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## **Education and Training Funded by the H-1B Visa Fee and the Demand for Information Technology and Other Professional Specialty Workers**

**Updated April 28, 2005**

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# Education and Training Funded by the H-1B Visa Fee and the Demand for Information Technology and Other Professional Specialty Workers

## Summary

The 105<sup>th</sup> and 106<sup>th</sup> Congresses raised the limit on newly approved H-1B visas in 1998 and again in 2000, from the level of 65,000 set by the Immigration and Nationality Act of 1990, because of a perceived shortage of workers with information technology (IT) skills. A longer term remedy to the seeming mismatch between the qualifications of U.S. workers and the technical skill requirements of U.S. employers also was initiated: 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 occupations. Most of the user fees went to the Computer Science, Engineering, and Mathematics Scholarship (CSEMS) program in the National Science Foundation (NSF) and the H-1B Training Grant program in the Department of Labor (DOL). Between 2000 and 2005, the NSF awarded about \$190 million through the CSEMS program to colleges and universities to provide scholarships to low-income, academically talented students enrolled in undergraduate and graduate degree programs in mathematics, engineering, and computer science. Between 2000 and 2004, the DOL program awarded some \$328 million to local workforce investment boards and businesses to provide training in technical skills to employed and unemployed workers. More than 60,000 individuals had completed their training as of September 30, 2004, out of a total of some 87,000 persons to be trained. Most of the 129 grants have focused on high-tech/information technology skills training.

The labor market experienced a “jobless recovery” for almost two years following the November 2001 end of the last recession, with the IT sector being especially hard hit. The reduced demand for IT workers was reflected in the number of approved new H-1B visas falling short of the elevated cap in FY2001 through FY2003. On October 1, 2003, the 195,000 cap on newly approved H-1B visas reverted to 65,000, and the user fee that funded education and training programs expired. The 130,000 drop in H-1B visas intensified competition among employers as did the labor market’s rebound, which occurred at about the same time. The limit on H-1B visas was reached earlier in each year: February for FY2004, and October — the very first month of the year — for FY2005.

In late 2004, the 108<sup>th</sup> Congress addressed the situation in Title IV 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, the act imposes on H-1B petitioners a fee of at most \$1,500 to fund education and training activities. The act changes the agencies’ allocation of fees deposited in the H-1B Nonimmigrant Petitioner Account and alters their related education and training programs as well. In accordance with the Bush Administration’s FY2005 budget request, P.L. 108-447 also rescinded \$100 million in unobligated funds in the Nonimmigrant Petitioner Account that would have been available to the Secretary of Labor. This report will be updated as warranted concerning education and training programs funded through the reinstated H-1B user fee.

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# Education and Training Funded by the H-1B Visa Fee and the Demand for Information Technology and Other Professional Specialty Workers

The elevated cap on H-1B visas, which enabled employers to temporarily import alien workers to fill professional specialty occupations, expired on October 1, 2003.<sup>1</sup> So, too, did the user fee that funded activities intended to increase the supply of high-skilled U.S. workers and thereby to reduce reliance on H-1B workers. Specifically, (1) the ceiling on H-1B visas issued for initial employment at non-exempt employers reverted from 195,000 to 65,000 effective FY2004, the limit established under the Immigration and Nationality Act of 1990, and (2) certain education and training programs of the National Science Foundation (NSF) and the U.S. Department of Labor (DOL) lost their funding source.

Previously, in 1998 and 2000, Congress was motivated to raise the limit on H-1B visas by a perceived shortage of workers with information technology (IT) skills (e.g., computer systems analysts and programmers, data communications and network personnel, and computer systems technical support). The economy flourished from the mid-1990s through 2000. This was particularly true of companies in “high tech” or IT-intensive industries (e.g., electronics manufacturing, telecommunications, and software services). The demand for workers with IT skills also was expanding outside the high tech sector as firms increasingly utilized computer-based technologies.

