HELP WANTED: THE SMALL BUSINESS STEM WORKFORCE SHORTAGE AND IMMIGRATION REFORM

HEARING

BEFORE THE

SUBCOMMITTEE ON CONTRACTING AND WORKFORCE

OF THE

COMMITTEE ON SMALL BUSINESS
UNITED STATES
HOUSE OF REPRESENTATIVES

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Questions for the Record:

None.

Answers for the Record:

None.

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THURSDAY, APRIL 25, 2013

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SMALL BUSINESS,
SUBCOMMITTEE ON CONTRACTING AND WORKFORCE,
Washington, DC.

The Subcommittee met, pursuant to call, at 10:00 a.m., in Room 2360, Rayburn House Office Building. Hon. Richard Hanna [chairman of the subcommittee] presiding.

Present: Representatives Hanna, Amodei, Meng, Clarke, and Chu.

Chairman HANNA. This hearing is called to order.

Thank you for appearing today to discuss two topics of critical importance to small businesses and our national economy: the shortage of workers with educations and skills in Science, Technology, Engineering, and Mathematics, also known as STEM, and immigration reform.

Small businesses are the backbone of the United States' economy and the historic source of new jobs and innovation. Among American small businesses, high-tech firms that engage in STEM fields hold great promise in creating the kinds of jobs critical to helping rebuild our middle class.

The potential of STEM-based firms to achieve this goal is evident in economic reports that show that even during the deepest troughs of the recession, many technology-dependent firms continued to grow and add jobs. In addition, wages paid in these industries outpaced those paid in most non-STEM occupations.

Unfortunately, despite the great promise of technology to grow our economy and create solid middle class jobs, the share of degrees in STEM fields awarded by American universities has been in decline. In addition, a larger percentage of these degrees are earned by foreign students present in the United States on a temporary visa.

As a consequence, 34 percent of small businesses surveyed reported difficulties finding qualified applicants for available positions. What we know is that we face a shortage and long-term gap between STEM jobs openings and qualified applicants.

This Committee partially examined this issue at a September 2011 hearing. During that hearing, small businesses and their representative associations testified that small businesses face short-

ages of workers even with elementary skills in STEM-based disciplines.

At the same time, many small businesses report an even more acute shortage of workers with post-secondary and advanced degrees in STEM disciplines. According to one estimate, by 2018, there will be more than 200,000 jobs requiring graduate STEM-level training that businesses will not be able to fill with native-born workers.

While the preference of many businesses and policymakers is to fill available jobs with American workers, it will take a great deal of resources and time to build up the pipeline of American students with advanced STEM skills. It can be done. I personally think we should pursue this task with urgency, and I have introduced legislation to do just that.

In the meantime, however, in order to grow and remain competitive, small businesses need a reliable supply of skilled workers to meet their pressing workforce needs. Many have suggested that expanding programs for highly-skilled immigrants and guest workers could be a viable strategy to meet these needs while the United States improves its STEM education system.

Today's hearing will examine a number of issues pertaining to immigration reform and the skilled workforce needs of small businesses, including the extent of the STEM workforce shortage, its economic effects on small business, and whether immigrants and guest worker visas reduce or improve wages and opportunities for the American worker. American has always been welcoming to those who seek freedom and opportunity, and if you talk at any length of time with any member of Congress or their constituents, you will find an American immigrant story.

In today's global economy, small businesses are not just competing against larger rivals for market share; they are also competing for talent. Allowing small businesses to fill STEM job openings with foreign workers in the short-term will help those businesses grow and aid our economic recovery and make America more competitive globally.

Once again, thank you all for being here today. I now yield to Ranking Member Meng for her opening statement.

Ms. MENG. Thank you, Mr. Chairman. And thank you to all our witnesses for being here.

Education is the foundation of America's economy, providing the tools for discovery and the skills to participate in an evolving global economy. Perhaps no fields are more important to this reality than Science, Technology, Engineering, and Mathematics, the so-called STEM disciplines. For many small businesses, success is often dependent on being able to hire these STEM educated workers. Without them, small firms would be left without the workforce they need to innovate and grow.

It is easy to see the importance of STEM to the United States' economy. STEM occupations have lower unemployment rates and higher pay, showing a high demand for this workforce. Workers with an undergraduate major in STEM make a half million more over their careers than non-STEM majors.

During the last 10 years, growth in STEM jobs was three times as far as growth in non-STEM jobs, and workers in these fields are

less likely to experience joblessness than their non-STEM counterparts. As a result, it is clear that STEM education is playing a vital role in America's economy.

Over the long-term, its role will expand even further. According to research from Georgetown University, STEM occupations will grow far more quickly than the economy as a whole, and by 2018, there will be 2.4 million job openings in STEM fields. Finding workers to fill these positions will be essential, both to the companies in these sectors and the overall competitiveness of America's economy. The primary way to fill these positions is through increasing education in these fields. In this respect, the federal government is playing a major role, providing more than $3 billion in STEM education funding through a wide range of agencies, including NSF, HHS, and the Department of Education.

These initiatives are critical to improving two areas at the center of STEM education—graduate study and K–12 teacher training. Supporting graduate education in computer science, engineering, and mathematics will encourage more students to pursue a STEM path. Fellowships and stipends for graduate studies are crucial in this regard. Doing so will increase the supply of STEM workers, allowing the United States' businesses to achieve their full potential.

Similarly, increasing the quality of teacher training at the elementary and high school levels will help reverse the reluctance of many of our young students to pursue STEM education. This is important because the Lemelson-MIT Invention Index has shown that 34 percent of young adults do not know much about these fields. A third of them said they were too challenging, and 28 percent said that their schools did not prepare them for STEM education. Simply put, investment in these teacher training programs can reverse these trends.

Another important mechanism to filling STEM positions is through immigration. H–1B visas are the primary way that a foreign STEM worker would gain access to the U.S., but with only 85,000 spots, this year's limit was hit in just 10 days since taking applications. The result is that fewer foreigners trained in scientific fields are coming to work in America. Not only does this mean that it is harder to find qualified employees, but it means lower rates of entrepreneurship. To this point, according to research completed by the Kauffman Foundation, the proportion of immigrant-founded companies nationwide has slipped by 1 percent, and in Silicon Valley, the percentage of immigrant-founded startups declined by nearly 10 percent. Fewer startups mean less growth and fewer jobs, both of which we need.

With these complex issues before us, I am looking forward to today's hearing, which will provide insights into what our country can do to prepare and attract a STEM workforce. Doing so is essential for the U.S. to remain one of the most innovative and competitive economies in the world. Understanding how we can increase the quality of STEM education while encouraging greater participation in these scientific fields is imperative not just for America's workers and businesses but for the U.S. economy overall.

I thank the chairman for convening this hearing and I yield back.

Chairman HANNA. If committee members have opening statements I would ask they be submitted for the record.

The lighting system is fairly simple. You have five minutes to deliver your testimony. We will be flexible with that. We want to hear from you. When you see the light go yellow you have another minute, but relax.

Our first witness is Mr. John Tyler. He serves as general counsel and secretary of the Ewing Marion Kauffman Foundation in Kansas City, Missouri. Among his areas of expertise are issues related to innovation and highly-skilled immigration. Thank you, Mr. Tyler, for being here today. You may now deliver your testimony.

STATEMENTS OF JOHN TYLER, GENERAL COUNSEL AND SECRETARY, EWING MARION KAUFFMAN FOUNDATION; NAGAPPA RAVINDRA, PRESIDENT, RAVI ENGINEERING AND LAND SURVEYING, P.C.; RYAN COSTELLA, DIRECTOR OF STRATEGIC INITIATIVES, CLICK BOND; MORGAN REED, EXECUTIVE DIRECTOR, ASSOCIATION FOR COMPETITIVE TECHNOLOGY.

STATEMENT OF JOHN TYLER

Mr. TYLER. Thank you, Mr. Chairman. Good morning to everyone.

As the chairman said, I am the general counsel and secretary for the Ewing Kauffman Foundation. The Kauffman Foundation focuses on fostering economic independence by promoting entrepreneurial success and educational achievement.

Small businesses, and in particular young businesses, have been a significant driver of job growth, and they are a major source of innovative products, services, and processes. More new firms and more growth can mean more jobs, more innovation, and improved standards of living. As such, U.S. policy must support small businesses, and especially the entrepreneurial subset positioned for the transformative growth that keeps our nation's economy vibrant.

Among current policies that do not do that well is our immigration system, particularly for STEM businesses. According to the National Science Foundation, demand for STEM jobs has been growing, and part of the reason for that is not just demand within industry but also due to people retiring and the lack of native-born talent being educated in the relevant fields as the opening statements commented as well.

According to data from the Department of Education and the Georgetown Center on Education in the Workforce, there is an estimate that the shortfall in STEM fields could be nearly 224,000 workers by 2018 or about 25 percent of industry labor, that is if we just rely on a native-born workforce.

Although these problems affect our economy and innovative capacity more broadly, they present distinct challenges for small business, which too often is at the mercy of an expensive process with too many businesses competing for too few visas that take too long to process. Small businesses frequently operate on limited budgets and personal sacrifice, particularly during the early stages. Survival, much less growth, can depend on a company's ability to

attract and retain the right talent with the right skills and experience at the right time.

Three changes in U.S. immigration law will help small business in this regard. First, increased numbers. All business will be helped by eliminating or raising the national caps on the EB series visas. Also, Congress should increase the annual H–1B visa allocation. Demand frequently exhausts supply before the visas are even available as the ranking member noted, including for the coming year. Moreover, increasing these numbers may increase jobs based on studies that show that an average of between two and five additional jobs are created in connection with each H–1B hired.

More specific to small business, Congress should also consider setting aside a number or percentage of economic STEM visas for small business in recognition of the infrequency with which they generally engage the bureaucracy and the corresponding inability to realize efficiencies.

A second change would be to provide a predictable path to permanent residency for foreign students who receive graduate or even bachelor degrees in STEM disciplines from U.S. colleges and universities. These visas could help in at least three ways. First, they permit holders to become small business owners, entrepreneurs, and job creators themselves. Second, the visas would presumably be portable because there is no employer to protect who has made an investment in obtaining the visa. Finally, these visas better position our nation to directly benefit from permitting a high quality education at a U.S. college or university instead of forcing those benefits overseas.

My third recommendation recognizes that other changes will likely be of little value without changes in the process. The current process is too cumbersome, too time-consuming for all business, but especially so for small business. As evidence of that distinction, the service is more likely to recognize a longstanding large business as a "trusted employer," entitled to expedited processing, which is fine, but Malcolm Goeschl asserts that the service is operated with the presumption that businesses could not have a legitimate visa need if they meet any two of the following three criteria, all of which are likely to encompass small business. Those criteria are having 25 or fewer employees, having annual gross income of less than $10 million, and/or being less than 10 years old. Congress should ensure against such an ill conceived presumption, which this Committee might do directly given its responsibilities.

In addition, the service should be required to afford presumptive status to H–1B holders and EB series applicants who original employer closes, particularly if they have a similar job or have started a legitimate company. Too often, those people lose their visa status and must leave or start over if they can.

Given that only about 44 percent of firms founded since 2003 survive after five years, there are significant risks for foreign employees of the other 56 percent, which because they are less than five years old are likely to be small businesses.

Other nations are increasingly eager to welcome high-skilled and entrepreneurial immigrants, particularly those trained at our colleges and universities. Without the types of changes I suggest, U.S. participation in the global brain circulation is more likely to be

one-sided, meaning that knowledge and innovation will leave but do not circulate back, and small businesses will suffer.

Thank you for the invitation to submit this testimony, and I look forward to your questions.

Chairman HANNA. Thank you, Mr. Tyler.

Our next witness is Nagappa Ravindra.

Mr. RAVINDRA. Yes.

He is president of Ravi Engineering and Land Surveying, headquartered in Rochester, New York. Mr. Ravindra began his business in 1995 and employs approximately 90 people. A native of India, he earned his master's degree in structural engineering from Syracuse University and has become a United States citizen.

Mr. Ravindra, thank you for appearing here today. I would like to acknowledge your wife who is also here with you and drove down from Rochester.

You may begin your testimony.

STATEMENT OF NAGAPPA RAVINDRA

Mr. RAVINDRA. Thank you. Chairman Hanna, Ranking Member Meng, and members of the Committee, I appreciate the opportunity to testify in today's hearing on how the STEM workforce shortage is affecting small firms.

My name is Nagappa Ravindra and I am the president of Ravi Engineering. We are a small engineering consulting firm based in Rochester, New York. I am here today to testify about how H–1B visas are essential to small engineering firms that need to hire engineers with specific skill sets in order to serve our clients' needs. I also want to tell you my story and how my firm would not exist without work visas for engineers.

I am a member of the American Council of Engineering Companies, the voice of America's engineering industry. ACEC, for short, members—numbering more than 5,000 firms representing hundreds of thousands of engineers and other specialists throughout the country—are engaged in a wide range of engineering works that propel the nation's economy and enhance and safeguard America's quality of life. Over 70 percent of ACEC's members are small firms.

My firm, Ravi Engineering and Land Surveying, has been in business since 1995. I came to this country in 1980 after graduating from the Indian Institute of Technology in Madras, India, with a Bachelor of Science degree in Civil Engineering. I got my Master's degree in Structural Engineering from Syracuse University and started my career as a structural engineer in a consulting firm in Syracuse, New York. I was able to get a green card within nine months with the help of my employer and became a citizen at a later time. After training for eight years, I moved to Rochester, New York to accept a high position in another consulting firm and worked another five years before starting my own business in 1995. I started a consulting engineering firm providing structural engineering services and went on to add employees and offer other services such as bridge design and inspection, land surveying, construction inspection, environmental and geotechnical engineering. Currently, we average 90 employees and have three offices in New York and one in Pittsburgh, Pennsylvania.

