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REVIVING OUR ECONOMY: SUPPORTING A 21ST CENTURY WORKFORCE

FIELD HEARING

BEFORE THE

COMMITTEE ON EDUCATION
AND THE WORKFORCE
U.S. HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRTEENTH CONGRESS

SECOND SESSION

HEARING HELD IN Mesa, AZ, MARCH 20, 2014

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C O N T E N T S

	Page
Hearing held on March 20, 2014	1
Statement of Members:	
Kline, Hon. John, Chairman, Committee on Education and the Workforce	1
Prepared statement of	6
Statement of Witnesses:	
Barton, Cathleen, Education Manager, Intel Corporate Affairs, Southwestern United States, Intel Corporation, Chandler, Arizona	15
Prepared statement of	17
Crow, Michael, Ph.D., President, Arizona State University, Tempe, Arizona	76
Prepared statement of	79
Farley, Christy, Vice President, Government Affairs and Business Partnerships, Northern Arizona University, Phoenix, Arizona	153
Prepared statement of	155
Hart, Ann, Weaver, Ph.D., President, The University of Arizona, Tucson, Arizona	140
Prepared statement of	142
Heumann, Rick, Vice Mayor, City of Chandler, Chandler, Arizona	7
Prepared statement of	10
Lambert, Lee, D., Chancellor, Pima Community College, Tucson, Arizona	31
Prepared statement of	33
Lara, Ernest, A., P.h.D., President, Estrella Mountain Community College, Avondale, Arizona	149
Prepared statement of	151
Pepicello, William, Ph.D, President, University of Phoenix, Tempe, Arizona	56
Prepared statement of	58
Additional Submissions:	
Mr. Lambert: Meeting Tomorrow's Workforce Demands Today	167

Reviving Our Economy: Supporting a 21st Century Workforce

Thursday, March 20, 2014
House of Representatives
Committee on Education and the Workforce
Washington, D.C.

The committee met, pursuant to call, at 9:00 a.m., at the Arizona State University, Polytechnic Campus, 7001 East Williams Field Road, Student Union, Cooley Ballroom B, Mesa, Arizona, John Kline [chairman of the committee] presiding.

Present: Representatives Kline, Salmon, Rokita, and Grijalva.

Staff Present: Janelle Belland, Coalitions and Member Services Coordinator; Alex Sollberger, Communications Director; Brian Melnyk, Professional Staff Member; Jenny Prescott, Legislative Assistant; and Rich Williams, Minority Education Policy Advisor.

Chairman KLINE. A quorum being present, the committee will come to order. Good morning, and it is a delightful morning. Speaking as a Minnesotan, I can tell you that I am thrilled, absolutely thrilled to be here. Welcome to our guests, and thank you to our witnesses for joining us today. I would also like to thank Arizona State University for hosting our field hearing to discuss ways states, institutions, and the federal government can better support the 21st century workforce.

This committee has convened numerous hearings in Washington to examine the challenges and opportunities facing the nation's classrooms and work places. Whenever possible, we like to bring the voices of everyday Americans to the Capitol to learn their ideas on how to move our country. But it is even better when we have the opportunity to get out of Washington and into local communities, which is why we are in Phoenix today.

My friend and colleague, Matt Salmon, invited the committee to Arizona's 5th District to talk to area business leaders, education stakeholders, and state officials to learn how people are working together to prepare graduates in the Grand Canyon State for success in the workforce.

The House Committee on Education and the Workforce last year advanced legislation we called the Skills Act to revamp the nation's network of job training programs, empower employers, and help put more Americans back to work. The committee is now working to improve career and technical education, or CTE, by reauthorizing the Carl D. Perkins Career and Technical Education Act. We

are also exploring opportunities to strengthen our higher education system through the reauthorization of the Higher Education Act.

One of our top priorities in both these endeavors is supporting innovation, whether by encouraging CTE schools to adopt technology that mirrors the tools used in the local workforce or by championing policies that help students earn a postsecondary degree in less time with less debt. In fact, Matt Salmon has introduced legislation known as the Advancing Competency Education Project of 2013 that lets colleges offer federal financial aid based on students' prior experience and knowledge instead of credit hours, allowing students to advance in a degree program faster without accumulating as much debt.

Once again, I would like to thank our witnesses for joining us today, and we look forward to a productive discussion. I will now yield to Mr. Salmon for his opening remarks.

Mr. SALMON. Thank you, Mr. Chairman. Good morning, and welcome to this important hearing to discuss ways our education and our business communities can collaborate to encourage economic growth. I do not care where you go in America, when you ask people what is on their minds, it is get more jobs going in this country.

I want to thank Chairman Kline for his leadership and for making the trip all the way here to Arizona to do this hearing today. I hope I delivered on my promise of fabulous weather.

Chairman KLINE. You did.

Mr. SALMON. Particularly given the snow we have been traipsing through in D.C. and a little bit of snow in your home state of Minnesota. I want to thank Todd Rokita from Indiana for making the trip and my dear colleague from Arizona, Raul Grijalva, for attending this hearing, as well.

Here in Arizona, we not only enjoy fantastic winter weather, but also great traditions of educational opportunities and pro-growth business environment. In fact, today we will hear from some of our great educational institutions on the innovative ways that they are working to deliver education to our students, and as well how they are working to connect with local businesses to fill the pipeline for tomorrow's workforce.

Arizona has a rich history. We need only look to the great seal to the State of Arizona to find where our economy was at the beginning of our statehood. The five Cs include cattle, cotton, copper, citrus, and climate. These Cs are still important to our economy, including copper, which accounts for two-thirds of the entire nation's output. However, Arizona continues to evolve and thrive. Our education and our business communities have further developed Arizona into the diverse economy it is today with healthcare, transportation, and innovative industries being core drivers of employment through the state.

Today we are going to hear from the City of Chandler on the state of the local economy, as well as how the educational community ties into local business there. Chandler is extremely well known for its high tech industry, which makes up 75 percent of the manufacturing employees, while the national average is just 15 percent. Every city in the nation is host to unique workforce industries, so it is important to connect with local businesses to ensure that we are meeting the needs of employers. We can then better

prepare students with the skills that they need to enter the workforce today and be equipped to adapt to the trends of the future.

We are also going to hear from Intel, one of the world's largest high tech semiconductor chip manufacturers. Intel has numerous inventions that most of us on a daily basis, including the processors found in most personal computers, use. They have had a large Arizona presence since 1979. They have almost 12,000 employees in Arizona alone, and it is the largest employer in Chandler. They continue to grow with the expansion of their 300 million research and development site. Without employers like Intel, our high tech industry in Arizona would not be anywhere near where it is today.

I am also looking forward to testimony from the University of Phoenix, who has worked for years to make higher education more accessible and recently won accolades as a top 10 online MBA program. Phoenix actively engages the business community through their Industry Strategy Group as well as their Workforce Solutions Department, including engaging businesses such as Microsoft and Cisco Systems.

One of the largest community college networks in the nation is here with us today, and that is the Maricopa Community Colleges with their Estrella Mountain campus, also with us is the Pima Community Colleges. Our community colleges have been such an important part of higher education in this state. They work closely with our high schools and our dual enrollment programs as well as with our universities for seamless transition towards degrees. Of interesting note, I met my wife at the community college, and we are still married, so it worked out pretty good.

Another important aspect is their work with community businesses with career and technical education tracks. Chandler Gilbert Community College, just next door to this campus, works in tandem with local authorities and law enforcement, fire safety, aviation, nursing, and other in-demand career fields to prepare their students.

We are also extremely fortunate today to have representatives from our three esteemed public universities: Christy Farley, a dear friend and somebody who has advised me on education policy for a lot of years, from Northern Arizona University out of Flagstaff. Dr. Ann Hart—we are just thrilled to have her. She has been a breath of fresh air to come and run the University of Arizona. And of course from my alma mater, Dr. Michael Crow from Arizona State University out of Tempe. Go Sun Devils.

I would like to thank ASU for opening their doors for this committee field hearing here at the polytechnic campus, which encompasses high-tech research and education, including the renowned Algae Laboratory. ASU is one of largest, if not the largest, university in the nation, and is redefining higher education through the new American model. One of ASU's student-business partnerships is with Intel, and they worked together to develop a customized engineering degree for some of the chip makers, Arizona-based employees.

The U of A is the state's finest university—excuse me—first university. Michael, I did not mean to give you a heart attack.

[Laughter.]

Mr. SALMON. That was just a reading error. The University of Arizona is the state's first university, operates the state's only public medical school, and is the largest research institution in our state. They also connect with businesses such as Raytheon to work toward inspiring the next generation of innovators. And I might add that they were Obama's pick in the final four, and so they are probably going to be in the final four. And as an ASU grad, I am really proud of them, too.

Northern Arizona University State has connected with the business community through its business outreach boards locally as well as nationally.

All of the institutions here today provide an excellent educational environment for students and continue to be pioneers in higher education. All work to think outside the box with new concepts, interdisciplinary collaborations, and academic programs that educate our students, provide important research, and help U.S. industry prosper. So it should come as no surprise to anyone in this room that the cost of education is on the minds of virtually everybody in America: families, parents, students. And in an effort to address this challenge, I recently introduced bipartisan legislation to start a pilot project for higher education institutions to pursue the competency-based education model, something NAU offers through personalized learning.

My bill, H.R. 3136, The Advancing Competency-Based Education Project of 2013, allows institutions to tailor instruction to students' unique needs and learning pace. Students will progress when they have mastered the requisite knowledge and skills necessary for a course rather than just time spent in a classroom. This controlled demonstration program could reduce costs and provide opportunities for students to earn their degree on time or early in some cases. Perhaps most importantly, this bill would allow certainty and accessibility for a broad array of higher education institutions to provide this 21st century learning environment.

The goal for the vast majority of students entering postsecondary education is to obtain the skills necessary to be competitive in the job market with the critical thinking skills to adapt with an ever-changing workforce.

I look forward to hearing from the experts in these fields today on how we can work together towards this goal. I want to thank our first panel of witnesses: Rick Huemann from the City of Chandler, Dr. Pepicello from the University of Phoenix. Is it Pepicello?

Mr. PEPICELLO. Pepicello.

Mr. SALMON. Okay. Pepicello from the University of Phoenix, Cathleen Barton from Intel, and Lee Lambert from Pima Community College who appear on the first panel. Thank you very much. And Dr. Michael Crow, Christy Farley from Northern Arizona University, and Dr. Ernest Lara from Estrella Mountain Community College for the second panel, and Dr. Ann Hart.

We look forward to this discussion on ways we can collaborate among the education and business communities in providing a gateway to 21st century jobs. And I look forward to a productive hearing. I will bet you all thought I was trying to filibuster, but I wasn't.

Chairman KLINE. I thank the gentleman. I now recognize Mr. Grijalva from Arizona for his opening comments.

Mr. GRIJALVA. Thank you, Chairman, and thank you for holding this field hearing, a very important topic and I'm very appreciative of the hearing here in Arizona. I know you had to endure leaving Minnesota to be with us, and we appreciate the sacrifice.

To my good friend, Mr. Salmon, thank you for initiating the idea. I very much appreciate it. We are glad that the community college has provided you with an enriched life of bliss. And the Freudian slip about U of A is welcomed as well.

I used to be a big much bigger booster of the U of A and then redistricting happened. So I have like 20 percent of Maricopa in my district, so I am working towards something I think we all struggle with: bipartisanship and trying to be as representative of all sides.

Thank you to the witnesses, to the public universities and their leadership for being here. It is very much appreciated. For the private for-profit college, Phoenix, for being here. I appreciate it. The community colleges, which I think is an important addition in terms of the numbers of students that find that to be the most accessible and affordable place to start. And to both of the leaders from Estrella and Pima, thank you very much.

The private sector, how that collaboration and how we are going to streamline to ensure we are reviving our economy and the workforce that's needed for that revival is in tech areas. And to the elected leadership, thank you as well, sir, I think that perspective in the overall community health and satisfaction levels that we need in our communities, your testimony will be very helpful.

We are talking about a lot of things, but I think one of the areas I hope to talk about is adult education and what it means to try to bring remediation and assistance, whether it's for English language learners, GEDs, adult-based education, to give people the foundation in order for them to take the next step to prepare themselves for a new expanded and different workforce that is evolving. Accountability. I am sure that is an issue that is important, whether it is a discussion of the gainful employment rule or whether it is a discussion of what public institutions feel in terms flexibility and oversight from the federal government.

And collaboration, and as we reauthorize the Perkins Act, the collaboration that we can use with the Perkins Act as an incubator on how we have that collaboration to enact legislation and initiatives and funding for the private sector and public institutions and workforce institutions, collaborate and some incubators to look at that private/public partnership that everybody talks about that maybe needs a little more "shall" rather than "may" in legislation.

I also want to talk a little bit about as we go forward that there is a reviving of our economy that depends a great deal on who we as a nation and we as a Congress invest in the growth of this community of ours, and central to this is workforce development. Central to this is the public institutions that will educate that workforce.

And so this is a timely hearing, Mr. Chairman. I appreciate the opportunity to be here, and I yield back.

Chairman KLINE. I thank the gentleman. Pursuant to committee Rule 7(c), all committee members will be permitted to submit written statements to be included in the permanent hearing record.

Without objection, the hearing record will remain open for 14 days to allow statements, questions for the record, and other extraneous material referenced during the hearing to be submitted in the official hearing record.

[The information follows:]

[The statement of Chairman Kline follows:]

Prepared Statement of Hon. John Kline, Chairman, Committee on Education and the Workforce

Good morning. Welcome to our guests, and thank you to our witnesses for joining us today. I'd also like to thank Arizona State University for hosting our field hearing to discuss ways states, institutions, and the federal government can better support a 21st century workforce.

This committee has convened numerous hearings in Washington to examine the challenges and opportunities facing the nation's classrooms and workplaces. Whenever possible, we like to bring the voices of everyday Americans to the Capitol to learn their ideas on how to move our country forward. But it's even better when we have the opportunity to get out of Washington and into local communities, which is why we are in Phoenix today.

My friend and colleague Matt Salmon invited the committee to Arizona's 5th District to talk

to area business leaders, education stakeholders, and state officials and learn how people are working together to prepare graduates in the Grand Canyon State for success in the workforce.

Arizona's economy continues to show signs of improvement. The unemployment rate has declined over the last year, and in January the state created 8,300 new jobs. To continue this trend, it is critical more young people in Arizona have access to the training, education, and hands-on experience necessary to meet the needs of the local workforce and compete for in-demand jobs.

The House Committee on Education and the Workforce last year advanced legislation we called the SKILLS Act to revamp the nation's network of job-training programs, empower employers, and help put more Americans back to work.

The committee is now working to improve career and technical education, or CTE, by reauthorizing the Carl D. Perkins Career and Technical Education Act. We are also exploring opportunities to strengthen our higher education system through the reauthorization of the Higher Education Act.

One of our top priorities in both these endeavors is supporting innovation, whether by encouraging CTE schools to adopt technology that mirrors the tools used in the local workforce, or by championing policies that help students earn a postsecondary degree in less time, with less debt. In fact, Matt Salmon has introduced legislation known as the Advancing Competency Education Project of 2013 that lets colleges offer federal financial aid based on students' prior experience and knowledge instead of credit hours – allowing students to advance in a degree program faster without accumulating as much debt.

As the committee continues to examine ways we can boost innovation and support a 21st century workforce, it's important we hear from students, educators, and state and local leaders about challenges and opportunities facing the workforce and education system. Your feedback helps inform and strengthen our work in Washington, and we are grateful for your input.

Once again, I'd like to thank our witnesses for joining us today. We look forward to a productive discussion. I will now yield to Mr. Salmon for his opening remarks.

Chairman KLINE. We have two distinguished panels of witnesses today, and I would like to begin by very quickly for the record introducing the first panel. I think Mr. Salmon did an excellent job of providing the background for each of them.

So let me just quickly say that in the first panel we have Mr. Rick Huemann. He currently serves as the vice mayor of the City of Chandler, Arizona, having begun his tenure on the city council

in January 2009. Ms. Cathleen Barton serves as the education manager for Intel Corporate Affairs, Southwestern United States. Mr. Lee Lambert has served as chancellor of Pima Community College since July 2013. I hope that date is right. And Dr. William Pepicello has served as the president of the University of Phoenix since 2006.

Before I recognize each of you to provide your testimony, let me just very quickly go over our lighting system again. This is the box that we have here. When I recognize you, you will have five minutes to give your testimony. There will be a green light that comes on. After four minutes, the light will turn yellow, and at the end of five minutes the light will turn red, and I would ask you to expeditiously wrap up your testimony if you have not done so. And after all four witnesses have completed their testimony, we will, each of us, will be given five minutes to ask questions.

Okay. I would like now to recognize Mr. Rick Heumann for five minutes.

STATEMENT OF HON. RICK HEUMANN, VICE MAYOR, CITY OF CHANDLER, CHANDLER, ARIZONA

Mr. HEUMANN. I am Chandler Vice Mayor, Rick Heumann. I want to thank you for the opportunity to provide testimony for today's hearing.

Before I discuss the Chandler Education Coalition and its roots, I want to give a brief overview on the economic outlook of Chandler and the region. Chandler today is a dynamic economic generator that has branded itself as the innovation and technology hub of the southwest United States, and for good reason. We are a growing part of a global economy with a host of companies, like Intel, Orbital Sciences, Microchip, Infusion Soft, QBE, Bank of America, and General Motors' new innovation center. Each of these companies and many, many more have a significant presence in our city.

The Price-Rudd Corridor is home to many of these firms and consistently makes the top list of hot economic corridors in the Arizona development community. The Greater Phoenix Metro Area also boasts a tremendous quality of life with mild weather, low cost of living, and amenities like golf, trails, and array of other outdoor pursuits.

Chandler also has one of the most stable fiscal positions with AAA bond ratings from all three national agencies, one of just two cities in Arizona and just 31 cities nationwide to make that claim. Finally, Chandler enjoys the second lowest cost of service levels for Phoenix metro residents when taking into account property taxes, sales taxes, and utility costs.

Chandler has generated several thousand new jobs in the past two years alone, and nearly 23,000 jobs from 2008 to 2013, some of our roughest economic years in this country's history. Many of the jobs being created in Chandler and the region fall into the category of STEM—science, technology, engineering, and mathematics. We are truly shifting to a knowledgeable economy.

With that in mind, our city has partnered with Arizona State University, my alumni, and the University of Arizona. ASU recently opened the Chandler Innovation Center in the city's former public works yard in our downtown core. ASU is holding engineer-

ing classes there in unique partnership with local industry. This alliance also includes Tech Shop, a leader in the entrepreneurial maker movement.

The U of A is holding classes in our downtown community center. These are master level teaching courses that also include collaboration with our business community through a very intense internship program. U of A also has lab space in our city's innovation incubator for the Center of Applied NanoBioscience and Medicine.

Chandler Gilbert Community College partners with many of our local employers on specifically defined curriculum, like clean room operations for Intel. All these programs are turning out a very educated and prepared workforce.

But how do we sustain the development of a well-rounded, qualified workforce? We must set our sights on developing educated workers literally from birth so they are suitably prepared to enter the classrooms ready to learn from day one. That is why in 2011, I created the Chandler Education Coalition. In this effort, I envisioned a collaborative systems building effort to support the quality of educational opportunity and school readiness in the City of Chandler.

We invited members of the education community, K through 12, community colleges, and our state universities. We have corporate leaders from several sectors of the economy, and we have a host of non-profit organizations at the table, as well. This committee, made up of more than 30 organizations, is committed to improving school readiness from cradle to kindergarten across the City of Chandler.

The purpose of the Chandler Education Coalition is to create a collaborative support system of community stakeholders to ensure all Chandler children, birth through five, obtain the necessary literacy skills for school readiness. We recently partnered with Read On Arizona, a statewide public/private partnership of agencies, philanthropic organizations, and community stakeholders committed to creating effective continuing services. Read On Chandler, like its parent group, will work to improve language and literacy outcomes for Arizona's children in these very formative years.

Another important component of this endeavor is our relationship with the Arizona SciTech Festival. Chandler has been a leader in partnering with the festival organizers at the local level. For the past three years, we have held the Chandler Science Spectacular. This three-day collaborative event brings awareness to the world of science and includes participation from several small businesses, high tech companies, schools, and non-profit agencies. It is very rewarding for me to see the enthusiasm and excitement from kids and parents alike, because when we allow our youth to experience science activities up close and personal, it provides them with a vision that anything is possible for the future.

I am personally committed to finding and engaging new partners along the way. We envision our education pipeline that will offer the opportunity, tools, and resources to every child in our system achievement and success. We imagine companies understanding our purpose and their role in this process. And we predict unparalled success as a community from both an education and economic standpoint, a role model for the nation and for the world.

With that, I look forward to your questions and comments. Thank you.

[The statement of Mr. Heumann follows:]

Congressional Testimony
Chandler Vice Mayor Rick Heumann
March 20, 2014 Field Hearing

Good morning, I am Chandler Vice Mayor Rick Heumann.

I want to thank you for the opportunity to provide testimony for today's hearing.

Before I discuss the Chandler Education Coalition and its roots, I want to give a brief overview on the economic outlook of Chandler and the region.

Chandler today is a dynamic, economic generator that has branded itself as the Innovation and Technology Hub of the Southwest United States.

And for good reason.

We are a growing part of a global economy and a host to companies like Intel, Orbital Sciences, Microchip, Infusionsoft, QBE, Bank of America and General Motors' new Innovation Center.

Each of these companies – and many, many more, have a significant presence in our city.

The Price Road Corridor is home to many of these firms and consistently makes the top lists of "hot economic corridors" in the Arizona development community.

The greater Phoenix metro region also boasts a tremendous quality of life, with mild weather, low cost of living and amenities like golf, trails and an array of other outdoor pursuits.

Chandler also has one of the most stable fiscal positions, with AAA Bond ratings from all three national agencies -- one of just two cities in Arizona -- and just 31 cities nationwide to make that claim.

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Many of the jobs being created in Chandler and the region fall into the category of STEM – Science, Technology, Engineering and Mathematics.

We are truly shifting to a knowledge economy.

With that in mind, our City has partnered with Arizona State University and the University of Arizona.

ASU recently opened the Chandler Innovations Center in the City's former public works yard in our downtown core.

ASU is holding engineering classes there in a unique partnership with local industry.

This alliance also includes TechShop, a leader in the entrepreneurial Maker Movement.

The University of Arizona is holding classes in our Downtown Community Center.

These are master-level teaching courses that also include collaboration with our business community through a very intense internship program.

The U of A also has lab space at our City's Innovation Incubator for its Center of Applied Nano-bioscience and Medicine.

Chandler-Gilbert Community College partners with many of our local employers on specifically defined curriculum like clean room operations for Intel.

All of these programs are turning out a very educated and prepared workforce.

But, how do we sustain the development of a well-rounded, qualified workforce?

We must set our sites on developing educated workers literally from birth – so they are suitably prepared to enter the classrooms ready to learn from day one.

That is why, in 2011, I created the Chandler Education Coalition.

In this effort, I envisioned a collaborative, "systems building" effort to support the quality of educational opportunity and school readiness in the City of Chandler.

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We have corporate leaders from several sectors of the economy.

And we have a host of nonprofit organizations at the table as well.

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Chandler children, birth through five, obtain the necessary literacy skills for school-readiness.

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Chandler has been a leader in partnering with the Festival organizers at the local level

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It's very rewarding for me to see the enthusiasm and excitement from kids and parents alike.

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We envision an educational pipeline that will offer the opportunity, tools and resources to allow every child in our system achievement and success.

We imagine companies understanding our purpose – and their role in this process.

And, we predict unparalleled success as a community from both an educational and economic standpoint.

A role model for the nation and for the world.

With that, I look forward to your questions and comments.

Chairman KLINE. Thank you.

Ms. Barton, you are recognized for five minutes.

STATEMENT OF CATHLEEN BARTON, EDUCATION MANAGER, INTEL CORPORATE AFFAIRS, SOUTHWESTERN UNITED STATES, INTEL CORPORATION, CHANDLER, ARIZONA

Ms. BARTON. Good morning, Chairman Kline, Representative Salmon, and members of the committee. Thank you for the opportunity to testify on the importance of business-higher education partnerships to create a robust workforce development network for our nation, for the state of Arizona, and for Intel Corporation. My name is Cathleen Barton, and I am the education manager for Intel in the Southwest U.S.

At the core of our education programs and advocacy are our partners, and today I want to talk about three partnership areas: programs to develop the next generation of innovators, programs to hire the next generation of innovators, and advocacy and programs to support innovative education partnerships.

Intel is the world's largest semi-conductor manufacturer and employs 105,000 employees worldwide. More than half of them are here in the U.S. And at a time when the call for a revival of U.S. manufacturing is the imperative for our nation, we are proud that three quarters of our manufacturing and research and development is here in the United States. A study by PriceWaterhouseCoopers estimates Intel's total impact on U.S. GDP at $408.5 billion from 2008 to 2012.

Intel Chandler, where we manufacture our latest products, is one of our largest and most complex sites in the world. We invest $450 million in R&D each year with a 2.4 billion average economic impact in Arizona, 11,000 employees —over that—are in Arizona. Almost 800 are Ph.D.s, 2,200 have masters in science, and 770 MBAs. We understand the importance of higher education because they are the students we hire to design the technology of the future, conduct our research, and run our factories.

Intel hires more students from ASU for openings across the U.S. than any other institution of higher education. Between 2010 and 2012, we hired 836 students from ASU and 182 students from the University of Arizona and Northern Arizona University.

Intel also partners with colleges and universities each year to hire approximately a thousand summer interns. A new Intel internship experience that was piloted with ASU and Chandler Gilbert Community College is now being evaluated for multi-company collaboration.

Intel's veteran recruiting team partners with several university chapters of the Veterans of America organization in order to support our goal of hiring veteran STEM and MBA talent. This partnership includes both Arizona State University and the University of Arizona.

Intel also partnered with ASU's College of Technology and Innovation, developing a flexible B.S. engineering program for some of our employees whose work schedules are not aligned with a traditional academic calendar. In addition, to support ongoing employee development, more than 1,100 employees utilized Intel's tuition as-

sistance program in 2012, over 300 of them in Arizona's public and private community colleges and universities.

Partnering to keep our universities and their students up to date and competitive is not only good for the technology industry, but it is good for our local and national competitiveness. Two elements of these partnerships include curriculum development and access to new technology and tools. For example, we partnered with ASU to develop a curriculum to help students understand environmental and high volume manufacturing challenges for the industry.

Regarding access to state-of-the-art technology and tools, Intel is providing 50,000 kits featuring the new Intel Quark technology to a thousand universities worldwide. This is our Galileo project, and it will enable students to become the new generation of entrepreneurs and inventors in rapidly growing areas, such as the Internet of Things and wearable computing.

