National Foundation for American Policy

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Research: Legal and Economic Case is Strong for Keeping STEM OPT (Optional Practical Training) for International Students

International Students Remain Key to America's Future in Science and Engineering

Arlington, Va. – Today, 81 percent of the full-time graduate students at U.S. universities in electrical engineering and 79 percent in computer science are international students, but the Trump administration may soon eliminate the primary way such students work in the United States after graduation, according to a new report released by the National Foundation for American Policy (NFAP), an Arlington, Va.-based policy research group. The report finds eliminating via regulation STEM OPT (Science, Technology, Engineering and Math Optional Practical Training) would encourage U.S. companies to hire and place many more international student graduates of U.S. universities outside the United States, which would threaten America's role as a center of innovation, harm U.S. universities, and limit available jobs for U.S. workers by pushing more investment abroad.

The study points out, as a candidate, Donald Trump tweeted: "When foreigners attend our great colleges & want to stay in the U.S., they should not be thrown out of our country." However, sources indicate the Trump administration is poised to attempt to end STEM OPT, which allows international students in STEM fields to work 3 years after graduation – an additional 2 years beyond the 12 months of work authorization allowed under Optional Practical Training for foreign students.

"Preventing talented foreign-born science and engineering students from working in America after graduation would be harmful to the American economy," said NFAP Executive Director Stuart Anderson, former head of policy at the Immigration and Naturalization Service under President George W. Bush and author of the report.

The report, "International Students and STEM OPT," is available at www.nfap.com. A second, related study, "The Importance of International Students to American Science and Engineering," was also released.

The additional 2 years for STEM students has proven vital because it provides international students potentially 3 chances to obtain H-1B status. H-1B visas are generally the only practical way a foreign national can work long term in the U.S. The supply of H-1B visas has been exhausted for 15 consecutive fiscal years, making it necessary for companies often to apply 2 or 3 times before gaining H-1B status for international students they recruit for employment.

STEM OPT was first created by the Bush administration in 2008, in large part to prevent the United States from losing outstanding students unable to obtain H-1B visas. The U.S. government has permitted work authorization for international students post-graduation since 1947. Optional Practical Training provides work authorization for 12 months. In 2008, the Bush administration

extended OPT status an additional 17 months (29 months total) for international students in STEM fields.

Table 1
Full-time Graduate Students and the Percent of International Students by Field (2015)

Field	Percent of International Students	Number of Full-time Graduate Students – International Students	Number of Full-time Graduate Students – U.S. Students
Electrical Engineering	81 percent	32,736	7,783
Computer Science	79 percent	45,790	12,539

Source: National Science Foundation, Survey of Graduate Students and Postdoctorates, NFAP calculations. U.S. students include lawful permanent residents. Graduate students are in master's and Ph.D. programs.

In response to litigation, the Obama administration formalized STEM OPT in a March 11, 2016 final rule, following a period of notice and comment, extending the period for international students in STEM fields by 24 months, or 3 years total, if certain conditions were met. It is this additional 2 years the Trump administration may rescind, although it is theoretically possible the 12 months of OPT granted to all international students also could be at risk, since it, too, is subject to regulation and not enshrined in statute.

The legal case for maintaining STEM OPT is strong. "A federal court has already held that the Department of Homeland Security (DHS) had the statutory authority to publish a rule extending OPT to students in STEM fields," according to Stephen Yale-Loehr, a professor of immigration law practice at Cornell Law School. "The court found that DHS had clear legal authority to issue the rule under a general immigration statute authorizing the government to set conditions on what a nonimmigrant can and cannot do while in the United States. The court noted that since at least 1947, the immigration agency has interpreted the immigration laws to allow foreign students to engage in employment for practical training purposes. During all that time, Congress acquiesced to that interpretation."

Among the key findings of the research:

- Representatives of U.S. tech companies say eliminating STEM OPT would compel them to change recruiting practices if they believed gaining approval for an H-1B was unlikely because international students could only stay 12 months in OPT status, rather than the 3 years STEM OPT would allow. Companies say they would plan to recruit, hire and place international students *outside* the United States, since without an H-1B visa these students could not work long term in America.

- Countries with which America competes for talent, such as Canada and Australia, make it comparatively easy for international students to work after graduation. Nations around the world are competing for both international students and high-skilled immigrants.

- Ending STEM OPT could have a negative impact on America's position as a center for innovation, causing companies to shift more employees and resources, including design centers and engineering, outside of America. That would leave fewer opportunities inside the United States for U.S. workers, the opposite of what advocates of ending STEM OPT aim to achieve.

- The loss of many international students in STEM fields would cause science and engineering programs to shrink or disappear at many U.S. universities. The majority of the

students in most U.S. graduate school programs in computer science and electrical engineering are international students.

- The high level of international students plays a role in universities being able to attract and retain faculty, who rely on graduate students to conduct research. "Eliminating STEM OPT would have a chilling effect on international students, causing many to rethink applying to U.S. universities," said Jackie Bangs, assistant director, Division of International Programs, Oregon State University.

- Eliminating STEM OPT would contradict the administration's position in favor of the RAISE Act, which in granting permanent residence under its point system actually gives far more points and a significant advantage to international students who earn a STEM degree from a U.S. university, indicating the administration concedes such students are economically beneficial to the United States.