As a member of ACEC, we advocate a quality-based selection process and we compete for work based on the strengths and talents of our employees. To win projects, we need to demonstrate exceptional qualifications and experience. So, in order to grow and succeed, we need experienced, as well as entry-level engineers who are exceptional and talented individuals. Our growth is limited because of a lack of qualified people in our industry. Currently, we have vacant positions we cannot fill due to lack of experienced engineers.

Because there are not enough engineers with the skill sets we need, we currently employ one engineer on an H–1B visa and a student on an OPT visa. We had hoped to transfer the student to an H–1B visa, but as you know, the current cap of 65,000 was met in five days and our labor certification could not be completed in time.

Engineers and the engineering industry are major economic drivers and play an essential role in helping the U.S. compete in the global economy. Engineers are in high demand, but the output of new engineers from the nation's universities is not keeping up with the needs of the industry and the nation.

Bachelor's degrees in engineering have declined by nearly 20 percent since 1985. The workforce is also getting older. Nearly 30 percent of all engineering and science degree holders in the labor force are 50 or over and are headed toward retirement.

There is also greater competition for the diminishing pool of engineering graduates, particularly from the information technology industry seeking the skill sets that engineering graduates provide. Only half of engineering degree holders work in the engineering field. According to Duke University, between 30 and 40 percent of graduates from the University's Master's of Engineering Management program take jobs outside of the engineering profession.

Moreover, the proportion of foreign students earning engineering degrees at American universities is quite high. According to the American Association of Engineering Societies, for the 2008–2009 academic year, foreign nationals comprised 43.9 percent of the Masters and 54.6 percent of the Ph.D.s awarded in engineering by U.S. universities.

With so many engineering graduates from American universities working in other fields, it does not make any sense to send trained foreign engineers home to work for our competitors in the global marketplace. If I had not been given the opportunity to stay and work in the United States, 90 American workers would not have the job opportunities provided by my firm. My story is not unique. Speaking from my personal experience, nearly half of my graduating class of 220 students from Indian Institute of Technology in Madras, India, came to the United States in 1980 to pursue higher education. Out of that pool of 110 engineers who came to this country, today, nearly 30 percent have their own businesses employing a large number of Americans; about 20 percent are CEOs, CTOs, general managers, and senior officers in Fortune 500 companies; 20 percent of professors, deans, and educators in premier institutions; and the remaining have become venture capitalists and successful investors.

I strongly believe that the United States needs to invest in talented and young engineers similar to investing in our roads, bridges, and infrastructure as a long-term strategy for growth and prosperity. I urge Congress to strengthen and expand the H–1B visa program so that firms like mine will be able to hire the necessary engineering talent to serve our clients' needs and continue to grow and thrive.

Thank you for the opportunity to participate in today's hearing, and I would be happy to respond to any questions from Committee members.

Chairman HANNA. Thank you, Mr. Ravindra.

I now yield to a visiting colleague, Mr. Amodei, who will introduce our next witness.

Mr. AMODEI. Thank you, Mr. Chairman and Madam Ranking Member. I was excited about doing this until I heard the last witness refer to people over 50 as getting older, so I am still dealing with a little bit of that. But I will drive on nonetheless.

I appreciate your courtesies. It is a privilege to appear before you here today, not only as a member of the Immigration Subcommittee of the Judiciary Committee to get a little cross-pollenization on what your fine Subcommittee is doing, which will be helpful in our work also, but also to introduce a fellow Carson High School graduate in the form of Mr. Costella.

Now, in keeping with chronological accuracy that Mr. Ravindra has started, Mr. Costella, to make no mistake about it, went through that high school about two and a half decades after I did and has obviously made much better use of his high school start in his career than I have. But it is with some pride that I introduce not only a constituent but a person who represents a company that is a constituent company—a leader in national defense, aerospace, transportation; not only a major impact on local commerce but nationally, the fabric of our community; a company that employs over some 300 people in Nevada and Connecticut; folks that are innovators not only in their particular product line but also in terms of everything they are faced with—and that includes not only their product but also the way they manage, recruit, and administer the people that work for them, our most important resource.

So with that, Mr. Chairman, I would yield back. Thank you for your courtesy, and I look forward to hearing from Mr. Costella, hopefully without any indications on how much younger than I he happens to be and how much more productive his professional career has been to date.

Thank you.

STATEMENT OF RYAN COSTELLA

Mr. COSTELLA. Thank you, Congressman Amodei. It is great to see you here. Thank you. And Mr. Chairman and Ranking Member Meng, thank you guys for the invitation. It is great to be here.

This is a really important issue. As Congressman Amodei alluded to, I am the director of Strategic Initiatives at Click Bond, Inc., and we are headquartered in Carson City, Nevada, which is actually the state capital, for those of you who might think it is Las Vegas.

We employ about 250 people in Carson City and then another 60 or so in Watertown, Connecticut.

We are a family-owned business. This past year we celebrated our 25th anniversary. We are a very, very proud manufacturer in the United States. We are a company that is in transition. Since we are talking about generations and ages, our owners are actually transitioning toward handing the company to the next generation, to their son, and we are a company in transition. We are growing. There is no shortage of opportunities. We are the global leader in the design and manufacture of adhesive-bonded fasteners, primarily for the aerospace industry but we also do a lot of work in naval and marine, and increasingly other transit vehicle sectors. And for the laypeople, basically our parts are mechanical fasteners that we use adhesives to put into place that hold in all the electrical systems and planes and trains and ships and those kinds of things.

As we look into the future, we have an incredible workforce that has done amazing work to make us the global leader, but a large number of our folks are baby boomers, and very similar to other companies, especially small businesses in this country, those folks are going to be leaving the workforce soon, and we have to replace them somehow. And on top of that, as I said before, we have major growth opportunities in front of us and we have to find the people that can help us achieve those goals.

Unfortunately, in Nevada we have challenges with respect to education, and we have challenges with respect to retaining folk even in our state, and that is a totally different subject, but the point is when we look out into the future, filling those jobs is not going to be an easy task. Now, we have made some major investments in Nevada on trying to address this problem. We, as a company, have partnered with the Manufacturers Association in Nevada, as well as our fellow manufacturers themselves to partner with higher education institutions across the state, the Workforce Development System, the Economic Development Apparatus, as well as the K–12 education system to really define what the needs are that we have.

Historically, we have pounded our fists on the table and said we cannot find the people we need, and we were very good at pointing our fingers at the education system and anyone else that would allow us to point at them to tell them that we are not getting what we need. And I would say probably over the past three to five years we have really had a change of mind where we have said maybe we need to look in the mirror a little bit and we need to be a bit more proactive about defining what our needs actually are.

And so we have been very involved in our work in Nevada in really saying, look, let us talk about with STEM skills really are. Everyone hears STEM and the first question is usually what the heck is STEM? And then they hear Science, Technology, Engineering, and Math. Okay, what does that mean?

For us, STEM are the basics—reading, writing, the ability to do math, the ability to problem solve. And those things paired with a propensity to show up on time, to communicate effectively and work in teams, if someone has those skills, we can train them to do any job in our company. We can put them through school and

they can become an engineer who invents the next greatest thing. Without those basics, there is not a very bright road ahead. And so we have really focused our work on trying to set that as the minimum standard—those basic reading, writing, and math skills. We tend to actually look at the National Career Readiness Certificate granted by ACT as a solid indicator of that.

And then as you move up the chain, we have to realize that as manufacturers and as employers, when we want to tell the world, hey, we need these specific skills, we have to use some sort of common language so people understand what you are talking about. So we have really got behind the idea of using nationally portable, industry-driven credentials to particulate what our needs are.

So at Click Bond we have a huge need for machine operators that can one day become journeyman-level machinists. So we align our needs with the National Institute of Metal Working Skills Credentials, and we have seen tremendous success in a program that has taken people literally from unemployment to full-time jobs with benefits and national credentials. So I would love to talk a little more about that.

In closing, I see my red light is on here, as far as the immigration piece goes, when we need a person with a specific skill set, we look for someone who is the right fit who has got the skills, and if there is a way to build a larger pool of people as we grow and as other small- and medium-sized businesses grow, if we can have a larger pool of people to pick from that is more competitive, that just drives how much more excellent and competitive we can be in this global economy.

So I look forward to your questions and telling you a little bit more about our company if you would like to know more. Thank you.

Chairman HANNA. Thank you, Mr. Costella.

I now yield to Ranking Member Meng, who will introduce the next witness.

Ms. MENG. I am happy to welcome Morgan Reed, who is the executive director of the Association of Competitive Technology. ACT represents more than 5,000 small- and medium-sized information technology firms and helps them leverage their intellectual assets to raise capital, create jobs, and continue innovating. Mr. Reed specializes in issues involving application development relating to privacy, intellectual property, competition, and small business innovation. He also serves on the SBA's Office of Advocacy Advisory Council. Welcome.

STATEMENT OF MORGAN REED

Mr. REED. Thank you. And thank you for the introduction.

Chairman Hanna, Ranking Member Meng, and distinguished members of the Committee. As you heard, my name is Morgan Reed, and we represent over 5,000 software and other high-tech small businesses throughout the world. Our members are at the forefront of the revolutionary changes happening today through mobile apps, cloud computing, and data management. And the best news is I am here to tell you today my members are hiring, or rather trying to hire.

Chairman Hanna noted in his op-ed yesterday that small businesses are the engine of job creation. Well, for the mobile apps economy, we are dominated by small business; 70 percent of the top selling mobile apps, small businesses or micro businesses. Moreover, this is not a Silicon Valley-only phenomenon. In fact, the study we did in 2012 showed that 60 percent of the app companies are actually outside of California.

And of course, the growth that we have all talked about—you have heard everyone at the table talk about—I want to put some numbers to that—$92,000—$92,000 is the current median pay according to the Bureau of Labor Statistics for a software engineer. Ninety-two grand. I know a lot of people who consider that a great living wage. And, of course, BLS predicts that there will be 120,000 new computing jobs annually through 2020. Unfortunately, my numbers cannot grow their companies if they are unable to hire the workers they need to make the next game or the next game changing application.

But instead of talking BLS numbers or Department of Labor averages, I thought I would be a little more specific. So Congressman—Chairman Hanna, in your district, Enesco Avionics is looking for a software engineer to work in Endicott; BAE, looking for engineers. Congresswoman Meng, Hoptin Media, which is on Austin Street in Forest Hills, they are looking for a software engineer. Aurora Games in Jackson Heights, looking for a mobile app developer. Congressman Amodei, you obviously heard from Mr. Costella, but guess what? Hodges Transportation is looking for two engineers—a design engineer and a test engineer. Congresswoman Clarke, in your district I have got Cardwell Beach Marketing. They are looking for an interactive design engineer.

All of these openings have been available for some time. And with these openings commanding high salaries one would expect that, well, America must be spiking in people pursuing computer science degrees. Remarkably, that is not happening. The primary reason is the steep decline in schools teaching computer science. Only one in 10 high schools offer the class. Students are less likely to major in a technical subject if they did not study it in high school. And with fewer computer science majors graduating from universities, we are woefully short on the talent our U.S.-based tech industry needs.

Now, we know that improved STEM education can produce results. A National Science Foundation supported effort called Young People's Project is already out in the field working to improve math and science scores in schools in underserved communities. For example, Aria Fleming was a middle school student when YPP reached out to her in the Mississippi Delta. She clearly was not on a path to math and science education, yet she has now graduated from Tennessee State University with a degree in electrical engineering and works for Procter and Gamble. CodeNow is an afterschool program in New York that is taking high schoolers after school and teaching them how to code, and its graduates are winning national science awards and studying computer science in college.

Now, we have seen the investment in STEM education at the secondary level has positive results, but this begs some obvious

questions. One, does STEM education solve today's problem; and two, how do we pay for it? I mean, we all love the idea of putting more money into something but we have got to find some revenue to make it happen. And the reality is the tech industry is willing to step up. Right now we know that the tech industry has said something we rarely hear, which is charge us more, please. We are looking at the need for H–1B visas and saying double our fees for H–1B visas if that helps us get more workers today to solve problem number one, and also if that money goes to help solve problem number two, which is the STEM education need that we have.

One of the key elements of the I–Squared Act, of course, it will raise $500 million annually over 10 years for STEM programs. This funding represents a fraction of the positive economic impact for future generations who can fill these jobs that are currently going overseas or worse, remaining unfilled.

So I urge members of this Committee to help small businesses succeed by charging us more so that we can get the tech visas that we need now and get the STEM education that we need to grow America's workforce to meet our needs tomorrow.

Thank you very much.

Chairman HANNA. Thank you, Mr. Reed. I appreciate your time and testimony.

Mr. Tyler, you said that the—maybe I misunderstood, but in order to qualify for the program, the immigration program, H–1B visas, the minimum is 25 employees, $10 million gross?

Mr. TYLER. No, I am sorry, I may have misspoke, Mr. Chairman. What I was referring to was a practice at the USCIS that was documented at least in 2010, where the USCIS seemed to have a presumption that if a business had fewer than 25 employees, if it had less than 10 million in annual revenue, or if it was less than 10 years old, any two of those three, that there was a presumption at the service that the company did not have legitimate visa needs.

Chairman HANNA. On its face that seems absurd to me knowing that most companies start with one employed or, like Mr. Ravindra, start by himself. Can you elaborate on that? Maybe Mr. Reed would also because the tech companies in my community, most companies, start as a very small business with an idea and expand. So basically, we are limiting our helping small businesses simply by those rather arbitrary and capricious rules.

Mr. TYLER. I agree. And Malcolm Goeschl in his article goes at some length to describe that process and how the presumption hurts. With that fundamental presumption in place it denies those businesses that meet those criteria the opportunity to hire talent, denies them the opportunity to grow and to advance their products, much less to advance the company's——

Chairman HANNA. Well, Mr. Ravindra, who started with one himself, would not be able to be anywhere he is today at all. He would have to wait for years and years to grow to that size which almost by definition means he will never get there.

Mr. TYLER. That is the impediment.