In addition to entrepreneurs and investors, Intel also invests in the teacher workforce through partnerships like Intel Math and Intel Teach, programs that help teachers become better prepared to teach Arizona's college and career ready standards. We invested in Intel Math, an intensive training course for K–8 teachers, and partner with the University of Arizona to implement it in Arizona and various other states.

Other successful Intel Math partnerships in Arizona include the Arizona Department of Education, NAU, and the Arizona Board of Regents. Intel Teach partnerships with higher ed and state departments of education train teachers to develop students' critical thinking, problem solving, communication, and collaboration skills.

Finally, I would like to mention Intel's participation in Governor Brewer's Arizona Ready Graduation Rate Task Force. This task force is a collaboration of the business and philanthropic community, early education, K–12, higher education partners, including the Maricopa Community College District. The task force is focused on expanding practices, programs, and policies that decrease the number of high school dropouts and increase graduation rates. Key areas of focus include scaling successful career and technical education programs, which are demonstrating high degrees of success.

Another innovative approach being explored to accelerate high school education and training and postsecondary credit and degree attainment include elimination of college remediation and expanding early college and career high schools and other grade nine through 14 pathways models. These programs are delivering significant results in many cases with minority students, students who are critically important to a majority/minority population like the state of Arizona.

I want to thank you for the opportunity to provide testimony this morning, and I look forward to your questions.

[The statement of Ms. Barton follows:]

Testimony to the Committee on Education and the Workforce

Cathleen Barton

Intel Education Manager, Southwestern United States

March 20, 2014

Intel Corporation respectfully submits this testimony for the record in conjunction with the Committee's hearing on Education and the Workforce. The testimony will focus on three topics

- Programs to train and develop the next generation of Innovators
- Programs to hire the next generation of innovators, and
- Advocacy and programs to support effective and innovative education partnerships

Intel Corporation

Intel Corporation is the world's largest semiconductor chip maker, based on revenue. We develop advanced integrated digital technology, primarily integrated circuits, for industries such as computing and communications. Our goal is to be the preeminent computing solutions company that powers the worldwide digital economy. We are transforming from a company with a primary focus on the design and manufacture of semiconductor chips for PCs and servers to a computing company that delivers complete solutions in the form of hardware and software platforms and supporting services.

Intel was founded 45 years ago at the dawn of the digital age in Silicon Valley and our corporate headquarters is in Santa Clara, California. Our history is the history of the 20th century technology revolution and is still being written today. As of the end of 2012 Intel employed over 105,000 people worldwide and more than half of them, over 53,000, are here in the US.

At a time when the need for a revival of US manufacturing is a popular refrain, Intel stands as a unique example of a commitment to US manufacturing. Three-fourths of Intel's manufacturing is here in the United States. In the last two years Intel has broken ground on two large manufacturing facilities in Arizona and Oregon to add to the existing network of fabs in Arizona, Oregon, New Mexico and Massachusetts. According to the Progressive Policy Institute, Intel is

the 5th largest capital investor in the United States[1]. In 2012 alone, Intel invested over $8.5B in capital in the United States. A recent study by Price, Waterhouse, Coopers estimates Intel's total impact on US GDP at $408.5B from 2008-2012.

But Intel's investment in the United States is not limited to manufacturing. Over three-fourths of Intel's research and development is also based here at home. Intel has major R&D facilities in Oregon, Arizona, Massachusetts, Texas, Colorado, Washington, California and South Carolina. Intel is an economic engine in our site communities and the fuel for that engine is our highly skilled workforce.

Intel Chandler, where we manufacture our latest products, is one our largest and most complex sites in the world. We invest $450 million in R&D each year with $2.4 billion average economic impact to Arizona. Of the over 11,000 Intel employees in Arizona, almost 800 are PhD's, 2200 have Masters in Science and 770 MBA's. We understand the importance of Higher Education because these are the students we seek as we hire the best and the brightest engineers and scientists to design the technology of the future, conduct our research and run our factories. Intel is an economic engine for the nation and the fuel for that engine is our highly skilled workforce.

We know that a chronic shortage of engineering students threatens America's role as the world's leading innovator and continues to impede our nation's fragile economic recovery. We believe having a vibrant economy sustained by quality education, a skilled workforce, and innovation is key to our Nation's success. Through our education initiatives and investments, Intel is helping communities build local capacity while preparing the next generation of innovators.

Intel's Education Strategy

For more than four decades, Intel has made education the primary focus of our strategic philanthropic activity. We invest more than $100 million annually in programs that promote STEM education, encourage women and girls to seek careers in technology, foster and celebrate innovation and entrepreneurship among the best and brightest young students in the world and help teachers to incorporate best practices in math, science and the effective use of technology in their work.

We work in coalitions with other high-tech companies to encourage the U.S. Congress and state legislatures to support technology access, development and implementation of more rigorous K-12 mathematics and science standards, as well as assessments to support initiatives that develop 21st century skills, such as critical thinking, collaboration and creativity. These are skills they need to be the innovators of tomorrow. We were among the first to call for more rigorous standards and assessments to ensure that US students are competitive with their peers in other countries. We have been advocates for the Common Core State Standards since the initiative was first conceived and we continue to lend our voice as the implementation of the Common Core becomes a reality.

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[1] Dana G. Carew and Michael Mandel, "Investment Heroes: Who's Betting on America's Future," Progressive Policy Institute, Policy Brief, July 11, 2012.

The statistics are well known to all of us. According to the most recent (2011) National Assessment of Educational Progress (NAEP), commonly referred to as "The Nation's Report Card," only 40 percent of U.S. 4th grade students and 35 percent of 8th grade students (note the trend) performed in mathematics at or above the "proficient" level. In the science assessment, only 32 percent of 8th grade students performed at or above the proficient level. Only 26 percent of 12th grader students scored at or above the proficient level in mathematics and only 21 percent did the same in science in 2009.

But the truth is that what really matters in the 21st century is how our children stack-up in comparison with their peers in other countries who will be seeking the same jobs in the commercial market and designing their own nation's military systems. The well-regarded Programme for International Student Assessment (PISA) assesses the performance of 15-year-olds in mathematics and science, from OECD (Organisation for Economic Co-operation and Development) countries and other countries. In 2009, the average scores of U.S. students in both mathematics and science were below the average of all OECD countries and also below some non-OECD countries. Specifically, U.S. students ranked 23rd in science and 31st in mathematics among the OECD member countries and total of 65 participating countries. And in the most fundamental educational skill of all—reading—our nation's children ranked 17th.

What drives and inspires Intel's commitment to education is both our need to secure a highly skilled workforce for every employer and our desire to ensure that this country remains the global leader in innovation and entrepreneurship.

Hiring the Next Generation of Innovators, Makers and Entrepreneurs

Recent College Graduate Hiring and Internship Programs
From 2010 through 2012 Intel hired over 14,500 recent college graduates, from two-year degrees through PhD. students, from 1700 colleges and universities in the United States. Arizona State University (ASU) is the largest college recruiting partner for openings across Intel sites in the US, generating approximately two times more hires than the next largest partner institution. Between 2010 and 2012 Intel hired 836 students from ASU. We also hired 182 from the University of Arizona and Northern Arizona University.

Internship Programs
Intel partners with colleges and universities each year to hire approximately 1000 summer interns. A new Intel internship-like experience that was piloted with Arizona State University and Chandler-Gilbert Community College, The Intel Ultimate Engineering Experience, is also being considered as a model for multi-company collaboration. This six-week, part-time uniquely designed program provided hands-on technical engineering experience through a variety of technical skill development activities, team based project work, competitions, professional skill development, networking and social activities. Training in engineering design and communications was also covered.

Intel's veteran recruiting team has also partnered with several university chapters of the Student Veterans of America (SVA) organization in order to support our goal of hiring STEM veteran and MBA talent. This effort includes both Arizona State University and The University of

Arizona. In hiring manufacturing technician level Intel not only recruits veterans directly from the military, we also partner with several two-year community colleges to recruit for these roles. It should be noted that veterans attaining a two-year degree at a community college receive special consideration during our recruitment process.

Intel also partners with Arizona State University's College of Technology and Innovation (CTI), developing a flexible BS Engineering degree program for some of our Arizona-based employees, whose schedules aren't aligned with a traditional academic calendar. In addition, to support ongoing employee development over 1100 students utilized Intel's tuition assistance program in 2012, over 300 of them in Arizona's public and private community colleges and universities. This represents an annual investment in our employees and a partnership with higher education totaling almost $8 million dollars.

Curriculum Development, Technology Innovation and Galileo Project

At Intel we also work with our higher education partners across the US to ensure students are able to learn about the latest technology advancements and state-of-the-art-tools. Keeping our universities up to date and competitive is not only good for the technology industry but it is good for our local and national competitiveness. Two elements of these partnerships include curriculum development and access to new technology. For example we partnered with ASU to develop curriculum to better help students understand environmental and high-volume manufacturing issues with our industry. Other curriculum development includes areas of embedded control, parallel computing and cyber security.

To further spur innovation, Intel is providing 50,000 development boards featuring the new Intel® Quark technology to approximately 1,000 universities worldwide. This is our Galileo project and the new development kits and software programming interface make it easier for students, as well as artists, designers and other do-it-yourself enthusiasts – who often don't have technical backgrounds – to create interactive objects or environments. Our technology is enabling a new generation of entrepreneurs and inventors in rapidly growing areas – from the Internet of Things to wearable computing. We are also partnering with other organizations such as MIT Media Labs and TechShop to develop curriculum and supporting materials for middle school and high school students—truly a pipeline of the next generation of innovators and makers.

Higher Education Competitions

Intel knows that entrepreneurship and innovation are core drivers of sustainable growth nations and in states like Arizona. Intel's entrepreneurship initiatives drive innovation and accelerate economic growth with a focus on computing technology. One of our key programs is the Intel Global Challenge, a collaboration with University of California Berkeley that promotes entrepreneurship and showcases business opportunities that have the greatest potential for a positive impact on society through the deployment of innovative technologies. Regional competitions enable hundreds of students to showcase their ideas and innovations. The winning

entries from these Intel entrepreneurship programs and regional challenges then get to go to Berkeley for the final Intel Global Challenge event.

Engineering Projects in Community Service: Social Innovation and Entrepreneurship

Grants from the Intel Foundation helped Arizona State University (ASU) and the University of Arizona (UofA) significantly increase participation in the Engineering Projects in Community Service (EPICS) programs for both university and high school students. A National Academy of Engineering Award-winning program, EPICS was developed by Purdue University and is a series of service learning classes and hands-on field experiences. Students solve engineering and technology-based problems for nonprofit community agencies, schools, and government entities. One team at ASU is designing low-cost ways to use solar power to prevent brownouts at a girls' school in Bangladesh; another team is working to develop a mobile, nature-oriented video game designed to encourage young girls to be active outdoors.

Intel Labs

Although a number of Intel business groups support education through internships and volunteerism, one business group, Intel Labs, is unique in its programs that support STEM education. The mission of Intel Labs is to fuel Intel's growth by delivering breakthrough technologies that bring the benefits of the ongoing digital revolution to everyone. In order to achieve this mission, Intel labs must work closely with academia to foster innovation and technology breakthroughs as well as to feed the pipeline of researchers needed by Intel and all industries.

One of the programs of Intel Labs is the Intel PhD Fellowship program. The program's goal is to continuously improve Intel's access to hard-to-find PhD talent through funding and actively mentoring top PhD students working in line with Intel's technical areas of interest and emerging technical pipeline needs. The Intel PhD Fellowship Program works with selected university contacts to connect with student candidates that are working on specific areas of research of interest to Intel. The award is based on the academic calendar and is a one-year award. Each PhD Fellow is paired up with an Intel mentor to provide technical coaching and build a relationship between the student and Intel.

Intel Labs also supports the work of the Anita Borg Institute through grants and board service and through grants for its work in promoting technology careers for women. The Anita Borg Institute recently announced that Intel Corporate was its 2013 Top Company for Technical Women award recipient. One of our recent collaborations with the Institute was sponsorship of the 2012 Grace Hooper Celebration and the upcoming 2014 conference to be held here in Phoenix Arizona. This conference is designed to bring the research and career interests of women in computing to the forefront. Presenters are leaders in their respective fields, representing industrial, academic and government communities. Leading researchers present their current work, while special sessions focus on the role of women in today's technology fields, including computer science, information technology, research and engineering.

In 2012, Intel Labs collaborated with the Intel Corporate Affairs Group to embark on a partnership with Maker Faire, a grassroots movement of entrepreneurs, inventors and tinkerers who seek to encourage STEM careers and a culture of innovation. Describes as the "Greatest Show and Tell in Earth," the Maker Faire creates an opportunity for students to experience first-hand the satisfaction and rewards of hands on work in fields such as computer coding and robotics. Unlike the science competitions sponsored by Intel, Maker Faires are not competitions. They are simply a way for young people to learn by doing. Intel chose to invest in the Maker Movement because Intel was built by makers who envisioned a world of possibilities and instilled in our culture a deep rooted connection to innovation. Maker Faire is an opportunity for Intel and our community of makers to engage and share with other innovators who share these values. In 2012 over 1200 elementary school students in the Silicon Valley visited the San Mateo Maker Faire during Intel sponsored Maker Education Day. In 2013 Intel introduced Maker Spaces as a pilot project in some of Intel's Computer Clubhouses in the United States, with strong results; expansions of this successful program are planned for 2014, including sites in Arizona.

Intel's Education Programs: Rewarding, Recognizing and building the Pipeline

Science Competitions

Our science competitions are at the center of our education programs. Our goal in sponsoring the competitions is to identify and celebrate talented young scientists. Through the Intel Science Talent Search and the Intel International Science and Engineering Fair, we reach over 7 million students around the globe. Through reward and recognition of these students, we inspire younger students to follow in their footsteps and communities to invest in high quality science education.

Each year, more than 1,700 seniors attending American high schools conduct original research projects and present their work in the country's oldest, most prestigious pre-college science competition: the Intel Science Talent Search, a program of Society of Science & the Public. Forty of these young innovators are chosen as finalists and invited to participate in a nearly week-long event in Washington, D.C., where they compete for over $1.25 million in awards and scholarships. Intel STS alumni have achieved some of the world's most prestigious honors: Eleven have won MacArthur Foundation "Genius" grants, six have won the National Medal of Science and the National Medal of Technology, and seven have won the Nobel Prize. The event culminates with the Intel STS Gala in March, where the forty finalists are celebrated and the scholarships awarded at a black-tie event. This event represents how Intel believes the students should be recognized by the public, with as much respect, appreciation and praise as our most accomplished athletes.

Eric S. Chen, 17, of San Diego recently won the top award of $100,000 from the Intel Foundation for his research of potential new drugs to treat the flu. His interdisciplinary approach combined computer modeling with structural studies and biological validation, with a focus on drugs that inhibit endonuclease, an enzyme essential for viral propagation. Eric hopes his work will lead to a new class of drugs to control flu outbreaks during a pandemic, allowing time for a vaccine to be developed.

The Intel International Science and Engineering Fair, also a program of Society for Science & the Public, is the world's largest pre-college science fair competition. Each year, approximately 7 million high school students around the globe develop original research projects and present their work at local science fairs with the hope of winning. Those who do win progress to regional, state, and national competitions. Ultimately, the select few, 1,500 promising young innovators, are invited to participate in Intel's ISEF in the US.

At this week-long celebration of science, technology, engineering, and math, students share ideas, showcase cutting-edge research, and compete for awards and scholarships. At Intel ISEF, awards are based on students' abilities to tackle challenging scientific questions, use authentic research practices, and create solutions for the problems of tomorrow.

The 2012 winner of Intel ISEF, Jack Andraka, is from Crownsville, Maryland, where at the age of 15 he surpassed what most adults achieve in a lifetime. His research discovered a way to detect pancreatic cancer at its earliest stages through a simple and low cost test using a slip of paper and a drop of blood. The implications of his research on early detection for a variety of cancers, including lung and ovarian cancers, are substantial. And he is just getting started.

Hermanas-Latinas Designing Their Future

Intel's programs to encourage students to seek careers in STEM fields are not limited to our large science competitions. In each of our sites in the US, Intel invests in local initiatives that support STEM education. Hundreds of young women from Arizona and Oregon junior high and high schools participate in Hermanas conferences. Guided by the mission of increasing the number of under-represented females in science, technology, engineering and mathematics (STEM) fields, the one-day conference provides a supportive environment in which young women can interact with successful Latinas in STEM careers, explore technological careers, receive encouragement to finish school, attend college, and to pursue their goals.

Intel's Latino employee group volunteer at the conferences to provide mentoring for the students. The projects undertaken at the conference ranged from extracting DNA from strawberries to the science behind crime scene investigations. One young woman, quoted in media coverage of the conference, said: "I haven't seen many Hispanic women doing things like that. It inspired me because I feel like we could go far."[2]

Project Lead the Way

Intel has a long history in supporting Project Lead the Way (PLTW) in our site communities, but one of our most successful and deepest relationships have built with PLTW is rooted in the state of California. About six years ago, Intel identified PLTW as a best known method for inspiring students to pursue STEM careers, while providing critical professional development to educators. The program was most effective in helping the teachers become comfortable with delivering instruction using a hands-on, project based course. Using the San Diego region's PLTW implementation template as a model, Intel partnered with Sacramento's economic and

[2] Andrea Castillo, "Latina high schoolers from Forest Grove, Hillsboro, Beaverton introduced to science, technology careers," The Oregonian, February 23, 2013.

workforce development affiliate of their local chamber of commerce, Next Ed, to scale up PLTW to a multi-county, multi district approach. At the start of the implementation, PLTW was in two schools in the greater Sacramento region. The curriculum is now currently in over 40+ schools throughout the California Capital Region, serving over 6,000 students. Intel has led the effort, from starting the regional PLTW collaborative venture to investing nearly $500k to support classroom startup costs and training costs for every PLTW teacher within the Capital Region (nearly 150 teachers).

Most recently, PLTW and Next Ed were chosen as recipients of a $5 million Department of Education I-3 grant to demonstrate success rates of high need/nontraditional students in STEM course work as well as their potential success in college and careers in STEM fields. Intel supported the grant by committing $50,000 towards the required 10% private sector match. Intel further helped by bringing other regional leaders to the table resulting in over 23% private matching funds, far exceeding the required amount. The grant will help PLTW expand to over 60 schools, reaching over 10,000 students in the Capitol Region.

Intel Educator Professional Development Programs: Investing in the Teacher Workforce

Intel does not focus solely on talented students. We also invest heavily in the teacher workforce and teacher preparation and professional development. We understand that behind every successful student regardless of the level is a teacher providing needed inspiration and guidance.

Intel Math

One of the most successful professional development programs developed and supported by our company is Intel Math. Mathematics, a subject not generally the strength of elementary school teachers, is the essential language of science, engineering and technology. Intel Math increases teachers' understanding of mathematics and confidence in teaching the subject, which makes a real and measurable difference in the time they spend on instructing students, the enthusiasm they show for the subject, and in what their students learn.

Intel Math is an 80-hour professional development course in mathematics content for K-8 teachers. The program was adapted from the Vermont Math Initiative developed by Dr. Ken Gross. The course is collaboratively taught by a practicing mathematician and a mathematics educator. One of the goals of Intel Math is that teacher participants deepen their own understanding of math through problem-solving.

Intel Math "is designed to close the gap between insufficient mathematics training of elementary school teachers and the demands of the contemporary mathematics classroom" (Kenneth Gross, on VMI), and places emphasis on deepening the teacher participants' understanding of core K-8 mathematics concepts. Studies showed that elementary school teachers were often uncomfortable in teaching math to their students. This problem stemmed from their own fundamental lack of knowledge of math concepts. A recent study of the impact of the training on Arizona teachers showed that the students of Intel Math-trained teachers scored significantly higher on the AIMS (Arizona's Instrument to Measure Standards) test than the students of comparable elementary school teachers.

Intel supports the Arizona College and Career Ready Standards initiative because more rigorous standards raise expectations, and today's students need a higher base of academic knowledge to be successful in college and careers. As previously mentioned, International tests and benchmarks consistently demonstrate that U.S. students score lower and lag behind international counterparts. Intel believes that the state standards like Arizona's College and Career Ready Standards offer a strong platform for closing that gap.

We not only support the standards but we are also have partnerships with school districts, AZ state department of education, teacher and higher education to help teachers transition to new standards. These partnerships cover statewide engagements to support student achievement in K-8 Mathematics in support of the Arizona College and Career Ready standards by building capacity through intensive professional development. In order to deliver Intel Math we partner with the University of Arizona and the Institute for Mathematics & Education (IM&E) which became the national training partner for Intel Math, responsible for overseeing the implementation and dissemination of the Intel Math program in various states across the country including Arizona. As of 2012, 10 states in addition to Arizona were implementing Intel Math, reaching over 1400 elementary school teachers.

The Arizona Board of Regents (ABOR) supports partnerships designed to increase academic achievement of students in core subjects by enhancing the content knowledge and teaching skills of classroom teachers in high-need schools. ABOR chose to focus on projects that incorporate the Intel Math curriculum to help K-8 teachers in hard-to-serve communities become highly-qualified and teach to the new Arizona Common Core Standards in mathematics. Three project teams – from University of Arizona, Northern Arizona University, and Prescott College – were funded and partnered with K-12 school districts to provide professional development for K-8 teachers.

Additionally in Arizona, very successful partnerships between the Arizona Department of Education and Northern Arizona University provided Intel Math professional development focused on supporting teachers in high need, hard-to-serve communities.

Intel Teach

Intel's signature program for teacher professional development is Intel Teach which has been offered for over 12 years in the United States and 70 countries worldwide. Intel Teach has trained over 500,000 teachers here in the U.S., 23,000 in Arizona and 11 million world-wide. The Intel Teach Program empowers teachers to achieve common core and state standards implementation while developing the students' problem solving, critical thinking, communication, and collaboration skills. These skills are essential for college and career-readiness in an information age.

Partnering with experts in online education and educational technology, Intel has redesigned its proven professional development as the basis for Intel Teach Elements, a series of interactive, multimedia courses designed specifically for online and blended use by educators. The courses under the Intel Teach Elements program include key areas of instruction deemed important by educators: Project-Based Approaches, Assessment of 21st Century Skills, Educational

Leadership, Thinking Critically with Data, Collaboration, Science Inquiry, and Designing Blended Learning. The Intel Teach program is offered free of charge to including State and Regional agencies, districts, schools and other local institutions. Intel Teach is currently offered in 29 states.

Intel Educator Academy

A third professional development opportunity, the Educator Academy, is provided in conjunction with our Intel ISEF science competition. This professional development program is targeted at administrators at the state and local level as well as those from universities. This program reaches a smaller number of teachers than Intel Math and Intel Teach, but is an effective way to leverage an existing education program to add a professional development component at modest cost. Every year at Intel ISEF, Intel invites select educators to participate in the Educator Academy with all expenses paid by Intel. The Academy focuses on improving science education and the scientific quality of science fair projects. The participants receive a "hands on" view of how Intel ISEF works and how to organize their own science fairs. They meet with the organizers and judges about judging and rules, and receive the benefit of insights from scientists of the highest caliber. The participants also benefit from exposure to educators from other countries and gain a view of the international competitive landscape. In 2102, 37 educators from the United States participated in the Educator Academy.

Teachers Engage

Intel provides a program for teachers who have participated in our professional development offerings to continue their development and expand their collaboration. The Teachers Engage program is an online community of educators that is offered free of charge to any teacher. This community is an extension of Intel's commitment to education and classroom transformation through technology. Transforming education to meet the needs of today's learners requires ongoing support for teachers as they implement new teaching practices. Intel connects educators who integrate technology into the classrooms and promote student-centered approaches in the Teachers Engage online community. Teachers Engage offers 21st century classroom resources, online courses, and active dialogue within a global network. Participants gain a professional edge through collaborating and interacting with other educators, creating private learning spaces, and hosting or attending in live webinars. Approximately 18.000 educators are members of the Intel Engage community at www.engage.intel.com.

Additional Intel resources that support education and future Workforce Development

Intel Involved

An additional program that supports STEM education is our Intel Involved volunteer program. This program provides opportunity for employees to impart their knowledge, technical skills, and work experience to transform education in K-12 schools and universities near our site

communities. As volunteers they serve as role models and mentors to students in K-12 and higher education and are real world examples of the opportunity available in STEM careers.

Through the Intel Involved Matching Grant Program (IIMGP), the Intel Foundation extends the impact of that service by donating cash to qualified schools where Intel employees and retirees volunteer at least 20 hours in a year. In 2012, our employees volunteered over 235,000 hours in our local schools. The anticipated benefit to local schools, when the calculation of qualified hours is complete, will be approximately $2 million.

Additional Partnerships

Intel and the Intel Foundation do the vast majority of our work in education and philanthropy through partnerships. Partners are selected based on common goals and objectives for each program or initiative. Typically we involve government (local, state, federal, departments of education, etc.), other corporations, non-profit entities, and other funders such as private foundations. Our goal is always to maximize the impact of our investment by using our funding and influence to bring together coalitions that can greatly increase the scope and scalability of what we could do on our own. We believe that governments and their agencies are essential partners for scaling solutions. We believe other corporations bring real world experience and pragmatism - and often the kinds of marketing and communications skills that help to tell the story of critical work to a larger audience. We believe that non-profits in the education arena with a track record of effectiveness and impact help us to understand the needs and voices of the clients or 'customers' they serve so well. And of course other funders who share our goals and philosophy can help us attain a much larger impact.

Governor Brewer's Arizona Ready Graduation Rate Task Force

The Arizona Ready Graduate Rate Task Force is an excellent example of collaboration between business, early childhood, K12 and higher education partners, including the Maricopa Community College District, and the philanthropic community who are focused on developing and scaling practices, programs and policies that decrease the number of students who drop out of high school and increase the graduation rates of college and career ready students. Key areas of focus include enhancing and expanding the successful career and technical education programs across the state which are demonstrating high rates of high school completion and post-secondary education course taking.

Additionally, other innovative approaches to accelerating education and skills development, increasing high school graduation rates and post-secondary credential, certificate and degree attainment are being explored by "pulling into high school" what has traditionally been delivered in higher education, including proposals to eliminate college remediation by delivering support in high school. Additional considerations include expanding "early college and career high schools" and other grade 9-14 models, like the successful P-Tech program in New York and models being developed in states and regions across the US as part of the recent Department of Labor "Youth Connect" competitive grant process. These programs are delivering significant results, in many cases, with students who have been over-represented in drop out statistics, and under-represented in post-secondary education. This is especially important in a majority

minority student population state like Arizona and these programs, policies and strategies offer unique opportunities for maximizing business, K12 and higher education partnerships.

Society for Science and the Public

One example of our partnerships is our extensive work with Society for Science & the Public (SSP), and the many other organizations involved in the Intel International Science & Engineering Fair (Intel ISEF) and the Intel Science Talent Search (Intel STS).

