

**AAUW Capitol Hill Lobby Corps**  
**Gender Bias Elimination Act of 2007 (H.R. 3514)**  
**November 8, 2007**

**I. SUMMARY**

**Message:** AAUW believes this legislation will help increase America's competitiveness by reducing gender bias women face in science, technology, engineering, and mathematics (STEM) fields at colleges and universities. Please cosponsor the Gender Bias Elimination Act (H.R. 3514).

This legislation makes many important strides by directly addressing concerns raised in the National Academies' report, "Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering," which argues that women face a lifetime of subtle biases that discourage them from careers in STEM fields. Under this legislation, agencies that fund scientific research (NIH, DOE, DOD, NSF, and NASA) will be required to conduct anti-gender bias workshops, enforce existing federal anti-discrimination laws, publish demographic and funding data for grant applications, extend grant support for researchers on leave for caregiving, and submit to Congress an evaluation of the program's impact.

**II. BACKGROUND**

By 2010, one in four new jobs will be "technically oriented," or involve computers. However, women still lag far behind in earning computer technology degrees and working in computer technology-related professions. High school girls represent only 16 percent of computer science AP test takers<sup>1</sup> and college-educated women earn only 29.1 percent of bachelor's degrees in mathematics and computer science (down from 39.3 percent in 1984) and 24.7 percent of doctorate degrees in mathematics and computer science.<sup>2</sup> Overall, women comprise roughly 27 percent of computer and mathematical professionals.<sup>3</sup> A report of the Commission on the Advancement of Women and Minorities in Science, Engineering and Technology says that there are four points in life at which girls and women seem to lose interest in STEM: as they enter middle school, late high school, college and graduate school, and in their professional life.<sup>4</sup> AAUW Education Foundation's *Tech Savvy* (2000) and *Women at Work* (2003) have documented the troubling shortage of girls and women preparing to work in STEM fields.

**Slow Progress in College**

Women now make up a majority of college students. In 2006 the number of undergraduate degree recipients who were women was 59 percent,<sup>5</sup> up from 42 percent in 1970. Despite this incredible growth, women earn only 20 percent of all bachelor's degrees granted in engineering and physics, and a decreasing share of bachelor's degrees in mathematics and computer science.<sup>6</sup>

According to the National Science Foundation, the number of computer science degrees earned by women peaked in 1985 at 38 percent of total computer science degrees granted.<sup>7</sup> By 2006 this number had decreased to only 14 percent of computer science degrees granted.<sup>8</sup> In engineering the number of women has decreased in the past few years. Women comprise only 20.5% of

engineering bachelor's degrees.<sup>9</sup> These numbers may have been greater if not for the fact that undergraduate women transfer out of STEM fields before graduating because of unsupportive classroom environments characterized by lack of role models, a limited peer group, and outdated pedagogy.<sup>10</sup> Since 2000, the percentage of women receiving master's degrees in mathematics and computer sciences has decreased somewhat from 35.7 percent to 33.7 in 2004.<sup>11</sup> In mathematics and computer science the numbers of degrees awarded at each degree level shows huge discrepancies as education increases. Women achieve master's degrees in STEM fields at half the rate of men.<sup>12</sup> Finally, women earned 37.4 percent of the science and engineering doctoral degrees in 2004. While far less than their equal share, this rate is nearly five times the percentage they earned in 1966.<sup>13</sup> The need for STEM legislation is greatest for female minorities. While in 2004, 29 percent of computer scientists were female, only four percent were female and African American, two percent were female and Asian, and 1 percent were female and Hispanic. Progress is being made, but not at all levels, and not at acceptable speeds.<sup>14</sup>

A National Academy of Sciences study entitled, *Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering*, notes that women faculty are slower to gain promotion than men, are less likely to reach the highest academic rank, and have lower salaries and are awarded less grant money than their male colleagues.<sup>15</sup> Women represent fewer than one in five faculty members employed in computer science, mathematics, engineering and the physical sciences. In engineering in particular, women account for just over one in ten faculty members.<sup>16</sup> At the university level, gains in women's attainment of bachelor's and doctoral degrees in STEM disciplines still have not translated into workplace parity. Through research at Virginia Tech, the Society of Women Engineers has found that 78 percent of male faculty, but only 41 percent of women faculty believes that faculty members are treated fairly regardless of gender.<sup>17</sup>

### **STEM as Step Towards Pay Equity**

The impact of education levels on the wage gap is of particular importance to AAUW. Women with a college degree earn more than women without this credential. For example, on an hourly basis, women with a four-year college degree earned about 80 percent more than women with only a high school degree in 2001. Moreover, during the past two decades, this difference has grown. Jobs in STEM fields pay more than jobs in other fields throughout a person's career. For example, a woman working as a computer scientist or systems analyst—a nontraditional field for women—can earn a mean annual wage of \$51,116, while a woman working as an administrative assistant—a traditional field for women—will only earn a mean annual wage of \$29,068.<sup>18</sup> In addition, women's earnings in STEM fields, as a percent of men's, were 85.7 percent, much higher than the average for women with a four-year college degree.<sup>19</sup> Despite this, far fewer women are hired in STEM fields.<sup>20</sup> Furthermore, when hired, women are not paid the same, even in highly skilled occupation. In the computer science sector, the "within occupation" pay gap is around 92 percent.<sup>21</sup> This is higher than the overall gender pay gap of about 80 percent, but still not pay parity.