The opposition to STEM OPT rests on a zero-sum view of the economy, implying that the approximately 45,000 international students who receive STEM OPT status annually are taking jobs from U.S. students. There is no evidence to support this contention, based on economics or the recent performance of students in STEM fields in the U.S. job market.

An analysis by Glassdoor shows that 9 of the 10 highest paying majors 5 years out of college are in STEM. Moreover, there is no correlation between an inability to find work in a STEM field and the presence of foreign nationals in that field in the United States. Nearly three times as many individuals with degrees in the social sciences (11.8 percent), a field in which relatively few H-1B visa holders receive degree, report working involuntarily out of their field as those with degrees in computer and mathematical sciences and engineering, according to the National Science Foundation. The Conference Board reported in August 2017 almost 5 times as many online ads for positions in computer and mathematical science occupations as individuals listed as unemployed in those occupations.

The study on "The Importance of International Students to American Science and Engineering" found international students allow U.S. universities to offer high quality academic programs in science and engineering and to supply the graduate students essential for conducting research and retaining top faculty. Without international students the number of students pursuing graduate degrees (master's and Ph.D.) in fields such as computer science and electrical engineering would be small given the size of the U.S. economy. In 2015, at U.S. universities there were only 7,783 full-time U.S. graduate students in electrical engineering, compared to 32,736 full-time international students. Similarly, in computer science, in 2015, there were only 12,539 full-time U.S. graduate students compared to 45,790 international graduate students at U.S. universities.

Among the key findings of the research on "The Importance of International Students to American Science and Engineering":

- At many U.S. universities, both majors and graduate programs could not be maintained without international students. In electrical engineering, the majority of full-time graduate students (master's and Ph.D.s) are international students at 93 percent of the U.S. graduate school programs with at least 30 students, or 175 U.S. universities total. In computer science, the majority of full-time graduate students are international students at 237 universities, representing 88 percent of the U.S. graduate school programs with at least 30 students. In both cases that represents an increase since 2010.

- Over the past two decades, foreign nationals have helped fill the demand for high-level technical talent in the United States. In 1995, approximately the same number of U.S. and international students were full-time graduate students at U.S. universities in computer science. Since 1995, international students have far outpaced U.S. students.

- Between 1995 and 2015, the number of full-time U.S. graduate students in computer science increased by 45 percent, from 8,627 in 1995 to 12,539 in 2015. Over the same period, the number of full-time international graduate students in computer science *increased by over 480 percent*, from 7,883 in 1995 to 45,790 in 2015.

- The number of full-time U.S. graduate students in electrical engineering *decreased* by 17 percent, from 9,399 in 1995 to 7,783 in 2015. Meanwhile, over the same period, the number of full-time international graduate students in electrical engineering *increased by 270 percent*, from 8,855 in 1995 to 32,736 in 2015.

- The increase in both the size and number of graduate programs in science and engineering at U.S. universities indicates U.S. student enrollment has not been held down by the lack of available slots at U.S. graduate schools. Qualified Americans who want to attend graduate school in these fields could a find a program in the United States.

- Foreign nationals account for 81 percent of the full-time graduate students in electrical engineering and petroleum engineering, 79 percent in computer science, 75 percent in industrial engineering, 69 percent in statistics, 63 percent in mechanical engineering and economics, statistics, 59 percent in civil engineering and 57 percent in chemical engineering.

- A high level of international students allows U.S. universities to attract and retain faculty. "If we were not to place such a heavy emphasis on research, we wouldn't be able to get faculty that teach the wide range of things we do, with the appropriate expertise, so our educational mission would suffer," said Professor Christopher Raphael, chair of the computer science department at Indiana University.

- "To get tenure and perform research, professors require a significant number of graduate students and there are not enough domestic students alone in certain fields," said Professor Stuart Cooper, department chair of chemical and biomolecular engineering at Ohio State University.

- In electrical engineering, international students account for 87 percent of the full-time graduate students at Auburn University, 64 percent at Duke University, 74 percent at the University of Kentucky, 88 percent at Texas A&M, 86 percent at SMU, and 74 percent at the University of Texas at Austin.

- In computer science, international students account for 76 percent of the full-time graduate students at Rice University, 92 percent at Texas Tech, 63 percent at UCLA, 86 percent at North Carolina State, 75 percent at LSU, 73 percent at George Mason University, 83 percent at Vanderbilt, 86 percent at West Virginia University and 77 percent at Virginia Tech.

Maintaining a welcoming policy on international students is essential to preserving America's role as a center of technological innovation. Such a policy means reasonable visa policies for international students and making it easier for students to work after graduation, including preserving STEM OPT and improved policies on H-1B visas, per country limits and employment-based green cards. The competition for international students and talented science and engineers is intense. U.S. policymakers would be wise to welcome international students to America.

About the National Foundation for American Policy

Established in the Fall 2003, the National Foundation for American Policy (NFAP) is a 501(c)(3) non-profit, non-partisan public policy research organization based in Arlington, Virginia focusing on trade, immigration and related issues. The Advisory Board members include Columbia University economist Jagdish Bhagwati, Ohio University economist Richard Vedder, former U.S. Senator and Energy Secretary Spencer Abraham and former INS Commissioner James W. Ziglar. Over the past 24 months, NFAP's research has been written about in the *Wall Street Journal*, the *New York Times*, the *Washington Post*, and other major media outlets. The organization's reports can be found at www.nfap.com. Twitter: **@NFAPResearch**

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