In the US alone, Intel ISEF and the many affiliated and feeder science fairs in 48 states reach an estimated 150,000 high school students. While we fund a total of $665,000 in scholarships for all of the top award winners in each of the 17 categories of research (including the Gordon E. Moore award of $75,000 to the grand award winner), hundreds of public and private entities provide an additional $2.3 million in scholarship awards in various special categories. Students from US science fairs account for 65% of the finalists in Intel ISEF.

Our Educator Academy brings teams of educators from five different states each year, together with comparable teams from countries all around the world. There they share best practices both in how to create and manage high impact competitions of their own, but even more importantly, how best to educate and prepare students as young scientists who can conduct independent research, break new ground in science, and compete effectively both at local fairs and at Intel ISEF. The Army, Navy, Air Force, National Institutes of Health and the National Academies of Science are all involved in providing research opportunities for students and scholarships for young researchers. The list of active partners in this vast effort encompasses public and private entities of virtually every stripe.

At the national level, Intel works with organizations such as the National Governors Association (NGA) and the Council of State School Officers (CCSSO) to advance education reform. Our Intel Teach program was recognized by the NGA in 2010 with its prestigious Public Private Partnership Award.

At the federal level, Intel was a founding member of "Change the Equation," a CEO-led initiative designed to answer the President's call to move the U.S. to the top globally in science and math education over the next decade. In support of the initiative, Intel has committed to provide professional development training to an additional 100,000 U.S. teachers over a three-year period through Intel Math, Intel Teach and our Intel ISEF Educator Academies.

Evaluation

Evaluation is a critical tool that we use both for continuous improvement of our programs, and to measure their overall impact. Our goals are to learn how to do our work more effectively, share what we learn for the benefit of other funders, help our grant recipients increase their impact, and ensure that we stay focused on effectiveness and scalability rather than on little jewels that might make us feel good, but cannot truly address the systemic issues we are targeting. At the same time, Intel takes a pragmatic approach to evaluation; it is entirely possible to spend as much or more time evaluating a program as implementing it. We try to ensure that we use evaluation as a means to increase impact rather than as an end in and of itself. Expenditures on evaluation are

kept proportionate to the size of the grant or program, and we strive to use evaluation to help our grant recipients increase their reach and impact without distracting them unduly from the tasks at hand. In some cases we have funded independent third party evaluations of our programs, as was the case with Intel Teach and Intel Math. In other cases the evaluation was conducted jointly by Intel Foundation staff and the grant recipient.

One example is our evaluation of the Undergraduate Research Opportunity (URO) initiative developed and managed in partnership with the Semiconductor Research Corporation (SRC). It is well-understood that as many as 50 percent of all undergraduates enrolling as freshmen in engineering, computer science and related degree programs will drop out or change majors before their junior year. The percentage of those who, on average, continue to graduate school for a masters or Ph.D. is far smaller. We had seen good evidence that giving these students - especially women and other underrepresented populations - the opportunity to do research while undergraduates greatly increased rates of retention and graduation in their field. The addition of supportive classes and discussion groups focused on explaining the why and how of graduate school also made a tremendous difference. Partnering with 14 universities and the SRC, Intel provided stipends that allowed 600 students to participate in undergraduate research. Our jointly conducted evaluation showed that more than 97 percent of those students completed an undergraduate degree in a technical major, and nearly half continued onto graduate school - overwhelming evidence of real impact and success. By virtue of having conducted the research and with these data in hand, the SRC has already been able to recruit a second funding partner, allowing them to increase significantly the number of university partners and student researchers.

An independent evaluation of Intel Teach, our teacher professional development program that has reached 600,000 teachers in the US and more than 10 million around the world, was conducted by experts at the Center for Children & Technology (CCT), associated with the Education Development Center. As with the evaluation of the SRC URO, our focus was on measuring real impact – i.e., changed teacher behavior, improved classroom learning, changes in attitude, etc. Using both formative evaluation - to assess and improve actual implementation - and summative evaluation - to measure overall impact - we have been able to stay on a path of continuous improvement and growth.

Conclusion

Education has been Intel's primary philanthropic focus for decades. Intel has over 200 programs in more than 70 countries that provide professional development for teachers, support and celebrate student achievement in science, technology, engineering, and math, and bridge the digital divide with relevant, local online content for educators, students and parents. Our experience in education worldwide has informed our understanding of the need for higher standards and more rigorous assessments for our students here at home.

In the past, the job of schools was to filter out the few natural scientists from the crowd and send them on to an elite education to become academics and researchers. Today, we need far more people with these skills to take positions in academia, in industry, in government. All young people need a far better grasp of technology and science simply to live in this increasingly complex and rapidly changing world inundated with data, climate changes, and revolutionary

advances in medical science. As microprocessor technology becomes ever more complicated, there is great value to Intel in increasing the diversity of the pool of people searching for answers to scientific questions, both profound and practical, especially given the persistent the lack of qualified American job applicants for our microprocessor manufacturing and research and development facilities.

Chairman KLINE. Thank you.

Mr. Lambert, you are recognized.

STATEMENT OF LEE D. LAMBERT, CHANCELLOR, PIMA COMMUNITY COLLEGE, TUCSON, ARIZONA

Mr. LAMBERT. Chairman Kline, Representative Grijalva—

Chairman KLINE. Mr. Lambert, could you turn your mike on? Apparently they are saying it is not. There we go.

Mr. LAMBERT. Do you want me to start over? Just keep going? Okay.

Tucson, my home, is the sixth poorest of its size in the U.S. Increasing our competitiveness in an unforgiving economy is a top priority, but because of globalization and technological advances, we know we are up against firms from across the United States and around the world. The approximately $46 million investment that the Federal government makes in Pima allows us to achieve multiple goals, particularly improving student retention, engaging underserved communities, and meeting the needs of area business and industry.

Recently, Pima was awarded two grants to help adult learners transition into the workforce. Each contains an element that requires us to engage the private sector. In 2010, Pima secured a 5-year grant to provide education and services to low-income individuals so that they could enter the fast-growing healthcare sector. We aligned with our key partner, Pima County One Stop, which provides Workforce Investment Act-funded services to nearly 4,000 job seekers. More than a thousand people have enrolled in our Health Professional Opportunity Grant Program to date, with 210 of these formerly jobless men and women finding employment in the healthcare industry, making on average just under $12 an hour.

Similarly, the first three years of our participation in the Trade Adjustment Assistance Community College and Career Training Grant Program has been extremely successful. As part of a community college consortium in Arizona, Pima prepares students for skilled, high wage jobs in the energy sector. This program is geared to helping military veterans and other adult learners. Working in partnership with the local utility, in this case, Tucson Electric Power, we have developed an Electrical Utility Technology certificate, and will be adding an associate's degree concentration as well. Tucson Electric Power or its subsidiaries have hired 63 percent of the 50 students taking part in the program. We are working with Southwest Gas Corporation to develop a similar program.

Regarding student retention, many of our students are of extremely modest means, who often are the first in their family to attend college. We strive to keep tuition low, but the reality is these students cannot afford to attend college without Federal financial aid, including Pell grants.

Regarding engaging underserved populations, I am proud to say that Pima's adult education program is the second largest here in the state of Arizona. Our adult education program serves up to 6,100 students a year. The high school equivalencies these women and men earn give them a chance to climb the economic ladder. Also, Pima is developing new contextualized learning initiatives that integrate adult basic education with occupational skills train-

ing so that these students are put on a fast track to postsecondary credentials.

Pima Community College is committed to aligning its curriculum and services with the needs of industry to keep the talent pipeline filled with workers who have the skills business need now and into the future. Each of the college's more than 120 occupational programs is assisted by an advisory committee composed of representatives from local businesses who can provide us with real-time, ground-level insights regarding industry needs and emerging trends. These insights result in real change in our programs.

An example of that is we are currently working with a consortium of more than three dozen manufacturers to alter our machine tool technology curriculum so it meets the National Institute for Metalworking Skills certifications.

Again, I want to thank you for having me share what Pima is doing with the federal investments you have made in community colleges.

[The statement of Mr. Lambert follows:]

Testimony to U.S. House Education and Workforce Committee

Chairman Kline, Representative Grijalva, Representative Salmon, thank you for giving me the opportunity to talk on behalf of Pima Community College. Along with nine other community college districts in Arizona and the more than 1,100 community colleges in the United States, we work every day to help students achieve their academic and career goals.

Today I want to talk about the important role that federal investment in education plays in helping PCC prepare students for jobs and careers in the 21st century. Tucson, PCC's home, is the sixth-poorest of its size in the U.S. Increasing our competitiveness in an unforgiving economy is a top priority. But because of globalization and technological advances, we know we're up against firms from across the U.S. around the world.

The approximately $46 million investment that the federal government makes in PCC helps us achieve multiple goals, particularly improving student retention, engaging underserved communities, and meeting the needs of area business and industry.

Recently, PCC was awarded two grants to help adult learners transition into the workforce. Each grant contains an element that requires us to engage the private sector. In 2010, Pima secured a five-year grant to

provide education and services to low-income individuals so that they could enter the fast-growing healthcare sector in a variety of professions, including health information technicians, licensed practical nurses, and community health advisors. PCC has aligned with a key partner, Pima County One Stop, which provides Workforce Investment Act-funded services to nearly 4,000 job-seekers.

More than 1,000 people have enrolled in the HPOG program to date, with 210 of these formerly jobless men and women finding employment in the healthcare industry at an average wage of $11.84 an hour.

Similarly, the first three years of our participation in the Trade Adjustment Assistance Community College and Career Training grant program, better known as TAACCCT, has been extremely successful. As part of a community college consortium in Arizona, PCC prepares students for skilled, high-wage jobs in the energy industry. This program is geared to helping military veterans and other adult learners. Working in partnership with the local utility, the Tucson Electric Power Company, we have developed an Electrical Utility Technology certificate, and will be adding an associate's degree concentration as well.

Tucson Electric Power or its subsidiaries have hired 63 percent of the 50 students taking part in the program. We are working with Southwest Gas Corporation to develop a similar program in the gas industry.

Regarding student retention, many PCC students are of extremely modest means who often are the first in the family to attend college. PCC strives to keep its tuition low, but the reality is these students cannot afford to attend college without federal financial aid, including Pell Grants.

The number of PCC student receiving Pell Grants has declined from more than 16,000 in 2011 to about 10,000 this year. PCC is joining with the American Association of Community Colleges in asking that Congress reinstate the Year-Round Pell Grant, which will increase student success in summer classes, as well as the Ability to Benefit requirement, and the 18-semester cap on eligibility. The average age of a PCC student is 27; many are balancing work and family obligations while attending school part-time. Making these changes in Pell eligibility will help our students as they piece together the credits they need to reach their educational goal.

Regarding engaging underserved populations, Tucson is home to about 80,000 to 100,000 adults who lack a high school credential. These men and women will face hard lives, as you know, marked by chronic unemployment and an ongoing need for various types of government assistance I'm proud to say that PCC Adult Education, the second-largest provider of Adult Education services in the state, has helped Arizona achieve a No. 2 national ranking in the success of Adult Education students. PCC Adult Ed serves more than 6,100 students a year. The high school equivalencies these women and men earn give them a chance to climb the economic ladder. Also, PCC is developing new contextualized learning initiatives that integrate Adult Basic Education with occupational skills training, so that the student is put on the fast track to a postsecondary credential.

Pima Community College is committed to aligning its curriculum and services with the needs of industry to keep the talent pipeline filled with workers who have the skills business needs now and in the future. Each of the College's more than 120 occupational programs is assisted by an advisory committee composed of representatives of from local business who can provide us with real-time, ground-level insights regarding industry needs and emerging trends. These insights result in real change in our programs. For example, we are working with a consortium of more than three dozen area manufacturers to alter our Machine Tool

Technology curriculum so it meets National Institute for Metalworking Skills certification standards, and aligns with high school Joint Technical Education District curriculum. Also we are working to establish a Business Intelligence Competency Center that will give us the ability to sift through mounds of data to recognize patterns, detect trends and unearth opportunities. A robust Business Intelligence tool would allow Pima to better align its resources with other entities in the community to further economic development of the region.

I would like to conclude with the words from Andy Grove, the founder of the computer chip maker Intel, who coined the phrase "strategic inflection point" to describe a time of profound change, risk and opportunity. The United States is at a strategic inflection point as it seeks to retool its economy for the 21st century. Education remains a key element in achieving that goal. The federal government's investment in PCC helps us assist students as they seek to gain the education they need for the middle-skill jobs that will form the core of our economic recovery. Maintaining federal funding levels to federal student aid programs, to Adult Education and Literacy programs, and to workforce development programs is crucial for Pima Community College to keep the talent pipeline filled with motivated, capable employees. The return on the federal government's continued investment in the next generation of workers has been and will continue to be tangible. For individuals, it

results in entry into the middle class. For our nation, it provides the backbone of stable, prosperous communities and gives meaning to the words, "The American Dream."

PimaCommunityCollege

AACC and ACCT Priority: Maintain the Pell Grant Program

Pell Grants assist 3.35 million low- and moderate-income community college students each year by helping them meet the cost of tuition, course material, and living expenses. 37% of all community college credit students receive a Pell Grant. The program must be sustained without further limitations in student eligibility. Additionally, Congress should restore eligibility for the year-round Pell Grant, "ability-to-benefit" students, and revisit the current 12 semester cap on eligibility.

Pima Community College Impact:

Award Year	Number of Recipients	Average grant per student	Total grant dollars disbursed
2013-2014	10,205	$3,094	$31,578,461
2012-2013	12,978	$3,111	$40,374,771
2011-2012	16,122	$3,203	$51,651,448

PimaCommunityCollege

AACC and ACCT Priority: Preserve and Extend the Community College and Career Training Grant Program (TAACCCT)

The first three years of the Trade Adjustment Assistance Act Community College and Career Training Grant program have been extremely successful. The program delivers high quality, relevant training to TAA-eligible and other workers. It encourages new program delivery and has generated cooperative agreements between a wide range of institutions and business. The final year (FY 2014) of dedicated funding should be awarded as scheduled and Congress should consider providing continuing funding for this or a similar program after FY 2014.

Pima Community College Impact:

PCC was awarded TAACCCT grant 9/2012, funding expires 10/2016

Funding Levels:	10/1/12 – 9/30/13	**$586,124**
	10/1/13 – 9/30/14	**$829,351**

Recruitment: The mailing of the Spring 2014 Career Focus in January resulted in **37** new program participants in TAACCCT for the Spring Semester.

Support Services: A Math Boot Camp was started in February to provide a 'refresher' for non-traditional students or transitioning adults. Pre and posttest assessments are given; students have demonstrated a **40%** gain in knowledge after completing the Boot Camp.

Partnerships and Collaboration: New industry relevant courses are in development, involving the College and Tucson Electric Power.

Program Completion: The two semester program has a success rate of students earning a 3.0 or higher. **95%** of the students are being placed in an internship. **63%** of the students are hired by TEP and subsidiaries.

PimaCommunityCollege

AACC and ACCT Priority: Community College Funding

Congress should nullify looming across-the-board funding cuts. It should consider restoring funding for higher education and training program, including: the Workforce Investment Act's job training and adult basic education; Federal Supplement Educational Opportunity Grants, Federal Work Study; Carl D. Perkins Basic State Grants; institutional aid programs such as Strengthening Institutions (Title III, Part A), Hispanic Serving Institution (HSIs), Asian American and Native American Pacific Islander Serving Institutions, Tribal Colleges, and Predominately Black Institutions (PBIs); and the National Science Foundation's Advanced Technological Education (ATE) program.

Pima Community College Impact:

Federal Dollars funding Adult Basic Education at PCC: **$1,764,863.00**

Workforce Investment Act's job training: Workforce Investment Act funds represent **$4.5** to **$5** million in direct revenue to Pima County. Estimated fiscal impact of the entire One Stop system is more than **$20 million**.

Federal Supplement Educational Opportunity Grants: Academic year 2013-2014, PCC received **$572,462.00** for SEOC grants. As a result, **672** students were awarded a SEOC grant.

Federal Work Study: Academic year 2013-2014, **268** PCC students have been awarded positions on and off campus. Off-campus positions are located at a local Literacy Connects agency. PCC received **$621,488.00** for the 2013-2014 academic year.

Carl D. Perkins Basic State Grants:	2013-2014	**$347,352.00**
	2013-2012	**$355,606.00**
	2011-2012	**$453,631.00**

Strengthening Institutions (Title III): Pima Community College North West Campus was awarded a five-year Title III grant of approximately **$400,000 per year or $2 million** for the duration of October 1, 2011 – September 30, 2016

Hispanic Serving Institution (HSIs): **$10,439,980.00**

PimaCommunityCollege

AACC and ACCT Priority: Strengthen Workforce Development

Congress should reauthorize the Workforce Investment Act (WIA) this session, prioritizing the role that community colleges play in educating American's workforce. This should be achieved, in part, by authorizing the Community College to Career Fund, ensuring that community colleges are members of state and local workforce investment boards, and making programs at public institutions of higher education automatically eligible for training funding. Additionally, the Adult Education and Family Literacy Act (AEFLA) is a critical component of addressing adult literacy issues. Community colleges serve as key adult education providers and, in some cases administer AEFLA funding. Support for this program should be dramatically enhanced.

Pima Community College Impact:

PCC Adult Education: **14** different funding sources for a total of **$4 Million**

Main Program (ABE/HSE/ELAA)	4886
Distance Learning	233
Citizenship	275
Family Literacy	47
RAISE (Rehabilitative Adult Independent Skills Education)	83
REP (Refugee Education Program)	622
Total PCC ABE Students	**6,146**

FY 14 (Federal) Appropriations for Job Training and Education: Workforce funding above post-sequester level, but still below pre-sequester level **$1.012T**, FY09 spending level **$1.013T**, **-10.99%** between FY10-FY13

Community College to Career Fund: A three-year, **$8 billion** program that expand upon partnerships between community colleges and the business community in order to train and employ two million workers in technical and skilled manufacturing jobs.

Workforce Investments Boards: More than **15,000** job seekers used One-Stop's self-service system in FY 2013. Of the **3,879** who received WIA-funded services, 86 percent of the adult and laid-off workers and **77 percent** of youth ages 14-21 were successfully placed in employment. More than **750** employers hired One-Stop job seekers in FY 2013. Pima County Board of Supervisors appoint leaders from local businesses, nonprofits and educational institutions to serve on the Pima County Workforce Investment Board (WIB).

PimaCountyCommunityCollegeDistrict

ADULT EDUCATION
ANNUAL REPORT
PIMA COUNTY BOARD OF SUPERVISORS
FISCAL YEAR 2012-2013

Pima Community College Mission:
The mission of Pima Community College is to develop our community through learning.

This report is provided to the Board of Supervisors as an annual update and describes specific metrics of performance and services to Pima County residents during fiscal year 2012-2013 as part of an Intergovernmental Agreement (IGA #01-38-P-127464-0700) between Pima County and Pima Community College District that moved Adult Education from the County Superintendent of School's Office and the County Board of Supervisors.

HIGHLIGHTS OF FY 2012-2013

Restoration of State Adult Education Funds: PCC led the effort that resulted in the restoration of state funding for adult education. This was accomplished through targeted, intensive efforts by members of PCCAE's Civics and Student Leadership Team and other state programs. They raised awareness about the importance of adult education with business leaders, the press, community colleges, and policy makers. Adult education funding was included in Superintendent Huppenthal's budget. There was broad support for funding from legislative leaders resulting in this historic decision.

Students Served: Despite funding cuts and changes at the College, PCCAE served more students. Pima's program accounts for nearly one third of all the state students and our extraordinary performance helps the Arizona's Adult Education program meet or exceed their federal performance measures. Arizona's Adult Education Program continues to be in the top 4 in the nation!

Fiscal Year	Total Students Enrolled in Classes	ABE/ASE Students Served	English Students Served	Got GED Diploma	Enrolled at PCC	Entered Employment
11-12	5793	3329	2464	1488	223	185
12-13	5899	3368	2531	1411	148*	129*

* Follow up for these students is still happening

GED Graduation: Over 250 graduates joined community and college leaders at the May 22nd GED Celebration at the TCC.

National Adult Education Honor Society: Nine PCCAE students were inducted into the National Adult Education Honor Society in recognition of outstanding student achievement and participation during Arizona's Love of Literacy Week, February 14th. It was incredibly inspiring to hear the voices of the teachers and students talking about their successes in adult education.

Elizabeth Pino, an adult education student leader from Family Literacy and El Pueblo Liberty, attended the **Association of Community College Trustees (AACT) Annual National Legislative Advocacy Summit** in Washington DC as a representative Pima Community College. Her Digital Story was shown at the day-long pre-conference on advocacy.

YEARLY DATA

State Performance Measures: PCCAE students are meeting or exceeding the Performance Measures set by the State of Arizona in the majority of categories. Capturing students' performance requires monitoring and testing students on a timely basis. Staff have developed and implemented resourceful ways to improve this process and ensure that the State's goals are met.

Pima College Adult Education FY13			
Instructional Level	**(Grade Level Equivalent)**	**State Projections**	**PCCAE Outcome**
Beginning Literacy	0 to 1.9	68%	69%
ABE Beginning	2 to 3.9	60%	63%
ABE Intermediate	4 to 5.9	60%	59%
ABE Advanced	6 to 8.9	55%	50%
ASE	9 to 12.9	53%	49%
Beginning ESL Literacy		64%	64%
Low Beginning ESL		70%	75%
High Beginning ESL		67%	68%
Low Intermediate ESL		64%	69%
High Intermediate ESL		60%	61%

Note: Grade level equivalence according to the Test of Adult Basic Education (TABE)
ABE – Adult Basic Education 0.0-8.9 and ASE – Adult Secondary Education 9.0-12.9

PROGRAMS AND SERVICES

Transition to Pima Community College: The PCCAE Transition staff meet with students to help them maneuver through all the various academic and vocational programs, provide information on educational, training and employment opportunities, referrals to community agencies and institutions, academic and career advice and planning, financial aid, assessments, goal setting, campus tours and presentations, as well as scholarship opportunities. Last year, 1,458 students were served individually and over 3,800 students in groups.

- Four percent of our students transitioned from Adult Education to credit classes at Pima Community College

- 11 students received $250 GED scholarships to attend credit classes at Pima
- 2,020 students did GED Official Practice Tests at our three learning centers and most of them met with the transition advisors
- Approximately 30 students attended an ELAA Transition Class at one of the learning centers taught by a transition advisor. That class included advanced English language skills, college study skills, and computer skills as well as other College and Career content.
- Community agencies and programs such Job Path and HPOG did more than 40 presentations in our GED and ELAA classes.

Citizenship: PCCAE currently has 12 classes on the Rights and Responsibilities of Citizenship, all taught by volunteers. We look for those people with a background in history, civics and government. Potential Citizenship volunteers who are second language learners are also considered but this is not a requirement. Our training program for Citizenship volunteers is as follows:

- Volunteers are oriented as to the nature and history of the citizenship program within PCCAE;
- Volunteers are required and scheduled to do a minimum of three observations of other citizenship classes;
- Volunteers are given access to the 10 unit citizenship curriculum;
- Volunteers meet with the Coordinator of Volunteers and Citizenship Education to lesson plan and discuss what the first class might look like;
- Citizenship Volunteers are oriented as to the required paperwork—registration, eligibility verification, sign-ins, monthlies, etc.;

These volunteers attend regularly scheduled quarterly citizenship instructor meetings to give classroom updates, discuss concerns, present questions and to receive on-going professional development in terms of citizenship education, the naturalization process and language acquisition.

Family Literacy Program: PCCAE's comprehensive Family Literacy Program (FLP) supports adults and their children with a multiple component model that includes adult education, parenting education, home visits, early childhood education, parent and child together time, and volunteer service in the community. The FLP partners include Child Parent Centers Inc. (Head Start), Sunnyside Unified School District, Pima County Public Library, Literacy Volunteers of Tucson (Literacy Connects), and Tucson Unified School District. Through this collaboration last year, the FLP served a total of 77 families at the Santa Rosa and Ocotillo Family Literacy Centers. Family Literacy parents were in class more than 14,000 hours and completed more than 6,000 hours of volunteer and community service.

AmeriCorps: Eighteen AmeriCorps members provided service to over 20 organizations across Pima County including the Community Food Bank, Casa De Los Niños, libraries, schools, and non-profit organizations. They helped raise funds, filled and sorted food boxes, staffed booths, tutored children, cleaned and planted trees in our parks and neighborhoods, trained and worked with youth developing leadership through service learning projects, helped the disabled, helped homeless veterans, participated in national days of service such as Martin Luther King Day, Make a Difference Day, Cesar Chavez Day, Global Youth Service Day, and 9/11 activities, and attended numerous trainings. Additionally, AmeriCorps Members joined the Tucson Community Emergency Response Team (CERT) which prepared them for disaster services, local, state or other. This is all in addition to the service they provide staff and students within PCCAE.

Refugee Education Program (REP): REP contracts with AZ DES to provide English Language Training to refugees resettled in Pima County. The program offered eleven (11) ESOL classes of different levels from Pre-Literacy through Intermediate to 624 refugees. The refugees are referred to the program by three resettlement agencies: International Rescue Committee, Lutheran Social Services of the Southwest (Refugee Focus) and Catholic Community Services. REP also offered VESL (Vocational English as a Second Language) classes for refugees at International Rescue Committee and Refugee Focus resettlement agencies.

Civics Program:

- Approximately 225 students participated in nearly 2,500 hours of activities.
- PCCAE student leaders have made it possible for 10 of their fellow students to have the financial assistance they need to pay the **GED test fee**.
- Students developed their technology and writing skills along with a strong voice for topics and themes they care about in two pilot **Digital Storytelling** classes. 37 students participated in over 600 hours of programming at El Pueblo Liberty and the 29th St. Coalition Center. Various volunteers helped in this pilot program, including Brad Jacobson, a PhD student in Rhetoric, Composition, and the Teaching of English (RCTE) at the University of Arizona.
- **University of Arizona Law School Immigration Clinic** Law professors and students facilitated presentations for students and staff at all three Adult Education learning centers during the past year.

- Students from El Pueblo Liberty participated in the **Job Fair at El Pueblo Liberty Learning Center**. Congressman Grijalva and Goodwill of Southern Arizona teamed up with EPL to coordinate the event in which more than 40 employers and approximately 2,000 job seekers participated. January 11, 2013.

- Civics staff traveled to Phoenix to co-facilitate the **2nd Statewide Adult Education Ambassadors "Train the Trainer"** for 18 staff and students from Rio Salado Adult Education Program. Two students from Pima also attended the training. The training concluded with a meeting with Rio Salado President Chris Bustamante. November 16-17, 2012.