The 108<sup>th</sup> Congress came to the intertwined H-1B visa cap and user fee issues in a much different economic environment. The labor market did not begin to recover for almost two years from the recession that ended in November 2001, with IT workers especially hard hit by cyclical and other factors.<sup>2</sup> This was reflected in the number of approved H-1B visas for new admissions falling below the elevated

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<sup>1</sup> 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.

<sup>2</sup> 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.

cap from FY2001 through FY2003. On October 1, 2003, however, the two-thirds drop in the H-1B visa ceiling meant that employers of workers in professional specialty occupations faced heightened competition for visas. And, at about the same time, the “jobless recovery” came to an end.<sup>3</sup>

In addition, the expiration of the user fee meant that the fee-funded education and training programs of the NSF and DOL would cease operation once the agencies drew down the accumulated monies. Some argued that the programs were no longer needed because an adequate supply of already qualified workers now exists to fill employers’ demand for IT and other professional specialty workers. Others countered that this is only a temporary situation: if these programs were to stop producing U.S. workers with the requisite qualifications for high-skilled high-growth occupations, they claimed that Congress would again feel impelled to raise H-1B visa levels.

This report begins by discussing the provisions of the relevant immigration legislation passed in 1998, 2000, and by the 108<sup>th</sup> Congress in late 2004. It then focuses on the education and training programs funded with H-1B user fees. The report closes with a brief examination of changes in the supply-demand situation for IT workers over time.

## Legislative Activity

In recent years, Congress has repeatedly turned to immigration as a short-term means of alleviating a perceived shortage of U.S. workers with IT and other specialized skills. It also passed what is considered a more long-term remedy to the seeming mismatch between the qualifications of U.S. workers and the professional and technical skill requirements of U.S. employers that has prompted employers to increase their utilization of H-1B workers: the imposition of a user fee dedicated to funding programs to prepare U.S. students and workers for high-skilled rapidly growing jobs.

### Round I

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 105<sup>th</sup> 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

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<sup>3</sup> 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.”*)

specialty occupations to 115,000 annually in FY1999 and FY2000, and to 107,500 in FY2001.<sup>4</sup>

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 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.
- DOL was awarded an additional 6% of the user fees to reduce the processing time of visa applications and for enforcement activities.<sup>5</sup>

## Round II

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

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<sup>4</sup> 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.

<sup>5</sup> 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.

The 106<sup>th</sup> 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 do not count against the cap (i.e., the cap does not apply to continuing employment).

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.

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.<sup>6</sup> No more than 20% of the grants could be awarded to train persons for a single specialty 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.<sup>7</sup> 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).

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<sup>6</sup> 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.

<sup>7</sup> Under ACWIA, 100% of the grants went to these bodies.

- The 6% that went to DOL under ACWIA for reducing the processing time of H-1B applications fell to 4%.<sup>8</sup>

### Round III

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.<sup>9</sup> The cap on H-1B visas was then reached earlier in each year: February for FY2004, and October — the very first month of the year — for FY2005.

The 108<sup>th</sup> 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 reauthorizes a user fee to fund education and training activities for U.S. students and workers. Specifically, effective on the date of enactment, 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 under prior law), except for employers with 25 or fewer full-time equivalent workers employed in the United States. In another change from prior law, these small employers are to 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:

- The share going to NSF’s CSEMS program rises to 30.0% from 22.0%. The amount 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.”<sup>10</sup> 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

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<sup>8</sup> The Attorney General received 4% to reduce the processing time of H-1B petitions and to improve the enumeration of nonimmigrant workers.

<sup>9</sup> CRS Report RL32047, *The “Jobless Recovery.”*

<sup>10</sup> A list of eligible programs is to appear in the *Federal Register* within 60 days after enactment of P.L. 108-447.



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 somewhat to 10% from 15%.
- The share going to DOL’s Technical Skills Training Grants is lowered as well, to 50.0% from 55.0%. The act appears to have 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.<sup>11</sup> 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., “developing appropriate curricula to build core competencies and train workers, identifying and disseminating career and skill information, and increasing the integration of community and technical college activities with activities of businesses and the public workforce investment system to meet the training needs” of designated high-growth sectors).
- The 4% that went to DOL under ACWIA for reducing the processing time of H-1B applications increases slightly to 5%.<sup>12</sup>

## **Program Activity Pursuant to P.L. 105-277 and P.L. 106-313**

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.

