and science programs designated by the Director."[12] In addition, the NSF Director may now use a maximum of 50% "of such funds for undergraduate programs for curriculum development, professional and workforce development, and to advance technological education. Funds for these other programs may be used for purposes other than scholarships."
- The share provided to the NSF for K-12 activities to carry out a direct or matching grant program to support private-public partnerships in K-12 education and to continue to carry out systemic K-12 reform activities is reduced from 15% to 10%.
- The share going to DOL's Technical Skills Training Grants is lowered as well, from 55.0% to 50.0%. The act substantially changed the DOL program. It states that grants are to be awarded to eligible entities to provide job training services and related activities to employed and unemployed workers so they can obtain or upgrade career ladder positions in high-growth industries.[13] Eligible entities are defined as private-public sector partnerships, including businesses or business-related nonprofit organizations (e.g., trade associations), education and training providers (e.g., community colleges and other community-based organizations), entities involved in administering Title I of WIA, and economic development agencies. To facilitate the provision of training services, DOL is allowed to use these funds to assist in developing and implementing model activities (e.g., increasing the integration of community college activities with those of businesses and the public workforce investment system). The Secretary of Labor must ensure the equitable distribution of grants across geographically diverse areas and must, among other things, take into account in awarding grants the extent to which applicants will make available funds from sources other than the user fee. The Secretary is authorized to require a matching share of cash or noncash resources.

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[12] Eligible programs include the biological sciences (excluding medicine and other clinical fields), physical sciences, mathematical sciences, computer and information sciences, the geosciences, and engineering as well as technology areas related to these fields of study.

[13] While Congress specified the industries under prior law, P.L. 108-447 states that high-growth sectors are to be determined by the Secretary of Labor in consultation with state workforce investment boards. The selection of these industries should take into account such factors as sectors projected to experience substantial job gains, experiencing technological and other innovations that will require development of new skill sets by workers, in which new and emerging businesses are expected to grow, or those that have a significant effect on the overall economy or on the expansion of other industries.

- The 4% that went to DOL under prior law for reducing the processing time of H-1B applications increases slightly to 5%.[14]

Program Activity

P.L. 106-313 required the NSF and DOL to submit a report, one year after the date of enactment (October 17, 2000), to the Committees on the Judiciary of the House and the Senate. The reports were to discuss the tracking system employed to monitor the performance of activities funded through the Nonimmigrant Petitioner Account and the number of persons who completed training and entered the high-skilled workforce through these programs.

NSF

Evaluations. In "Report on H-1B Nonimmigrant Petitioner Receipts, 2001," the NSF noted that three competitions were held between 1999 and 2001 for awards through the CSEMS program. A total of 352 multi-year awards were granted to two-year and four-year colleges and universities. A majority of the individual scholarships the institutions funded from these awards went to students working full-time toward a bachelor's degree (72%) or associate degree (21%).

The first scholarship recipients matriculated in fall 2000. Consequently, just a few recipients (181) had graduated by summer 2001. Grantees reported that the career goals of these graduates accorded with the intent of the scholarships, namely, they were interested in employment in such areas as information systems, semiconductor technician, manufacturing design engineer, network technician (internet security), mining engineering technology, and electrical engineering. Graduates obtained positions at such employers as Hallmark Cards (as a computer technician), IBM, Lucent, National Security Agency, ST Microelectronics, Sandia National Laboratory, Texas Instruments, and Wal-Mart (as a computer programmer).

In addition to the CSEMS program, which was authorized in ACWIA and continued in P.L. 106-313, the latter act authorized another ongoing NSF program funded with H-1B user fees, namely, "Private-Public Partnerships in K-12." It involved partnerships between industry and educational institutions, for example, that focus on such diverse activities as materials development, math and science teacher professional development, use of technology in the classroom, and systemwide K-12 reform in economically disadvantaged areas. The report stated that, given the program's K-12 focus, its direct impact on entrants into the high-skilled workforce was unclear.

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[14] The Secretary of Homeland Security, rather than the Attorney General, receives the remaining 5% to reduce the processing time of H-1B petitions and to improve the enumeration of nonimmigrant workers.

More recently, the NSF contracted for an evaluation of the CSEMS program. It received a draft evaluation report in September 2005, which is not yet ready for distribution.[15]

Funding. The total amount of fees allocated to the NSF from the Nonimmigrant Petitioner Account under P.L. 105-277 and P.L. 106-313 is shown in **Table 1**. As previously noted, most of the NSF's share of fees has gone to the CSEMS program.