- Civics staff and partners from Literacy Connects co-planned and facilitated the **third "Statewide Ambassadors Train the Trainer" session** at El Rio for 21 students and staff from PCCAE, Literacy Connects, and Northland Pioneer College. The training culminated in a relational meeting with Britann O'Brien, Director of Governor Brewer's Southern Arizona office. January 18-19, 2013

Volunteer Tutors: The majority of PCCAE volunteers serve as tutors working one-on-one or with small groups for individualized instruction. At the time of initial placement, volunteers meet with their Supervising Instructors in order to determine basic learning objectives and a schedule. Volunteers also work as classroom aides working with an instructor within the class. Conversation classes are facilitated by volunteers for higher level ELAA students ready to transition out of their advanced level ELAA classes. Volunteers are more facilitators than teachers but do work with vocabulary, pronunciation, reading comprehension and context.

Volunteer orientation includes the history of PCCAE, its place within Pima College, the nature of adult learners and keys to success as a volunteer. Follow-up trainings involve more specific teaching techniques in how best to work with adult learners. Classroom observations allow perspective volunteers to not only see how paid instructors deliver instruction but are also opportunities to interact with students under the supervision of the instructor

Eyeglass Referrals: PCCAE referred 17 pre-screened, low income students for free eye exams and free eyeglass referrals. Participating companies were Lenscrafters, through their Gift of Sight/One Sight program providing the glasses (three local stores), Accent on Vision, and Alvernon Optical providing free exams.

Distance Learning (DL) Program: DL served 235 students in FY13, with 71% making educational gains and improvements, exceeding Arizona Department of Education target goals. PCCAE's DL program is the largest Adult Education DL program in the state, and has also become a model program in the state on how to effectively work with learners at a distance. A Best Practices guide developed by PCCAE's lead DL teacher has been distributed by the Arizona Department of Education to other Distance Learning programs in the state, and DL instructors have served as trainers and mentors for new and struggling DL programs.

GED Testing: GED Testing administered the GED Test at three PCC campuses, Community, East, and Northwest, as well as administered testing for Pima County Jail, Las Artes, Brookline College, Marana Correctional Center, Tucson Job Corp, Tohono O'odham Jail in Sells, and the Town of Ajo. Over 250 of those graduates attended the GED Graduation at the TCC Music Hall in May 2013.

In order to close out the 2002-2013 GED Test, PCCAE implemented a comprehensive plan that included training staff for an increase of testing volume and communicating test expiration deadlines to the community. A committee made up of PCC administrators and staff was formed to plan for future changes in GED Testing. PCCAE staff and instructors continue to collaborate with each other and community partners in the sharing of GED Testing information.

Technology Integration: One of the primary goals in technology integration has been to increase the use of the AzCIS (Arizona Career Information System) as measured by the number of student portfolios created. Training in the use of AzCIS was included in two program-wide in-services. When the numbers of students (from January to June 2013) with portfolios was compared with the same time frame for 2012, the number of logins more than doubled. The numbers of portfolios in those two time periods increased by more than a factor of three.

Another goal that was a part of our technology plan was the training and support for instructors as they integrated the SmartBoard use in their classrooms. There were multiple trainings provided at the three learning centers. The trainings included the basics, a more extended exploration of the features, and some teacher-directed small-group practice time.

LEADERSHIP

Arizona Association for Lifelong Learning – The Arizona Association for Lifelong Learning is a 41 year old statewide organization that helps raise awareness about adult education and provides professional development to the adult education field. Several PCCAE staff hold leadership positions with the Arizona Association for Lifelong Learning (AALL). Anne Petti is the current President, Katy Brown is the Treasurer, and Regina Suitt is the Chair of the Awareness Committee.

Commission on Adult Basic Education (COABE) – COABE is the leading national adult education association that provides leadership, communication, professional development and advocacy for adult education and literacy practitioners in order to advance quality services for all adult learners. Regina Suitt is the COABE Board Region 7 Representative and she is the Public Policy Chair.

PARTNERSHIPS

Tucson Festival of Books – For the fifth year, PCC participated by hosting a booth at the annual Tucson Festival of Books. AmeriCorps and PCCAE staff volunteered at the event.

Literate Worker Team – Adult Education Services Advanced Program Manager attends a monthly Literate Worker meeting with the libraries, One Stops, CBOs and FBOs to share information and cross-refer to classes and activities. The team also looks for ways to ensure programs are not duplicating services and for joint funding opportunities. This team has been meeting since 2007.

Pima County Libraries

- During the first weeks of school, PCCAE instructors and librarians at El Pueblo, El Rio and Eckstrom-Columbus coordinated to provide students with library tours, lessons on using electronic resources and signed all students up with library cards. Throughout the year librarians came to adult education classes and taught students various other library and literacy skills.
- Multiple PCCAE instructors utilized the library Caboodle Kits which provided class sets of books.
- The library provided fun activities for kids while their parents attended PCCAE AmeriCorps led Teach the Parent, Reach the Child classes.
- The Civics Team held voter registration and information drives at the El Rio Library.
- PCCAE and library branches distribute each other's marketing and class offering materials.
- Libraries provided six facilities for PCCAE volunteer-taught Rights and Responsibilities of Citizenship classes.
- The El Rio Library uses the PCCAE computer lab to conduct computer and job search classes which many PCCAE students as well as neighborhood community members attended.

- The Eckstrom-Columbus Library temporarily shared space at the PCCAE 29th Street Coalition Center while a remodel of the permanent library space was underway.
- Library GED Coordinator and library GED instructors participated in PCCAE's Instructional Materials Committee and attended PCCAE Teacher In-Service.
- PCCAE GED Testing Program coordinates with Library GED Instructional Program to share info on student graduation rates from library classes, with individual written student permission.
- PCCAE GED Testing Coordinator attended bi-annual Library GED Team meetings to present GED closeout and GED 2014 updates and answer questions.

Literacy Volunteers of Tucson (LVT): This is the fourth year that PCCAE and LVT (a program within Literacy Connects) partnered to offer students a GED class at their main location to ensure that their students have a clear path to the GED after receiving one-on-one tutoring and small group instruction. Forty-four students enrolled in the GED preparation class.

LVT also collaborated to support the Santa Rosa Family Literacy class. Two volunteers worked with the Family Literacy team to ensure that the adult education needs of all parents were met.

Workplace Education Program, and Contracted Classes –

- Two GED classes are provided at no charge at both Pima County OneStop Centers. At the Rio and Kino One-Stop centers, 84 students were served. It is a great long-term partnership, and one of the many visible ways that Pima County truly supports a One Stop system for job seekers who also need basic skills or a GED.
- Workplace Education Program provided contracted classes for employees of Goodwill. A 10 week GED Fast-track class was developed to help employees pass the current version of the GED test. Employees were given full paid release time to attend classes once per week in addition to a bonus on passing the GED. We also provided Basic Skills and College Readiness to youth in their GoodFutures Program
- Pima County Jail – For over 20 years, the Jail has contracted with Adult Education to provide all their adult education programming. This year the classes served 396 incarcerated students for over 9,218 hours.

EXCEPTIONAL SERVICE

Awards and Recognitions

- Student Ambassador Ana Chavarin was featured on the National Coalition for Literacy and VALUEUSA's Spotlight on Achievement, a national initiative to honor adult learner success stories in conjunction with the convening of the 113th Congress. Beginning September 2012, the NCL collected adult learner success stories from local programs. The learners' stories are published on the NCL website. The NCL shared all published success stories with the learners' newly elected officials and with the Assistant Secretary for Vocational and Adult Education. http://spotlight.national-coalition-literacy.org/story.php?subID=37
- Laura Porfirio received the Arizona Association for Lifelong Learning's Award of Excellence in Honor of Gary P. Tang at an awards luncheon at Rio Salado College in Tempe. November 2nd, 2013.
- Pima Community College won an award in May 2013 from the Tucson-Pima County Historical Society for Preservation and Adaptive Reuse of Roberts Elementary, which now houses one of our Adult Education Learning Centers, the 29th St. Center.
- AmeriCorps Members attended the Pima County Board of Supervisors meeting on April 16, 2013, and were presented with a Proclamation for Global Youth Service Day (GYSD).
- Family Literacy students at the Santa Rosa Library site won an AALL award at the Literacy Week Ceremony for their project, "Alphabet Photo Album & PowerPoint".
- On April 24, 2013 PCC received a certificate for the support for students and families in the Lynn/Urquides Elementary community.
- Women's Literacy Network students were honored with certificates of achievement and medals of hope by the Mayor of Tucson, Councilman Fimbres, and Pima County supervisor Richard Elias.
- Laura Porfirio successfully completed the nationally recognized Leadership Excellence Academy training program and will become a Certified Manager in Program Improvement (CMPI).
- Janice Gallagher won a prestigious Celebrate Literacy Award from the Tucson Area Reading Council (International Reading Association).

Staff Participation in the Community – PCCAE currently has several staff members serving on various boards and/or participating in key community activities:

- Regina Suitt and Laura Porfirio served on the Literacy Connects Advocacy Committee and attended monthly meetings throughout the year.
- Regina Suitt is the Awareness Chair for the Arizona Association for Lifelong Learning (AALL), a Board member and the Public Policy Chair for the Commission on Adult Basic Education (COABE), and a member of the Mayor's Education Task Force.
- Anne Petti is the President and Katy Brown is the Treasurer for the Arizona Association for Lifelong Learning.

- Micki Ulrich served as the Vice Chairperson on the board of the Sunnyside Literacy Zone Council.
- Regina Suitt is a member of the Mayor's Education Task Force and on the board of a local Charter H.S.
- Sarah Fearnow is a widely acclaimed TIAN trainer and is regularly contacted to present and coach other programs and present in other states.
- Karen Smith is a member of the Mayor's committee to plan the first annual Second Chance event, designed to educate ex-offenders and the community about educational and employment opportunities.
- Regina Suitt participated in the National Library Literacy Action Agenda Community of Practice.

PCCAE staff also actively participates in the following:

- The 4R Neighborhood Coalition (formerly the Twenty-Ninth Street Corridor Communities (292C))
- Pima County Reentry Coalition
- United Way of Tucson and Southern Arizona
- Youth Coalition of Activism and Progress
- Pro Neighborhoods
- Tucson Learn and Serve Group
- AZ-TESOL (Teachers of English to Speakers of Other Languages)

Presentations at State and National Conferences – Adult Education staff are routinely called in as subject matter experts and to present at conferences.

- Three Arizona Adult Education Student Ambassadors along with a Civics staff member (a former adult education student) attended and presented at the 8th National Adult Learner Leadership Institute in Washington, DC organized by VALUE (Voice of Adult Learners United to Educate). Students and staff had Breakfast Meetings at the Senate and the House, attended training and debriefing sessions, presented a workshop on "Powerful Stories for Positive Change", and went to a Closing Luncheon at the Library of Congress. May 6 - 8, 2013
- Staff and students presented at the National Collegiate Leadership Conference at the University of Arizona. Student government leaders and advisors from all over the country attended our workshop: "Ambassadors: Advanced Student Leadership Training." An audience of college and university students was trained in our program of awareness raising, story crafting, public speaking, and preparing to meet with officials and decision-makers. February 15 - 16, 2013. http://www.az-aall.org/uploads/8/2/0/6/8206167/aall_april_newsletter.pdf
- During AmeriCorps Week (March 9 – 17, 2013), Members presented "What is AmeriCorps" at the University of Arizona and had a display table at the Annual Peace Corps Fair.

- Norma Sandoval and Cecilia Ramirez presented at the 22nd National Conference on Family Literacy in Louisville, KY in April. The title of the workshop was: "Parents Teaching Parents: A collaborative effort to foster Parent Leadership". Laurie Kierstead-Joseph and Katy Brown also presented a poster project in this conference titled "Parent Engagement: Moving Beyond participation through student leadership development".

OPPORTUNITIES

At the federal level, there are many more opportunities coming for adult education and community colleges to work in partnership with local Workforce Investment organizations to deliver targeted and comprehensive adult education services that directly relate to the workforce needs of the community. With a new PCC Chancellor at the helm who champions the role that Adult Education plays in college and career readiness, PCCAE is poised to lead the state in preparing a workforce that is skilled, educated, and 21st-century ready.

In another challenging year when adult education received essentially level funding with ever-increasing costs and ever-increasing demand, the support of Pima County has never been more greatly appreciated and more greatly needed. **Funding from Pima County has and continues to contribute to the overall success of PCCAE in achieving its mission.**

CHALLENGES

A long term solution for funding still needs to be developed to fund Adult Education and Family Literacy. The restoration of state funding is a temporary solution. The need continues to rise, and level funds cover fewer services, due to salary and benefit increases. Until Adult Education and Family Literacy are formula-funded in the state budget, these much-needed services remain in jeopardy.

Prioritizing services and programs continues to be difficult, but PCCAE remains the largest adult education program in Pima County and the second largest in the state. We have a pivotal role in the fact that Arizona Adult Education is fourth in the nation, in terms of education gains.

Expenditures from Pima County's Contribution

The funding that the county appropriates for adult education is essential to serving Pima county residents and will become even more important into the future. The investment that the county makes in adult education has made it possible to save vital services for students in our community.

The following expenditures were made from the Pima County Board of Supervisors FY 2012-2013 contribution of $250,000, a Pima Community College Professional Development contribution of $2,600 and the carryover of $38,839.91 from 2011-2012, for a total budget of $291,439.91:

2012-2013 Budget

Carryover from 2011-2012	**$38,839.91**
Total Pima County Contribution	**$250,000.00**
Pima Community College Professional Development Contribution	**$2,600.00**
Salaries for staff and instructors	$202,677.57
Employee-related expenses (benefits)	$68,664.33
Utilities (phones, Internet access, electricity, postage)	
Travel	$5,352.70
Contractual services (custodial)	
Lease costs for Eastside Learning Center	$1.00
Instructional and office supplies	$14,744.31
Total Expenditures	$291,439.91

Chairman KLINE. Thank you.

Dr. Pepicello, you are recognized for five minutes.

STATEMENT OF WILLIAM PEPICELLO, Ph.D., PRESIDENT, UNIVERSITY OF PHOENIX, TEMPE, ARIZONA

Dr. PEPICELLO. Chairman Kline, Representatives Salmon, Grijalva, and Rokita, I would like to thank you for the opportunity to testify on behalf of University of Phoenix and its parent company, the Apollo Education Group. I am honored to represent more than a million students, alumni, faculty, and employees.

With more than 40 years within the academic community, I can state unequivocally that the opportunities and challenges facing higher education have never been more glaring than today. Major economic forces are forcing change within all of higher education, a constant global regeneration of new information, and access to knowledge is forcing us to embrace lifelong learning. Completing a degree program is just the beginning for working Americans today.

The so-called traditional college student is no longer the majority of students. Nearly three-fourths of all undergraduates are considered non-traditional. The 18- to 24-year-old undergraduate who enrolls full time after finishing high school is the exception rather than the rule.

The nature of the workforce has dramatically changed as well. Competition for jobs at every level comes from all over the world. Accordingly, student expectations have changed dramatically. They expect us to offer a foundation that is rich in both academics and occupational skills, combined with an approach that is more pragmatic. Knowledge must be portable and cyclical at key intervals in career development.

Today's adult learners do not enroll in higher education to discover who they are. They pursue education to connect to a desired career. They seek access to an economy that will need 22 million new workers with postsecondary degrees by 2018. The traditional higher education model serves as the foundation for what is the greatest system in the world, but the longstanding process of educating only 10 to 20 percent of our nation at the college level and then relying on that small group to build our companies and create jobs is distant history.

We commend the president for pushing for greater investment and achievement in higher education. Unfortunately, many of the policies focus on the traditional model as the primary means of this educational delivery. Relying solely on this model could hundreds of billions of dollars in public investment, a significant amount made all the more significant by the trend of declining investment from the public sector.

Our founder, Dr. John Sperling, believed that the private sector had much to offer. In fact, many of the techniques first pioneered by University of Phoenix are now considered beset practice by the larger educational community. We believe that our 845,000 alumni are living proof of the important role in providing access to higher education for more Americans, and to help them develop the skills to achieve their professional goals.

Employers want their employees to develop competencies throughout their education journey and to demonstrate the value

in the marketplace before they graduate. Our programs are a direct response to those human capital needs. Our structure allows us to adapt quickly to the changing demands of our employer partners and our students. For example, we are increasing our use of full-time faculty for first-year courses, we are making improvements in our orientation programs for students, introducing more certificate programs, and expanding the use of adaptive learning. We invest millions each year in instructional and student advisory services. These investments provide a variety of pathways to support our students' career preparation, leveraging the latest technologies to provide education that connects more directly to graduates' employability.

Our Stackable Credits Programs enable students to get a certificate and earn a certificate prior to completing their degree. Students are more likely to realize earlier returns on their investments in this way, and we expect that they will graduate at higher rates, too.

All of this must be tied, however, to what students require as they evaluate their higher education options before they enroll. Students with career plans, financial plans, and support from employers are much more likely to succeed. Our Phoenix Career Services features a career guidance system to help prospective students make more informed decisions regarding their career path and their education opportunities. We are also helping prospective students understand tuition and fees for their entire degree program and to build a personal plan for how they will be able to pay for that education. Our adaptive learning technologies in math allow us to adjust to students' interactions and performance, anticipating what the types of content and resources they need will be as they progress.

While we continue to pursue innovation, the regulatory framework that governs our higher education system is somewhat antiquated, burdensome, costly, and often prevents robust innovation. The deeply flawed gainful employment regulations are just one example. Substantial revisions and enhancements to existing statutory and regulatory framework must be made by Congress in order to effectively measure the return on taxpayers' investments. And any accountability structure should be applied to all postsecondary institutions and for the benefit of all students.

In closing, there are many promising innovations taking route. Representative Salmon's bipartisan legislation on competency-based learning is an excellent example of the type of reforms that are needed as Congress moves forward to reauthorize the Higher Education Act of 1965.

I want to thank you once again for this opportunity to have testified. Thank you.

[The statement of Dr. Pepicello follows:]

Statement of

William J. Pepicello, Ph.D.

President, University of Phoenix

Before the

Committee on Education and the Workforce

United States House of Representatives

Reviving Our Economy: Supporting a 21st Century Workforce

March 20, 2014
Mesa, Arizona

Chairman Kline, Representative Salmon, Representative Grijalva thank you for the opportunity to testify on behalf of University of Phoenix and its parent company, Apollo Education Group. I am honored to represent more than 1 million students, alumni, faculty, and employees.

I preface my testimony by stating that my perspective about the rapidly changing landscape of higher education and the critical need to immediately rationalize the federal regulatory framework, innovate delivery by effectively personalizing learning and more closely aligning areas of study with the needs of the global economy, is informed by 40 years of continuous work inside the academic community. Upon completing a master's degree and doctorate from Brown University, and prior to my appointment as President of the University of Phoenix, I served as a professor, department chair, regional dean and president at University of Delaware, Temple University, National University and University of Sarasota, known today as Argosy University.

Now at the helm of University of Phoenix for the past 8 years I can state unequivocally that the opportunities and challenges facing higher education today have never been more glaring.

Outlined in two reports released by Apollo Education Group CEO Greg Cappelli (*"Empowering America: Reinventing Pathways to College and the Workforce"* -and- *"Education, Jobs and the American Dream: How We Got Here"*), the industrial-age institutions that make up the foundation of America's secondary and postsecondary educational systems have not changed substantially since the 1960s. Yet the American population, which is supposed to be served by these systems, has shifted dramatically. By the end of the 20th century, California, Hawaii, New Mexico, and the District of Columbia had majority "minority" populations. By 2020, eight more states are projected to join the list: Arizona, Florida, Georgia, Maryland, Mississippi, Nevada, New Jersey and New York.

Related evolutions have occurred in the college-going population. The so-called "traditional" college student is no longer the majority of students. According to the National Center on Education Statistics, 73 percent of all undergraduates are considered non-traditional, representing the newly "typical" undergraduate. The "traditional" undergraduate—characterized as one who earns a high school diploma, enrolls full time immediately after finishing high school, depends on parents for financial support, and either does not work during the school year or works part time—is the exception rather than the rule.

The nature of the workforce has dramatically changed as well. As recently as 1970, a high school diploma was sufficient for most jobs and less than 40 percent of the labor force had completed any education beyond 12th grade. Over the next 40 years, the U.S. and global economy began to need, indeed demand, a different range of skills and a higher level of education. Between 1970 and 2007, the share of middle class jobs held by high school-educated workers decreased sharply, from 46 percent to 31 percent.

Economic isolation, stagnating wages and the trend of wealthier families investing more time and resources on their children have fueled a rising educational disparity. Unsurprisingly, these

disparities have directly affected college achievement. In the early 1980's, there was a 30 percent point difference in the proportion of prosperous versus poor Americans who earned Bachelor's degrees. The gap today is about 45 percent.

Furthermore, there are 3.7 million job openings not being filled by U.S. companies today due to a skills shortage. Fifty-two percent of American companies have difficulty filling "mission critical" positions – with many jobs going unfilled for years. By 2018, 63 percent of the workforce will need some college and the current system will fall short of this demand.
In 2010, President Obama set a goal for the country, that by 2020, America would once again have the highest proportion of college graduates in the world. The President also challenged every American to commit to at least one year of higher education or postsecondary training.

We applaud and embrace these goals. As a nation, however, we cannot ignore the significant level of investment and commitment it will take to reach these milestones. Our population and workforce gained, on average, about a year's worth of education per decade from 1940 to 1980. This was a time when, as a nation, we were out educating the world. But between 1980 and 2010, the nation's educational attainment rate stalled to about a half a year per decade. As a result, American workforce is short more than 100 million years of education as a society. Each missing year is represented by a decision not to finish high school, not to enter college, not to stay in college, or a decision not to return to college. Our nation's "missing years" of education have cost U.S. GDP as much as $2.3 trillion, by one estimate, and continue to threaten America's ability to compete in a global economy. If we were to close the educational achievement gap from students from the poorest families, we would add $400 billion to $670 billion annually to U.S. GDP.

President Obama was correct when he said: "We know that education is everything to our children's future. We know that they will no longer just compete for good jobs with children from Indiana, but children from India and China and all over the world."

There are positive signs that key stakeholders are recognizing things must change. The traditional higher education model serves as the foundation for what is the greatest system in the world, but the longstanding process of educating only 10 to 20 percent of our nation at the college level – and then relying on that small group to build our companies and create our jobs – is distant history. Making up 100 million year deficit in workforce education appears to be a feat beyond reach. However, to put the challenge in perspective, it amounts to a single year of additional education attainment for each member of the current population ages 25 years and older. If each American found the time for one additional year of postsecondary education or training, the U.S. could largely offset four previous decades of slowing growth.

We commend the President for pushing for greater investment and achievement with support of new types of innovation, unfortunately, many of his Administration's policies focus on the traditional education establishment as the primary means of education delivery. Relying solely on the traditional model will cost more than $800 billion in public investment, a significant amount made all the more significant by the trend of declining investment from the public

sector. Innovation, rapid capacity growth and greater collaboration between public and private institutions and business are essential to once again lead the world in educational attainment.

University of Phoenix, Apollo Education Group, and its subsidiaries are committed to working with Congress, the White House, and all higher education stakeholders to build flexible pathways from education and training to the workforce and back again, leveraging successful education technologies, new education delivery mechanisms and other innovations so that postsecondary education connects to employability. Indeed, supporting a 21st century workforce is the best way to revive and grow our economy.

University of Phoenix

Innovation, affordable capacity expansion, collaboration between public and private institutions and working closely with business needs is at the heart of the University of Phoenix. Since its founding in 1976, University of Phoenix has been guided by a singular vision to provide education to those underserved by the traditional higher educational establishment. Our founder, Dr. John Sperling, believed that education was the only utilitarian means by which individuals could proactively improve their socio-economic means. Dr. Sperling, a Cambridge-educated economist, set out to create degree programs for working adults while teaching at San Jose State University. His challenge: to offer convenient class times at local campuses, and to teach adults in ways that complemented their professional lives. Interestingly, his effort to establish an effective way to serve non-traditional students was rebuffed by traditional academia, but today, University of Phoenix is one of the largest private universities in North America, offering undergraduate, graduate, and doctoral degree programs at more than 100 locations nationally, and online world-wide.

University of Phoenix and Apollo Education Group's approach to providing high quality, affordable education to those who desire it the most – those willing to put in the time and effort to be educated – is the foundational basis for all of the innovations and approaches that we have developed and refined over the past 40 years.

In fact, many of the techniques first pioneered by University of Phoenix are now considered best practice by the larger educational community in general, including the use of online and blended-modality instructional approaches, the use of e-books, the reliance on faculty practitioners with both advanced degrees and industry specific experience to provide practical learning to students and our utilization of small learning teams to promote learning among classmates.

University of Phoenix has based its mission on serving the underserved of higher education; as a result, we currently boast an incredibly diverse student population. Nearly 20 percent [19.45%] of our students are African American, compared to a national average of only 13 percent. Additionally, female students make up nearly 70 percent [66.45%] of the total enrollment at the University of Phoenix, compared to just over half of the overall enrollment in colleges and universities nationwide.

Today's students rely on us to provide them with state-of-the-art technology, hands-on education with real-world experience, and a genuinely innovative approach to learning. Together we have changed the very nature of higher education. Our 845,000 alumni are a true testament to our impact and our dedication.

Career Connected Education

University of Phoenix and Apollo Education Group understand that by 2018, the U.S. will need 22 million new workers with postsecondary degrees. Higher education—whether private, public, for-profit, nonprofit, two-year community colleges or four-year, degree-granting universities—all must address a singular crisis—namely, that the U.S. workforce is short more than 100 million years of education.

We are working vigorously to learn from the pioneering role we have played to transform educational delivery and connect education more directly with high growth jobs. Much of this innovation is coming in the form of online platforms and learning advances, where cloud-based systems, adaptive learning technologies, and data-driven student learning analytics are changing the way students learn—and recapturing those missing years of education.

We have learned it is vital to intently listen to the business community and our students and understand that as working adults they need to acquire tangible skills to compete and achieve success today. They want a more personalized way to learn that leads to a better career path—whether they enroll in degree, non-degree or certificate-based programs. Our mission is to combine our education and career enhancement tools with our students' talents so they can move forward in life. Everything we do is centered upon that mission. It starts with a commitment to offering differentiated, career connected education at University of Phoenix and all our schools. As we create bridges between education and careers, improving student completion and career outcomes is a paramount objective. We are working to achieve this by providing a variety of pathways to support our students' career preparation, leveraging the latest technologies, new delivery models, and other innovations to provide education and training that connects more directly to graduates' employability. We are constantly reassessing our offerings, eliminating programs that don't fit workforce needs, and establishing new programs tied to in-demand jobs. This includes helping our students build competencies throughout their education journey and demonstrating their value in the marketplace before degree completion.

This all supports our goal to provide an excellent academic experience for students that also supports employers in hiring qualified, engaged employees. We are broadening our relationships with more than 2,500 corporate partners, working directly with organizations such as Cisco, Microsoft, Adobe, NewellRubbermaid, Hitachi, Sodexo and the American Red Cross. By working directly with these partners and many others, we better understand what employers want so that we can tailor our academic programs to fit their requirements and help fill their critical employment needs.