Chairman HANNA. Mr. Reed.

Mr. REED. I mean, let us be very specific. The high-tech industry is built off of companies that are incredibly small. We all know recently Instagram was purchased for $1 billion. They had 12 em-

ployees—12. Instagram. Huge. A lot of these tech companies as you say would not even hit that threshold even when they have hit true success. And the really key part—and you know, Mr. Ravindra here is a perfect example of that—is finding the right person. There is all this discussion about, well, we need STEM skills. We also need the right skills. Mr. Costella already referenced that about making sure that he has got the right kind of person to do the job.

So the problem with that number is it arbitrarily limits small business to find that one right person who has that right skill that can make the difference between your company going public, being acquired, or failing. And so that is a huge part of the problem that we see with this artificial limit on the side.

Chairman HANNA. So you would suggest then or that would suggest that there be no requirements whatsoever; that one person would be enough and one dollar and no years? Ten years is a long time to be in business in my view.

Mr. REED. Well, a lot of the tech companies we work with have actually either been in business in one form or another for far longer than that. I think, and the Kauffman Foundation can weigh in, obviously the ideal would be to have the ability to get the right person instantaneously with no wait and no requirements. We are also pragmatic and we know that finding a solution that will meet 435 members' approval of the House and 100 members of the Senate will be difficult, so there is ideal and what we think we can work with.

Chairman HANNA. Let me ask you one other question. When tens of millions of people are out of work in this country or have simply given up or are under employed, how does the guest worker program—this is for any witness—help those people find work?

Mr. REED. I will do a quick one. We have a member company in Illinois, and this is a horrible story because it actually talks about seven people who lost their job, but it fits with your model.

This was a company that did service and they had a person from Britain who was in the United States on a H–1B visa. The visa expired and there were seven people that helped support that person on the bids that they did for large enterprise-level companies in the Chicago area. They lost their H–1B visa person who was the team head, and those seven people could not go to work. So when you look at that number, I might have one H–1B visa, but if he is the key—or she is the key to making the rest of that bid possible, completing that RFP on time, then it is worth it to have that one person because that provides 7, 8, 10 more jobs to support the overall contract.

Chairman HANNA. Thank you.

Mr. TYLER. Mr. Chairman, if I might add to that, there are a couple of additional ways that the H–1B program can help but also needs to be changed. One of the ways that it currently helps is that there are studies that show for every H–1B that is hired there is an average of between two and five other jobs that are created to support the H–1B. So hiring the H–1Bs can, in fact, contribute to employing other folks as well.

One of the ways in which the H–1B visa would need to change to get to your point about the unemployment rate, currently folks

who are here on an H–1B have difficult, if not absolute barriers, to starting and growing their own company as an H–1B. And yet when we look at the impact of immigrants on the economy, if we look at the impact of immigrants on startups and new jobs and growth companies, 40 percent of the Fortune 500 companies had immigrant founders that were part of them. Between 25 and 50 percent of various companies depending on the studies in Silicon Valley and biomedical industry in Boston, publicly traded companies with venture capital input. So between 25 and 50 percent of these companies have had immigrant founders.

We need to do a better job. We need to do more to allow immigrants to start and grow companies, and the H–1B has impediments to that.

Chairman HANNA. One other question, just generally.

So what I have learned and I am pretty confident that we would all hear this, that STEM-related jobs are solidly middle class jobs. In a world where we see declining incomes, diminishing lifestyles, the American dream as we understand it generally becoming mere elusive and harder to attain, STEM educated workers, regardless of their origin, are people who pay taxes, and add value at all levels.

I would like to yield to Ranking Member Meng for her questions.

Ms. MENG. Thank you. I have a question for Mr. Costella.

Community colleges can play a significant role in training STEM professionals. What experience does your company have with employing these types of graduates? And anyone can answer also.

Mr. COSTELLA. Thanks for the question.

Community colleges, I mean, they are such a godsend for us, especially in Nevada. I will tell you a little bit about some success we have had.

We have a need, like I said before in my opening remarks, for machine operators. These are folks who—the machine operator, just for folks who do not know, is the entry-level point for a career in machining. So if you want to be a journeyman-level machinist that gets paid quite a bit of money to do your work, the entry point is a machine operator. We are not unique in the Northern Nevada area. A lot of small- and medium-size manufacturers have that need. So what we were able to do was come together as a community of employers and say we have the specific need, as I said before, we need to use the National Institute of Metalworking Skills credentials to validate that skill set. Then what we did is partnered with two of the community colleges up in Northern Nevada—Truckee Meadows Community College and Western Nevada College. We got them engaged in understanding what these credentials were and what they validate, and they agreed because these credentials are nationally portable and industry driven, and third-party validated and driven by longitudinal data, that they could actually grant academic credit along with the credential for anyone who would go through a program to receive it.

We then partnered with the workforce system so that the community colleges could get their facilities up to par to be able to train towards the National Institute of Metalworking Skills standard, and then we partnered as a community basically to go look at the unemployment lines and screen people to say, okay, who has

got the basic skills—reading, writing, math, problem solving—and who can pass a drug test? It is serious. People laugh but it is a problem.

So the folks who could do that, who could earn the National Career Readiness certificate, be drug-free, were then interviewed. And the folks who made it through that process—I think somewhere around 40 folks ended up going through this program initially. In 16 weeks, they went through eight weeks of in-classroom training on measurement, safety, materials, five days a week, eight hours a day. The second eight weeks they did three days a week in the classroom and the last two days of the week were spent in on-the-job internships with the employers who had the need, who articulated that need upfront, paid internships, and in 16 weeks they went from being unemployed, went through a training program at the community college that had a demand-driven equation from the employers, and ended up I think over a 90-something percent success rate in becoming employed with benefits. And again, we are talking about the first level of a career machining, $12–$14 an hour with benefits. And it is up from there.

And I am happy to say Click Bond, we actually hired four people out of that program and they are outstanding employees. I spoke with our vice president of production before I came out here and asked him how are these folks performing? And he said they are outstanding. They have got very, very bright futures. So that is a model that we saw a lot of success with in Nevada.

Mr. RAVINDRA. If I may add, we hire a lot of construction inspectors who most of them come from community colleges and they are graduates of community colleges and there is a severe shortage of these inspectors that we hire and community colleges are a great place to produce these graduates.

Ms. MENG. A question for Mr. Reed.

You proposed to increase visa fees and use the additional revenue to pay for STEM education, and maybe Mr. Ravindra would want to answer, too. Do you believe that smaller firms would be able to afford these visas or would large businesses end up being at an advantage because of their deeper pockets?

Mr. REED. The cost, when you look at an employee for the software sector, the cost of an H–1B visa—and worst of all, the time that it takes—remember, as you have all talked about, it was a matter of days until we hit that cap. So if you look at lost productivity, a few thousand dollars more is nothing compared to the cost of the acquisition of a talented software engineer. So if I am going to pay somebody $92,000 and you are going to say I am going to have to pay $2,000 or $3,000 more to acquire them, that is nothing. The legal fees that go into H–1B far exceeds the actual visa account. So whether you double our fees or more, it is not a significant portion of getting that right person. And so absolutely, unequivocally when I have talked to our members, they have said if I get the right person out of the deal I will take it in a heartbeat.

Mr. RAVINDRA. Well, I do not know about that. As a small business, we are certainly watching our dollars and whenever we hire people we try to hire through the Internet and through trade journals, and realizing ourselves we do not even go through a head hunter. So any cost increase would not be looked upon kindly by

the small firm industry. So it does affect our bottom-line. If that is what it takes to bring in more educated people with the right skill set we probably will, you know, pay for it but definitely it is not a good idea.

Mr. TYLER. If I could add in, it may be worth considering some sort of or exploring some sort of a compromise similar to what the U.S. Patent and Trademark Office has done. They now have multiple tracks by which you can get patents through the PTO. And one of the tracks you get an expedited track if you pay a higher fee. So rather than increasing the fee on everyone, there is a possibility that a multi-tracked system could help. But particularly, considering the effect on small business, a track for small business could also be useful.

Mr. REED. And I will amend mine to say yes, we all are watching our bottom dollar but right now the desire to get a product to market is really critical for us, and so there is another element of it that I think is important and that is that large businesses will actually be helping to build our domestic developer workforce. So I did not want to make it sound cavalier but I want to keep our eye on the prize, and our eye on the prize is getting talented work, American workforce built here in this country by any means that we can get it done.

Mr. RAVINDRA. I just want to add one thing. I do agree when it comes to the cost allocation, the major cost is spent on the lawyers who help get the research together. So if we simplify the process we can simply save a lot of money and then the part that goes to pay for the H–1B visa itself is not a big portion of the whole process. So yes, I do agree with Reed. We can absorb some cost increase in the processing of the H–1B visa. If it is simplified quite a bit, then we save a lot of money on lawyers.

Ms. MENG. Question for Mr. Tyler.

While the number of foreign students in STEM fields has increased by 50 percent in the last 20 years, the percentage of the students receiving the temporary visas has remained the same. If more of these students were able to remain in the U.S. on H–1B visas, how would this affect American students' ability to secure employment in STEM fields?

Mr. TYLER. That is an excellent question, and there have been a number of studies related to crowding out as it is. The Kauffman Foundation has not done those studies so I am not directly involved with those studies. But a number of the studies do show that there is not only not a crowding-out effect with regard to those jobs, but there is actually in some ways a crowding-in effect because with the foreign students getting jobs it is creating other opportunities. I mean, with the foreign students getting jobs there is still a need for teams. There is still a need for people to complement each other and to complement each other's skill sets. And there are studies that show that there is, in fact, a crowding-in effect as opposed to a crowding-out effect.

Ms. MENG. Another question for Mr. Reed.

The steep drop-off mentioned in computer science education at the high school level is very troubling. Is this a supply issue—are there not enough qualified teachers? Or demand issue—demand issue—students are not interested enough? Or both?

Mr. REED. It is a little A plus B. You are exactly right. My own personal story fits this very much. My father was a computer science and mathematics teacher and I actually took AP math from my dad. So I am exactly what is part of this.

What is interesting about that is if I look at my classmates in my dad's AP class from a high school in Alaska with 116 kids in it, I can name five of us that are now in the software industry in one form or another. And the problem that we are facing is that folks like my dad are retired. It is harder to find qualified math and computer science teachers that are willing to take that pay. I mean, the good news is a good software engineer earns $92,000. The bad news is it is really hard for a math and computer science teacher to make $92,000. So basic economics says if you are good at computer science, you are going to find a computer science job with one of us here at the table rather than teaching. So yes, A is part of the problem. And then B, we need to do more to encourage students to see the advantage from taking computer science even at a younger age. And so that is why we look at programs like CodeNow and others that help incent people and make them understand, hey, there is not only a job here but a bright future that can change the way you look at the world.

Mr. COSTELLA. Just on that note with STEM careers in general, one of the things we have seen some major success with is employers themselves taking the responsibility to communicate what we do. Historically, we have just assumed that counselors and teachers and everyone knows what we do and they will somehow drive people magically into our factories and we will all be happy. Well, if we do not open our doors and we do not ask students and parents and teachers and folks to come through our facilities, whether it is in the IT world or manufacturing, they do not know any better. And what we have seen is when we do that it does significantly increase the likelihood that people want to pursue these careers. And then if you can attach to that sophisticated marketing and advertising and fund that through kind of associations and whatnot, you actually can make some inroads.

Ms. MENG. Thank you, Mr. Chairman. I yield back.

Chairman HANNA. Ms. Clarke. You have five minutes or a little more if you like.

Ms. CLARKE. Thank you very much, Mr. Chairman. And thank you, Ranking Member Meng. And I would like to thank our witnesses for your testimony here today.

I want to refer back to a point that was raised by you, Mr. Tyler. You spoke about the barrier to H–1B visa employees to establishing a business in the United States. What would you see as a remedy for this challenge to a nonresident, noncitizen entrepreneur?

Mr. TYLER. It may not be necessarily changing the H–1B itself, but actually creating a new visa class that would allow for entrepreneurial visas. And there have been a couple of various bills introduced to do these sorts of things. But to more specifically allow foreign——

Ms. CLARKE. Nationals?

Mr. TYLER.—nationals to start and grow companies and to allow H–1B recipients to transition into that status or to allow foreign nationals to enter that status directly.

Ms. CLARKE. So what would that business be classified as? Would it be an American business or what type of business would it be?

Mr. TYLER. The presumption is that it would be an American business starting in America, and presumably, one of the bills requires that you hire various numbers of people, nonfamily members, in jobs in America. But I would not necessarily want to say that the business could only operate in America. In today's global economy it is important for growth and opportunity that if a business can, in fact, be multinational——

Ms. CLARKE. I just think that this is sort of a new paradigm.

Mr. TYLER. True.

Ms. CLARKE. Right. And it is an intriguing one because I certainly understand the global nature of business these days, but one of the challenges has been I guess American employment.

Mr. TYLER. Correct.

Ms. CLARKE. And so the question becomes are we ready to embrace that new paradigm or in the alternative, do we provide a pathway to either residency and/or citizenship for H–1B visa holders? Have you given any thought to that?

Mr. TYLER. Well, in some ways—and there are studies that show that right now the alternative for a lot of these folks is not to start their companies in America; it is to leave America and start their companies somewhere else. So they go back to their home countries and they start and grow their companies there. And a lot of these countries are very eager and they are very intentional and strategic about trying to recruit these people back to their country.

Ms. CLARKE. Right. Part of the challenge is the brain drain, right?

Mr. TYLER. Correct.

Ms. CLARKE. Of any of these nations. So what I am saying is in terms of ultimately anchoring someone in the United States. We want the talent. We want the business. There is a tension, a natural tension between a national of another nation and the United States in terms of that talent, right? So I am trying to get a sense of just in terms of creating this new paradigm, if you will, is what is it that we would use as I guess the magnet? Is it to become on a pathway to becoming American? Or is it just sort of a global, this is a good place for you to start a business mentality? And I will open that up for the rest of the panel because I am just trying to get a sense as we go through reform or what I call a new system, how we would manage that.