Table 1. H-1B User Fees Allocated to the CSEMS Program and K-12 Activities Pursuant to P.L. 105-277 and P.L. 106-313

Fiscal year	Funding level (in millions of dollars)
2000[a]	25.06
2001[b]	78.51
2002[c]	57.31
2003	46.57

Source: National Science Foundation.

a. Reflects the CSEMS program and K-12 activities under P.L. 105-277.
b. Reflects the CSEMS program and the changeover to K-12 activities under P.L. 106-313.
c. The NSF anticipated that the funds flowing from P.L. 105-277 would have been fully obligated by the end of FY2002.

In spring 2000, 114 CSEMS awards totaling $22.5 million were announced. In spring 2001, 110 awards totaling $24.3 million were announced, as were 72 supplements (in the amount of $24.0 million) to 2000 awards to extend them from two years to four years. In summer 2001, 77 awards totaling $26.5 million were announced, and in summer 2002, 93 awards totaling $32.0 million were announced.[16] The program made 67 awards in 2003 totaling $25.3 million.[17] An additional 92 awards in the amount of $32.6 million were announced from June through September 2004. (These were unobligated funds allocated to NSF from the Nonimmigrant Petitioner Account in late 2003.)[18]

Between FY2000 and FY2004, then, the NSF provided $187.2 million in H-1B user fees to colleges and universities through 553 new awards and 72 supplements in an effort to increase the supply of individuals with skills in computer science,

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[15] Information provided to CRS by NSF, Oct. 21, 2005.

[16] Information provided to CRS by NSF, May 18, 2003.

[17] According to the information provided Jan. 29, 2004 to CRS, the 2003 figure includes 10 supplements totaling $225,192 under the Department of Energy (DOE) agreement for students and a few faculty to work in DOE labs.

[18] Information provided to CRS by NSF, Oct. 21, 2005.

engineering, and math. Some 40,000 students were awarded scholarships over the period. A total of 329 projects remained active in 2005 (i.e., they still had students holding scholarships).[19]

As the NSF receives its share of user fees from the Nonimmigrant Petitioner Account about six to eight weeks after the end of the quarter in which they are collected, it received a small sum in March 2005 and larger amounts later in the year. While waiting for funds from the reauthorized user fee to accumulate, the agency revised its user-fee funded scholarship program based on P.L. 108-447's modifications, which went into effect in March 2005. Because the legislation expanded the definition of eligible disciplines, the name of the program was changed to NSF Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM). A solicitation for proposals was issued on January 3, 2006 stating that about $50 million would be dispensed to institutions of higher education through some 110 new awards. The maximum an institution may request is $500,000 over the 48- to 60- month award period. Individual scholarships may not exceed $10,000 annually. Proposals must be received by April 12, 2006, and the NSF anticipates making awards in summer 2006.

DOL

Evaluations. The Department has not released its report to Congress as mandated by P.L. 106-313, but it did complete two other studies of the Technical Skills Training Grant program. The first report provides a snapshot, as of spring 2001, of six among the first 43 grants awarded. The second report focuses on "best practices" derived from six other grants among the same 43 grants, and covers the period from late 2001 to early 2002.[20]

In 2001, DOL awarded a three-year contract for a process evaluation of the program (i.e., one that focuses on implementation issues). As of May 2003, the first two rounds of site visits had been completed and the final two rounds had begun. Among other things, the study is to describe whether and in what ways grantees have innovated to deal with less traditional target groups (e.g., employed workers) and with providing a higher level of skills training than usual, as well as identify problems concerning implementation and sustainability of the program.[21]

Although ACWIA did not specify the fields in which training was to occur, the Department characterized the training to be in high-skilled occupations experiencing shortages, specialty occupations for which employers had filed H-1B applications, high-growth industries, and in-demand occupations in local labor markets. Based on a survey of the 43 initial grantees, the Government Accountability Office (GAO)

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[19] Ibid.

[20] The reports are available at [http://www.doleta.gov/h%2D1b/].