Business leaders seek graduates who can help their companies thrive immediately, and our programs are a direct response to those human capital needs. To further deliver educational experiences that directly prepare students for their career field of choice, University of Phoenix is structurally realigning to focus on managing and operating its eight distinct colleges more individually to address the specific needs of the markets they each serve. With accountability for driving performance at the college and program level, our leaders are dedicated to academic quality, retention, leading product innovation, and creating an enhanced student experience within each college at the University of Phoenix.

The alignment by college is intended to improve student outcomes, since student retention and completion are our top priorities. We know that if students don't progress, if they don't complete their program and earn their degree, they likely will not achieve their career aspirations. To ensure that they do, we are redesigning our curricula, including modifying the structure of our entry courses and implementing improved support systems. We also are increasing our use of full-time faculty for first-year courses, making improvements in our orientation program, and expanding the use of adaptive learning. Significant change in retention and completion rates requires a long-term, sustained effort. We are completely committed to engaging and supporting our students throughout their progression to graduation, ensuring they have the support they need to succeed.

Innovative Student Support

We are aggressively pursuing targeted strategies within each program and modality to better serve our students and to meet the needs of our 2,500 business partners and the nation's workforce.

Working to ensure students have the support, guidance and tools needed to pick the right program and set the right career path, is a foundational focus for us. Students need to know if we are an appropriate educational match and what it will take to succeed. They need tools and guidance to make informed decisions by properly assessing their skills and interests and thoughtfully setting a course that includes a career plan and a financial plan.

One of University of Phoenix's transformative initiatives, which has generated similar efforts by other educational institutions, is our University Orientation program. University Orientation program is a three-week, non-credit-bearing, free orientation course required of prospective students who have had less than one year of college experience. We designed the program to help students understand fully the commitment necessary to complete a college degree while meeting family and professional obligations. The curriculum emphasizes time management, computer skills, financial literacy and responsible financing and prepares students for what they can expect in their coursework.

A comprehensive strategy at Western International University has also recently been launched, which involved changes to virtually every aspect of the university. At West, the academic and service models have been revamped to increase flexibility and offer students a more self-directed approach, and lowered tuition by half. The cost of traditional higher education is an

important topic, and Apollo Education Group is committed to delivering the best value proposition possible across all of its institutions and programs of study. West offers a unique entrance into the university with its new student Start Smart program, allowing a student to test drive online education and West by taking their first two credit-bearing courses for $200 each. These specific courses for all new students are not eligible for federal or state financial aid, but will apply to all West degrees (or other accredited university based on the acceptance of transfer credit) should the student continue on with the university as a degree-seeking student. An undergraduate student needs a 2.0 cumulative grade point average to enroll and a graduate needs 3.0 or better. Start Smart gives prospective students full transparency into the online academic experience as well as the commitment of time and money to ensure that a student can be successful at West.

Beyond ensuring the right students enroll and they understand the commitment it will take to graduate, *Phoenix Career Services* features a career guidance system to help prospective students and job seekers make more informed decisions regarding their career path and their education options. The system does this by helping them assess their interests and careers related to them as well as the demand for those careers in their market and the typical education and skills required by employers for those careers. The Phoenix Career Guidance System helps prospective students start developing their career plan even before they enroll, which they will continue to build upon once enrolled with additional career tools, resources, and services. A specialized military skills translator tool is also available for military service members and veterans, helping them to make the link between the skills they developed in the armed forces with job skills needed for civilian occupations.

Phoenix Career Services, which currently has more than 70,000 jobs posted in the system, also offers enrolled students additional tools and support to help them translate their education into their career of interest. A personalized Career Plan is created and mapped to the student's academic program. This plan provides job search actions that students conduct during their academic journey. The plan also includes four assessments (Competencies, Work Environment, Interests, and Reasoning Aptitude) that help students become more self-aware of their strengths and weaknesses and how these relate to their career goals. Resume development services are available to students and alumni as well as interview preparation services. A dynamic online source is available where students and alumni can access current career opportunities available with leading companies across the U.S. Also, career coaches are available to alumni, military students and students close to graduation with a need for more specialized assistance with their education and career journey.

In addition to offering students career services and education to help develop the skills and competencies required to pursue their desired career, we understand that a successful student experience must not only be about their academic commitment and career goals, but also a clear understanding of the financial investment they are making. All students have an opportunity to build out a personal financial plan detailing how they are going to pay for their entire degree program, not just for a course or semester.

The University of Phoenix Financial Plan is a comprehensive service designed to help prospective students estimate tuition and fees for their entire degree program and build a personal plan for how they will pay for it. With the goal of minimizing or eliminating loans, the Financial Plan displays the estimated monthly payment for any loans built into the plan, so that the student understands the implications of his or her borrowing prior to enrolling.

The Financial Plan has also been integrated directly into the University's curriculum to emphasize the critical decisions that are inherent in students' choices.

The ability to create individualized financial plans before applying to the University allows students to be fully aware of their potential future financial commitments and make more informed decisions as to whether attending University of Phoenix is the right choice, a process we believe is not common among other postsecondary institutions that normally only discuss or show costs for one year at a time.

To further assist prospective students, we have developed tools and resources that present to prospective students national average salary information alongside their expected future monthly payments. The combination of tools, resources and financial counselors allow students to identify possible employer discounts or tuition reimbursement programs. For example, if the employer is in the system—and we have relationships with more than 2,500 public and private employers— a discount will be modeled in the student's Financial Plan. This is important because we have found that students who enroll in a program while employed—and with support from their employer—graduate at higher rates and are less likely to default on future debt associated with the costs of education.

Universities cannot guarantee salary or career outcomes, just as they cannot prohibit students from borrowing more than they need based on statutorily set loan amounts prescribed in the law. Still, at University of Phoenix, we provide more localized salary data through the Phoenix Career Guidance System (CGS), a system we created that is not only a salary database, but a central portal containing job availability information in a student's geographic location with more than 70,000 jobs posted in the system.

Degree Programs With Certificate Options

One of the foundational components of the traditional higher education model that must change is the fact that a student enrolled in a degree program must wait the 2 or 4 or 6 years it takes to earn an Associate's, Bachelor's or Graduate degree. Students, particularly working adult students, should be better positioned to realize a return on their investment earlier. University of Phoenix is embracing this paradigm shift with new undergraduate programs that will allow students to receive stackable credits enabling students to get a certificate prior to completing their degree. Not only does the new academic format allow students earlier return on their investment, we believe that it may be an important factor in boosting retention by allowing students to take increased numbers of career-relevant courses up front in their programs and giving students a tangible University of Phoenix certificate that can help them market themselves to employers at an earlier stage on their journey towards graduation.

Providing flexible pathways to immediate skills and relevant degrees is a key way to respond to the dynamic needs of the business community. Another Apollo Education Group is subsidiary, Apollo Lightspeed, has built important online experiences led by some of the world's leading experts on business innovation. The newly launched *Balloon* initiative is another robust initiative designed to address the growing skills gap. *Balloon* is an online career skills and learning marketplace featuring many of the world's leading technology companies and education providers. *Balloon* seeks to address the growing gap between career-seekers' skills and employers' talent needs by helping users identify customized career paths, understand the knowledge and skills sought by employers along that path, and, then learn from the right courses to improve their chances in a competitive labor market. *Balloon's* initial focus is on providing a course and skills marketplace to support the $3 trillion global technology industry, with plans to expand into additional career fields. With a growing catalogue of more than 14,000 technology courses and training programs from a variety of education providers, and a database of more than 146,000 current and recent job listings, *Balloon* connects individuals seeking specific skills valued by leading technology companies to online learning offerings aimed at delivering those skills to learners. It includes online learning offerings from technology industry leaders – including Adobe, Amazon Web Services, EMC and Microsoft.

As Lightspeed's initial offering, *Innovator's Accelerator* allows business executives and managers to develop and apply innovation skills, encourage disruptive thinking, and create fresh ideas within their organizations. Since its launch in early 2013, business leaders from across many leading industries, including companies such as Cisco Systems and Kimberly-Clark, have signed on to accelerate innovation in their organizations with this tool.

Adaptive Learning

Career success is directly linked to educational success. Educational success is directly linked to retention and graduation. One of the key implications for retention and graduation is the level of remediation a student needs. Adaptive learning takes a data-driven approach to instruction and remediation, adjusting to a student's interactions and performance, anticipating what types of content and resources learners' need at a specific point in time to make progress. According to the Gates Foundation, rigorous adaptive learning solutions leverage various strands of academic research in areas such as intelligent tutoring systems, machine learning, knowledge space theory, memory, and cognitive load theory. Apollo Education Group subsidiary, Carnegie Learning, is a leader in adaptive learning and employs an approach acknowledged to be one of the most sophisticated tools in the space. Carnegie Learning uses a "cognitive tutor" model to break down mastery into component skills at a detailed level. Thoughtful integration into University of Phoenix math curriculum is well underway and work has begun on a grammar module since math and writing are two of the largest opportunities for retention improvement across most postsecondary institutions.

Early results of Carnegie Learning's cognitive tutor Adaptive Math Practice (AMP) technologies integration are encouraging. University of Phoenix conducted a large-scale controlled randomized study involving tens of thousands of general education mathematics students. As

compared to an industry-leading, non-adaptive math service previously licensed by the University of Phoenix, AMP produced major gains for students.

- Lower student course fail rates
- Higher end-of-course grades
- Better student retention, persistence and improved academic performance in subsequent mathematics courses

At current enrollment levels, more than 100,000 University of Phoenix students will use AMP each year, and with general education mathematics courses required to earn a degree, essentially all students will use this technology in their tenure at the university. AMP benefits students of all backgrounds, by adapting to individual student needs and responding with a truly unique learning experience.

Rationalized Framework

University of Phoenix and Apollo Education Group welcome the opportunity to engage in a balanced examination of the laws and regulations that govern our higher education system. Congress has a systematic process in place to perform oversight and make necessary adjustments to address the changing needs of today's students. Generally, this regular legislative and regulatory process works well when it is performed as Congress designed it, with higher education stakeholders working together to identify problems, make adjustments to the law and regulatory framework as necessary, and address the needs of students as those needs evolve and change.

At every opportunity we earnestly seek to work with Congress and the White House in a bipartisan, collaborative, transparent manner. However, the politically-charged environment over the past several years is hurting students. Hardworking students are having their degrees tarnished by vitriolic, indiscriminate attacks on one segment of the higher education system. The longstanding bipartisan support for critical higher education programs is being eroded by political gamesmanship. All postsecondary institutions must be accountable for the sizeable taxpayer investment made to make college affordable and accessible to all students no matter their socioeconomic status, age, or geographical location. The only way to accomplish this is by working together to put the interest of students first. Today's new traditional students, most of them working adults, must be afforded the respect they so rightfully deserve by policymakers, politicians and the educational establishment.

For example, University of Phoenix welcomes a meaningful and balanced debate over the Department of Education's gainful employment regulations. But that has not occurred. The process used to develop the proposed regulations, unfortunately, has been less than optimal and has produced a deeply flawed draft proposal that will hurt students and lead to other unintended consequences. We believe regardless of what is released by the Department of Education, substantial revisions and enhancements must be made by Congress to the existing statutory and regulatory framework in order to produce an effective measure of return on investment for all postsecondary institutions and all students.

We remain committed to working with the Congress, the Department of Education, and the White House to ensure the right protections are in place to protect the federal investment in higher education. We agree the significant investment this country makes in higher education must be protected and enhanced in order to serve the next generation of American students. The challenge facing us requires a comprehensive, collaborative approach or the educational achievement gap will grow and economic prosperity will decline for a growing proportion of Americans.

In closing, despite the political environment in Washington, DC, there are many exciting and promising innovations taking root throughout higher education. And leaders in Congress are working on important legislation to help clear the way for even more progress. Representative Salmon's bipartisan legislation on competency-based learning is an excellent example of the type of reforms that are needed as Congress moves forward to reauthorize the Higher Education Act of 1965. University of Phoenix and Apollo Education Group are eager to work with all Committee members and will continue to be at the forefront of adapting our programs to meet the needs of our students; helping to revive the economy through supporting the 21st century workforce.

Chairman KLINE. Thank you. Thank you all for excellent testimony, and we will move now to questions from the panel. I will start, and I will start with you, Dr. Pepicello, because you brought up the regulatory regime which is out there, and you mentioned gainful employment.

As you know, and I know you know this very well, the Department of Education just a week or so ago released a revised gainful employment regulation. How does this compare with the last iteration, and what is the impact on the University of Phoenix?

Dr. PEPICELLO. Well, the impact is probably not the major issue for us. We believe that the regulatory environment as it applies to higher education should be applied equitably and to all institutions of higher education.

The issues that are addressed in this gainful employment proposal as well as the earlier one are not issues that are isolated within the for-profit higher education community. And, in fact, gainful employment would have some effect on some of the community college programs that are offered. So our concern is that the focus may be too narrow, and we need to see how the implications of gainful employment and similar regulations would play out in the broader higher education community.

Mr. LAMBERT. May I add to that?

Chairman KLINE. Yes, you may.

Mr. LAMBERT. I support the notion of having an accountability system for our nation's community colleges. I think it is important that we be able to say back to the public, to all the folks who invest in us, and the students what the return is going to be. I support making sure they get livable wage jobs.

So in concept, I think it is a positive thing. Now, we need to look at the mechanics and what the actual impact is going to be. So I just want you to know that I am supportive of that, and also the AACC. We have developed a voluntary framework for accountability that we are really standing behind as an example of our commitment to that.

Chairman KLINE. Thank you. Ms. Barton, if I could, in your testimony, you talk about veterans' programs and recruiting. I would like you to take a minute and just kind of expand on that. What skills do veterans have already that you are looking at, and how do your programs help progress these skills towards the direction you want to go?

Ms. BARTON. So I would say that one of the most obvious skills are leadership skills. And so, when we are looking for veterans and looking to fill positions that require supervision of our employees, that would be an area where there is an abundance in skill.

The other piece would be that in an environment such as Intel that is so technology heavy, if you will, the veterans who leave the military with technical education and experience is critical because we, in fact, can hire directly from the military without any additional postsecondary education in many cases when we are looking for people to help us run our manufacturing floor.

And then, of course, we have ongoing training and development—as I mentioned, the program with Arizona CTI—to continue to develop those skills and capabilities whether it is technical, in engineering, or in management, like our MBA programs.

Chairman KLINE. Great. Thank you. Mr. Huemann, you talked about the Chandler Education Coalition, and I wrote down here I think you said there are over 30 or so members. Did I get that down right?

Mr. HEUMANN. We have 30 different organizations that are involved, bringing their leaders to the table. So that 30 multiplies down amongst their staffs and their groups.

Chairman KLINE. Well, what kind of decisions does this coalition make?

Mr. HEUMANN. A couple of things we are working on. This early literacy program we are working on, we feel it is so important for kids to be able to read when they get to kindergarten. And some of our socioeconomic areas that are more challenged, it is a struggle. We have kids coming to school, in some cases, 70, 80 percent of them are not ready for kindergarten.

So this program we are rolling out this fall, we will be able to go in and tackle getting kids to be able to read from birth to five. It is so important. We feel that the kids are not behind that way. You start out behind, and you have a challenging time through your whole schooling system, and it puts them behind all the way through school.

Chairman KLINE. So the members of this coalition, you get together and vote, or what is—

Mr. HEUMANN. We get together and work collaboratively. It is a public/private partnership. Intel is at the table with us. Many business organizations—our non-profits, our school districts, our private schools, as well, are part of this—to work together in a collaborative kind of effort. And we do vote on certain issues based on the topic.

Chairman KLINE. Okay. Thank you. Mr. Grijalva, you are recognized. The microphones are—

[Laughter.]

Mr. GRIJALVA. Mr. Lambert, Doctor, you mentioned the role of community colleges. In my opening statement, I talked about adult-based education, and that, what is it, 16, 17 percent of the 16 and above residents of our fine state are not graduating from high school. And the 18,000 people that are served in adult basic education kind of breaks out to heavy remediation, literacy, high school equivalency, and then postsecondary work as well.

A lot is said about students having to come in and do all this remediation before they can do something else. Adult basic education, like it or not, provides that safety net for a lot of students.

Respond as to how you have integrated that into the college. You have one of the largest, if not the largest, adult basic education programs in the state, and how you see that as part of this workplace model.

Mr. LAMBERT. So thank you, Representative Grijalva, for the question. So looking at the fact that 78 million baby boomers are going to retire, every single individual we have in our society who is eligible to work, we need to bring them in and train them properly. So we cannot afford to not keep a focus on training and preparing our adult learners who have not reached that GED and beyond place. So I think that is very critical, first step.

I think second step, is we have integrated our adult education program better into the fabric of our academic career programs. So the first step is to bring them closer into what we are going to start calling—I am losing the train of thought here. We are going to integrate the learning into a contextualized environment so that when the student comes in, if she or he wants to be an aviation technology mechanic, that is what you are, and we are creating an on-ramp through an IBES type program that gets you there. And adult education feeds through that funnel, if you will, to that pathway. So that is an example, I think, of getting to a better success for those students. And as you know, Pima Community College is delivering one of the finest adult basic education programs in the country.

Mr. GRIJALVA. The point, and you made it, is it is not just intervention. There is a follow up.

Mr. LAMBERT. There has got to be a pathway. There has got to be a pathway.

Mr. GRIJALVA. Ms. Barton, I mentioned also what I see as essential down the road, a lot of lip service to the concept, but not context to it, and that is that whole private/public collaboration toward identifying what workforce needs are going to be and aligning the education. Legislatively, how do we make that not an option, but more of a reality?

Ms. BARTON. I am not sure that you need to legislate that, and I think that perhaps today more than ever before, the business and education partnerships are much more evident, certainly here in the state of Arizona. Both in the policy arena, how we have had tremendous collaboration in that area, but also in the program area. So I am not sure that is legislative.

I think there is a natural desire between business and education. We see that this is about innovation, economic development, and personal prosperity.

Mr. GRIJALVA. I agree with you. I think the involvement of the business community is essential. I was disappointed when we had a proposition initiative to raise the amount of funding for school children in our public schools—I believe we are 49th in the country—that there was active opposition on the part of the business community to that initiative, including billionaires from outside the state that funded the effort to undo that.

I say that because there is also a resource question. Sometimes education is idea rich and resource poor. We all have great ideas, but we can never implement them because you need something. But it is more of a commentary than a question.

Doctor, with regards to the for-profit, you know, for-profit colleges educate 13 percent of the students in this nation, utilizing about 25 percent plus of all the federal aid, whether it is Pell, secured loans, et cetera, and are responsible for about half of the defaults in terms of the loans.

I mention that because that was the genesis to begin this gainful employment rule. And I agree with you, there are some problems with that rule. I think it is too soft on the career requirements in terms of what gainful employment is, and I think it is too hard on other programs that are low cost in which there is no real borrowing going on in the for-profit sector.

I mention that because one of the gainful employment programs that the Department of Education looked at, 72 percent of the people leaving that program had a debt. And if they did enough work, they ended up making less than a person that had dropped out of high school. I do not think that is the income of a good career education.

Chairman KLINE. The gentleman's time has expired.

Mr. GRIJALVA. [Off audio.]

Chairman KLINE. I know you were.

[Laughter.]

Chairman KLINE. Mr. Salmon, you are recognized.

Mr. SALMON. Thank you, Mr. Chairman. Before I ask a question, I would like to actually recognize somebody that is here that has been a tireless advocate of education across the spectrum in Arizona, and somebody I deeply admire, Dr. Carolyn Warner. Please recognize her.

[Applause.]

Mr. SALMON. Thanks for being here. My first question is for you, Ms. Barton. And it is regarding the strong encouragement from the technology industry to increase the number of H1B visas in the country, which I do support. I think we have got to meet the demands and be competitive on a global market, so I think it is a good request. But it is a Band-Aid for a deeper problem, and that is that we are not producing the kinds of people that could be employed in the high tech realm where those needs are. What do we need to do to fix that?

Ms. BARTON. Thank you for the question and the opportunity. First of all, I think it is a both/and solution. I do not think that we are ever going to not want to hire the best and brightest from around the world.

Mr. SALMON. Of course.

Ms. BARTON. So thank you for continuing to work on that for us. I think the other piece is the increased focus on the college and career ready standards which ensure that all kids will graduate high school with the broadest range of choices and be able to pursue areas in the technology areas, like STEM.

I was just talking with someone yesterday at a tribal leaders' conference on education. And she said to me, I was with eight students who had made it from tribal communities to Arizona State University, and seven of them said they were not prepared. The school prepared them to get there, but not prepared to succeed. So I think the preparation in K–12 is critically important.

And then I think there are some incredibly innovative programs in STEM education which get at something that really is important to students, and that is they want to do something that matters and makes a difference. So getting at programs like the engineering projects and community service that we do with Arizona State University and the University of Arizona gives kids a chance to apply engineering principles, solve real world problems that are identified by community-based organization. So it is kind of STEM social innovation, social entrepreneurship, and transformation.

Mr. SALMON. I saw a statistic that frightened me, and hopefully one of you will correct me if it is inaccurate. But any comments from anybody on the panel that internationally we rank 24th in the

number of baccalaureate degrees in STEM. And as the only world super power, that is not acceptable. Any thoughts on that? Anybody on the panel?

Dr. PEPICELLO. Well, I think it goes beyond that, Representative Salmon. It is not just our production of STEM degrees, but it is making sure that those degrees are in areas where they are needed. One the things that goes to the partnerships that the University of Phoenix has been very active in is going to employers.

We have 2,500 partners nationwide, and the way we are developing our curriculum, including forays into STEM, is to go to the employers and ask them how it can be that there are so many job openings in the country and we still have unemployment. And they told us, as you just said, that we are not producing what it is that employers are looking for. So we are working hand in hand, not taking education to careers, but working it backwards, starting with the careers and building our education programs based on that.

Mr. LAMBERT. I think it is also important, Representative Salmon, that we not lose perspective, that STEM is not just at the baccalaureate level, but it is at the sub-baccalaureate level.

Mr. SALMON. Great point.

Mr. LAMBERT. And as the Brookings Institute report revealed, that almost half of that is at the sub-baccalaureate level where our nation's community colleges fill that spot.

With that said, I think we have got to do a better job of getting our young folks to understand that these are important pathways. And they have to start to be engaged at probably late elementary into middle school. And I do not think we are doing enough at that level to create that interest and see that these are great opportunities, not only at the baccalaureate level, but at the sub-baccalaureate level.

Mr. SALMON. Thank you. Dr. Pepicello, my esteemed colleague made some comments about the proposed rule last week, and I just thought you might want to respond.

Dr. PEPICELLO. Well, you know, I think that the basic issues here are those of transparency and accountability, and that if students understand when they come to an institution what the job possibilities are, what they can expect in ways of return on that investment, that students are by and large capable of making those kinds of judgments without having a regulatory imposition there. So I think it is both making students aware of what their responsibility will be if they go down a certain path, and then having institutions be not just transparent, but accountable for making sure that students have that information.

Chairman KLINE. The gentleman's time has expired.

Mr. SALMON. Thank you.

Chairman KLINE. The gentleman's time has expired. Mr. Rokita?

Mr. ROKITA. I thank the chair, and good morning to the witnesses. Thank you for your testimony. I thank my friend, Matt Salmon, for organizing us today. I know Matt to be direct and honest, but, most importantly, he wears Arizona on his shirtsleeves. So I think he does a great job for the state.

I also want to say that even though I am from Indiana, I happen to know and have a friendship with your governor back when we

were both secretaries of state, and also your current secretary of state. I know Jan and Ken, like Matt, to be very honest, very direct. And without knowing or getting into the specific policy issues that you all have to deal with as Arizonans, I know that honesty and forthrightness is a rarity and a prize in our business sometimes. And I just think you are well represented in all those regards.

I have been in Arizona a few days now, and it is certainly not my first trip. I like to think I am more than a tourist. Half my mother's family, in the 1950s, I believe, migrated to Arizona from Indiana. And I remember black and white super eight reels that my grandfather's brother showed me, and because they are in black and white you would think he was filming the surface of the moon until Camelback Mountain came into the viewfinder. So I also feel like I have grown up a lot with this area. Ever since 1974 we have been spending our Christmases here, so like many of you, I do not know snow at Christmas.

And so, it is just with a great deal of pride that I spent the last 2 days at tribal communities learning a lot about the educational challenges and some of the breakthroughs, and what self-determination and what "hand up" versus "hand out" can do for communities. I spent some time at Great Hearts, a public charter school management organization, and learned a lot about what they are doing, similar to what we are doing in Indiana.

I went to the Scottsdale Airport where a lot of aviation leaders got together. And aside from literally begging me to help get the federal government's boot off the neck of that industry, they were telling me how much they needed air frame and power plant mechanics, how much they needed aviators. Then I went to the Rodel Foundation where I visited with your former CEO and many other community and philanthropic leaders, Ms. Barton, to learn what they are doing and how they are taking the bull by the horns, not waiting for any government program or anything else.

And by the way, this does not just happen in Arizona. I think for the first time in perhaps American history, I am seeing more private individuals of all political stripes—Republican, Democrat, liberal, conservative—come together to tackle this education issue that you so eloquently described today. So thank you for your leadership as well.

In that regard, one thing that continues to percolate as I have these meetings and hear your testimony, in the back of my mind is still if we are going to be a free society, if we are going to enjoy what I believe to be a unique American exceptionalism, and if we are going to continue to be a nation of self-governance, I need, we need, engaged citizens. We do not need automatons.

And so, talk to me about what, even though you are going to, for example, Dr. Pepicello, take the career and back up from that, how you are going to give me an engaged citizenry through what would be one career-oriented instruction when we also know that the career that is needed or that the education for a career that is needed today might very well change, and probably will very well change, next year. And how do I have people that have learned how to learn so that they can transition easier?

Ms. Barton, you first.

Ms. BARTON. Thank you, Mr. Rokita. I think that the college and career ready standards that teach students critical thinking, problem solving, communication, and collaboration skills, as well as a deeper understanding in math and English language arts, is part of ensuring that we are teaching children how to learn.

Mr. ROKITA. So you need a commitment to that as well at Intel. You need someone ready to do that.

Ms. BARTON. We are doing that, and we are a very strong advocate of that. I think there is another really important piece, though, and that is in that kind of education that is very student centered, there is an opportunity starting at kindergarten all the way through university and everywhere in between to make sure that we have got students engaged in problem solving and projects that matter to their communities and they see the real world application of their education.

It also starts to develop them and have them see themselves as having a place in their communities, and this is important in the leadership piece as well.

Mr. ROKITA. Thank you. And that is not just found in the military. Mr. Pepicello?

Chairman KLINE. The gentleman's time has expired. Actually I know this trick very well. You talk up until there are two seconds left.