Mr. TYLER. Well, America continues to be the best place to start and grow a company, and we need to retain that status. And I think if we allow opportunities for foreign nationals to start and grow their companies here, not necessarily—or not on temporary visas—maybe provisional, but certainly permanent residency at a minimum, in starting and growing a company you are attracting capital, you are attracting talent, you are attracting customers and

suppliers. A temporary status adds risk, a high degree of risk to an already risky venture.

So in addition to the ecosystem that supports starting and growing businesses for the foreign national and their ability to start and grow their business, to hire people, there needs to be some degree of certainty around their status.

Mr. REED. I wanted to give you a quick specific answer. As you know, the president supported something called the Start-up Visa Act of 2013, and I was using my handy dandy mobile device to make sure who the sponsors were. But it gets to the heart of your question—how do we find a way to bring them in? You mentioned the brain drain. Well, the good news is so far the brain drain has worked in our favor. Folks have come to America. We have been the beneficiary of it. So you are right. It acts like the Startup Visa in finding ways as part of the immigration reform bill. Any form of immigration reform that helps us continue to win the brain drain war is absolutely essential. And so I would encourage you to look at some of the suggestions through the Startup Visa Act that the president has supported and others.

Mr. COSTELLA. I would just say we do not really deal with the H–1B visa specifically but as a manufacturer that is growing, that has a really intense design capability, we want the best and brightest in the world to come here to live, to work in our companies, to build their families, to pay taxes, and we do not want to educate them here in our universities and then sit across the negotiating table from them. We want them on our side of the negotiating table. So whatever can be done to allow that to happen, and that is what you all are diving into, that is something that I think small- and medium-size businesses in general are probably supportive of.

Ms. MENG. Thank you very much. Mr. Chairman, I yield back.

Chairman HANNA. Thank you.

Ms. Chu, are you prepared to ask a question?

Ms. CHU. Yes.

Chairman HANNA. Go ahead.

Ms. CHU. Mr. Reed, I have heard—well, actually maybe for the whole panel, I have heard many of you address the solution for STEM job shortages via immigration reform, but no one has mentioned the large pool of potential STEM workers that are women. Currently, women hold less than 25 percent of STEM jobs and as discussed by many of you directing visa fees to bolster an improved STEM education at the K–12 level certainly is key to increasing the native STEM workforce population that we have for the long term. But we also need to make sure that some of this money is directed at increasing the number of women getting STEM degrees.

So in what ways could we do that—could we increase the presence of women in STEM jobs and therefore increase the supply of STEM workers to alleviate these shortages?

Mr. REED. Well, I will start with a little bit of a personal side of the story. My wife is actually a veterinarian, so she is actually a STEM professional and went through school to take math and science classes all throughout and become a doctor. And I watched her class over the time that she has been in it. Veterinary medicine, for example, started out with almost all men. Her class when

she graduated had 90 students. Four, I think, were men; the rest were women. So we are, in fact, seeing a lot of women in medical professions and others that are, in fact, STEM-based, that are heading towards women. I believe the last statistic I saw was that there were more women in medicine—in medical school right now than there are men.

So I think it is good to see that growth, but you point to something a little more specific, which is my industry, the software industry, where we are not still seeing the growth. And I think it is absolutely worth looking at to find ways to increase the diversity through how we spend the money that comes out of the H–1B program. I think there is a lot to learn from some of the nonprofit work that has already been done and we should use that as we figure out the best way to utilize the spending.

Mr. RAVINDRA. I would like to add, yes, there is certainly a shortage of women in the engineering field and also a shortage of high school students going into engineering. So definitely we need to increase the awareness among high school students and also train the high school guidance counselors to introduce STEM-related fields to let them know that the kids have a future in them. So it definitely needs to be introduced at the high school level to encourage girls to go into engineering.

Ms. CLARKE. Mr. Costella.

Mr. COSTELLA. One of the owners of our company is a woman. Our director of communications and our director of technical communications are women. Our director of business process is a woman. And one of the things that we find extremely important is making sure that when we engage with schools, both letting parents and students and folks into our factory, visiting schools for career fairs, is to show that our sector is not just putting parts together. There is a whole slew of jobs that are interesting. And showing the folks who are in leadership in our company who are women, having them go out and be the spokespeople, too. It has a tremendous impact in inspiring young girls that these are careers that they can have. And so again, I go back to I think the answer lies with the employers taking responsibility and taking this seriously enough. If we do not engage, I do not see how you build a pool of interest that is sustainable.

Mr. TYLER. Yeah. And I would add I think that your question is very astute and I would add to not just women in STEM fields but women in entrepreneurship, women who grow companies. There should be more of them and we need to have more of them. But there is also evidence that the number of women who have started growing companies is growing. And I think at the Kauffman Foundation, we are trying to engage in one particular set of programs how do we do that better? How do we as a foundation facilitate the entry of women into STEM fields, entry of women into entrepreneurial fields and their ability not just to enter, but to succeed in those fields? So supporting groups like Astea, which provides women mentors to women entrepreneurs, trying to identify those women who can be role models, who are role models, and to do more to support them in their efforts to demonstrate that this is an excellent path for women.

Ms. CLARKE. Thank you.

I yield back.

Chairman HANNA. Something maybe a little more contentious, we have limits from certain countries on the total numbers of people who can immigrate to the U.S. Knowing what we know about STEM and how important STEM is to the future of this country, and we have a lot of anecdotal evidence that suggests that when people come here, if they cannot get a visa within a certain period of time they actually go back and become our competition, do you think we should set visas based on skill sets as opposed to just raw numbers?

Mr. REED. Obviously, I am going to sound like a broken record. That is exactly right. We are looking for the right person, and we do not care what country they come from, what accent they have. We want the person with the skill set that we want. So absolutely. We see a need to change the perspective basing it on the border versus basing it on the talent. And I think you are exactly right there.

Mr. TYLER. And it seems arbitrary that Malawi or Lichtenstein would have access to the same 7 percent of EB series visas that countries like India and China and European Union countries have. The number is arbitrary. The application of the system in that regard is arbitrary. And it sure seems like there are a lot better ways to do it that would be particularly tied to opportunities, to needs, to skill sets, to education levels that folks in the countries may have.

Chairman HANNA. So there is a fundamental logic for this country to pursue immigration policy that perhaps acknowledges the fact that there are certain people we need more of, and those for this moment in history are people who are educated in STEM.

Can any of you give me some real life evidence of somebody you knew, maybe a company you know of, that came here and could not get a visa in time, so they took their knowledge and their skills and built a business overseas that is perhaps our competitor today?

Mr. RAVINDRA. I can speak about that.

Not necessarily because they did not get a visa or they were not able to stay here, but what we need to do is we need to attract the best and the most talented people to come to the United States, stay on, and then continue on to start businesses and that will be to our benefit. So I do know that many of my classmates who came here and did start businesses but did go back to my home country, India, and continue to expand and establish bases outside the country, it is just global economy. So whatever they thought for their business that it would be beneficial for them to be in India instead of being in the United States, they pursued that. So not because they were not able to obtain the visa or anything.

But lately things are changing because, like I said, when I first came here to this country 20–30 years ago I got my green card within nine months, so that is a big difference. Today, for a student to get a green card it takes eight years for somebody from my country. So there is definitely—the person is going to think about it and then say, hey, you know, if there are opportunities elsewhere in other countries as good, why would I want to stay here? So that person would think very seriously about staying in this country and go outside.

Chairman HANNA. To follow up with that, and I am going to read you something—I will ask the question quickly.

So we are the competitive place to be. People want to start businesses here. We have great educational systems here. And to your point, if it takes nine years, people are going to think twice about whether or not they should even bother. But this is from David Brooks, a columnist from the New York Times, "In the 21st century, the U.S. will no longer be the big dog. Human capital will be more broadly dispersed. There will be an array of affluent nations fully engaged in a global economy. Their competitiveness will be more about organizing relationships and amassing force to thrive. America will need to have to be the crossroads nation where global talent congregates and collaborates."

So if we do not get ahead of this dynamic that you describe, we will not be that country at that global crossroads. Would anyone like to comment on that?

Mr. RAVINDRA. That is correct. As a matter of fact, many other countries, like the European countries, are jumping ahead and then giving research to very talented people in STEM, inviting them over to their countries with open arms compared to the United States. So they recognize that. So the European countries have already started recognizing the need for it.

Mr. TYLER. And I would add not just European countries but also your neighbor to the north, Canada, is aggressively pursuing U.S. castaways, if you will. They have new visas that they make available. They have expedited processes that they make available. Australia, New Zealand are being aggressive. Japan. I mean, any number of countries. I mean, Japan, which had formerly been mostly closed to immigrants, is now recognizing value in attracting——

Chairman HANNA. So, Mr. Tyler, would you say then, we are losing our ability to attract these people; a lot of it is because of our own bureaucracy and of course the whole other issues around immigration. How long do you think this dynamic can go on before we are looked at as a place that is too formidable to try?

Mr. TYLER. Predicting the future is always risky. I would suggest that with the degree of attention that other countries are paying to this issue and the aggressiveness with which they are pursuing talent and not just the countries we have mentioned but also China and India who we are educating a lot of their talent and a lot of their workforce and a lot of their entrepreneurs. Not only do we have to change how we are doing business as a nation because it makes it more attractive, but we have to do it more aggressively because other countries are not just being more welcoming for U.S. educated students but they are making inroads in having a more friendly business climate where there are more opportunities for advancement, and even wealth creation, to degrees. And those opportunities become, you know, on one hand an opportunity for the U.S. economy given the global marketplace, but on the other hand, if we do not pay attention, we do not pay attention quickly, it becomes a threat to the U.S. economy.

Mr. REED. I will give you a specific one and that is Kunal Bahl who created a company called Snapdeal. I am looking at the article where it talks about it. He now has 400 employees. He is in posi-

tion to take on Groupon, and he specifically said his H–1B visa expired in 2007 and he returned home to India now to create a company called Snapdeal. The headline on the article is great. It says, "At a time where the U.S. could use all the tech jobs it can get, Kunal Bahl is creating hundreds of them in India."

Chairman HANNA. Amazing.

Mr. COSTELLA. And I would just add, at least from the manufacturer's perspective, we are kind of there. There is a shortage of people today in skilled STEM careers, as many as 600,000 across the country according to some estimates. It is a problem and I appreciate that we want to look forward and be ahead of the curve. I think we are at the curve and not figuring this out will be detrimental to our future. I really believe that.

Chairman HANNA. Innovation technology can facilitate new domestic jobs in industries or make it easier to transfer jobs overseas. Besides improving STEM education, what else do you think we can do to keep jobs here with knowing that all the uncertainty by government in terms of regulation and taxes and everything else? I know it is a big question but Mr. Reed, you are smiling.

Mr. REED. The size of that question is pretty daunting. Obviously, from the small business perspective——

Chairman HANNA. You ask questions.

Mr. REED. Yeah, I know. You get the opportunity.

From the small business perspective we have several issues from the technology part that we need to look at. We do have a lot of uncertainty right now with regards to regulation around other issues. Privacy is one that you heard mentioned earlier. But as we have to build these companies here in the United States, making sure that we can get the right person quickly and be able to pivot—one of the biggest—the biggest things that we have learned in the last five to six years over the mobile apps economy is it is not just about having the smartest person; it is having the smartest person who can change direction because the market changes.

Eight years ago there was no such thing as the iPhone. There was no mobile apps economy. So in a matter of years we have created something that will hit about $100 billion by 2016. So when you look at barriers to entry and barriers to success, a lot of it has to do with where there is either a government or other impediments that get in the way of a good, fast pivot.

Mr. TYLER. And part of what could be done to alleviate that is just in looking at the amount of regulation that current exists. And too often regulation gets adopted and it stays on the books without any real effort over time to evaluate is it still right? Does it still make sense? Should we do away with this regulation? What is the effect? Just because a regulation was adopted 15 years ago not only does not mean that it still makes sense today but it may actually be causing harm today when it may have been the right thing 15 years ago. So there needs to be a more concerted effort to review regulations, and I would suggest at all levels of government, not just the federal level, but state levels as well. And to evaluate the regulation—what is the effect of this regulation not only based on the original intent and purpose of the regulation but what harm is it causing now? What harm is it likely to cause in the future? And are the benefits, you know, which comes in more important—the

benefits to be gained or the harm that is caused? And a lot of that harm that is caused is increasing the expense associated with starting and growing businesses.

Mr. COSTELLA. And as a small business that is part of the aerospace and defense supply chain, for example, one of the things that we have worked very hard in our engagement on the Hill is to try and educate folks that while the regulation may be well intended, it oftentimes impacts of customers. And a lot of people do not realize a lot of small businesses, their customers are the big OEMs, like a GE or a Boeing or a Lockheed-Martin or a Northrop Grumman. And so while there may be regulations that impact those guys at the top, there is rarely very much analysis about how it impacts the second and third and fourth tier suppliers down the chain like us. And we employ people with those good, high paying jobs that if through the stroke of a pen a program is just wiped out or some sort of regulation is put in place that adds a tremendous amount of cost, that does not affect the big guys; that comes right down the chain to us. And at some point it becomes not sustainable and it gets kind of scary. So I would say the cognizance of the entire supply chain and how decisions here, which I truly believe are well intended in many respects, how do they actually impact the guys on the front lines?

Chairman HANNA. Thank you.

Mr. RAVINDRA. Being in the construction industry I just want to add that obviously, the investment in infrastructure is a good way to improve business climate in the country. And from what I know, any place in other countries, especially like for example, India, speaking from my personal experience, building a good, nice airport in my hometown, paved the way for major improvements and major investment by private sector all around and all the way to the town, filled with technology companies that took advantage of the investment.

Chairman HANNA. Thank you.

Ms. Clarke.