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<sup>11</sup> 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.

<sup>12</sup> The Secretary of Homeland Security, rather than the Attorney General, will receive the remaining 5% to reduce the processing time of H-1B petitions and to improve the enumeration of nonimmigrant workers.

## 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 Lucent, the National Security Agency, Wal-Mart (as a computer programmer), Intelligent Epitaxy Technology, Texas Instruments, ST Microelectronics, 3M, IBM, Hallmark Cards (as a computer technician), and Sandia National Laboratory.

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.

More recently, the NSF contracted for an evaluation of the CSEMS program, and preliminary data are available from visits to a few projects. As of late January 2004, a survey of awards was in clearance with the Office of Management and Budget.<sup>13</sup>

**Funding.** The total amount of fees allocated to the NSF from the Nonimmigrant Petitioner Account is shown in **Table 1**. As previously noted, most of the NSF’s share of fees has gone to the CSEMS program. The NSF did not anticipate additional funds becoming available in FY2004 or in FY2005 in light of the expiration of the H-1B user fee after FY2003, but it expected to award unobligated balances from prior years in FY2004.

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<sup>13</sup> Information provided to CRS by NSF, Jan. 29, 2004.

**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 <sup>a</sup>	25.06
2001 <sup>b</sup>	78.51
2002 <sup>c</sup>	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 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 2001, 77 awards totaling \$26.5 million were announced, and in 2002, 93 awards totaling \$32.0 million were announced.<sup>14</sup> The program made 67 awards in 2003 totaling \$25.3 million.<sup>15</sup> Between 2000 and 2003, then, the NSF provided \$154.6 million in H-1B user fees to colleges and universities through 461 new awards and 72 supplements in an effort to increase the supply of individuals with skills in computer science, engineering, and math.

In October 2003 the NSF released its last solicitation before the user fee's expiration. The deadline was January 28, 2004. About \$30 million remained available for CSEMS awards in FY2004 from, for example, the second and third quarters of FY2003 that were received after last year's awards were made.<sup>16</sup> The NSF awarded the funds during summer/fall 2004 and early 2005.

As of January 27, 2004, grantees reported to NSF that a total of 17,305 students were receiving CSEMS scholarships. With the addition of the 2004-2005 awards, more than 400 projects remain active (i.e., they still had students holding scholarships). Some of these expect to operate through at least 2008.

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<sup>14</sup> Information provided to CRS by NSF, May 18, 2003.

<sup>15</sup> 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.

<sup>16</sup> Information provided to CRS by NSF, Jan. 29, 2004.

## DOL

**Evaluations.** The Department has not released its report to Congress as mandated by P.L. 106-313. 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.<sup>17</sup>

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 will 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.<sup>18</sup> The Department also had considered whether to undertake an experimental evaluation of the program (i.e., one in which participants are randomly assigned to one or more treatments, such as the High Skills Training Grant program, and a control/comparison group).

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 (formerly the General Accounting Office) (GAO) found that most provided training in IT jobs.<sup>19</sup> 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 3 years to 5 years.”<sup>20</sup>

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<sup>17</sup> The reports are available at [<http://www.doleta.gov/h-1b>].

<sup>18</sup> Information provided to CRS by DOL, May 29, 2003.

<sup>19</sup> 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.

<sup>20</sup> Burt S. Barnow, *Exemplary Practices in High-Skill U.S. Department of Labor H-1B Training Programs*, Mar. 2002, pp. xiv-xv.

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. (See section in this report entitled Legislative Activity, Round II.)

Beginning with its January 2003 grant solicitation, DOL attempted to take into account modifications to the program contained in P.L. 106-313 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. It explained to grant applicants that candidates for training should already have had the prerequisites for the occupational training being proposed by grantees. (Under prior awards, some sites had provided remedial courses to persons who lacked the background to participate.<sup>21</sup>) The solicitation identified as priorities the provision of higher levels of training in occupations for which H-1B visas had been approved 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 adequate 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.