We are not going to have another round of questions for this panel because we have another panel coming. So I want to thank the witnesses for excellent testimony, and engagement, and the questions and answers. I appreciate it very much. You all can stand down if you will, and we will bring the next panel up.

I see the second panel is now seated. It is now my pleasure to introduce our distinguished second panel of witnesses.

Dr. Michael Crow has served as the president of Arizona State University since 2002. Is there going to be sort of a war or something going here? I am not sure.

[Laughter.]

Chairman KLINE. During his tenure at ASU, he has established major trends, disciplinary research initiatives, and witnessed an unprecedented academic infrastructure expansion, tripled research expenditures, and attainment of record levels of diversity.

Dr. Ann Weaver Hart is currently serving in her second year as president of the University of Arizona. During her first at the UA, Dr. Hart successfully led a process to create an integrated strategic plan for the university's academic and financial future.

Dr. Ernest Lara has served as the president of Estrella Mountain Community College since 2007. He has previously held faculty and leadership positions at ASU and three of the Maricopa Community Colleges.

And Dr. Christy Farley serves as the vice president of government affairs and business partnerships at Northern Arizona University. Prior to joining NAU in 2004, Ms. Farley served as executive director of the Arizona State Board of Education.

I think you have all been in here at some point previously, but just a reminder, this little box here is controlling our lives for a while. When you start your testimony, the light will turn green. After four minutes, it will turn yellow, and after five minutes it

will turn red, and I would ask you please to wrap up your testimony. Then as you saw, when we ask questions, we stay mostly within that five-minute window as well so that everybody has a chance to ask questions and we can get everybody involved.

So we are ready to go. I would now like to recognize Dr. Crow for five minutes.

STATEMENT OF MICHAEL CROW, PH.D., PRESIDENT, ARIZONA STATE UNIVERSITY, TEMPE, ARIZONA

Dr. CROW. Mr. Chairman and Representative Salmon, members of the committee, it really is an honor to be here this morning and have an opportunity to give you a few minutes of our thinking about your objective, which is reviving our economy for the 21st century workforce. The name of your committee captures the central crux of the matter, which is the correlation between education and the workforce, something which has often been overlooked or set as a secondary objective, I think, for many universities.

And so, looking at our university, Arizona State University, here in metropolitan Phoenix, we asked the question, "How can we connect to business to address their workforce needs?" And the most fundamental thing that we have focused on is actually reconceptualizing the purpose of the university itself away from an isolated ivory tower-laden institution to a frontline institution. The movement of the university to the frontline is both a conceptual and a practical exercise that we have been involved with heavily over the last 12 years. It focused on resetting the vision of the institution.

One part of that vision for our institution is taking responsibility for the outcome of the social, economic, educational, health, and well-being outcomes of our community. Many universities do not take that on as a responsibility. We do. For us, that has also meant setting new aspirations, design aspirations, for our institution, focusing on use-inspired scholarship, focusing on the university as an entrepreneur, valuing place; that is, embedding ourselves deeply into the local innovation ecosystem, into the local economic ecosystem, if you will, in ways in which it has altered everything that we do.

For us, this has meant working in new ways on every level. It means embedding entrepreneurship as a curricular element into all of our colleges, not just our business and engineering college. It has meant for us the establishment of a unit focused on what we call economic affairs, which is working hand in glove with both companies that we are attempting to retain in Arizona and in the United States and companies that we are attempting to grow and nurture, and companies that we are attempting to recruit. And so, these are new ways for us interact, new ways for us to engage.

We have also become engaged in the development of a new concept called i-projects where local companies—some of them you heard about from the City of Chandler this morning and elsewhere in metropolitan Phoenix and around Arizona and around the United States—come to us with their problem or their project. Students and faculty work together on this project or this problem. Then the company is able to watch these students engage in this project, and often then employs these students after their opportunity to solve the specific problem.

A little side bar about that is that one of the things that we have realized is that the up and coming workforce—I am not a big believer in all of the negative things that people talk about. I tend to focus on the unbelievable positive momentum this country has, the unbelievable potential that our young people have. And the one thing that we have realized in the design of our university is that we have kept it too walled, too separate, too disengaged.

So we have worked really hard to break those walls down so that companies and their problems are embedded in our pedagogical and educational activities so that the educational experience is leading directly to, in a sense, what we heard earlier from Representative Rokita, this notion of the individual that can be engaged in an educational experience where they can learn to learn anything, and also be prepared for the workforce. And so, for us it is taking on these two things together and restructuring our identity, restructuring how we work, how we are organized, how we teach our classes, how we instill entrepreneurial spirit into our students and so forth.

Relative to the university as a partner, this is really where the breaking down of the walls around the ivory tower are most important. Intel, as an example, you heard earlier from Cathleen at Intel, how we are working with Intel, but it goes even deeper than that. We are a provider of human capital, knowledge capital, ideas, solutions, mechanisms for change, catalysts for change.

And so, what we do is we work in sort of a comprehensive way, sitting with a company like Intel, and I can give you the list of dozens, if not scores, of other companies that we are working with in this way and saying, "what is it that you need from us as a partner?" You need individuals who are educated across three subjects, not just trained for a specific job. You need individuals who have capacity to operate on a global basis, the capacity to work in ways in which they are not just an engineer, but they are working on other kinds of complex problems at the same time, so we worked on that.

To Representative Salmon's point on STEM education, let me just give you a context of how we have worked. In the last 10 years, we have been able to double the number of graduates graduating from this institution from around 9,000 to almost 19,000. We have been able to quadruple the level of research, and our faculty is the same size. We have been able to do that as a function of making that our objective. We have been able to do that as a function of breaking down the walls. We have been able to do that as a function of finding new ways to link with the economic success of this community.

One part of that obviously is STEM, so when you read the national publications that no one is interested in STEM education, I do not know where they are visiting. They must be visiting somewhere other than Arizona. So we have seen a massive increase in STEM educational activities at our institution, more than double the number of majors. For our incoming freshman class, of the ten leading majors, seven are STEM majors.

And so, we have seen unprecedented increases of minority students, young women going into the STEM education fields. This has come about as a result, however, not of just saying that we

wish it was so. It has come about as a function of the fact that we put a mirror on ourselves, changed our identity, changed how we do things, and then changed everything along the way.

And just very quickly, two things as recommendations for the committee to consider: one, find innovative institutions and find ways to rally around them. Everyone is trying to change the entire system. That will not work. Second, hold universities accountable for all of their products—private universities, public universities, for-profit universities, all of them—who they graduate, how they graduate, how they are employed, what their debt is, how they work in the economy. Hold everybody accountable. Everybody.

[The statement of Dr. Crow follows:]

Reviving our Economy: Supporting a 21st Century Workforce

Testimony of Michael M. Crow

President, Arizona State University

Hearing before the Committee on Education and the Workforce

United States House of Representatives

ASU Polytechnic Campus

March 20, 2014, 9:00 - 11:30 AM

Thank you, Chairman Kline and Members of the Committee. I am honored to share with you my perspective on the importance of the role of higher education in developing the workforce of the twenty-first century. Our nation's research universities produce the broadly educated graduates who serve as the workforce for the twenty-first century economy as well as the ideas and technologies that create entire new industries. These institutions produce graduates with entrepreneurial perspective and a mastery of specialized cutting-edge skills requisite for success in the contemporary workplace; new knowledge to drive scientific discovery, technological invention, and understanding in all fields to guide us forward; cutting-edge ideas, products, and processes that move discovery into the marketplace, spurring both the personal success of graduates and national economic competitiveness.

As president of Arizona State University, I have led an institutional reconceptualization that among its other objectives prioritizes the expansion of broad accessibility to world-class academic excellence as a primary mechanism for both individual success and workforce development. During the past decade Arizona State University has undertaken a comprehensive institutional reconceptualization that represents an effort to reframe a large public university as the foundational model for a New American University, which is predicated not only on academic excellence but also inclusiveness to a broad demographic as well as maximum societal impact. In the global knowledge economy of the twenty-first century,

access to cutting-edge knowledge is requisite to the formation of a competitive workforce. Our success in establishing a prototype for an institutional platform capable of bringing competitiveness to the workforce must be understood in this broader context.

Arizona State University has successfully addressed challenges facing other large public universities and thus may serve as a case study relevant to other institutions. The motivations that impelled ASU to seek reconceptualization were various and interrelated. Rather than rely on historical models, ASU initiated an institutional design process undertaken to transform the institution as well as to establish a new model for the American research university. In response to the unprecedented transformation of the regional demographic profile and limited higher education infrastructure in one of the fastest-growing states in the nation, ASU sought to expand enrollment capacity, promote diversity, and provide access to world-class research and scholarship to a heterogeneous student body that includes a significant proportion of students from socioeconomically disadvantaged and underrepresented backgrounds, including first-generation college applicants. Associated challenges that motivated the establishment of a new institutional platform included an underperforming pre-K–12 educational system; limited public and private support for the university, including declining state government investment when measured on a per-student basis; and the need for research-driven, knowledge-based economic development in an economy insufficiently diversified to accommodate population expansion.

Arizona State University is the nation's youngest major research institution and largest university governed by a single administration. In response to enrollment demand, during the past decade ASU has increased enrollment by more than 33 percent and diversified its student body and faculty while simultaneously promoting new standards of academic excellence. ASU reached a record enrollment of 76,771 undergraduate, graduate, and professional students in

fall semester 2013. This represents a 33.4 percent increase over the 57,543 students enrolled for fall semester 2003. ASU has made remarkable progress in the academic profile and diversity of its student body. While the freshman class has increased in size by 42 percent since 2002, for example, enrollment of students of color has increased by more than 100 percent, and from academic year 2003 through 2011 the enrollment of low-income Arizona freshmen increased 647 percent.

ASU is committed to offering admission to all qualified Arizona residents regardless of financial means. In FY 2013, ASU awarded a record $1 billion in all forms of financial aid to 66,551 students. Of that total, $414 million was awarded in the form of scholarships and grants to 51,920 students. Total financial aid for undergraduate students grew from $195 million in FY 2002 to $773 million in FY 2013. The number of undergraduate students receiving financial aid grew from 25,594 in FY 2002 to 54,608 in FY 2012, a 113 percent increase. Pell grant recipients at ASU have grown from 10,344 during the 2002-2003 academic year to 26,074 in 2011-2012. These awards provide need-based grants to low-income undergraduate and certain post-baccalaureate students to promote access to postsecondary education. First-time freshman Pell grant recipients increased 205 percent from FY2003 to FY2011, from 1,209 to 3,688 students. In FY 2013, 78 percent of ASU undergraduate students received financial aid. The average student financial aid package for full-time Arizona resident undergraduate students with need was $11,849. According to the College Board, average indebtedness of ASU undergraduates continues to be below the national average for public universities, which for the academic year 2011-2012 was estimated to be $25,000.

ASU has attained international recognition as a major research university even while advancing an institutional commitment to accessibility and diversity. The research-intensive milieu of such an institution enhances undergraduate and graduate instruction, driven by the

interaction of students with faculty at the cutting edge of discovery in their fields and the exposure of undergraduates to personal research opportunities. Integrated university-based research, development, and education fuels our national economic competitiveness. At ASU, an ambitious expansion of the research enterprise has quadrupled expenditures during the past decade. ASU advances critical national research and has attained international prominence in such areas as earth and space science, renewable energy, advanced materials, microelectronics, healthcare, national security, sustainable development, and urban systems design. Major interdisciplinary research initiatives of strategic national interest such as the Biodesign Institute and Global Institute of Sustainability (GIOS) complement more than a dozen new transdisciplinary schools. To take but one example from our science and technology portfolio, our LightWorks initiative represents a multidisciplinary effort to advance solar-based energy, leveraging signature research in artificial photosynthesis, biofuels, and next-generation photovoltaics to lay the intellectual and technical foundations for a light-driven economy. In terms of levels of competitive funding, ASU now ranks among the top 20 universities in the nation without a medical school, according to the National Science Foundation.

In an era when learning has become the single most critical adaptive function for individual success, ASU is redefining the public research university as an egalitarian institution focused on improved educational outcomes, the needs of the workforce, and providing solutions to the challenges that confront Arizona. The challenges confronting higher education in Arizona informed the resolve to match academic excellence with broad access, promote diversity, and meet the special needs of underserved populations. And while the overarching institutional commitment remains to provide the best possible education for the students of Arizona, ASU represents a new paradigm for the solution-focused research university of the

future. ASU is determined to be of ever-greater service to our nation and the world, and to mount responses commensurate with the scale and complexity of the challenges that confront the global community. The indicators delineated in the attached compendium of university achievements (FY 2003 through FY 2013) demonstrate the success of the institutional transformation of Arizona State University.

Statements specific to university-industry collaboration, entrepreneurship, engagement and innovation.

Over the past ten years, Arizona State University has completely redesigned itself to embrace entrepreneurship, innovation and engagement in ways previously unrealized in American higher education. Our experiments in institutional design have proven successful thanks to a host of factors, not least among which is the wisdom of the ideas upon which they are founded. For example, Austro-Hungarian-American economist Joseph Schumpeter proposed ideas about economics and capitalism that stood at odds with prevailing views of his time. These included extensive thoughts on the nature of innovation. He considered not only new products, but also new methods of production, new markets, new sources of supply, and new organizations of industry as meaningful innovative activities. The agents of these innovative activities, he argued, were entrepreneurs. Schumpeter stated that entrepreneurs are motivated by a variety of factors, including "the will to conquer…to prove oneself superior to others" and the "joy of creating…of getting things done."

The implications of Schumpeter's views for universities are twofold. First, universities should promote economic growth by continually generating new streams of knowledge. At ASU, we view this as an imperative for anxious engagement in use-inspired research. Second, according to Schumpeter, universities must bridge the gap between knowledge production and the agents of economic growth—entrepreneurs—to catalyze innovations. At ASU, we recognize that innovations are diverse and can emerge from any corner of the university knowledge enterprise. Accordingly, we have advanced our efforts in entrepreneurship, innovation and engagement along the following "design aspirations."

The first design aspiration is to engage as many people as possible in entrepreneurship. Despite the strong national attention given to engineering and computer science-based innovation and entrepreneurship, we strongly believe that students in all disciplines have meaningful entrepreneurial ideas. As such, we offer entrepreneurial education and opportunities to all students in all programs and at all levels across the university. We are reaching out to diverse groups by highlighting the diverse forms of entrepreneurship, from traditional startups to impactful social innovations to intrapreneurship, and offering them resources to advance their ideas.

The second design aspiration is to leverage underutilized resources. A student body, the broader university that supports it, and the regional economy that surrounds it have tremendous endowments of physical, intellectual and human resources, much of which sit idle or unused. At every opportunity, we have sought ways to connect and network these underutilized resources, which can take the form of empty classroom spaces available to be converted to co-working spaces, local altruistic business leaders who would like to mentor startups, or allied organizations operating similar programs that can be further aligned for

greater impact. By linking these existing resources, we are working to unlock the true generative potential of Arizona at minimal cost to students and taxpayers.

The third design aspiration is to move as much intellectual property out of the university as possible. The federal government invests over $1 billion in Arizona research universities, who in turn generate almost 600 patents and technologies and launch about 20 start-up per year—a level of performance that exceeds many of our peers but remains insufficient from my perspective. We are taking a new approach, one of maximizing deal flow rather than university profit. It is our intention to transfer intellectual property from the university out to entrepreneurs and into the business community at unprecedented speed and volume.

The forth design aspiration is to constantly embrace new approaches. It is true that most research class universities have entrepreneurship and technology transfer enterprises. However, it is also true that there is little diversity in their functional forms despite widespread diversity in the economies and communities in which they are situated. We reject these standard models in favor of more responsive and adaptive emergent models. We view new, untested approaches as incredible opportunities to explore rather than avoid. At the same time, we are swift to identify and jettison or retool ineffective programs. It is my view that this way of thinking should be embraced widely.

The establishment and expansion of the Entrepreneurship and Innovation (E&I) office at ASU is one important manifestation of these design aspirations. The E&I office is located at SkySong, ASU's 42-acre multipurpose innovation park in Scottsdale. Its activities revolve around helping students and staff across the university as well as the broader community to grow ideas, launch ventures, find resources, and build a community of innovation. The E&I

office launches, leads and supports many initiatives to advance ASU's entrepreneurship design aspirations.

The E&I office launched the Alexandria Coworking Network in partnership with public libraries in the cities of Scottsdale, Mesa, Phoenix and Glendale. The Alexandria collaboration spaces in each of these libraries are designed for local entrepreneurs, innovators, meet-up groups, inventors and others to network, connect, seek advice, meet potential team members, and work on their entrepreneurial ideas. ASU offers practical information to support venture development and growth through teaching modules and mentors. Local library staff, who go through specialized training at ASU, act as champions by offering information resources to their community of innovators. We expect to have six coworking spaces online by summer 2014 and we are exploring collaborations with other municipalities beyond the Phoenix metro region to build the southwestern regional entrepreneurial ecosystem.

We created numerous competitions to appeal to the spectrum of student and faculty-lead ventures. One such competition, the Innovation Challenge, provides opportunities for teams of undergraduate or graduate students to win up to $10,000 to advance an innovative project, prototype, venture or community partnership that positively impacts local or global communities.

We also work at a broader scale with less developed venture ideas. For example, we developed the 10,000 Solutions internet platform to allow anyone to submit, view, react and act on ideas for advancing education, technology, community building, sustainability, economic wellbeing, health, human rights, and discovery.

We designed and launched the Arizona Furnace Technology Transfer Accelerator as one solution to address the glut of unused patents and technologies developed by universities. This program is led by ASU but involves universities across the state. Furnace takes unencumbered

intellectual property held by university technology transfer offices and develops it through a proprietary process. This process identifies exploitable ideas, recasts them in simple and accessible language and places them on a purpose-built social networking website in which participants can find promising ideas and form teams to exploit them. Teams, which are largely composed of individuals from outside the university, advance proposals to utilize specific technologies of interest to them. Winning teams receive the right to use the specific intellectual property as well $25,000 for start-ups costs, free office space and mentoring services for ten months. The university technology transfer office may take an equity stake in the startup in exchange for the intellectual property. We are proud to report that the model, which is financially supported by the Arizona Commerce Authority and BioAccel, has attracted worldwide attention and that ASU was awarded a Department of Defense grant to adapt and extend the Furnace methodology to three Department of Defense labs.

ASU in partnership with the City of Chandler and TechShop—a membership-based organization that provides the public with sophisticated tools, equipment, training and access to a community of creative people—created the ASU Chandler Innovation Center in downtown Chandler. ASU uses the facility, which is owned by the City of Chandler, to offer a variety of courses in engineering, computing, entrepreneurship and product development for traditional and non-degree seeking students. Meanwhile, TechShop operates its TechShop Chandler program in the facility. This spring semester 300 students, faculty and staff have the opportunity to leverage a TechShop membership to prototype their ideas and create new products.

The campus we meet at today is home to Startup Village, a residential community open to ASU students of all majors who wish to live and work in a unique environment that promotes their startups' success. Startup Village meets the needs of student entrepreneurs by

providing living arrangements that promote collaboration, ideation and around-the-clock access to the human capital of fellow student entrepreneurs.

To accelerate our own technology transfer, we launched the Rapid Startup School, which is aimed at Postdoctoral researchers, graduate school students, junior faculty, and alumni. This program creates an excitement and knowledge base around entrepreneurship at the university by offering a series of applied and practical mini-modules taught by successful entrepreneurs and investors from external organizations at the ASU campus and Alexandria locations. Specific learning outcomes include an orientation to practical entrepreneurship and training in business finance, IP issues facing new ventures and product and market feasibility. The program includes networking sessions throughout and concludes with one-on-one counseling on team creation and product development. Since 2011, the Rapid Startup School has offered 105 classes across 11 programs and engaged 1,166 attendees.

We have enjoyed great success in our efforts to stimulate entrepreneurship and innovation among our students and local community. Since 2011, ASU has helped to support over 83 student startups with just $824,000 in seed funding. These student-led companies have attracted $2,038,750 in additional seed funding from outside ASU. Over 90% of these companies are still in existence and they currently employ 78 people. Twenty-six are currently in revenue. Students in these ventures have filed for 18 patents to protect intellectual property associated with their start-ups.

Our external startups headed by non-students (but supported by ASU staff) have also enjoyed incredible success. Since 2011, we have supported 25 startups with $250,000 in seed funding. These startups have leveraged our support to raise $3,260,480 in additional funding. Eighty four percent of our external startups are still alive today and they currently employ 20 employees.

Although we diffuse entrepreneurship throughout the entire university structure, we still have discrete degree programs, certificates and classes for those who want focused instruction. The WP Carey School of Business offers a Bachelor's of Science degree in Business Entrepreneurship; the Ira A. Fulton Schools of Engineering offers a Bachelor's of Science degrees in Technological Entrepreneurship and Management; and the Herbeger Institute for Design and the Arts offers a Bachelor's of Arts degree in Digital Culture with a concentration in Technological Entrepreneurship. ASU also has eight graduate degree programs that heavily feature entrepreneurship as part of the curriculum and we have a university-wide undergraduate certificate in Entrepreneurship that is accessible to any student in any major.

ASU has launched significant efforts in the area of traditional workforce development to affect local economic development outcomes. These efforts fall under the categories of increasing the size of the student pipeline, ensuring graduates are well matched to degrees that fit their interests and initiating new degree programs. Just as in our entrepreneurship programs, there are overall principals or design aspirations that guide our workforce development efforts.

The first design aspiration is to expose students to tangible careers and professions as soon as they enroll at the university. Some public officials have attempted to address workforce issues by increasing the visibility of salary estimates and other disembodied metrics of graduate success in the hopes of influencing degree choices of university students. While this may provide some information to students, we believe it is the wrong tactic to develop an educated and competitive workforce. In our efforts with students, we attempt to provide tangible real-world experiences and employer interactions so that students can understand careers and organizations and make informed decisions in the selection of majors that closely align with their interests and motivations. We believe graduates who are passionate and engaged in their

professions will add the most value to their organizations, seek out continued education opportunities and sustain a competitive regional workforce.

The second design aspiration is to be continually responsive to business needs. ASU leaders maintain regular contact with business leaders across the state. We view vigorous business engagement with academia appropriate and highly beneficial to our university and students. ASU has complex relationships with regional employers, from sponsored research projects, to operation of joint facilities, to faculty consulting and even specialized degree offering. Understanding their hiring and staffing needs not only helps us advance in other aspects of our relationship with them but also to ensure quality employment opportunities for our graduates. This strengthens our local economy, which in turn strengthens us.

A primary mechanism of influencing workforce development in Arizona is through the production of educated workers. Accordingly, we are strongly committed to expanding access to higher education in Arizona. We estimate that ASU will produce more than 13,000 bachelor's degrees in the 2013-14 academic year, sharply up from 8,566 in academic year 2002-3. We estimate that we will produce nearly 18,000 bachelor's degrees and more than 24,000 total degrees in academic year 2019-20.

Yet it is not enough for universities only to create more graduates. Universities must create more graduates who are also prepared to succeed in their chosen professions. To give the committee a sense of our efforts in how we provide opportunities for students to find majors and professions that fit their interest profile, I would like to highlight several exemplar projects in our Fulton Schools of Engineering.

As I previously mentioned, we engage students in career exploration early. Even before engineering students are admitted to Fulton Schools of Engineering, we offer peer career coaches and professional career staff and tools to guide in selecting majors that suit the

individual student's interests and values. Once admitted, incoming students form relationships with fellow engineering students, staff, faculty, the Dean and members of industry at "E2." This camp enables an early understanding of the professional culture of engineering, which leads to a host of long term benefits beginning with better grades and satisfaction with the college experience.

Our Fulton Schools of Engineering offer an array of undergraduate and graduate degree programs in the traditional engineering disciplines but are organized into five interdisciplinary schools. This organizational structure maximizes learning and knowledge production by fostering meaningful collaboration. Undergraduates are able to learn the core principles taught in engineering programs across the country while graduates and faculty are able to conduct the interdisciplinary use-inspired research industry demands. The benefits are systemic and include the openness to new approaches spoken of early. By way of example, ASU Fulton faculty saw a need for a new delivery mode for BS degrees in electrical engineering. They swiftly assembled what became the first fully online accredited Bachelor's of Science degree in electrical engineering in the country. Demand is high—launched in August 2013, the program has enrolled more than 250 students.

University-wide, we have moved to make experience-based learning a core experience for the student. As of March 2014, ten of twelve colleges at ASU have at least one major that requires an internship or applied project for graduation. Fifty-two percent of bachelor's degree earners in our most recent class reported completing at least one internship before graduation.

As testament to these and other changes throughout the university, ASU graduates have been enjoying high and increasing levels of success in the labor market. In 2012-13, the 90-day undergraduate employment success rate was 86.5%, up from 83.4% in 2011-12. Our bachelor's degree recipients reported average earnings of $44,030 in 2012-13, up 3.2% from the previous

year. We are proud to report that 78% of new degree recipients remain in Arizona after graduation. The attached document enumerates ASU's various achievements over the past ten years.

Thank you for the opportunity to share some our general approaches and some specific examples of how ASU is advancing entrepreneurship, innovation and workforce development.

Arizona State University Achievements

FY2003 through FY2013 (2014-01-02)

On July 1, 2002, Arizona State University initiated its transformation into an educational model that would serve as a new option for American higher education.

> Our **New American University mission** – to prove that a university can be simultaneously excellent and broadly inclusive; that it should engage in use-inspired, as well as curiosity-driven, research; and that it can take significant responsibility for the economic, cultural and environmental health of the communities it serves — has been demonstrated.

In August 2008, *Newsweek* recognized the university's success by calling ASU "one of the most radical redesigns in higher learning."

Academic Excellence and Access

We measure ourselves by who we include, not who we exclude. We are committed to the belief that no student qualified to learn at the research-university level should be denied access to a college education of the highest order, so we have simultaneously pursued expanding institutional access to the historic levels of committed public research universities while increasing academic rigor and quality.

In FY2002, ASU was an emerging public research university with an uneven academic reputation. Since that time, we have received widespread external recognition for achievements in academic excellence.

- **Top university:** ASU was named among the best universities in the nation and the world by a number of different ranking organizations.
  - The Academic Ranking of World Universities, compiled by Shanghai Jiao Tong University, ranked ASU as 79th among the top 100 universities in the world in 2012. This assessment compares 1,200 higher education institutions worldwide and is considered

one of the most prominent world university rankings. ASU entered the rankings in 2003, achieved top 100 status in 2006. ASU ranked 46th among all universities in the United States and 26 among all public U.S. universities.