Ms. CLARKE. Thank you, Mr. Chairman. Excuse me.

I would like to refer back to a question actually raised by Congressman Hanna, and that is given that there is legislation that would lift the statutory cap on overrepresented countries, do you find that would be a sufficient answer to the employee shortages that we face? Or would you be in favor of a removal of caps all together?

Mr. TYLER. I think——

Ms. CLARKE. Did you kind of get where I was going with that question?

Mr. TYLER. If I understand the question, you are asking if eliminating the per country cap in the AB series visa, is that going to solve the need for talent? I would suggest that it is a component of solving the need but it is not going to be sufficient to solve the need because the EB series visas, they are still—if you eliminate the per country cap, there is still the numeric caps that exist as well and those numbers are relatively small for each of the series. And even looking only at the EB series is not likely to solve the workforce needs.

Mr. REED. I agree. If you look at the raw numbers, the fact that we hit the cap in a matter of days, it is interesting to note that in 2009, which we have to argue is the worst economic condition that this country has faced since the Great Depression, we still used up all the H–1B visas. So at a certain level we have to understand that the cap itself needs to be expanded and eliminating the per country is going to be important to doing it.

Ms. CLARKE. So then you are saying lift the cap or remove the cap? Or——

Mr. REED. Ultimately, I am very pragmatic about this. I want solutions that help my members, and so removing the cap would be great but I am also very cognizant of the needs of Congress to meet compromise levels. So at best, let us get it raised first and then we can revisit the question of removing it all together.

Ms. CLARKE. So I heard the number 600,000 currently in the shortage of people with the expertise. If we are raising the cap, I mean, where is the sweet spot there?

Mr. REED. Well, I think we have looked at numbers more in the 120,000 range versus where we are right now, and I know that Kauffman can speak to the specific numbers on that. But overall, you are right. Even a lift of the cap will not eliminate our shortage, but that is why we want the money to go to STEM so at the same moment that we are raising the cap, we are also getting Americans who are capable of filling those slots prepared immediately through community college efforts, through afterschool programs, through every level of the education system so that at the same time we are lifting the cap, we are also bringing Americans into those jobs.

Mr. RAVINDRA. I just want to add I would be for removing the cap because for the primary reason, as an employer, when I am looking for employees, I am looking for certain skill sets and I am also comparing the foreign students and graduates with the local workforce available, and I want to hire the best. So the market will dictate. If you remove the cap and if the market is flooded with too many foreign graduates and if the companies have an abundant supply and then they are going to hire the best and the remaining will ultimately go home anyway. So I do not think removing the cap is going to hurt us.

Ms. CLARKE. Very well.

One final question, Mr. Chairman. Can you provide us with an idea of the diversity of the potential foreign candidates with STEM degrees that you are finding in the aggregate candidate pool? I mean, where from around the world are we talking about? Is it just every nation? We certainly know of India and China. I heard the E.U. also mentioned but they are our main competitor right now. I just do not see people rushing out of the European Union unless I guess financially there is an incentive. But what are we talking about here?

Mr. REED. Actually, we have been able to get some good talent out of Ireland. Their economic situation, they have a great education system in Ireland. They have produced some really skilled software engineers over there. And you are right. We are willing to pay more. And that is not a bad thing necessarily if we get the right talent. So I think it is good that we face off against our competitors like Ireland, like the E.U., and say come to America. If you

are better, smarter, or faster, we would love to have you here to help create jobs. So it is all the way around the world but we should never take our eye off the places that are directly competing with us.

Ms. CLARKE. I yield back, Mr. Chairman.

Chairman HANNA. Ms. Chu, do you have a question?

Ms. CHU. Yes. I wanted to ask specifically about the Senate bill that is before us on comprehensive immigration reform.

Mr. Reed, you pointed out that simply increasing the H–1B cap will be not enough to solve the STEM worker shortages that we are facing, and you stated that not everyone can fill this gap and that for vulnerable technology startups that the right fit is very critical.

The Senate immigration bill would add an additional 120,000 merit-based visas for high- and low-skill immigrant workers annually. And I am just wondering what you think about this. It would give extra points to immigrants with masters degrees and Ph.D.s, and those with experience working in high demand fields would also provide—it has a potential for providing small businesses and startups with the skilled employees that they need. Outside of increasing H–1B or employment-based visa categories, would this improve the chance of finding the right fit candidates?

Mr. REED. Congresswoman, I believe that there are quite a few benefits that we are seeing in the Senate bill. I have to say that we find the I–Squared legislation as proposed to definitely have some advantages over the Gang of Eight—I guess we can call it the Gang of Eight Senate version in that it is a little more pragmatic about some of the difficulties in making sure that we can get the right employee. There are elements of the Gang of Eight bill on the H–1B side that would put some pretty high burdens for a small startup company in terms of meeting their requirement that we have looked into every possible way to find an American, that we leave ourselves open to investigation by the Department of Labor for multi-years.

So when you look at the Senate bill, to go directly to your question, does it solve all the problems? Of course not. We know that. We discussed that ad nauseam. We think that the I–Squared language probably does a better job of dealing with the small business needs that are being considered elsewhere, and so we would encourage you to look at the I–Squared language around that portion. Overall, I think it is important that the other area that needs to be looked at is that right now the legislation in the Senate only apportions about 15 percent of its money to a secondary education. A lot of it goes right now to college, community colleges, which is great, but I think one of the things we need to consider is the fact to get that competent college student, like you talked about, getting them in the community college, they need the talent that Mr. Costella described—reading, writing, arithmetic. So we need to actually put some more of that money looking at the high school level, too.

So as you look through that Senate bill, look at the I–Squared on the H–1B requirements and look at where the money is going and ask serious questions about is there a way for us to put more into secondary education so that Mr. Costella's needs are met as

well and that they have the math skill so that they can go through the journeyman program.

Ms. CHU. Okay. Mr. Tyler.

Mr. TYLER. If I would, I would add that it is important that immigration reform, particularly as it relates to the high skilled levels, and particularly in the area of small business, that we remember that high skilled immigrants have a greater propensity to start and grow companies. So it is not just a workforce issue; it is also an entrepreneurship issue and starting and growing companies, which actually then creates more demand for workforce. Creates jobs, creates opportunities, and creates product services, et cetera. So it important that there be opportunities for folks, as I mentioned earlier, for foreign nationals to come to the U.S. to start and grow their companies here. And also for foreign nationals who are here on temporary visas or other restricted visas to be able to have a pathway to starting and growing their business.

Ms. CHU. Mr. Tyler, there is—in talking about the Senate immigration bill, it does have a provision that would improve the portability of visas, and in your testimony you mentioned that small businesses would particularly benefit from procedural changes to the law that allow for this portability. Could you expand on this point and explain why it would be important to you? How it would benefit small businesses?

Mr. TYLER. Portability is important for a few different reasons. The absence of portability ties the immigrant to a particular company. It ties them to their sponsor. And that creates opportunities for below market wages, below market working conditions because of that specific tie to the employer, because if the person who is sponsored by the employer leaves that employment, they have to either leave the country or find somebody else to sponsor them. So having degrees of portability is important because it becomes a pressure against abuse of the system which is important. Portability also needs to encompass the possibilities of starting and growing companies as opposed to finding another employer sponsor. Starting a company and having that company effectively hire you becomes part of portability as well.

Mr. RAVINDRA. If I may add, I was speaking to a friend of mine who owns a small business—not exactly a small business but a company of 200 plus employees. I asked him about how many H–1B visas he has hired and sponsored, how many employees, and he said none because the complexity of the process scares small businesses. And they really do not want to deal with going through the H–1B process to hire people and they will not just do that. And so simplification of the process is really critical for small businesses to hire H–1B visa graduates.

Mr. COSTELLA. I would second that just as a smaller business. When we look at that it is burdensome to figure it out and understand all the details. So we will adopt our own measures of finding the right people, but simplifying that would help us access more talent, which makes us more competitive and helps us grow and create more jobs.

Ms. CHU. Thank you. I yield back.

Chairman HANNA. We talked a little bit about the Senate bill. Part of it, to protect opportunities and wages for domestic workers,

the Senate bill includes provisions that would require employers to pay H–1B visa employees higher wages. Would anybody like to speak to that?

Mr. RAVINDRA. I can speak a little bit about it.

When we sponsor an employee for the H–1B visa in talking to our counsel, they advised us that we need to pay the prevailing wage, which is whatever the average rate of pay is for that employee and not pay any less than that for the chances of that employee to get their visa. So we cannot really go and hire foreign graduates assuming that we can pay less and then make money out of that. So we do not do that. And also, our counsel told us that the rate of pay has got to be on par with anybody that we would hire.

Chairman HANNA. So basically you would say then the Senate provision is irrelevant; that it is unnecessary?

Mr. REED. I would say that right now I know that being on the software side it is a little different than my colleagues here at the table but we are not finding that people are saying no to hiring the right talent because it is slightly more; in fact, we are actually looking at wage competition in the other direction which is trying to keep our best employees in our company by doing anything we can, including salary increases. As we all know, those are going up. So it is not really relevant to us right now in the software sector.

Chairman HANNA. What you are really saying is the market has taken care of that.

Mr. REED. Absolutely.

Chairman HANNA. Okay.

Mr. TYLER. Mr. Chairman, if I might add on the compensation side of things, small businesses have a tendency to compensate their folks in a lot of different ways. It is not just salary.

Chairman HANNA. Oh, is it?

Mr. TYLER. Exactly. So it is salary but there are bonuses that come into play, and a lot of times, particularly with very small businesses or even growing small businesses there is equity that can be part of the compensation. As I understand it, the prevailing wage calculation, the immigrant calculation of market wages is salary based. It does not account for bonuses. It does not account for equity. Now, equity is hard to value, and particularly in a small company and a closely held company, but at the same time there is value there and that can be an important aspect of the compensation.

Mr. REED. That is actually, and I apologize for not even thinking about bringing that up, that is actually probably one of the most critical areas for us. If Congresswoman Meng had a great idea and she and I wanted to start a high-tech firm and we had the change rattling around in our pocket, the way that she would be compensated for her brilliant idea and all of her successful output would be stock. Would be some other compensation—equity in the firm. And when you take that away from us it makes it a small business—it gives us—chops us off at the knee a little bit when we are going up against a much larger company that can do it all through salary. So absolutely. Thank you for bringing that point up.

Chairman HANNA. Let me reverse the notion a little bit, the question.

On our current laws, and we all know immigration is on the table now. A lot of people are hopeful that by September we will all have something settled. But in the absence of that or if we wind up with more of what we have, how long would it take to build up our own indigenous workforce to fill the types of jobs that you gentlemen see coming down the pike knowing what Mr. Reed said earlier, and that less than 10 percent of the schools are focusing on information technology education types of individuals, how reckless is it for us to stay on this path, and what are the long-term consequences if we do not change our policies?

Mr. REED. I know Rob Atkinson at ITIF has done quite a bit of looking at the innovation economy in looking at how many jobs we will be down if we continue on this course. And I have seen numbers as high as 900,000 or more for in the innovation economy sector. I know that Kauffman Foundation has also done some work on this. But we are talking millions, and at least at least from the software side, at least a million.

Mr. COSTELLA. I would say that in terms of the timeframe to turn it around it is not going to happen fast. There are so many facets that we have learned in our work. I mean, we were able to, because of our very strong partnerships with the workforce system in the state of Nevada, the governor, the higher ed system as a whole, the K–12 system, we were able to put together a program to meet an immediate need for machine operators in fairly short order, but that does not answer our need for journeymen level machinists. By the time there is a shortage of some of these really skilled people, which we will notice in the next five to seven years, it takes me five years to train a journeyman level machinist. If we wait till the shortage hits it is too late. You cannot find those folks. You cannot train them. And so there is no immediate solution, and I cannot emphasize enough, as I think I have been doing, the role of employers to be proactive. I guess I am singing to ourselves. We have got to engage and be proactive in this conversation. There are things that can be done at the federal level from a policy perspective to simplify and to get this right. But we have to be the boots on the ground, to be clear about what we need. We have to engage with the community, with students, with parents, with teachers, to make sure that these careers are viable options. And without those pieces all coming together I just do not know where the solution is going to come from.

Mr. RAVINDRA. I just want to add we really need to look at long-term benefits of investing in STEM and investing in encouraging high school students to get into STEM. So whatever we do, we need to be looking at long-term investments, long-term—the benefits are going to be 10, 15 years from whatever we do today is when we benefit. So it is really easy to turn around and look for short-term gains in any field, even the companies look for quarterly returns, and then if they stop looking at the long-term investment and long-term growth aspect of the business they lose out.

Mr. TYLER. Mr. Chairman, I would offer a couple of points. One, the importance of education and educating our native-born population cannot be understated. It is not just a workforce issue, it is

not just an employment issue. It, in fact, affects the future of our democracy. Educated citizenry is essential to the functioning of our nation. If we continue to neglect that we are continuing to neglect our nation in those sorts of ways in addition to the workforce issues.

A second point is that even if we had a completely educated native-born workforce, there would still be needs to bring in foreign nationals, not necessarily to supplement the expertise and the skill sets, but if nothing else but to provide new ideas and new insights because in the global economy, American businesses are reaching out into some of the least strange places of the world, like European Union, but they are also reaching out to what might be strange places in the world, to understand cultures around the world, to understand frankly just how a product is used, much less the interaction with the potential customers, customs with suppliers, having access to that information, we are not going to be able to grow it at home. We are going to need to access it from abroad.

Chairman HANNA. Thank you. Thank you all.

Are there any further questions?

We have a couple of minutes, and a lot of times in these hearings the right questions do not come out and there are things that people would like to say and they do not necessarily have an opportunity to say. So we have got a few minutes if anyone would like to add to the conversation.