### **Improving STEM Opportunities**

In the last 50 years, more than half of America's sustained economic growth was created by the five percent of the workforce who create, manage, and maintain the processes and products of innovation: engineers, scientists, and advanced-degree technologists.<sup>22</sup> However, jobs requiring

technical training are beginning to grow at five times the rate of other occupations, while the average age of America's science, technology, and mathematics workforce is rising and the supply of new STEM workers is struggling to keep up with the demand, women remain severely underrepresented.<sup>23</sup> Fortunately, because women make up a large untapped resource that can be used to bring the U.S. up to speed, there is a need and a will for business and government to work to make STEM improvements. With better enforcement of Title IX and increased investment in programming the U.S. will begin to close the gender divide in STEM fields.

One such program is encapsulated in the Gender Bias Elimination Act of 2007 (H.R. 3514). The bill was established to deal with many of the problems identified in *Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering*. AAUW believes that this legislation is an important step in increased female participation in STEM fields.

### III. TALKING POINTS

- Attrition rates for women moving towards careers in academic science and engineering are greater than those for men at nearly every critical juncture, from early expression of interest in science and engineering to representation among tenure-track faculty applicants.<sup>24</sup>
- Women make up only 25 percent of the labor force in science, engineering and technology fields. That proportion varies widely in individual fields, with fewer women in occupations that require a high level of math skills, such as engineering.<sup>25</sup>
- The report, *Rising Above the Gathering Storm*, commissioned by Congress from the National Academies on Science, Engineering and Medicine, states that U.S. advantages in science and technology have begun to erode and discusses the need to improve math and science education. A significant pool of untapped STEM talent remains. If women and members of other traditionally underrepresented groups joined the STEM workforce in proportion to their representation in the overall labor force, the shortage of STEM professionals would disappear.<sup>26</sup>
- This legislation makes many important strides by directly addressing concerns raised in the National Academies' report, "Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering," which argues that women face a lifetime of subtle biases that discourage them from careers in STEM fields. Under this legislation, agencies that fund scientific research (NIH, DOE, DOD, NSF, and NASA) will be required to conduct anti-gender bias workshops, enforce existing federal anti-discrimination laws, publish demographic and funding data for grant applications, extend grant support for researchers on leave for caregiving, and submit to Congress an evaluation of the program's impact.

### WHAT THIS BILL WOULD ACCOMPLISH

1. Agencies that fund scientific research (National Institutes of Health, Department of Energy, Department of Defense, National Science Foundation, and National Aeronautics and Space Administration) will be required to conduct biennial anti-gender bias workshops in each major STEM discipline.
2. These workshops will educate members of review panels, university department chairs and agency program officers about methods that minimize the effects of gender bias in evaluation. Workshops will include data and research presentations on subtle biases and discrimination, department climate surveys, and interactive discussions or role-modeling.

3. These agencies will be compelled to enforce existing federal anti-discrimination laws.
4. A report will be published featuring composite information on demographics, field, award type and budget request, review score, and funding outcome for all funding applications.
5. Agencies will extend grant support for researchers on leave for caregiving.
6. In five years the agencies will submit to Congress an evaluation of the program's impact.

#### IV. STATUS

Sponsor: Rep Johnson, Eddie Bernice [D-TX-30]

Status: Referred to the Subcommittee on Health, Employment, Labor, and Pensions on 10/17/2007

This bill currently has 1 cosponsor.

[Rep Hinojosa, Ruben](#) [TX-15] - 10/18/2007

#### V. TARGETS:

Dems on Ed and Labor

Dems on Science and Technology

Women Dems

#### VI. WHO TO ASK FOR:

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<sup>1</sup> The College Board. *AP Program Summary Report 2006*.

[http://apcentral.collegeboard.com/apc/public/repository/ap06\\_prog\\_summary\\_rpt.pdf](http://apcentral.collegeboard.com/apc/public/repository/ap06_prog_summary_rpt.pdf). Accessed January 17, 2007.

<sup>2</sup> National Science Foundation, Division of Science Research Statistics. NSF 07-307. 2004 data.

[http://www.nsf.gov/statistics/nsf07307/content.cfm?pub\\_id=3634&id=2](http://www.nsf.gov/statistics/nsf07307/content.cfm?pub_id=3634&id=2). Accessed January 17, 2007.