- The *Times Higher Education World University Rankings*, using data supplied by Thomson Reuters, placed ASU in the top 200 in the world in 2010, using measures of excellence from all three core elements of a university's mission: research, teaching and knowledge transfer. In 2011, ASU was ranked 21st in the world in mathematics, above Columbia, Cornell, Oxford, MIT and Cambridge.
- *U.S. News & World Report* ranked ASU in the top tier of national universities from 2008 through 2013. It was also named one of the top "Up and Coming Schools," from 2009 through 2013 and second in the 2011 edition of "America's Best Colleges" – a ranking highlighting schools to watch in terms of promising and innovative changes in academics, faculty, students, campus life, diversity and facilities. In 2012, the magazine ranked ASU #1 in the nation for online student services and technology.
- A *Wall Street Journal* ranking published in Sept. 2010 named ASU number five in the nation among corporate recruiters for producing the best-qualified graduates – those that are the most prepared and academically well-rounded, who fit in well with the companies' cultures and produce the best track records.
- In 2009 and 2010, *Forbes* placed ASU on its list of 100 of "America's Best Colleges," based on students' satisfaction with their course instruction, indicators of their post-graduate employment success, four-year graduation rates, student and faculty success in competitive academic and research awards, and the four-year debt load for typical student borrowers.
- Arizona State University was selected by *G.I. Jobs* magazine as a "Military Friendly School" for four consecutive years, from 2010 through 2013. The list honors the top 15 percent of colleges, universities and trade schools that are doing the most to embrace America's veterans as students.
- *The Princeton Review*, one of America's most widely known education services and test preparation companies, has named ASU one of the "Best 377 Colleges" in the nation for four consecutive years, from 2010 through 2013. *The Princeton Review* calls ASU "a leading research institution and a dynamic public university" and commends it for its "outstanding honors college" and leadership in entrepreneurial education.
- ASU continues to be one of the top choices for international students, placing 20th in the nation in 2011 and 2012 among all colleges and universities, according to the Institute of International Education (IIE). International student enrollment has grown by 44.9 percent, from 3,544 in FY2003 to 5,137 in FY2013. International graduate students comprise 20 percent of the graduate student population. Graduate international enrollment increased by 26.9 percent, from 2,220 in fall 2002 to 2,818 in fall 2012.
- ASU received numerous honors for its nation-leading efforts in sustainability:
    - *Princeton Review* Green Honor Roll: For the fifth consecutive year (from 2008 through 2012), ASU received the highest possible score in its Green Rating and was one of only 21 universities to receive a perfect score in 2012.
    - *Sierra Magazine* "Coolest Schools," a survey that ranks the greenest college campuses in the nation, recognized ASU's leadership in sustainability from 2007 through 2011.
    - *Kaplan College Guide 2009* Top 25 Green Colleges: Aug. 2008
    - ASU earned a STARS Gold rating from the Association for the Advancement of Sustainability in Higher Education (AASHE). ASU was one of only 22 institutions out of 117 to receive a gold rating. STARS, the Sustainability Tracking,

Assessment & Rating System, is a transparent, self-assessment framework for colleges and universities to gauge relative progress toward sustainability.

- In 2010, *Time Magazine* named ASU President Michael Crow as one of the 10 best college presidents in the U.S. based on the achievements of ASU under his leadership.

- **Top programs:** Individual academic programs at ASU also have been ranked among the best in the world:
  - The W. P. Carey School of Business is recognized as one of the best in the world.
    - In 2003, the school started its impressive executive MBA program in Shanghai, which educates some of China's top business and government leaders. The program now ranks No. 21 worldwide, according to the Financial Times. It has more than 700 alums in China and is an exemplary part of ASU's global engagement mission.
    - The W. P. Carey School also launched its online MBA program in 2003. The program now ranks an incredible No. 2 among the nation's online MBA programs, according to U.S. News & World Report.
    - In 2008, the school's full-time MBA program broke into the Top 25 in the nation, according to U.S. News & World Report, only 17 years after graduating its inaugural class. The full-time MBA program is now ranked No. 30; the evening MBA is ranked No. 22 for part-time MBA programs, and the undergraduate business program was ranked No. 24 in its category in fall 2012.
    - As far as consistency, the school repeatedly ranks Top 30 in the nation for both undergraduate and MBA programs, according to *U.S. News & World Report* – six years in a row for the full-time MBA program and nine of the last 10 years for undergraduate.
    - The W. P. Carey School's Arizona-based executive MBA program ranked 13th on *The Wall Street Journal's* Top 25 list in 2010.
    - The Center for World-Class Universities at Shanghai Jiao Tong University ranked W. P. Carey No. 18 in the world for economics/business in summer 2012.
    - Many of the school's departmental programs consistently rank Top 25 in the nation for quality, including accountancy, information systems and supply chain management. The school's supply chain management programs routinely rank Top 10 in the nation.
    - The W. P. Carey School's research productivity reaches exceptional levels, resulting in practical knowledge that helps to boost the business world and students' classroom experience. The school achieves Top 25 North American rankings/Top 30 worldwide rankings for business-school research productivity.
  - In 2012, ASU Online was named the Pearson Product of the Year Award winner. It was the first time in the award's history that a service-based educational partnership received the award rather than a piece of educational content, such as a textbook or software.
  - The School of Public Affairs, ranked at #25 in U.S. News & World Report's 2011 and 2012 rankings, jumped to #16 in the 2013 edition. Five of its programs ranked within the top 20 in the nation, including #2 in city management and urban policy and #10 in environmental policy and management.
  - The Mary Lou Fulton Teachers College continued its climb in the 2013 *U.S. News* rankings of the nation's highest-rated graduate programs in education, coming in at No. 14 among public graduate schools of education and 24th among all public and private

graduate programs in the field. In 2012, ASU's graduate education programs ranked 16th and 26th, respectively.

- *U.S. News & World Report* ranked the Ira A. Fulton Schools of Engineering undergraduate and graduate engineering programs in the top 50 in the nation.
- The Herberger Institute for Design and the Arts is recognized as one of the best in the nation:
    - The institute was ranked number 22 in the nation in 2013 in fine arts programs by *U.S. News & World Report*. Its industrial design program entered the top 10 in 2008. Its graduate printmaking program has been in the top seven since 2003, and its photography program has been in the top 11 since 2002. In 2013, its ceramics program ranked #7.
    - The institute's undergraduate interior design program was ranked 9th and its graduate program 6th by *America's Best Architecture & Design Schools* in 2008. The industrial design undergraduate program was ranked 13th and graduate program ranked 10th.
- More than half of ASU's doctoral programs placed in the top 25 percent in the nation in a report released in Sept. 2010 by the National Research Council, one of the National Academies. The highest rated programs include psychology (peer group includes the University of Washington, the University of Southern California, University of Texas Austin, Michigan State, and Penn State); geography (peer group includes UCLA and UC-Berkeley); electrical engineering (peer group includes USC, Carnegie Mellon, Ohio State, and Johns Hopkins); civil and environmental engineering (peer group includes CalTech, Cornell, USC, Ohio State, and Duke); materials science and engineering (peer group includes UCLA, Duke, Michigan, Carnegie Mellon, Georgia Tech, and Johns Hopkins); chemistry (peer group includes Texas A &M, University of Maryland, and Emory). Spanish (peer group includes UC-Berkeley and NYU); communication (peer group includes University of Texas-Austin and University of Missouri); and public administration (peer group includes Harvard and University of Texas-Austin). Other programs ranked highly were history, economics and English.
- The Walter Cronkite School of Journalism and Mass Communication has the best overall record in the national Society of Professional Journalists Mark of Excellence competition for the past eight years and has taken first place in its region for 13 consecutive years. The school has finished in the top 10 nationally in the Hearst Journalism Awards, often called the Pulitzer Prizes of college journalism, for 10 consecutive years, including first-place finishes in 2008–2009 and 2006–2007. The school has placed first in the Hearst intercollegiate broadcast competition two out of the past three years and three out of the past six years. The Cronkite School has won more awards in the Broadcast Education Association's Festival of Media Arts competition than any other school in the country for four consecutive years. Cronkite students have also won the prestigious Robert F. Kennedy Journalism Award three out of the past five years.
- In 2013, ASU's Entrepreneurship and Innovation Group was named one of the world's top university business incubators by the University Business Incubator Index, which ranked ASU 10th in the United States and 18th in the world. ASU also received the 2013 Most Promising Technology Based Economic Development Initiative award from the State Science and Technology Institute. Spinout companies based on technologies developed by ASU researchers raised $68 million in external funding during the 2013 fiscal year. ASU students were among the finalists in Entrepreneur magazine's "College Entrepreneur of the Year" competition in 2011, 2012 and 2013, and the overall winner in 2011 was from ASU. ASU student startups also were among the finalists in Inc. magazine's "Coolest College Startups" competition in both 2012 and 2013, with an ASU

startup taking home the top prize in 2012. Inc. also named the Arizona Furnace Technology Transfer Accelerator, of which ASU is a founding partner, "one of three college town incubators to watch" in 2013.

- The Sandra Day O'Connor College of Law has moved up significantly in *U.S. News & World Report* rankings. In 2013, it was rated the 29th best law school in the nation. Its legal writing program also was ranked fifth best by *U.S. News & World Report.*
- The College of Nursing and Health Innovation achieved the following recognition:
  - In 2011, the college ranked 21 for its master's programs in nursing by *U.S. News & World Report.*
  - Graduate nursing programs are ranked top 4 percent in the nation by *U.S. News & World Report.*
  - The Department of Speech and Hearing Science has one of the largest programs in the country. In 2012, the audiology program was ranked 17th in the country by *U.S. News & World Report.* The speech and hearing pathology program is ranked 21st by *U.S. News & World Report.*
  - The School of Nutrition and Health Promotion has the second largest dietetics program in the country. Dietetics has a 95% pass rate on the National Examination for Registered Dieticians.
  - First time pass rate on the NCLEX-RN is between 94% and 98%.
- Barrett, the Honors College, was named one of the top three honors colleges in the nation in the most recent thorough assessment and ranking of all 64 honors colleges in the United States, done in 2005 by researchers at *Readers Digest. Readers Digest* called the three "America's Best Honors Colleges". The magazine said the Honors College at Arizona State University continues to set the standard for the country's top honors experience. In 2010, *USA Today* cited Barrett, The Honors College as a factor in naming Arizona State University one of the 100 Best Value Colleges and called the honors college "outstanding.
- The School of Criminology and Social Justice was ranked third in the nation for scholarly research in a study published in 2012.
- The anthropology program in the School of Human Evolution and Social Change was ranked in the top 5 in the *Chronicle of Higher Education's* last Faculty Scholarly Productivity Index in 2007. The program was fourth in the Center for a Public Anthropology's 2006 national ranking of public outreach in anthropology departments.

World-class faculty: ASU increased its number of faculty who have received the highest awards in their fields by adding the following new award recipients, fellows or academy members since the end of FY2002:

- 2 Nobel laureates, all since FY2002. ASU faculty and researchers also contributed to the Intergovernmental Panel on Climate Change (IPCC), which shared the 2007 Nobel Peace Prize.
- 10 members of the American Academy of Arts and Sciences, 9 since FY2002 (900 percent growth)
- 8 members of the National Academy of Engineering, 6 since FY2002 (300 percent growth)
- 11 members of the National Academy of Sciences, 10 since FY2002 (1,000 percent growth)
- 2 members of the Institute of Medicine, both hired since FY2002
- 4 members of the National Academy of Education, 2 since FY2002 (100 percent growth)
- 5 members of the National Academy of Public Administration, 4 since FY2002 (400 percent growth)

- 3 members of the Royal Society, one hired since FY2002 (50 percent growth)
- 65 American Association for the Advancement of Science Fellows, 45 since FY2002 (225 percent growth)
- 5 Sloan Research Fellows, 1 since FY2002 (25 percent growth)
- 5 Pulitzer Prize winners; 3 since FY2002 (150 percent growth)
- 99 Fulbright American Scholars with 127 awards, 57 Fulbright Scholars with 74 awards since FY2002
- 25 Guggenheim Fellows, 18 since FY2002 (257 percent growth)
- 24 IEEE Fellows, 13 since FY2002 (118 percent growth)
- 8 American Council of Learned Societies Fellows, 3 since FY2002 (60 percent growth)
- 19 recipients of Ford Foundation Fellowships, 13 since FY2002 (216 percent growth)

In addition, since FY2002 ASU's young faculty have been recognized as those who will lead the advancement of scholarship in their fields for the future with the following awards:

- 61 recipients of the National Science Foundation Early Career Development Award
- 1 recipient of the Department of Energy Early Career Principal Investigator Program Award
- 1 recipient of the Department of the Army Young Investigator Program
- 7 recipients of Presidential Early Career Awards for Scientists and Engineers, 6 since FY2002 (600 percent growth)

World-class students: ASU students also excelled in record numbers.

- The fall 2012 freshman class numbered 9,265. Median SAT score for the entering class was a record 1110, and 30.2% graduated in the top 10 percent of their high school class. Students from diverse ethnic backgrounds made up 38.6 percent of the class, up 134.8 percent from 22.3 percent in fall 2002.
- *U.S. News & World Report* named ASU the country's top destination for transfer students. A record 7,228 new students transferred to ASU from a community college or other university in fall 2012.
- ASU was the top-ranked public university for students being named to *USA Today's* All-USA Academic First Team.
- ASU is in the top 10 producers of Fulbright Scholars in the nation, with 181 since FY2002. In 2012, according to *The Chronicle of Higher Education,* ASU tied for fifth place with Yale University and the University of California at Berkeley.
- ASU has produced 6 Truman Scholars since FY2002.
- ASU has produced 6 Marshall Scholars since FY2002.
- 440 National Merit Scholars were enrolled at ASU in fall 2012, a 28 percent increase over the enrollment of 345 in fall 2001.
- 256 National Hispanic Scholars were enrolled at ASU in fall 2012, up 556 percent over the 39 students enrolled in fall 2001.
- ASU is one of the top schools in the nation in winning National Security Education Program (NSEP/Boren) grants to study abroad in countries of critical interest to U.S. security with 88 recipients since FY2002.
- The majority of eligible Flinn Scholars chose ASU, with 16 of 22 attending in FY2012 and 11 of 20 attending in FY2011. FY2013 added an additional 10 Flinn Scholars.
- 56 Bill and Melinda Gates Millennium Scholars were enrolled in FY2013; a total of 218 have attended ASU since the program's inception.

Degree production and persistence: ASU awarded 18,045 degrees in FY12, up 60 percent from FY2002. The six-year graduation rate for the freshman cohort entering 2006 was 56.8 percent, up

9.7 percent from the 51.8 percent rate for the cohort that entered in fall 1996. Freshman persistence in fall 2012 was 80.0 percent, 4.4 percent higher than in fall 2002.

ASU ranked as top school for diversity: From fall 2002 to fall 2012, we greatly increased access to the university, at the same time more closely reflecting the demographics of Arizona in our faculty, staff and student populations. ASU was ranked as one of the top institutions for ethnic minorities by top publications focused on diversity:

- In 2012, according to *Diverse Issues in Higher Education*, ASU ranked 6th in the nation for production of both American Indian and Hispanic graduates in all disciplines; in the top 5 for Hispanic undergraduate degrees in legal professions and studies, education, family and consumer sciences/human sciences; and number 5 for all minorities in education.
- ASU ranks first in the nation in 2013 for doctoral degrees awarded to Native Americans in all disciplines.

  Overall, 27 of ASU's program rankings appeared in the top 10 graduate and professional degree producers, and more than 90 programs were in the top 100.
  The top diversity graduate rankings for ASU in 2013 are:

Native American Doctorate (All Disciplines)	1
Native American Doctorate (Education)	1
Native American Master's (Public Administration/Social Service)	1
Native American Professional Doctorate (Law)	1
Hispanic Doctorate (Foreign Languages, Literatures, and Linguistics)	2
Native American Master's (Engineering)	2
Hispanic Doctorate (Mathematics and Statistics)	3
Hispanic Master's (Architecture & related)	3
Native American Master's (All Disciplines Combined)	3
Asian American Doctorate (Education)	5

- In their April 1, 2013 issue, *Hispanic Outlook in Higher Education* magazine published rankings for the number of graduate degrees awarded to Hispanics in several key areas.

Category	Out of all U.S. schools, ASU ranks
Graduate schools enrolling Hispanics	11
All Master's and PhDs in Teacher Education	14
All Master's degrees in Business Mgmt/Marketing	13
All Master's and PhD STEM degrees (science, technology, engineering and math)	15

- ASU was cited several times among the top 25 institutions in the United States in *The Condition of Latinos in Education: Fact Book 2008* by Excelencia in Education. ASU was ranked 24 among the top 25 colleges and universities enrolling Latinos during the 2006-

2007 academic year. The university also was ranked 24th for awarding bachelor's degrees to Latinos and 17th for awarding engineering bachelor's degrees to Latinos.

Growth in student ethnic diversity: While enrollment increased 32.2 percent (from 55,491 in fall 2002 to 73,378 in fall 2012), minority enrollment as percentage of total student population increased 107.9 percent (from 20.7 percent to 32.5 percent of the total student body).

- The number of African-American students grew 97.5 percent, from 1,768 to 3,491.
- The number of American Indian students grew from 1,166 to 1,184, a 1.5 percent increase.
- The number of Asian students grew from 2,535 to 4,108, a 62.1 percent increase.
- The number of Hispanic students grew from 6,018 to 12,880, a 97.5 percent increase.

Growth in student economic diversity: From FY2003 through FY2013, ASU made major progress in delivering on its promise that no qualified Arizona student be denied access to a college education based on ability to pay:

- Total financial aid for undergraduate students grew from $195 million in FY2002 to $773 million in FY2013, an increase of 296 percent. The number of undergraduate students receiving financial aid grew from 25,594 in FY2002 to 54,608 in FY2012, a 113 percent increase.
- Pell grant recipients (first-time freshmen) increased 156 percent from FY2003 to FY2013, from 1,209 to 3,098 students.
- In May 2009, the university announced the President Barack Obama Scholars program, which more than tripled the number of students from families with the greatest financial need who are eligible for financial aid that helps cover the direct cost of college attendance.
- In FY2013, ASU awarded a record $1 billion in all forms of financial aid to 66,551 students. $414 million of that total was awarded in the form of scholarships and grants to 51,920 students.
- Average indebtedness of ASU undergraduates continues to be below the national average for public universities of $25,000 (per College Board for 11-12 grads). 2011-2012 bachelor degree recipients who were Arizona residents had an average loan debt of $20,827.
- In FY2013, 78 percent of ASU undergraduate students received financial aid. The average student financial aid package for full-time Arizona resident undergraduate students with need was $11,849.

Growth in faculty/staff ethnic diversity: Minority employees as a percentage of total employees (excluding graduate assistants) increased by 26.4 percent to 29.1 percent of the total from FY2003 to FY2013.

- The number of Black/African-Americans grew from 344 to 364, a 5.8 percent increase.
- The number of American Indians declined from 193 to 149.
- The number of Asian/Americans grew from 1,122 to 1,559, a 38.9 percent increase.
- The number of Hispanics/Latinos grew from 1.122 to 1,299, a 15.8 percent increase.

From FY2003 to FY2013, total tenure/tenure-track faculty grew from 1,671 to 1,778 a 4.8 percent increase, while minority tenured/tenure-track faculty increased 44.7 percent, from 18.5 percent.

- The number of African-Americans declined from 45 to 41.
- The number of American Indians grew from 16 to 18, a 12.5 percent increase.
- The number of Asians grew from 132 to 224, a 69.7 percent increase.
- The number of Hispanics/Latinos grew from 116 to 155, a 33.6 percent increase.

Research and Innovation

At Arizona State University, research matters. It matters for attracting the best faculty and students. It matters for making learning experiential. It matters for training 21st-century minds. And it matters for advancing our communities, the nation and the world.

Research Growth

- ASU's research enterprise has more than tripled over the past decade. Research expenditures have grown from $123 million in 2002 to $405 million in FY2013.
- Among U.S. universities with research portfolios exceeding $100M in research expenditures, ASU has been one of the fastest growing research enterprises over the last five years (2006-2011 NSF Surveys).
- ASU ranks 17th out of 768 U.S. universities without a medical school for research expenditures (NSF 2011 Survey).
- ASU ranks 19th out of 912 U.S. universities for research expenditures in the non-science and engineering disciplines (NSF 2011 Survey).
- ASU ranks 8th out of 912 U.S. universities for research expenditures in the humanities (NSF 2011 Survey).
- ASU ranks 14th out of 912 U.S. universities for research expenditures in the social sciences (NSF 2011 Survey).
- Research space has grown along with research funding. Since 2002, we have added more than 1.5 million square feet of space in new research buildings.

Arizona State University continues to have one of the most productive technology transfer operations compared with large U.S. research institutions on certain performance metrics per $10 million in research expenditures:

- In FY13, ASU faculty submitted a record number of invention disclosures (250), were issued a record number of U.S. patents (48) and spun out a record number of new start-up companies (11).
- Arizona Technology Enterpresided, the technology transfer arm of ASU, also facilitated and brokered a record number of major agreements licensing ASU technologies for commercial use (88).
- Fluidic Energy, HealthTell and Heliae -- three ASU spinouts based in Arizona -- now employ more than 370 people worldwide, with 215 of those jobs currently in Arizona.
- In FY13, start-up companies that have licensed ASU IP closed on more than $68 million in venture capital and other financing.

Research Highlights

FY2013

- Researchers at the Flexible Electronics and Display Center, working with Army Research Lab scientists, broke their own previous world record and manufactured the world's new largest flexible color organic light emitting display (OLED) prototype, using advanced mixed oxide thin film transistors. At 14.7 diagonal inches, the new display nearly doubles the length of the earlier prototype. The technology offers high performance at a low cost with low power. FEDC researchers have also produced the world's largest flexible X-ray detector prototype using advanced thin film transistors
- Bill and Melinda Gates Foundation awarded $5.8 million to Professor Kurt VanLehn from the School of Computing, Informatics, and Decision Systems Engineering (CIDSE) to develop technologies for enhancing mathematics education. The Office of Naval

Research awarded $1.5 million to VanLehn to develop an intelligent tutoring system for science education.

- Higher Education for Development, a USAID funding agency for institutions of higher learning awarded $1.3 million to Professor Victor Agadjanian from the Melikian Center to conduct a Women's Leadership Project in Armenia, entitled "Advancing Gender Equality and Women's Empowerment in Armenia."
- Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E) awarded funding to Professor Dan Buttry from the Department of Chemistry and Biochemistry for a project to develop technologies to capture carbon emissions from power plants. This is the third ARPA-E award ASU has received, which is a testament to our innovative approaches and successes in high-risk, high-reward projects.
- Department of Energy awarded $15M for an ASU-led national Algae Testbed Public-Private Partnership (ATP3) that will position the Arizona Center for Algae Technology and Innovation (AzCATI) as the leading algae testbed facility within the country.
- ASU opened one of the university's largest research buildings to date, the Interdisciplinary Science and Technology Building IV (ISTB 4). The building is designed to advance research and discovery, and to encourage children to explore their futures as scientists and engineers. ISTB 4 does this through a mixture of high-tech labs, interactive environments and open spaces that allows the public to witness research and technology development as it happens.
- The NIH has awarded over $8 million for three grants to the College of Nursing and Health Innovation to study significant health issues in minority populations through community-based and community-focused interventions. The studies will examine ways to promote colorectal cancer screening among underserved populations, obesity prevention among low-income Mexican American women and children, and increase insulin sensitivity and weight specific quality of life in obese Latino adolescents
- Dr. Randy Nelson, director of the Molecular Biosignature Analysis Unit at the Biodesign Institute, was awarded a four-year, $5 million investment from NIH aimed at discovering biomarkers that help predict cardiovascular disease and to assess potential new treatments in people with Type 2 diabetes.
- The National Institutes of health has awarded a $3.3 million grant to Dr. Emily Beth Winslow in the Department of Psychology to study the effectiveness of a parenting skills intervention program that could help prevent substance abuse and mental health disorders in children. The study will examine the influence of sociocultural variables and baseline child behavioral problems on participation.
- ASU researchers are taking part in three new solar energy projects funded by the Australian and U.S. governments. The funding includes $68 million for two eight-year research programs and $15.5 million for 11 collaborative projects. ASU is involved in both of the eight-year programs and one of the research collaborations. ASU professors Christiana Honsberg and Liping Wang, and Dr. Ellen Stechel, deputy director of ASU LightWorks, lead the three ASU projects.
- The Mellon Foundation has awarded $600,000 to an international team of researchers to study humanities and sustainability. ASU's Institute for Humanities Research is the lead U.S. institution on the project, with institute director Dr. Sally Kitch as co-PI. Other lead institutions include the University of Sydney and Trinity University. The project will examine the social and cultural changes that are necessary to address sustainability problems and to implement technological solutions.
- Researchers in the Biodesign Institute were awarded $3.3 million from the National Institute on Drug Abuse of the National Institutes of Health to use DNA nanoscaffolds as a platform for developing a vaccine to reduce nicotine dependence. Co-PIs include Drs.

Yung Chang, Hao Yan, Sidney Hecht, Li Liu and Sudhir Kumar from ASU and Dr. Paul Pentel from Minnesota Medical Research Foundation.

- ASU's Mary Lou Fulton Teachers College was awarded $950,000 from the U.S. Department of Education to raise mathematics achievement among K-8 students. The project, led by Dr. Elizabeth Hinde, joins ASU with Northern Arizona University and the University of Arizona to provide teacher training and resources aimed at boosting student achievement to meet new state-mandated Common Core State Standards in Mathematics.
- A research team in the Biodesign Institute has created a variety of two- and three-dimensional DNA nanostructures that push the boundaries of the burgeoning field of DNA nanotechnology. The work, led by Dr. Hao Yan, was published in the March 22, 2013 issue of *Science.*
- Researchers in the Ira A. Fulton Schools of Engineering, led by Dr. Kaushal Rege, developed a safer alternative to stitches and staples for bowel surgery, using nanocomposite materials that act like a surgical solder. Their work appeared in the March 29, 2013 issue of *ACS Nano.*
- Scientists in the School of Life Sciences led by Dr. Ferran Garcia-Pichel discovered that temperature determines where key soil microbes can thrive—microbes that are critical to forming topsoil crusts in arid lands. In as little as 50 years, global warming may push some of these microbes out of their present stronghold in colder U.S. deserts, with unknown consequences to soil fertility and erosion. This work appeared as the cover story in the June 28, 2013 issue of *Science.*
- The journal *Science*, lauded ASU research on protein structures as one of the top 10 breakthroughs of 2012. For the first time, scientists determined the three-dimensional structure of a protein by the innovative new method of femtosecond nanocrystallography. The technique, developed by the ASU team and their collaborators at the LCLS free-electron laser, allows scientists to study reaction chemistry involving proteins in real-time.