Mr. COSTELLA. I would just say, reiterate from my opening remarks, that when we talk about STEM skills, a lot of people automatically think NASA engineer or something, and those are STEM jobs. But from the perspective of small- and medium-size businesses, it is the basics. It is reading, writing, math, problem solving. If we can get across that bar then we companies are happy to train and develop people. It is very, very normal for a company like ours to make substantial investments in developing and cultivating talent from the start all the way up through the senior levels of the company. So I just hope we do not think STEM is the separate kind of entity out there that is different than the basics. It is the basics and then all the way up.

Chairman HANNA. Sure. So knowing that people change jobs seven or eight times in their lifetime, knowing that what once was true, that you could have a set of skills today, but you need a long-term set of skills that you keep up with throughout your life to stay competitive and that if we are going to build a thriving middle class in this country, and rebuild this country in a way that provides a positive future for all of us, and reduces our high unemployment and this enormous debt that we are facing, we need to focus on STEM.

With that, I would like to thank you all for your time today. It has been very valuable. And again, I know you go through long distances and a lot of work to get here.

I ask unanimous consent that members have five legislative days to submit statements and supporting material for the record. Without objection, so ordered.

This hearing is now adjourned. Thank you.

[Whereupon, at 11:49 a.m., the Subcommittee was adjourned.]

APPENDIX

Testimony for Hearing on STEM Workforce and Immigration Reform

Before the Contracting and Workforce Subcommittee

Of the Small Business Committee

Of the United States House of Representatives

John Tyler - April 25, 2013

Introduction and Context

Good morning. My name is John Tyler and for the past 14 years I have been the General Counsel and Corporate Secretary for the Ewing Marion Kauffman Foundation in Kansas City, Missouri. The Kauffman Foundation is among the largest private foundations in America and our focus is on fostering economic independence by promoting entrepreneurial success and educational achievement.

As you know, small businesses and in particular young businesses have been a significant driver of job growth in our nation. Kauffman research shows that most net new job creation has historically come from businesses that are less than five years old.[1] Small and young businesses also are a substantial contributor to our nation's economy and a major source of innovative products, services, and processes that have not only contributed to our economy but also to our ways of life. As such, it is imperative that U.S. policy support opportunities for small businesses and especially that entrepreneurial subset whose businesses are positioned for the transformative growth that keeps our nation's economy vibrant. I refer to these collectively as "small business" in this testimony.

Among current policies that do not provide enough support for those opportunities is a U.S. immigration system that does not give enough consideration or support to economic priorities and opportunities that immigrants provide. The STEM workforce is particularly at risk of being neglected.

Demand for STEM jobs has been growing,[2] but STEM businesses are being squeezed from one end by the large number of STEM-skilled people leaving the field because of retirement[3] and from the

[1] See Dane Stangler and Robert Litan, WHERE WILL THE JOBS COME FROM? (Ewing Marion Kauffman Foundation, November 2009).

[2] Peter Schuck and John Tyler, *Making the Case for Changing U.S. Policy Regarding Highly Skilled Immigrants,* 38 FORDHAM URBAN L. J., 327, 359–41 (2010) (citations omitted).

[3] See National Science Board, Science and Engineering Indicators 2010, NSB 10–01, chapter 3, p. 29 (National Science Foundation, 2010); Peter Schuck and John Tyler, *Making the Case for Changing U.S. Policy Regarding Highly Skilled Immigrants,* 38 FORDHAM URBAN L. J., 327, 339–41 (2010) (citations omitted). Dowell Myers, THINKING AHEAD ABOUT OUR IMMIGRANT FUTURE: NEW TRENDS AND MUTUAL BENEFITS IN OUR AGING SOCIETY, (Immigration Policy Center, American Immigration Law Foundation, January 2008); Jacob Funk Kierkegaard, *The Accelerating Decline in America's High-Skilled Workforce: Implications for Immigration Policy,* POL-

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other by the decreasing number of native-born talent with the requisite level of knowledge and expertise who are entering the field.[4] Although these problems affect our economy and innovative capacity more broadly, they present distinct challenges for small business.

Small Business Vulnerability Under the Current System

As this Committee knows and understands, small businesses frequently operate on limited budgets and personal sacrifices of people driven by passion for their business' purpose, particularly during their early stages. Their very survival—much less growth—can depend on the ability to attract and retain the right talent with the right skillsets and experience at the right time.

Thus, small businesses in STEM fields are particularly vulnerable to the talent squeeze and workforce issues. The current immigration system too often leaves small businesses at the mercy of an expensive process with too many businesses competing for too few visas that take too long to process. Large established businesses are better able to dedicate regular financial and personnel resources to manage through the expense and bureaucracy of meeting their workforce needs. For example, one explicit way in which the system favors large business is that, because of their resources and regularity of engagement, they are more likely to be recognized as "trusted employers" for purposes of expedited processing. Even so, the current system does not meet the workforce needs of big business either.

Policy Change Recommendations

Changes in U.S. policy regarding immigration could alleviate the vulnerability of small business to certain workforce issues. As a result, firms may be more likely to survive past the early years and become growth firms. More firms and more growth will mean more jobs, more innovation, better standards of living, and advances in human welfare just as we have experienced in prior decades.

A 2010 article by Malcolm Goeschl highlights some of the challenges that small companies and startups face when trying to hire prospective non-native employees. Among these challenges are what Goeschl asserts was an apparent USCIS presumption that no company with 25 or fewer employees, annual gross income of less than $10 million, and/or less than 10 years old could have legitimate visa needs.[5] Such a presumption—whether actual or in practice—hurts small business.

In addition, there are three key types of changes that will help small business and their contributions to the American economy: changing the total of available economically oriented visas, adding

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ICY ANALYSES IN INTERNATIONAL ECONOMICS 84, p. 1 (Peterson Institute for International Economics, December 2007).

[4] Peter Schuck and John Tyler, *Making the Case for Changing U.S. Policy Regarding Highly Skilled Immigrants,* 38 FORDHAM URBAN L. J., 327, 340–41 (2010) (citations omitted).

[5] See Malcolm Goeschl, *An Attack on Entrepreneurialism: A Review of USCIS Adjudication of H1–B Petitions for Startups and Small Companies in 2009,* 87 No. 7 INTERPRETER RELEASES 369 (February 15, 2010).

at least one new visa type, and changing processes by which applicable visas are awarded.

Increase Number of Visas Available

With regard to quantity, there are any number of general increases that, by helping all business will also help small business. Among these are the following: (1) increase the annual number of H1–B visas so that supply better matches demand and (2) remove or at least increase the national caps on employment-based series visas. Data shows that increasing the number of H1–B visas has a further effect on job creation as studies show that an average of between 2–5 additional jobs are created in connection with each H1–B hired.[6]

More specific to small business and recognizing their unique circumstances, it may be appropriate to target a certain number of percentage of economy-oriented STEM visas for small business, based possibly on number of employees, overall revenues, and/or investment capital resources. This step would position small businesses to choose between competing with each other in this realm rather than with big business but without hurting big business.

New Class for STEM Graduates of U.S. Universities

Along with more visas, another change that would help small business by helping all business would be allowing foreign students who receive graduate or even bachelors degrees in STEM disciplines from U.S. colleges and universities to have a predictable, certain path to permanent residency, either by automatically providing green cards upon graduation or at least providing a temporary visa that automatically leads to permanent status upon satisfaction of certain conditions.

These visas could have at least four outcomes beneficial to the U.S. economy. First, they would permit U.S. employers to more readily access this talent to help meet their employment needs. Second, these visas would presumably permit broad portability, which will help protect against below market wages and working conditions and permit professional advancement and enhanced contributions through promotions and job moves. Moreover, there would not be the same incentives to restrict portability in order to protect the initial employer's investment of funds to obtain a visa through current channels. Third, they would permit these visa holders to become small business owners and entrepreneurs themselves by starting and growing their own businesses, as studies show that high skilled immigrants are more likely to do.[7] Finally,

[6] See Madeline Zavodny, IMMIGRATION AND AMERICAN JOBS, American Enterprise Institute and The Partnership for a New Economy (December 2011) (immigrants with advanced degrees from U.S. universities in STEM fields creates average of 2.62 jobs); National Foundation for American Policy, H1–B VISAS AND JOB CREATION (March 2008) ("for every H1–B position requested, U.S. technology companies increase their employment by 5 workers" on average with the average increasing to 7.5 workers for technology companies with fewer than 5000 employees).

[7] A recent Kauffman Foundation study showed that immigrants are almost twice as likely as native born people to start businesses. See Robert W. Fairlie, KAUFFMAN INDEX OF ENTREPRENEURIAL ACTIVITY 1996–2012, p. 10 (Ewing Marion Kauffman Foundation, April 2013). See also

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these visas would better position our nation to directly harvest the fruit of seeds sown by permitting access to the knowledge, experiences, networks, and other benefits of a high quality education at a U.S. college or university.

Procedural Changes

Although increasing quantities and adding a class(es) could help significantly, the benefits risk being minimized or even eliminated without changes in how visa applications are processed. The process is too cumbersome and time consuming for all business but is especially so for small business, which often is not engaged in the system with enough regularity and consistency to do so efficiently.

A more specific procedural change would better account for the inherently changing nature of new firms, most of which are small businesses, by allowing for portability if the originating firm goes out of business. According to Census Bureau data, only 44% of firms founded since 2003 survive after five years.[8] A person who is legally present on an H1–B or whose EB series visa is pending should not be penalized if the business that originally sponsored them closes. If the person has found similarly gainful employment or has started a valid business, the Service should be required to afford them presumptive legitimate status—not for their benefit necessarily but for the contributions they make to their new employer or business.

Conclusion

Other nations are increasingly eager to welcome high skilled and entrepreneurial immigrants, particularly those trained at American institutions of higher education.[9] The United States' current approach to immigration makes it a lot easier for those nations to succeed in this regard. While it is true that stronger economies elsewhere can have tangential, indirect contributions for the U.S. economy and businesses, it should not be at the expense of opportunities for direct benefits for U.S. jobs, economic growth, innovation, and advances in human welfare. The changes proposed here better protect those opportunities, particularly for small business.

These proposed changes also position the United States to more actively benefit from the growing global "brain circulation" by which knowledge and innovation is increasingly shared among nations. Without these types of changes, U.S. participation is more

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Anthony Luppino, John Norton and Malika Simmons, REFORMING IMMIGRATION LAW TO ALLOW MORE FOREIGN STUDENT ENTREPRENEURS TO LAUNCH JOB-CREATING VENTURES IN THE UNITED STATES, Ewing Marion Kauffman Foundation (August 2012).

[8] Dane Stangler and Jared Konczal, GIVE ME YOUR ENTREPRENEURS, YOUR INNOVATORS: ESTIMATING THE EMPLOYMENT IMPACT OF A STARTUP VISA, p. 4 (Ewing Marion Kauffman Foundation February 2013); Dane Stangler, THE ECONOMIC FUTURE JUST HAPPENED, p. 10 (Ewing Marion Kauffman Foundation, June 9, 2009) (setting survival to five years at 48–49%).

[9] See The Partnership for a New American Economy and The Partnership for New York City, NOT COMING TO AMERICA: WHY THE U.S. IS FALLING BEHIND IN THE GLOBAL RACE FOR TALENT (May 2012); Vivek Wadhwa, et al., THE GRASS IS INDEED GREENER IN INDIA AND CHINA FOR RETURNEE ENTREPRENEURS (Ewing Marion Kauffman Foundation, April 2011); Chris Gafner and Steven Yale-Loehr, *Attracting the Best and the Brightest: A Critique of the Current U.S. Immigration System,* 38 FORDHAM URBAN L. J. 191 (2010); Peter Schuck and John Tyler, *Making the Case for Changing U.S. Policy Regarding Highly Skilled Immigrants,* 38 FORDHAM URBAN L. J., 327, 336–39 (2010) (citations omitted).

likely to be one-sided—meaning that knowledge and innovation leaves but does not most fully benefit us by circulating back.

Thank you for the invitation to submit this testimony and to be a part of the Committee's work on reforming U.S. policy regarding high skilled immigration. I look forward to your questions.

A C E C

AMERICAN COUNCIL OF ENGINEERING COMPANIES

100 YERAS OF EXXCELLENCE

TESTIMONY OF MR. NAGAPPA RAVINDRA, P.E.

PRESIDENT OF

RAVI ENGINEERING & LAND SURVEYING, P.C.

BEFORE THE HOUSE COMMITTEE ON SMALL BUSINESS

SUBCOMMITTEE ON CONTRACTING AND WORKFORCE

APRIL 25, 2013

Chairman Hanna, Ranking Member Meng, and members of the committee, I appreciate the opportunity to testify in today's hearing on how the STEM workforce shortage is affecting small firms.

My name is Nagappa Ravindra and I am the President of Ravi Engineering & Land Surveying. We are a small engineering consulting firm based in Rochester, New York. I am here today to testify about how H–1B visas are essential to small engineering firms that need to hire engineers with specific skill sets in order to serve our client's needs. I also want to tell you my store, and how my firm would not exist without work visas for engineers.

I am a member of the American Council of Engineering Companies (ACEC), the voice of America's engineering industry. ACEC members—numbering more than 5,000 firms representing hundreds of thousands of engineers and other specialists throughout the country—are engaged in a wide range of engineering works that propel the nation's economy, and enhance and safeguard America's quality of life. Over 70 percent of ACEC's members are small firms.

My firm Ravi Engineering & Land Surveying, P.C. has been in business since 1995. I came to this country in 1980 after graduating from the Indian Institute of Technology, Madras, India, with a Bachelor of Science degree in Civil Engineering. I got my Master's degree in structural engineering from Syracuse University and started my career as a structural engineer in a consulting firm in Syracuse, New York. I was able to get a green card within 9 months with the help of my employer and became a citizen at a later time. After training for 8 years, I moved to Rochester, New York to accept a higher position in another consulting firm and worked another five years before starting my own business in 1995. I started a consulting engineering firm providing structural engineering services and went on to add employees and offer other services such as bridge design and inspection, land surveying, construction inspection, environmental and geotechnical engineering.