Under P.L. 106-313, the Department awarded 86 grants totaling about \$232.8 million through January 1, 2004. Fifty-four grants, in the amount of \$149.2 million, went to WIA's local workforce investment boards or consortia of such boards in a region. Thirty-two 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 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. (See **Table 3**.)

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<sup>21</sup> Ibid.

**Table 2. Awards of Technical Skills Training Grants**

Effective date of grants <sup>a</sup>	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 <sup>b</sup>	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 <sup>b</sup>	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 in the Nonimmigrant Petitioner Account that would have been available to the Secretary of Labor.

Between March 2000 and September 2004, 50 of the 129 grants awarded were completed. Most grants (completed and operational) focus on high-tech/information technology. Out of a total of 87,101 individuals, 19,615 participants were in training and 61,678 participants had completed training as of September 30, 2004.<sup>22</sup>

<sup>22</sup> DOL, Employment and Training Administration, *Workforce System Results*.

**Table 3. H-1B User Fees Allocated to the Technical Skills Training Grant Program Pursuant to P.L. 105-277 and P.L. 106-313**

Fiscal year	Funding level (in millions of dollars)
1999	41.38
2000	75.59
2001	131.49
2002	90.73
2003	97.13

Source: U.S. Department of Labor.

## Developments in the U.S. Labor Market for IT Workers

The labor market prospects of IT and many other workers has reversed course after the 1990s expansion. The data analyzed below show the harsher 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 4**.) Employment in these occupations increased by 121% between 1989 and 2000, which was well above the average increase across all occupations of almost 17%, according to U.S. Bureau of Labor Statistics' (BLS) data.

With the advent of the most recent recession in 2001, the number of employed IT workers dropped sharply (by 18%) between 2000 and 2003. Employment 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).<sup>23</sup> In contrast, the aggregate job loss that occurred during the recession was more than recouped by 2003, according to BLS data. Moreover, as shown in **Table 4**, employment growth in these IT occupational groups was virtually unchanged between 2003 and 2004.

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<sup>23</sup> AeA, *Tech Employment Update*, 2003.

**Table 4. Employment in Selected IT Occupations**  
(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.

## 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.

The incidence of unemployment among computer programmers edged downward in 2004 by about the same amount as all professional workers on average. Yet, the jobless rate of programmers remained at a comparatively high level as shown in **Table 5**. Despite the more substantial improvement in the unemployment rate of computer systems analysts, engineers, and scientists, it also was relatively high.

**Table 5. Unemployment Rates in Selected Occupations**

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

**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.



## Short-Run Prospects

According to annual surveys of hiring managers at IT and non-IT firms commissioned by the Information Technology Association of America (ITAA), near-term prospects for a substantial rebound in the employment of workers with computer-related skills remain dim. The Association had forecast a stronger recovery, but the weak demand projections of hiring managers for 2003 erased its earlier optimism.<sup>24</sup> Hiring managers anticipated even weaker demand for IT workers in 2004 as compared to 2003.<sup>25</sup>

The ITAA 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.<sup>26</sup> 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. (Other sources confirm the growing interest in sending IT and other work outside the United States.)<sup>27</sup>

On October 20, 2003, the Association's president testified before the House Committee on Small Business that estimates of 500,000 computer-specific jobs moving offshore over a 10-year period comprise a small share of the approximately 10 million U.S. workers in the IT labor force. 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.<sup>28</sup>

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<sup>24</sup> ITAA, *2003 IT Workforce Survey*, May 5, 2003, pp. 8 and 10.

<sup>25</sup> 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*.)

<sup>26</sup> *Ibid.*

<sup>27</sup> For additional information, see CRS Report RL32292, *Offshoring (a.k.a. Offshore Outsourcing) and Job Insecurity Among U.S. Workers*, by Linda Levine.

<sup>28</sup> ITAA, *Adding Value...Growing Careers*.