[21] Information provided to CRS by DOL, May 29, 2003. The process report does not appear to have been posted to the Department's website.

found that most provided training in IT jobs.[22] Other fields included health care, biotechnology, and science (e.g., registered nurse, licensed practical nurse, radiology technician, and certified nursing assistant), engineering and manufacturing (e.g., electrical engineer, mechanical engineer, and electronics technician), and telecommunications (e.g., telecommunications technician). The GAO report further noted that the training prepared individuals for a range of skill levels within occupations, not just at the baccalaureate level, which — depending upon the trainee's initial skill level — would have been difficult to accomplish within the grants' two-year period. One-year, no-cost (to the government) extensions were allowed. However, the previously mentioned "best practices" evaluation conducted for DOL recounted that the provision of an additional year did not completely resolve the grant period's hindrance to implementing some degree-granting programs "because grantees cannot plan for the option year as part of their initial submissions. Some site administrators indicated that it would be more useful if the programs were for three years to five years."[23]

Beginning with its January 2003 grant solicitation, DOL attempted to take into account modifications to the program contained in P.L. 106-313[24] and comments made by evaluators, among others. For example, the solicitation emphasized that a goal of the grants was provision of higher than preparatory or entry-level training so that participants would attain skill levels at or approaching those of H-1B workers. (Under prior awards, some sites had provided remedial courses to persons who lacked the background to participate.[25]) The solicitation identified as priorities the provision of higher levels of training in H-1B occupations and in fields referenced in P.L. 106-313. It accorded less of a priority to training in lower level health care fields and other non-professional specialty occupations. The grant period was lengthened to 36 months, with an additional one-year no-cost extension possible, to allow ample time for participants to complete the higher level training being offered.

Funding. The DOL began to solicit proposals for Technical Skills Training Grants once sufficient funds had been distributed from the Nonimmigrant Petitioner Account. As shown in **Table 2**, 43 grants totaling $95.5 million were awarded under ACWIA in 2000. The Department awarded another 86 grants totaling about $232.8 million through January 1, 2004 under P.L. 106-313. Fifty-four of these grants, in the amount of $149.2 million, went to WIA's local workforce investment boards or consortia of such boards in a region. The other 32 grants, in the amount of $83.6 million, went to partnerships consisting of multiple businesses or business-related nonprofit organizations that represent multiple businesses. (The business-led

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[22] U.S. Government Accountability Office, *High-Skill Training: Grants from the H-1B Visa Fees Meet Specific Workforce Needs, but at Varying Skill Levels*, GAO-02-881, Sept. 2002.

[23] Burt S. Barnow, *Exemplary Practices in High-Skill U.S. Department of Labor H-1B Training Programs*, Mar. 2002, pp. xiv-xv.

[24] As previously stated, P.L. 106-313 subsequently (a) clarified that the training need not develop skill levels commensurate with a four-year college degree but that workers should be prepared for a broad range of positions along a career ladder, and (b) specified the industries whose skill requirements the training grants were to be directed toward fulfilling.

[25] Ibid.

partnerships could also include educational, labor, faith-based or community organization, or workforce investment board.) Between March 31, 2000, and January 1, 2004, then, a total of $328.3 million in Technical Skills Training Grants was awarded. The grants accounted for 75% of the $436.32 million in H-1B funds expected to be allocated to DOL through FY2003 pursuant to P.L. 105-277 and P.L. 106-313.[26]

Table 2. Awards of Technical Skills Training Grants

Effective date of grants[a]	Amount of grant (in millions of dollars)	Number of grants
March 31, 2000	12.3	9
August 1, 2000	29.2	12
November 15, 2000	54.0	22
December 14, 2001	24.4	9
March 15, 2002	23.2	8
May 1, 2002[b]	34.5	14
June 15, 2002	19.1	7
October 1, 2002	17.3	7
December 16, 2002	6.0	2
April 1, 2003	10.3	4
July 1, 2003	14.8	5
October 1, 2003	14.8	5
January 1, 2004	19.4	7
January 1, 2004[b]	49.1	18

Source: U.S. Department of Labor.

a. The 2000 grants were issued while P.L. 105-277 was in effect. Subsequent awards were issued under P.L. 106-313.

b. These grants went to businesses or business partnerships. They were awarded under P.L. 106-313's requirement that these organizations should receive 25% of DOL's share of H-1B user fees devoted to training. All other grants shown in the table were awarded to local workforce investment boards or regional consortia of local boards.