Currently, we average 90 employees and have three offices in New York and one in Pittsburgh, Pennsylvania.

As a member of ACEC, we advocate for a quality based selection process and we compete for work based on the strengths and talents of our employees. To win projects, we need to demonstrate exceptional qualifications and experience. So, in order to grow and succeed, we need experienced as well as entry level engineers who are exceptional and talented individuals. Our growth is limited because of a lack of qualified people in our industry. Currently, we have vacant positions we cannot fill due to a lack of experienced engineers.

Because there are not enough engineers with the skill sets we need, we currently employ one engineer on an H–1B visa, and a student on an OPT visa. We had hoped to transfer the student to an H–1B visa, but as you know, the current cap of 65,000 was met in just five days and our labor certification could not be completed in time.

Engineers and the engineering industry are major economic drivers and play an essential role in helping the U.S. compete in the global economy. Engineers are in high demand, but the output of new engineers from the nation's universities is not keeping up with the needs of the industry and the nation.

Bachelor's degrees in engineering have declined by nearly 20 percent since 1985. The workforce is also getting older: nearly 30 percent of all engineering and science degree holders in the labor force are 50 or over and are headed toward retirement.

There is also greater competition for the diminishing pool of engineering graduates, particularly from the information technology industry seeking the skill sets that engineering graduates provide. Only half of engineering degree holders work in the engineering field. According to Duke University, between 30 and 40 percent of graduates from the University's Masters of Engineering Management program take jobs *outside* of the engineering profession.

Moreover, the proportion of foreign students earning engineering degrees at American universities is quite high. According to the American Association of Engineering Societies, for the 2008–2009 academic year, foreign nationals comprised 43.9 percent of the Master's and 54.6 percent of the Ph.D.s awarded in engineering by U.S. universities.

With so many engineers graduating from American universities and working in other fields, it does not make any sense to send trained foreign engineers home to work for our competitors in the global marketplace. If I had not been given the opportunity to stay and work in the United States, 90 American workers would not have the job opportunities provided by my firm. My story is not unique. Speaking from my personal experience, nearly half of my graduating class of 220 students from Indian Institute of Technology, Madras, India came to the United States in 1980 to pursue higher education. Out of that pool of 110 engineers who came to this country, today, nearly 30% have their own businesses employing a large number of Americans, about 20% are CEO's, CTO's,

General Managers and senior officers in Fortune 500 companies, 20% are professors, deans and educators in premier institutions and the remaining have become venture capitalists and successful investors.

I strongly believe that the United States needs to invest in talented and young engineers similar to investing in our roads, bridges and infrastructure as a long term strategy for growth and prosperity. I urge Congress to strengthen and expand the H–1B visa program so that firms like mine will be able to hire the necessary engineering talent to serve our clients' needs and continue to grow and thrive. Thank you for the opportunity to participate in today's hearing, and I would be happy to respond to any questions from committee members.

4/25/2013

Mr. Chairman and Members of the Subcommittee:

My name is Ryan Costella. I serve as the Director of Strategic Initiatives at Click Bond, Inc. We are a family owned company and just celebrated our 25th anniversary this past year. We employ 250 people at our headquarters in Carson City, NV, and an additional 60 people at our facility in Watertown, CT.

Thank you for the invitation to testify today at the hearing: *Help Wanted: The Small Business STEM Workforce Shortage and Immigration Reform.* I look forward to our conversation on the importance of STEM skills and their relevance to economic stability and the viability of small businesses.

Click Bond is the global leader in the design and manufacture of adhesive-bonded fasteners. Our products have revolutionized how the aerospace, marine, and transit vehicle sectors build their products around the world. Industries that were once dominated by riveted fasteners in their assembly solutions have evolved substantially, now embracing the use of structural adhesives to create the attachment points, which prevents the drilling of holes.

Our customers realize significant savings on cost of labor and materials, increased efficiency and profitability, and enhanced health and safety and reduction of risk. They trust our record of commitment to quality design, performance, and on-time delivery of parts. They know they can depend on our unique ability and knowledge of materials not only to innovate new solutions for their future challenges but also to provide robust customer service and training anytime, anywhere in the world.

We are proud of our presence as a U.S. manufacturer, leading our industry in innovation, environmental stewardship, and workforce development. We are heavily involved in our community and are committed to building partnerships with educational, workforce, economic development, and civic leaders to create a sustainable talent pipeline that serves the workforce needs of the manufacturing industry for decades to come.

Click Bond is a family itself and remains committed to fostering a family-friendly culture that provides our employees with competitive pay and benefits as well as multiple career advancement opportunities through subsidized education and training. As a result, we are developing a talented next generation workforce that enhances our competitiveness and capacity to continue meeting customer needs globally.

The future is bright, and there is no shortage of opportunity for us to continue innovating, growing, and expanding our business right here in the United States. To do that sustainably, however, we must aggressively confront an issue that most businesses are facing, which has now commonly become known as the Skills Gap.

Despite high unemployment levels, businesses are struggling today to find skilled employees to fill their jobs. Compounding the

problem, millions of Baby Boomers are preparing to leave the workforce, and we haven't even begun to account for growth.

Will it be possible to fill this gap? If we are struggling to find skilled people today, where will we find them in the future, as the problem magnifies? How do we fix this problem?

While there are no easy answers, I can report that Click Bond and other companies like us are taking the problem very seriously and finding new ways to tackle the issue head on.

There is a lot of talk about STEM education these days. Many people wonder, "What the heck is STEM?" They are then told it means, "Science, Technology, Engineering, and Math." But that's not really an explanation of what we mean by STEM education and skills.

Let me be more specific from an employer's perspective. Frankly, STEM starts with the basics that all people should master in a basic education. The ability to read, write, do math, and think critically are all key pillars, complimented by the ability to show up on time, communicate effectively, and work in teams. People with these skills can be developed and trained to pursue a menagerie of career pathways in multiple sectors of our economy. Without those foundational skills, the future is bleak.

Ideally, these skills are mastered by the time a person leave high school. Whether we're talking about an entry level accountant or technician on our assembly floor, our top design engineer or a quality inspector, the head of our sales team or the folks who package and ship our parts out the door, all aspects of today's manufacturing workforce require these foundational skill sets on a daily basis.

As you might imagine, these skills aren't unique just to manufacturing. Many employers, whether in energy, defense, IT, health care, transportation, logistics, hospitality, entertainment—the list goes on—require these basic skills.

Unfortunately today, even with record unemployment numbers, we are having a tough time finding people who can demonstrate these basic skills.

Some allege that maybe this gap isn't real at all and that's it's just an acute problem. Maybe manufacturers are just "too picky." Finding people with the basic skills I outlined—ability to read, write, do math, problem-solve, show up on time, communicate effectively, and work in teams—isn't some outrageous litmus test for employment: it's the minimum threshold to have a chance at a future on any career path.

Some say we don't pay enough. That's not true either. In 2011, the average manufacturing worker in the United States earned $77,060 annually, including pay and benefits. The average worker in all industries earned $60,168. Even more, for every dollar spent in manufacturing, another $1.48 is added to the economy, the highest multiplier effect of any economic sector. Our greatest asset is our people, and most manufacturers fund robust training and edu-

cation programs in partnership with our local high schools, community colleges, and universities.

Some say our operations are too dirty, and the jobs are too low-level. None of this is true either. If anything, people are constantly surprised with how clean manufacturing operations are in the 21st century. We sit at the forefront of environmental, safety, and quality standards. We can't compete globally if we aren't. To maintain these top notch requirements, we depend on highly skilled individuals, even for our most entry level jobs. With rapidly evolving technology, we need people who have the foundations to think, challenge the status quo, and solve new problems that we can't even anticipate today.

In response to these misperceptions and to the larger problem of the Skills Gap, many of us historically have pounded our fists on the table and pointed fingers, blaming the education system and other leaders for the gap we're sending. Blaming and finger-pointing don't achieve anything. This problem is serious, and we have to work together to find solutions.

I'm happy to say that we've changed our tune in Nevada by looking in the mirror. Let me share with you some of the success we've seen.

The manufacturing community has realized that our proactive communication is the key to the future. We are engaging with students, parents, teachers, and the community to explain that our industry isn't dirty smokestacks and low-paying jobs; in fact, we're bringing a message that manufacturing jobs ARE that well-paying jobs of the future. Along with marketing and advertising campaigns like Dream It Do It, commissioned by the Manufacturing Institute, we are opening the doors of our factories to teachers, students, and parents, and we're making substantial progress in showing our community that our operations represent the most exciting and sustainable careers of the future!

We are engaging with leaders in higher education—especially our community colleges—to ensure that their investments in training facilities and curriculum are worthwhile. We are now scaling a fast-track training program that literally takes people from the unemployment lines to full time employment with benefits as machine operators (the entry level position for a career as a machinist) in just 16 weeks. We were proud to hire four graduates from the program, and all of them stand out as model employees with bright futures ahead of them. Similar programs are in development for welding.

We partner with leaders in our workforce development system to ensure that the formula used in allocating Workforce Investment Act and other training dollars is demand-driven. Using these funds to train people for the jobs that exist today and in the future while simultaneously providing them with nationally portable, industry driven credentials as proof of their skill set is a win-win equation for everyone, employee and employer!

We partner with economic development officials by highlighting the success stories and illustrating the number of national creden-

tials granted as proof of a skilled workforce to attract more employers to our state to take advantage of the talent we are cultivating here.

We are making these investments because it's critical for our survival. We are making these investments because manufacturing is a tremendously exciting career path. Our quality-critical products enhance the performance and longevity of military aircraft and the efficiency and competitiveness of airliners/commercial aircraft. Others are developing technology and products that are causing breakthroughs in medicine, renewable energy, IT, transportation, logistics, and so much more. The reality is: manufacturing makes America strong. And we want to keep it that way.

Our efforts to develop and train people alone, however, aren't enough.

As the Baby Boomers leave our workforce, we will need to find new engineers, quality control experts, machinists, accountants, marketing and communications professionals, and so many more in order to grow and compete in the 21st century and beyond.

It will be critical that we have a pool of talent from which to recruit this dynamic manufacturing workforce.

We are strong believers that competition breeds excellence, so if people from other parts of the world are eager to come here legally to pursue their passion or a great idea or to be part of existing ideas that are flourishing, we want to welcome them. That's what America is all about, and it's what makes us different!

As the CEO of the National Association of Manufacturers recently stated, "Talent and skill have no borders...Manufacturers need to be able to hire the right person with the right skill at the right time."

Our company wants access to the world's best and brightest, period. Thousands of small and medium sized businesses are in the same boat. If existing regulations can be adjusted to make it easier for hard-working and talented people to come here legally to stay and build lives and families, pay taxes, and help make our businesses even more dynamic and viable—not to mention make our economy stronger and our future more secure—then we stand in support of those ideas. Rather than education the world's best in our universities and then send them home to eventually sit across from us at the negotiating table, let's make it easier for them to stay here in our great country and sit on our side of the table.

Thank you, and I look forward to your questions.

Testimony

of
Morgan Reed
Executive Director
The Association for Competitive Technology

before the
Committee on Small Business
The Subcommittee on Contracting and Workforce

on
Help Wanted: The Small Business STEM Workforce Shortage and Immigration Reform

April 25, 2013

Chairman Hanna, Ranking Member Meng, and distinguished members of the Committee: My name is Morgan Reed and I thank you for holding this important hearing on small business science, technology, engineering, and math (STEM) workforce shortage and immigration reform.

I am the executive director of the Association for Competitive Technology (ACT). ACT is an advocacy and education organization for people who write software programs—referred to as application developers. We represent over 5,000 small and mid-size IT firms and advocate for public policies that help our members leverage their intellectual assets to raise capital, create jobs, and innovate.

Our organization was founded in 1998 with the commitment to foster an environment allowing small technology companies to flourish. Our founders believed that the greatest innovation occurs in nimble companies like these and our board of directors has always been exclusively comprised of small business owners. The emergence of the mobile economy over the last five years has provided tremendous opportunity for our members to market software directly to consumers as apps.

While this new marketplace has thrived, we are now faced with a serious challenge—our country is not producing enough software developers to allow companies to grow. America's schools no longer provide the math and computer science skills to fuel the innovation that has long driven economic growth in this country.

This concern has become so grave that many companies are willing to pay double the current fees for additional visas and green cards so long as the added funds are designated exclusively for science, technology, engineering, and math education. The industry is willing to incur these extra costs—up to $5 billion—believing that schoolchildren educated in STEM subjects are more likely to pursue careers in technology.

The simple fact that companies are willing to pay double the existing fees should speak volumes—when's the last time anyone has uttered the words "charge me more, please"?

The small businesses that are tomorrow's leading technology companies know that finding the right employee today through an H–1B, and tomorrow through better STEM education, is critical to their ability to reach their full economic potential.

The Tech Ecosystem and Job Creation

I spend a significant portion of my time speaking to non-developer audiences who want to know about the state of the mobile apps economy. Unlike other industries, I find that I have to update my numbers for every speech, not just once or twice a year. Just two years ago, total industry revenues were $3.8 billion and expected to rise to $8.3 billion. However, by the end of last we already reached $20 billion and are now projected to reach $100 bil-

lion by 2015.[1] This is a meteoric rise for an app economy that didn't even exist five years ago.

Smartphones derive considerable value from the apps that run on them. Consumers are attracted to phones based on the functionality these program provide. Telephone companies and handset makers have devised entire ad campaigns highlighting the apps that run on their platforms. "There's an app for that" is probably one of the most recognizable ads in the technology space.

This success has had a dramatic impact on job creation. ACT's study in 2011 estimated that the current mobile apps economy has created, saved, or supplemented more than 600,000 jobs nationwide across iOS, Android, Windows Phone 7, and Blackberry platforms.[2] Another study by TechNet showed nearly 500,000 jobs created by the app economy on the major platforms alone.[3] We are sure that those numbers have grown by 20 percent or more through 2013, compared to an overall job growth rate more in the 7–10 percent range.