<sup>3</sup> Bureau of Labor Statistics, Current Population Survey, Table 11, 2005.

<ftp://ftp.bls.gov/pub/special.requests/lfaaat11.txt>. Accessed January 4, 2007.

<sup>4</sup> "Land of Plenty: Diversity as America's Competitive Edge in Science, Engineering, and Technology." September 2000. [http://www.nsf.gov/pubs/2000/cawmset0409/cawmset\\_0409.pdf](http://www.nsf.gov/pubs/2000/cawmset0409/cawmset_0409.pdf).

<sup>5</sup> Women & Information Technology. "By the Numbers." National Center for Women & Information Technology. [www.ncwit.org](http://www.ncwit.org).

<sup>6</sup> National Science Foundation, Division of Science Resources Statistics, *Women, Minorities, and Persons with Disabilities in Science and Engineering: 2004*, NSF 04-317 (Arlington, VA, 2004).

<sup>7</sup> Dean, Cornelia. "Computer Science Takes Steps to Bring Women to the Fold." *The New York Times*. April 17, 2006. [Http://www.nytimes.com/2007/04/17/science](http://www.nytimes.com/2007/04/17/science).

<sup>8</sup> Women & Information Technology. "By the Numbers." National Center for Women & Information Technology. [www.ncwit.org](http://www.ncwit.org).

<sup>9</sup> Women as a percentage of all bachelor's recipients, by major field group: 1966-2004. National Science Foundation. <http://www.nsf.gov/statistics/nsf07307/pdf/tab11.pdf>

<sup>10</sup> Fancsali, Cheri. *What We Know About Girls, STEM and Afterschool Programs*. Educational Equity Concepts.

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<http://www.afterschool.org/sga/pubs/whatweknow.pdf>

<sup>11</sup> Women as a percentage of all master's degree recipients, by major field group: 1966-2004. National Science Foundation. <http://www.nsf.gov/statistics/nsf07307/pdf/tab18.pdf>

<sup>12</sup> Ibid.

<sup>13</sup> Women as a percentage of all doctoral degree recipients, by major field group: 1966-2004. National Science Foundation. <http://www.nsf.gov/statistics/nsf07307/pdf/tab25.pdf>.

<sup>14</sup> Women & Information Technology. "By the Numbers." National Center for Women & Information Technology. [www.ncwit.org](http://www.ncwit.org).

<sup>15</sup> National Academies of Science. *Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering: 2006*, National Academies Press. Washington, D.C., 2006.

<sup>16</sup> Commission on Professionals in Science and Technology. *CPST (2006) Professional Women and Minorities: A Total Human Resources Data Compendium. 16<sup>th</sup> ed.* Washington, D.C.

<sup>17</sup> Margaret Edith Layne, P.E., Society of Women Engineers. Spoken before the House Committee on Education and Labor, subcommittee on Higher Education, Life-Long Learning, and Competitiveness, "Building on the Success of 35 Years of Title IX." June 19, 2007.

<sup>18</sup> U.S. Department of Labor. National Wage Data, Household Data Annual Averages, Table 39. 2005.

<ftp://ftp.bls.gov/pub/special.requests/lf/aat39.txt> Accessed January 11, 2007.

<sup>19</sup> "Median Usual weekly earnings of full-time wage and salary workers by detailed occupation and sex, 2005 annual averages." [Http://www.bls.gov.cps/cpswom2005.pdf](http://www.bls.gov.cps/cpswom2005.pdf).

<sup>20</sup> Ibid.

<sup>21</sup> AAUW Education Foundation. *Behind the Pay Gap*. 2007.

<sup>22</sup> "The Talent Imperative: Meeting America's Challenge in Science and Engineering, ASAP." Building Engineering and Science Talent. [Http://www.bestworkforce.org](http://www.bestworkforce.org). Society of Women Engineers General Position Statement on Science, Technology, Engineering, and Mathematics (STEM) Education and the Need for a U.S. Technologically-Literate Workforce. Society of Women Engineers. February 2006.

<sup>23</sup> Society of Women Engineers General Position Statement on Science, Technology, Engineering, and Mathematics (STEM) Education and the Need for a U.S. Technologically-Literate Workforce. Society of Women Engineers. February 2006.

<sup>24</sup> National Academies of Science. *Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering: 2006*, National Academies Press. Washington, D.C., 2006.

<sup>25</sup> Commission on Professionals in Science and Technology. *CPST (2006) Professional Women and Minorities: A Total Human Resources Data Compendium. 16<sup>th</sup> ed.* Washington, D.C.

<sup>26</sup> Congressional Commission on the Advancement of Women and Minorities in Science, Engineering and Technology Development [CAWMSET], *Land of Plenty: Diversity as America's Competitive Edge in Science, Engineering, and Technology*, (September 2000).