DOL did not award most of the almost $200 million it expected to issue to local workforce investment boards or regional consortia of boards under the January 2003 solicitation — which it cancelled effective January 16, 2004. As shown in the last row of **Table 2**, it did award virtually all of the approximately $50 million expected to be issued to business partnerships or business-related nonprofit organizations under the June 2003 solicitation. In accordance with the Bush Administration's FY2005 budget request, P.L. 108-447 rescinded $100 million in unobligated funds

[26] According to DOL, the following sums were allocated to the Technical Skills Training Grant program: $41.38 million in FY1999; $75.59 million in FY2000; $131.49 million in FY200; $90.73 million in FY2002; and $97.13 million in FY2003.

in the Nonimmigrant Petitioner Account that would have been available to the Secretary of Labor.

Between March 31, 2000 and March 31, 2005, 62 of the 129 grants awarded were completed. Most grants (completed and operational) focus on high-tech/information technology. Out of a total of 86,036 individuals, 27,806 participants were in training and 73,077 participants had completed training as of March 31, 2005.[27]

The DOL intends to primarily utilize the H-1B visa fees to support the President's High Growth Job Training Initiative,

> [p]ursuant to Public Law 108-447 authorizing capacity building and training activities in high-growth, high-demand industries. Funds awarded under this initiative are used to provide job training for workers to assist them in obtaining and upgrading career ladder employment positions. Funds are also used to build the capacity of organizations to provide this training by developing appropriate curricula that build core competencies and train workers, identifying and disseminating career and skill information, and increasing the integration of community and technical college activities with the worker training activities of businesses and the public workforce system.[28]

A majority of the H-1B user fees allocated to the Department will be awarded through competitive solicitations. The forthcoming solicitations, for which no timetable is publicly available, are expected

> to fund grant proposals that demonstrate innovative solutions to the workforce challenges in a high growth, high demand industry, within the context of strategic partnerships that include the workforce system, business and industry, and education.[29]

Labor Market Conditions for IT Workers

The labor market prospects of IT and many other workers reversed course after the 1990s expansion ended. The data analyzed below show the harsher — albeit generally improving — reality of recent labor market conditions for IT workers.

Employment

Almost 2.5 million persons worked in IT jobs as computer systems analysts, computer engineers, computer scientists and computer programmers in 2000 — more than twice the number in 1989, the prior peak in the business cycle. (See **Table 3**.) Employment in these occupations increased by 121% between 1989 and 2000, which

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[27] DOL, Employment and Training Administration, *Workforce System Results, Third Quarter PY2004/Second Quarter FY2005*.

[28] Information provided to CRS by DOL, Nov. 7, 2005.

[29] Ibid.

was well above the average increase across all occupations of almost 17%, according to U.S. Bureau of Labor Statistics' (BLS) data.

With the bursting of the dot-com bubble and advent of the 2001 recession, the number of workers in IT occupations dropped sharply (by 18%) between 2000 and 2003. Employment, without regard to occupation, contracted at both high-tech manufacturers (e.g., electronic components and accessories, communications equipment, and computers and office equipment) and high-tech services providers (e.g., communications and software services) as well.[30] In contrast, the total number of jobs lost during the recession was more than recouped by 2003, according to BLS data.

Table 3. Employment in Selected IT Occupations, 1989-2004
(numbers in thousands)

Year	Computer systems analysts, engineers, and scientists	Computer programmers	Total
1989	566	561	1,127
2000	1,797	699	2,496
2003	1,480	563	2,043
2004	1,513	564	2,077

Source: U.S. Bureau of Labor Statistics.

Note: The data are derived from the Current Population Survey, a household survey. The occupational classification system was changed beginning with 2003 data, which may not be strictly comparable with prior years' data.

Overall U.S. employment has continued to grow since it surpassed its pre-recession level in 2003. But, as shown in **Table 3**, employment in IT occupations in 2004 was still well below 2000 levels. Jobs in high-tech industries continued to be lost between 2003 and 2004, albeit in much smaller numbers than in immediately prior years.[31]

On the basis of data for high-tech industries, which showed job growth in 2005,[32] a turnaround appears to be underway. Occupational data from the U.S. Bureau of Labor Statistics (BLS) similarly suggest improvement in IT employment in 2005 compared to 2004.

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[30] AeA, *Tech Employment Update*, 2003, available at [http://www.aeanet.org].

[31] AeA, *High-Tech Industry Employment Slowly Turns the Corner*, Apr. 26, 2005.