ACT July 2012 Study of Top 800 Apps: Findings and Analysis

In 2012, ACT looked at of the current mobile app ecosystem, this time examining apps not only by revenue, but also by type and by geographic location.[4]

The results of our research showed two key results relevant to this committee:

1. Seventy eight percent of the top app developers are small businesses, with U.S. based companies heaviest in California, but significant regional diversity, especially in Business and Education applications

2. U.S. developers make a majority of apps, but international developers make up a growing portion of the market.

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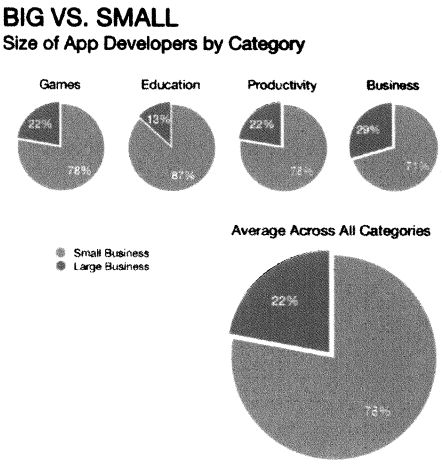
[1] Egle Mikalajunaite, "The Application Development Market Will Grow to $US100bn in 2015," research2guidance (July 6, 2011) *available at* http://www.research2guidance.com/the-application-development-market-will-grow-to-us100bn-in-2015/.

[2] "Testimony of Morgan Reed before the House Committee on Energy and Commerce Subcommittee on Commerce, Manufacturing and Trade." (Oct. 5, 2011) *available at* http://democrats.energycommerce.house.gov/sites/default/files/image_uploads/Testimony_10.05.11_CMT_Reed.pdf

[3] "New TechNet Sponsored Study: Nearly 500,000 'App Economy' Jobs in the United States," TechNet (Feb. 7, 2012) *available at* http://www.technet.org/new-technet-sponsored-study-nearly-500000-app-economy-jobs-in-united-states-february-7-2012/

[4] "Apps Across America: The Economics and Ecosystem of the Mobile App Market," ACT (July 18, 2012), *available at* http://actonline.org/files/Apps-Across-America.pdf.



ACT research continues to find that the majority of the top-selling mobile app developers (78%) are small businesses. Nowhere is the dominance of small business seen more than in education apps, where over 70% of the app developers surveyed were small businesses. Of those small businesses, 87% have 50 or fewer employees.

Without question, the new, increasingly mobile consumer is creating opportunities at every level and in every location of this country.

The Bad News

America's dominance in this fast growth market is held together by our ability to find new employees who can provide and support innovative new solutions. According to the U.S. Bureau of Labor Statistics, America is expected to create 120,000 new jobs in computer science annually throughout the decade, but our universities only produce 40,000 graduates a year qualified for these positions.[5] Self-taught individuals will help to fill that gap but at the end of the day, even the self-taught require an understanding of the kind of complex mathematics that drive today's data-crunching algorithms.

Moreover, the jobs we are sending overseas by failing to educate at home aren't bad ones. Software developers command significantly higher wages—$93,280 at the median according to the Bureau of Labor Statistics;[6] all with an unemployment rate among computer-related occupations of only 3.2 percent.[7]

For ACT's members, this job shortage creates an ideas problem. Prospective employees may choose to work at a larger corporation

[5] This estimate is based on the U.S. Bureau of Labor Statistics' occupational employment and job openings data, projected for 2010–2020, available at http://www.bls.gov/emp/.; Integrated Postsecondary Education Data System from the U.S. Department of Education's National Center for Education Statistics (NCES) available at https://webcaspar.nsf.gov.

[6] "Occupational Employment and Wages, 15–1132 Software Developers, Applications" Bureau of Labor and Statistics (May, 2012) *available at* http://www.bls.gov/oes/current/oes151132.htm.

[7] "Unemployed Persons By Occupation And Sex" Bureau of Labor and Statistics (March 2013) *available at* http://www.bls.gov/web/empsit/cpseea30.pdf.

because of the job security that risky new ventures simply cannot match. And while you may think that's good for the employee, it could be bad for our innovation economy. According to an analysis of patents by the US Patent and Trademark Office, small businesses account for 51 percent of the most innovative (and most often cited) patents.

The primary reason is the steep decline in schools teaching computer science. Only 1 in 10 high schools offer the class, and computer science accounts for just 0.6 percent of all Advanced Placement tests taken—a 60 percent drop since 2000.[8] University students are less likely to major in a technical subject if they have not studied it in high school. To fill classrooms, computer science departments admit foreign students who are then ineligible to work in the U.S. upon graduation.

When the Association for Competitive Technology's small-business members visit their representatives in Washington, they identify this broken pipeline of STEM education as the root cause of the high-tech worker shortage. Unable to find qualified computer science graduates, one California member company has 40 unfilled positions currently and some positions have been open for more than two years. At a hearing last year, Flurry, the fastest growing mobile analytics company, testified that it had more than 80 openings, many requiring the kinds of math and science that can't simply be learned over a weekend. Earlier this week, Microsoft testified that they had 6,300 open positions. Imagine what it's like for a small company to convince a great candidate that they should turn down the offer from Microsoft, or any other major technology company.

Finally, the *Economist* reports that for every job created in the high tech sector, 4.3 additional positions are created in the local economy.[9] Therefore the jobs we see unfilled today will lead to hundreds of thousands of lost local employment in a wide variety of other fields.

If we lose those jobs, where do they go? The beauty of the internet is its global, always-on nature. But this very global nature is why our failure to deal with the STEM problem could be catastrophic. Unlike other businesses, these high paying tech jobs can simply move elsewhere. Small companies that previously would never have considered overseas hiring now look to Israel for high skilled math workers, or Norway for User Interface expertise.

Fixing The Problem

Step One: the H–1B Band-Aid

There is no way to fix that skills gap overnight; it will take eight to ten years to see any STEM program produce the kind of impact we know is needed. So where does the needed math and science talent lay today? Right here in America's colleges and universities.

[8] The College Board's Database of AP Course Audits, *available at* https://apcourseaudit.epiconline.org/ledger/search.php.

[9] "The Jobs Machine: Start-ups founded by immigrants are creating jobs all over America" The Economist (Apr. 13, 2013).

It is estimated that in colleges and universities, foreign-born doctorate degree holders account for approximately 33% of the full-time faculty in computer sciences, 26% in engineering, 33% in mathematics, and 22% in the physical sciences. At the postdoctoral level, the participation of foreign doctorate holders is 56% in engineering, 50% in mathematics, and 42% in physical sciences. Data show that since 1990, approximately 50% of the U.S. Nobel laureates in the scientific and technical disciplines were foreign-born.[10]

With that kind of talent pool here on our shores, finding a way to keep them becomes critical. But H–1Bs are very limited, and often go to large, deep-pocketed firms that can afford to wait months to find out if a visa has been awarded. According to a 2011 GAO study, in years where the H–1B cap was met quickly and applicants denied, small businesses were the big losers, facing economic loss and product delays.[11] To avoid this negative impact on small business, a higher, more rational cap to H–1Bs must be in place.

However simply increasing the cap will not be enough. We need the right employee to make it to our small business doorstep because we can't just pick anyone to fill the slot. Today's technology companies have found that the right team can be more valuable than just the right skill. According to a recent Reuters article, the right fit is everything:

> *"Especially in a small start-up, they say, more than expertise is required: The right fit is critical. 'When you're creating something from scratch you need somebody outstanding,' said Nathan Blecharczyk, co-founder of the red-hot short-term rental company Airbnb. The firm currently has only two engineers working on its search capability, he explained—a critical function that could be improved if he could find just the right caliber of engineer. 'There isn't enough of the talent that we need to basically create this business in the U.S.,' he said. 'We do need to look globally for that talent.'"* [12]

To help small businesses, we support efforts to recapture unused employment-based green cards. We also support an exemption from the annual limits for U.S. advanced STEM degree holders. This should reduce the backlog, helping a small business make a realistic offer that results in a key team member moving from "visitor" to "resident."

Clearly small businesses need more H–1B visas in the pipeline. Unfortunately, some recent efforts to increase the number of H–1B visas come with far too many strings attached. The most recent

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[10] CRS Report *Foreign Science and Engineering Presence in U.S. Institutions and the Labor Force* Christine M. Matthews, Oct. 28, 2010.

[11] "For example, in years when visas were denied by the cap, most large firms reported finding other (sometimes more costly) ways to hire their preferred job candidates. On the other hand, small firms were more likely to fill their positions with different candidates, which they said resulted in delays and sometimes economic losses, particularly for firms in rapidly changing technology fields." U.S. Government Accountability Office, "H–1B VISA PROGRAM: Reforms Are Needed To Minimize The Risks And Costs Of Current Program," www.gao.gov, January 2011

[12] "VCs and Startups Call for More H–1B Visas, But Some Say Talent Shortage is Exaggerated," Reuters, (April 10, 2013). 4/10/13

version of the "Gang of Eight" bill in the Senate includes language that could create incredible regulatory hurdles.

We understand the desire of those in the Senate to ensure the correct use of H–1B, but if the level of bureaucracy functionally bars small businesses from using H–1B visas, we will harm the very innovators we need to support.

Specifically, the bill includes a recruitment requirements for non-dependent employers who are only modest users of the H–1B program. This recruitment language will require companies to maintain extensive records of individualized hiring decisions and subject employers to extensive scrutiny and second-guessing by the Department of Labor (DOL), years after the hiring decision, over case-by-case hiring outcomes.

And while the H–1B program should not be used to displace U.S. workers, the language mixes displacement and layoffs. Companies, especially small ones, often need to pivot to meet new strategic challenges. Their design or plan may not be workable against a competitor, or the platforms they depend on may change. These regular business requirements do not rise to the level of "for cause" terminations, and therefore create incredible burdens on small businesses who must be nimble to survive.

Instead, we believe legislation could help to protect workers better by other means. For example, legislation could restrict these provisions to employers whose net hiring of U.S. workers for the year is lower than layoffs within the same occupation.

Step Two: The STEM Investment

Scott Stanfield, an ACT member and president of Vertigo Software, Inc., addressed the STEM question with the best possible answer I have ever heard. When asked about why he supported using H–1B money for STEM, Mr. Stanfield answered:

> *I have been in business for a bit more than 15 years, and I plan to be in business 15 years from now. I know I will need talented, well-educated programmers in the future. I want that child who is just now entering grade school to have the training needed so that I can hire them as soon as they are ready*

Mr. Stanfield's long-term perspective is not uncommon for our small business members. They all plan to be in business, the technology business, for the foreseeable future. And they know that will take serious investment.

Technology businesses both large and small see value in funding STEM education through additional fees on H–1B visas and green cards. The I-Squared Act proposes to raise $500 million annually over ten years to be allocated for teacher training, post-secondary STEM programs, and computer science community college training. This funding represents a fraction of the positive economic impact for future generations who can fill these jobs currently going overseas, or simply remaining unfilled.

Looking beyond a Band-Aid fix, however, requires us to focus our efforts on primary and secondary education. If we hope to produce

enough graduates capable of qualifying for these high wage tech jobs, then students must be exposed to computer science education at an early age. This will require a renewed commitment to the subject in school districts across the country. Currently, only ten percent of high schools offer computer science courses. If students have never taken a technical subject before college, they are unlikely to pursue it as a major.

In the Senate I-Squared legislation, tech companies have expressed a willingness to pay double the current fees for additional tech visas and green cards if the extra funds are dedicated to STEM education in U.S. schools. Generating as much as $5 billion to expand education in these subjects, the tech industry hopes that more schoolchildren exposed to computer science will choose careers in the tech field.

The current draft of the Senate's "Gang of Eight" immigration bill allocates money for STEM education funded by H–1B visa fees, but most of it is directed to post-secondary education. A far larger percentage must be dedicated to educate schoolchildren in primary and secondary schools if they are to develop an interest in computer science and acquire the skills necessary to pursue it as a major in college.

The work of a few nonprofits reveals this approach yields success. One example comes from a group called CodeNow that conducted afterschool computer science training for students in Washington, DC. The organization targeted children in underserved communities whose schools didn't offer the subject. After teaching the students how to write software, one of the participants won a national STEM video game challenge only a year later. More importantly, these high school age children are sticking with it. Today, 30 percent of the program graduates have gone on to major in computer science at university.

Another program called the Young People's Project teaches school children math and other STEM skills. It is a math literacy outreach and mentoring program, utilizing high school and college students as "math literacy workers" that focus on innovative teaching techniques to make the subject more accessible through hands-on activities and workshops. The organization believes that kids who master math (and other STEM skills) develop greater academic self-esteem, and are more likely to succeed in school and become leaders in their community. They have programs in Boston; New York City; Jackson, MS; Ann Arb or, MI; Eldorado, IL; and Mansfield, Ohio.

These non-profit organizations have provided valuable insight for the government into how to design effective STEM programs and the incredible results that could be achieved with the kind of real, long-term investment that the I-Squared Act provides.

Conclusion

Mobile app makers and small tech companies are at the leading edge of innovation and job creation, but their inability to hire more workers is limiting their growth. Recent immigration legislation of-

fers relief in the form of expanded H–1B visa and green card access.

This meets immediate staffing needs, but doesn't provide the solution to America's chronic shortage of software developers and engineers. Our nation cannot maintain its global technology leadership with a foreign labor dependency. We must foster the growth of an American software developer workforce to ensure our industry's long-term stability and competitiveness.

Lucrative careers in the thriving tech industry should be more accessible to American students. If we are willing to invest in STEM education, particularly at the secondary level, we can get this done. The tech industry is willing to do its part to help fund these measures through increased fees for high skilled visas. The Senate I-Squared Act provides that opportunity. We hope Congress agrees with this approach and allows us to help.