[32] AeA, "U.S. Tech Industry Adds 190,000 Jobs over 18 Month Span," *The AeA Competitiveness Series*, vol. 3, Sept. 2005.

Nonetheless, annual surveys of hiring managers at IT and non-IT firms commissioned by the Information Technology Association of America (ITAA) show that prospects for a substantial rebound in the employment of workers with computer-related skills remain dim. The ITAA has identified offshore outsourcing (i.e., having work performed outside the United States) as one contributor to the dramatically changed situation of IT workers beyond such economy-wide factors as rapid productivity growth and increased health benefit costs.[33] Results from the 2003 ITAA survey of hiring managers showed that 6% of all firms moved IT jobs to other countries, with the figure doubling among IT companies.[34] (Other sources confirm the growing interest in sending IT and IT-enabled work outside the United States.)[35] Global Insight, in a study conducted for the ITAA, projected that the economy would create over 500,000 new IT jobs between 2003 and 2008, with about one-half being located offshore.[36]

The Economic Policy Institute (EPI) wrote in summer 2005 that "the freefall in IT employment has ceased, and this area is once again growing, though more slowly than overall payrolls."[37] It acknowledged that the demand for IT workers from the mid-1990s until the 2001 recession was partly "inflated by speculation rather than underlying fundamentals." When combined with supply-side conditions — which were marked by a "surplus of IT workers after the tech-bubble burst, along with the ever expanding global supply available through offshoring" — EPI concluded that "it is unlikely that employment levels will soon regain their recent peak."

Unemployment

Between 2000 and 2003, the unemployment rate more than doubled, rising from 2.0% to 5.2%, among computer systems analysts, computer engineers, and computer scientists. (See **Table 5**.) It quadrupled, rising from 1.6% to 6.4%, among computer programmers. Over the same period, all workers in professional and related occupations averaged a much smaller increase (from 1.7% to 3.2%) in their unemployment rate.

Although the incidence of unemployment among computer programmers edged downward in 2004 by about the same amount as all professional workers on average, the jobless rate of programmers remained at the comparatively high level of 5.8%. (See **Table 5**.) Despite the more substantial improvement in the unemployment rate of computer systems analysts, engineers, and scientists, it also remained above the average across all professional and related occupations in 2004 (3.6% and 2.8%,

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[33] See, for example, ITAA, *Adding Value...Growing Careers: The Employment Outlook in Today's Increasingly Competitive IT Job Market*, Sept. 2004. (Hereafter cited as ITAA, *Adding Value...Growing Careers*.)

[34] ITAA, *2003 IT Workforce Survey*, May 5, 2003.

[35] For additional information, see CRS Report RL32292, *Offshoring (a.k.a. Offshore Outsourcing) and Job Insecurity Among U.S. Workers*, by Linda Levine.

[36] ITAA, *Adding Value...Growing Careers*.

[37] Economic Policy Institute, "The Aftermath of the Tech Bubble," *Job Watch*, Aug. 5, 2005, available at [http://www.epinet.org].

respectively). Preliminarily, BLS data suggest that the unemployment rate of IT workers fell to a greater extent than that of other professional workers in 2005, perhaps resulting in virtual equality of their jobless rates with the average for all professional workers.

Table 5. Unemployment Rates in All Professional Specialty Occupations and in Selected IT Occupations, 1989-2004

Occupation	1989	2000	2003	2004
All professional specialty occupations	1.7	1.7	3.2	2.8
Computer systems analysts, engineers, & scientists	1.4	2.0	5.2	3.6
Computer programmers	1.6	1.6	6.4	5.8

Source: U.S. Bureau of Labor Statistics. Unpublished data from the Current Population Survey.

Note: Because of the fairly small number of workers in computer-related occupations, year-to-year changes in their unemployment rates must be several tenths of a percentage point (0.6-0.9) to be considered statistically significant. The occupational classification system was changed beginning with 2003 data, which may not be strictly comparable with prior years' data.

Given the available information, analysts have had great difficulty estimating the impact of importing professional specialty workers on comparable U.S. workers. One empirical analysis tentatively concluded that while allowing into the country H-1B workers with IT skills may not depress the wages of U.S. workers in computer-related occupations, the program might adversely effect the group's unemployment rate.[38]

[38] Madeline Zavodny, "The H-1B Program and Its Effects on Information Technology Workers," *Federal Reserve Bank of Atlanta Economic Review*, Third Quarter 2003.