FY2012

- Researchers at the Flexible Display Center, working with Army Research Lab scientists, successfully manufactured the world's largest flexible color organic light emitting display (OLED) prototype using advanced mixed oxide thin film transistors. The technology offers high performance at a low cost with low power.
- The Global Institute of Sustainability received a $27.5 million investment from the Walton Family Foundation to develop and deploy promising solutions to sustainability challenges and to educate future leaders in sustainability.
- ASU was awarded a four-year contract from the Defense Threat Reduction Agency of the U.S. Department of Defense to develop a novel diagnostic technology called immunosignaturing for rapid detection of exposure to infectious disease agents before symptoms occur. The four-year contract is valued over $30.7 million and will be led by researchers in the Biodesign Institute's Center for Innovations in Medicine.
- G3Box, a startup company created by a team of ASU undergraduate and graduate students, was named College Entrepreneur of the Year for 2011 by *Entrepreneur* magazine. Three of the five finalists in the competition (including the winners) were ASU teams in the Edson Student Entrepreneurship Initiative.
- ASU established the McCain Institute for International Leadership, named for John McCain, the U.S. senator from Arizona. The institute will focus on promoting character-driven leadership as well as research and decision-making in the areas of humanitarian work, human rights and national security.

- The National Science Foundation selected ASU as the new host university for the EarthScope National Office. The program explores the 4-D structure and evolution of the North American continent and studies Earth structure and dynamics across the planet. It is the largest science project on the planet, recording data over 3.8 million square miles. *Popular Science* has called the program one of the universe's ten most epic projects.
- The Virginia G. Piper Charitable Trust established a $10 million strategic investment at ASU to enable the university to improve all aspects of health care delivery. The initiative will include biomedical informatics, clinical data and public health surveys to assess health care outcomes and determine the best prevention and treatment practices.

FY2011

- The Mary Lou Fulton Teachers College was awarded a $43.4 million Teacher Incentive Fund grant from the U.S. Department of Education that will provide funding for comprehensive school reform in Arizona.
- ASU was awarded $18 million to establish the national NSF-DOE Engineering Research Center for Quantum Energy and Sustainable Solar Technologies (QESST). QESST uses quantum mechanics to solve challenges to harnessing solar power in economically viable and sustainable ways. The center has attracted more than 40 industry partners since inception.
- Faculty in the School of Earth and Space Exploration are leading a team to build an instrument for NASA's OSIRIS-REx mission, which will travel to an asteroid to collect samples and measurements. It is the first piece of complicated space hardware to be constructed on the ASU campus.
- The April 2011 cover of *Science* featured 3-D DNA nanoforms created by ASU Biodesign researchers. The forms were constructed through a revolutionary technique known as "DNA origami" and offer potential applications ranging from computing to health care.
- Biodesign Institute researcher Cheryl Nickerson received NASA's most prestigious commendation for outstanding contributions to science, the Exceptional Scientific Achievement Medal. NASA has designated Biodesign as its number-one university customer, putting the institute first in line for zero-gravity experiments on the International Space Station.
- An ASU student team created Note-Taker, a special camera that helps visually impaired students in the classroom. The device won first place for software design in the Microsoft Imagine Cup U.S. finals and second place in the same category in the Imagine Cup World Finals.

FY2010

- ASU's Mary Lou Fulton Teachers College received $19 million from Denny Sanford to launch a new initiative called the Sanford Education Project, which allows ASU to adapt Teach for America's most successful tools to attract, prepare, support and retain more highly effective teachers.
- ASU developed the Center for Convergence of Physical Science and Cancer ZBiology, funded by the National Institutes of Health's National Cancer Institute. The center, one of 12 across the U.S., seeks to provide unique insights into cancer by pulling together physical scientists, mathematicians and engineers to study cancer cells as physical objects.
- Elinor Ostrom, founding director of ASU's Center for the Study of Institutional Diversity, won the 2009 Nobel Prize in Economic Sciences. Ostrom is the first woman to win the Nobel in Economic Sciences and is considered one of the leading scholars in the study of

common pool resources. Other ASU Nobel laureates include Edward C. Prescott, winner of the 2004 Nobel Prize in Economic Sciences; and Leland "Lee" Hartwell, winner of the 2001 Nobel Prize for Physiology or Medicine.

- ASU launched LightWorks, an initiative designed to position ASU as a leader in solar-based energy and other light-inspired research. LightWorks capitalizes on ASU's unique strengths in renewable energy fields including artificial photosynthesis, biofuels and next-generation photovoltaics.

FY2009

- The White House announced that ASU would become home to the Energy Frontier Research Center for Bio-inspired Solar Fuel Production. The Department of Energy-funded project provided $14 million over a five-year period.
- ASU's Flexible Display Center was named one of the "Top 10 Technologies of 2008" by Wired magazine.
- ASU kicked off its new Origins Initiative with the Origins Symposium, which brought together 70 of the world's leading scientists and scholars, including Steven Pinker, Richard Dawkins, Donald Johanson, Brian Greene, Craig Venter and Lawrence Krauss. Stephen Hawking participated via video.

FY 2008

- ASU became the only university to receive two grants from the Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E) program. ASU's grants support work on a new class of high-performance metal-air batteries and the use of photosynthetic bacteria to produce automotive fuel from a combination of sunlight, water and carbon dioxide.
- NASA launched the Lunar Reconnaissance Orbiter (LRO) with the Lunar Reconnaissance Orbiter Camera (LROC) on June 18, 2009. ASU professor Mark Robinson is the principal investigator of the LROC imaging system.
- Research into using algae as a biofuel, led by researchers in ASU's Laboratory for Algae Research and Biotechnology, was listed on TIME magazine's "Top 50 Inventions of 2008."
- Phil Christensen, Joshua Bandfield and Alice Baldridge used the Mars-orbiting-camera with JMARS software, designed and operated at ASU's Mars Space Flight Facility, to find the first evidence for salt deposits in numerous places on Mars. These deposits, say the scientists, show where water once existed. Their report was published in the March 31, 2008 issue of the journal *Science.*

FY2003-2007

- The International Institute for Sustainability was established in November 2004 with a $15 million gift from Julie A. Wrigley. It is renamed the Global Institute of Sustainability a year later.
- In 2005, ASU created a new type of visualization center—one focused on connecting the science and expertise of ASU with the needs of the community. Decision Theater assists policy makers and others in making decisions about complex issues ranging from urban growth and public health to education and the environment.
- The Flexible Display Center was created to develop a new generation of electronics that are flexible, rugged, lightweight and low power. The FDC was created as a five-year cooperative agreement between ASU and the Army Research Laboratory through a $43.7 million grant from the U.S. Army. The contract was renewed for an additional five years and $50 million in 2009.

Entrepreneurship and Economic Development

In the last 11 years, ASU has taken entrepreneurship out of a single college or program (traditionally housed within a university's business or engineering school) and made it available to all students within all programs of study. The goal was to move from the traditional thinking of university entrepreneurship as a business plan competition and to embrace the thinking that entrepreneurship is a mindset, a new way of approaching not just venture creation but also learning, education and faculty-student-staff interactions. ASU's efforts in entrepreneurship have spanned all aspects of the university's programs and operations.

Formed in 2003, Arizona Technology Enterprises (AzTE) is the exclusive intellectual property management and technology transfer organization for Arizona State University. AzTE works with faculty, investors and industry partners to speed the flow of innovation from research laboratories to the marketplaces. Since 2003, 67 companies have been formed based on ASU research discoveries. Start-up companies that have licensed ASU IP have attracted nearly $400 million in funding from venture capital firms and other investors. AzTE projects that its FY13 results will again be in the top ten for 1) licenses and options, 2) startups, and 3) invention disclosures per $10M in research expenditures, according to statistics collected by the Association of University Technology Managers (AUTM).

In 2008, ASU opened SkySong, an innovation and entrepreneurship hub created in partnership with the City of Scottsdale. A 2012 study by the Greater Phoenix Economic Council found that SkySong and its tenants generate $113.6 million annually in regional economic output. SkySong houses more than 800 employees, in more than 314,000 square feet of space. SkySong has a combined occupancy of 98 percent, including 44 companies representing six foreign countries. In addition, four virtual companies, representing an additional two foreign countries, utilize the services and support of ASU SkySong without a physical presence at the project. These buildings were constructed through a public/private university partnership. Buildings 3 and 4 are in the planning stages, and a $44 million, 325-unit apartment complex is under construction on the SkySong campus as well.

Not only is SkySong a thriving business center that supports innovative and startup companies, it is a premier event facility in the Metro Area. In fiscal year 2012-2013, ASU SkySong hosted more than 5,500 events with 75,312 people attending and being exposed to the positive initiatives and activities occurring at SkySong.

While ASU has made a large and lasting impact on the entrepreneurial community of the Phoenix area, perhaps the greatest achievements for entrepreneurship are the advances that the Entrepreneurship and Innovation Group (E&I Group) at ASU has made in driving student, faculty and community entrepreneurship. The E&I Group launched in 2010 as ASU Venture Catalyst and was renamed in 2013 to more accurately reflect the growth and expansion of ASU's entrepreneurial efforts. It will serve as the focal entry point for students, faculty, staff, and alumni of ASU, as well as community members and ecosystem stakeholders, to gain a comprehensive understanding of all of the ways in which ASU is involved in and supportive of entrepreneurial aims.

Over the past three years, the Entrepreneurship and Innovation Group has created and implemented numerous programs designed to expand entrepreneurial support structures within ASU and to build the entrepreneurship ecosystem in the state of Arizona. In addition to the Edson Student Entrepreneur Initiative, the E&I Group has launched several new programs

within the last fiscal year including the Furnace Technology Transfer Accelerator, the Arizona Startup Accelerator, the Alexandria Co-Working Network and the Great Little Companies (GLC) Network. These programs have all launched to widespread public support and have been incredibly successful in their first year.

- ***Edson Student Entrepreneur Initiative***
  - The Edson Student Entrepreneur Initiative gives ASU's student entrepreneurs the opportunity to develop their innovative ideas and launch viable startup companies. The initiative provides funding, office space, training and mentorship over a 10-month period to help students launch and grow their for-profit, more-than-profit or nonprofit ventures.
- ***Furnace Technology Transfer Accelerator***
  - The Arizona Furnace Technology Transfer Accelerator is a startup accelerator designed to form, incubate and launch new companies created from technologies and intellectual property licensed from premier research institutions. It provides seed funding, office space and access to top industry mentors in order to commercialize discoveries made in university research labs. Arizona Furnace is recommended for graduate and postdoctoral students and junior researchers.
- ***Arizona Startup Accelerator***
  - ASU offers services for Arizona-based companies, including faculty spinouts, alumni ventures and non-ASU startups, through the ASU Startup Accelerator, a joint venture between ASU's Office of Knowledge Enterprise Development and Arizona Technology Enterprises.
- ***Alexandria Co-Working Network***
  - The Alexandria Co-working Network brings people together in collaboration spaces in public libraries across Arizona, creating a statewide network of places for people to connect, collaborate and find valuable resources. The collaboration spaces, which are free and open to the public during normal library hours, provide access to co-working space as well as resources that people can use to move their ideas forward, including:
    - Experienced mentors from ASU's mentor network
    - "Pracademic" (taught by practitioners) classes from ASU's Rapid Startup School
    - Physical and digital assets from the libraries
- ***Great Little Companies Network***
  - The GLC (Great Little Companies) Network supports up to 30 student startups each year that apply for but are not accepted into the Edson Student Entrepreneur Initiative, ASU's student startup accelerator. Each startup invited to participate in the GLC Network receives $3,000 in grant funding as well as direct mentoring through the Changemaker Central locations on each of ASU's four campuses.

One of the most successful programs within the E&I Group is the Edson Initiative. Since its inception in 2005, the Edson Initiative has provided 163 unique student ventures with nearly $1.4 million in seed funding grants. In the first five years of the program, these student ventures created more than 70 full and part time jobs, 40 percent were acquired, sold or are still operational, and more than 44 different majors and programs of study were represented by applicants. The 60 startups invited into the Edson Accelerator in the past 3 years have seen

tremendous success including: 4 of them have received external venture capital funding; 11 of them are currently in revenue, 10 have won first place in external entrepreneurship competitions, and collectively they have raised more than $1million in external grants and venture funding.

Accolades for these 3 cohorts include:

- 1st Place winners of the Microsoft Imagine Cup competition were ASU teams in 2011 and 2012
- *Entrepreneur* magazine 'College Entrepreneur of the Year' in the USA – finalists in the top 5 for three years running
- *Entrepreneur* Magazine "College Entrepreneur of the Year" winner in 2012
- AppSumo Lean Startup competition – winner (1st time)
- Winner of the Ford College Community Challenge in 2013
- Winner of the Arizona Commerce Authority's "Innovation Challenge" in 2013 (1st time)
- Cleantech Open – One winner of the Rocky Mountain Regional final (1st time)
- 'Idea to Product' Global competition (final in Sweden) – two finalists, placed second (1st time in 2012 and 2nd time in 2013)
- Entrepreneurs Organization (EO) Accelerator – One accepted (1st time)
- Global Student Entrepreneur Award Global Finals (graduate level) – One accepted (1st time)
- Startup Open global competition – Two in top fifty finalists (1st time)
- *Inc* magazine's 'Coolest College Startup in America' – 2 finalists – first and second place overall (1st time)
- 2 winners of Arizona Commerce Authority's Fast Grants in 2013, (1st time)

Additionally, the Furnace Technology Transfer Accelerator launched its pilot program successfully with more than 50 applicants and 10 new companies formed from unique technologies discovered in Arizona being invited into the accelerator. This inaugural cohort ended with a Demo Day where the 10 companies pitched their businesses to a room full of all levels of investor and strategic business community members. These 10 companies have raised an additional $300,000 in grants and external venture funding.

The ASU Startup Accelerator has incubated 20 startups over the past 3 years, providing support services to accelerate growing companies that are external to the university. These startups have raised more than $1.7 million in grants and external venture funding.

The successful results of the programs that have been created by the E&I Group have led ASU to be ranked by the University Business Incubator Index as 18th in the list of the Top 20 University Business Incubators in the World, and 10th on the list of the top 10 University Business Incubators in the United States. The UBI Index reviewed 550 university incubators around the world and performed a study of 150 university business incubators in 22 countries. Incubators were measured on a unique assessment framework with more than 50 performance indicators.

ASU's programs and initiatives to support student entrepreneurship have transformed the university into a leading school for entrepreneurship. Since January 2007, more than 2,000 applications were received for ASU's various student entrepreneurship competitions, more than 48,000 students have enrolled in an entrepreneurship course within their program of study, and more than 900 entrepreneurs have been trained in programs at ASU SkySong. All of these

initiatives and entrepreneurial successes were recognized on a national level when ASU was one of 22 campuses worldwide invited to join the Changemaker Campus Consortium by Ashoka, a global network of more than 2,500 social entrepreneurs.

ASU was selected as a Changemaker Campus in the fall of 2010 by Ashoka U. Ashoka U works to strengthen entrepreneurship in higher education by disseminating key knowledge and resources, recognizing innovation, and facilitating collaboration between institutions of higher education and social entrepreneur practitioners.

In 2012, the E&I Group, then ASU Venture Catalyst, began a program that would bridge the gap between student and university startups and external high potential startups. Rapid Startup School was designed to be a practical academic approach to teaching entrepreneurship, focused not on the theory behind entrepreneurship but the practicality of actually getting a startup business developed and funded. The objective is to allow graduate students, doctoral students, and postdoctoral researchers an understanding of commercialization and to stimulate startup activity. The initial 12 module program was very successful. It included 70 participants that included post doc and research staff, ASU Alumni, serial entrepreneurs and community members.

Since then, the Rapid Startup School program has grown to become the single educational platform through which all startup training and education is offered through the E&I Group. Since 2012, RSUS has provided 25 programs with more than 67 modules to more than 690 individuals interested in furthering their entrepreneurial education, outside of an academic classroom.

In FY13, proposals for industry sponsored projects increased from $14.6M to $16.3M and reported expenditures for industry sponsored projects increased from $9.9M to $12.1M. To support further growth in corporate engagement, EDCE helped established platforms for new comprehensive relationships with corporate partners, including Aerojet Rocketdyne, Go Daddy and PayPal while broadening engagements with current partners, including Intel, Boeing, and General Dynamics. To foster more internal collaboration with the entire university, EDCE created and manages the Corporate Engagement Council (CEC). Through quarterly meetings, The CEC facilitated an atmosphere of collaboration across units and increased communication and opportunities with partners in need of a single point of contact for ASU. To better serve the corporate engagement needs of the University, EDCE also implemented a shared employee program to help coordinate corporate outreach with CTI and FSE.

Last fiscal year, the economic development activities of EDCE resulted in strengthened relationships with local organizations to support business attraction efforts and foster job creation and a number of successful outcomes. For example, EDCE worked with both the Arizona Commerce Authority (ACA) and the Greater Phoenix Economic Council (GPEC) to attract a number of new entrants to the market, including General Motors, Bridgestone, and State Farm, in the last fiscal year.

In addition, EDCE was active in creating and managing the GPEC Innovation Council and supporting the GPEC/MAG/Brookings Metropolitan Business Plan. EDCE also collaborated with GPEC in securing a $250,000 grant from the EDA to create an advanced manufacturing strategy for the region and partnered with GPEC in its "Z-Strategy" in China.

After actively participating in the creation and launch of the ACA, EDCE helped secure the new statewide Manufacturing Extension Project (MEP) and the $1.8 million EDA Advanced Manufacturing Jobs and Innovation Award, both to be led by ACA. Significant support was

also given to the ACA led attempts to secure FAA authorization of UAS Test Site status for Arizona.

This past year, EDCE also helped Greater Phoenix Leadership (GPL) create a strategic plan to increase its impact on the community and actively engaged with Tucson Regional Economic Opportunities (TREO) to advance economic development in the Sun Corridor.

In FY13, EDCE also continued the development of several summit platforms designed to increase ASU visibility in key industries and with government leaders. Building on the success of its original CEO Forum series, EDCE held its second and third Arizona Solar Summits with statewide focus on industry and policy challenges facing the market. EDCE also continued to play a prominent role in the Education Innovation Summit series. Having grown to 1400 participants, EDCE was instrumental in deepening relationships with sponsors and securing presentation slots for five ASU related companies, including two faculty spinouts and one Edson company. The success of the EIN summit has reenergized the local education technology cluster which is being co-led between EDCE, GPEC and Matt Pittinsky, CEO Parchment, former ASU professor and co-founder of Blackboard. This rejuvenation of the cluster concept has led EDCE to take a leadership role in the U.S. Department of Education's cluster strategy discussions.

Additionally, the EDCE work with supporting and building industry consortia continued. Specifically, work with the QESST consortia excelled in 2013. Soitec, a QESST Industry Member, set the world record for solar cell efficiency, attaining 44.7%. EDCE was able to work with 10 additional industrial partners this year, and partnered with several of those companies on SBIR and Sunshot Incubator proposals. The QESST consortia created 4 spinouts and 3 patent disclosures in the last fiscal year as well.

Investment

In FY2002, ASU relied primarily on state funding. The low-tuition model in effect at the time provided few resources for financial aid, which meant that help was unavailable to those who needed it most. Private investors were relatively few.

Since then, we have worked to demonstrate the value of investing in ASU to local and state governments, students and their families, and private investors. We have earned their confidence as demonstrated by the following:

- ASU's endowment has grown from $206 million at the end of June, 2002, to $553 million at the end of June, 2013, a growth of approximately 169 percent. For the same period, the total assets of the ASU Foundation have grown from $228 million to $862 million – a 279 percent increase – and the number of individual donors per year has grown by 14 percent.i
- The ASU Foundation has raised $143 million for ASU scholarships from July 1, 2002 through June 30, 2013.i
- Since July 1, 2002, the ASU Foundation has raised $65 million in support of endowed faculty positions.i
- Dollars raised for capital projects by the ASU Foundation between July 1, 2002 and June 30, 2013 total $119 million.i
- Investment in ASU by the State of Arizona through state appropriations grew from $311.8 million in FY2003 to $482.9 million in FY2008, a 50 percent increase. However, as a result of severe economic stresses in Arizona, state investment declined to $301.7 million in FY2012, a reduction of 38 percent since the FY2008 peak. State investment grew moderately to $311.9 million in FY2013, about the same level as FY2003.

- ASU's total assets in FY2003 were $1.40 billion and have increased over 102 percent to reach $2.83 billion at the end of FY2013. ASU's total net assets have increased by 53 percent, from $876 million in FY2003 to $1.34 billion in FY2013. ASU's total revenue over the same time has grown from $846 million to $1.80 billion, a 112% increase. (Note: FY2013 information is based on preliminary unaudited financial statements.)
- Local governments made unprecedented investments in a state university, with the City of Phoenix allocating more than $220 million in voter-approved bond money to build the Downtown Phoenix campus, and the City of Scottsdale donating a $41.5 million parcel of land with $45 million in infrastructure improvements to build SkySong. In 2011, the City of Mesa invested $15 million for additional road and utility infrastructure for the Polytechnic campus.

Organizational Transformation

Traditional academic departments have advanced understanding in defined areas of intellectual endeavor. Over time, however, they have developed into silos, reinforcing their own existence and isolating faculty members from routine intellectual interaction with those in other departments. Traditional university organizations also are slow to react and respond, operating at a pace that is out of touch with the rate of change in the rest of the world. Addressing the problems of the 21st century requires a more fluid, responsive organizational structure, where faculty with radically different skills and experiences can work together to advance understanding and solve problems in ways that have not been possible before.

Since FY2002, ASU has made remarkable progress in transforming itself from an organization based strictly on traditional academic departments into a truly interdisciplinary institution. Since FY2002, the following new colleges and schools have been formed:

- School of Sustainability (a university college-level enterprise engaging many units throughout the university)
- New school in the W.P. Carey School of Business:
  - School of Accountancy
  - School of Health Management & Policy
- New schools in the Herberger Institute for Design and The Arts include:
  - The Design School
  - School of Arts, Media and Engineering
  - School of Film, Dance and Theatre
- New schools in the Ira A. Fulton Schools of Engineering include:
  - School of Biological and Health Systems Engineering
  - School of Computing, Informatics, and Decision Systems Engineering
  - School of Electrical, Computer and Energy Engineering
  - School for Engineering of Matter, Transport and Energy
  - School of Sustainable Engineering and the Built Environment
- Walter Cronkite School of Journalism and Mass Communication
- The School of Letters and Sciences

- The Mary Lou Fulton Teachers College was created through merging the Mary Lou Fulton Institute and Graduate School of Education with the College of Teacher Education and Leadership.
- College of Technology and Innovation
- College of Health Solutions, including:
  - School for the Science of Healthcare Delivery
  - School of Nutrition and Health Promotion
- New College of Interdisciplinary Arts and Sciences, including:
  - School of Humanities, Arts and Cultural Studies
  - School of Mathematical and Natural Sciences
  - School of Social and Behavioral Sciences
- New schools in the College of Liberal Arts and Sciences include:
  - Hugh Downs School of Human Communications
  - School of Aging and Lifespan Development
  - School of Earth and Space Exploration
  - School of Geographical Sciences and Urban Planning
  - School of Politics and Global Studies
  - School of Historical, Philosophical and Religious Studies
  - School of Human Evolution and Social Change
  - School of International Letters and Cultures
  - School of Life Sciences
  - School of Materials
  - School of Mathematical and Statistical Sciences
  - School of Social and Family Dynamics
  - School of Social Transformation
  - School of Transborder Studies
- New schools in the College of Public Programs include:
  - School of Community Resources and Development
  - School of Criminology and Criminal Justice

ASU's research enterprise has been redefined and expanded with the following new centers, institutes and initiatives since FY2002:

- Adaptive Intelligent Materials and Systems Center
- Advanced Technology Innovation Center
- American Indian Policy Institute
- Arizona Center for Algae Technology and Innovation
- Arizona Center for Medieval and Renaissance Studies
- Arizona Initiative for Renewable Energy
- ASU Advanced Photovoltaics Center
- ASU Advanced Computing Center
- ASU-Sichuan University Joint Confucius Institute
- Beyond: Center for Fundamental Concepts in Science
- Biodesign Institute
- Center for Adaptive Neural Systems

- Center for Advancement of Evidence-Based Practice
- Center for Advancing Business through Information Technology
- Center for Aging and Life Course Biology
- Center for Applied Behavioral Health Policy
- Center for Applied Nanoionics
- Center for Asian Research
- Center for Bio-Inspired Solar Fuel Production
- Center for Bioarchaeological Research
- Center for Bioenergy and Photosynthesis
- Center for Biological Physics
- Center for Biology and Society
- Center for Biomolecular Integrated Circuits
- Center for Civic Education and Leadership
- Center for Cognitive Ubiquitous Computing
- Center for Community Development and Civil Rights
- Center for Competitiveness and Prosperity Research
- Center for Computational Nanoscience
- Center for Critical Inquiry and Cultural Studies
- Center for Digital Antiquity
- Center for Earth Systems Engineering and Management
- Center for Educational Research for Global Sustainability
- Center for Embedded Systems
- Center for Environmental Economics and Sustainability Policy
- Center for Environmental Fluid Dynamics
- Center for Environmental Security
- Center for Executive and Professional Development
- Center for Film, Media and Popular Culture
- Center for Games and Impact
- Center for Global Health
- Center for Health Information and Research
- Center for Healthcare Innovation and Clinical Trials
- Center for Healthy Outcomes in Aging
- Center for Improving Health Outcomes in Children, Teens and Families
- Center for Indian Education
- Center for Jewish Studies
- Center for Law & Global Affairs
- Center for Law, Science and Innovation
- Center for Metabolic Biology
- Center for Meteorite Studies
- Center for Nanotechnology in Society
- Center for Photonics Innovation
- Center for Policy Informatics
- Center for Population Dynamics
- Center for Real Estate Theory and Practice
- Center for Renewable Energy Electrochemistry
- Center for Research on Education in Science, Mathematics, Engineering and Technology
- Center for Science and the Imagination
- Center for Services Leadership
- Center for Social Cohesion
- Center for Social Dynamics and Complexity

- Center for Solid State Electronics Research
- Center for Strategic Communication
- Center for Strategic Supply Research
- Center for Supply Networks
- Center for Sustainable Tourism (name change from Megapolitan Tourism Research Center)
- Center for the Study of Institutional Diversity
- Center for the Study of Race and Democracy
- Center for the Study of Religion and Conflict
- Center for Urban Innovation
- Center for Urbanism
- Center for Violence Prevention and Community Safety
- Center for World Health Promotion and Disease Prevention
- Ceramics Research Center
- Complex Adaptive Systems Initiative
- Consortium for Health Promotion and Behavioral Change
- Consortium for Science, Policy and Outcomes
- Decision Center for a Desert City
- Decision Theater
- Diane Halle Center for Family Justice
- Edson Student Entrepreneur Initiative
- Edward C. Prescott Center for the Advanced Study in Economic Efficiency
- Family and Human Dynamics Research Institute
- Flexible Display Center
- Future Arts Research
- GeoDa Center for Geospatial Analysis and Computation
- Global Institute of Sustainability
- Hartford Center of Geriatric Nursing Excellence
- Healthy Lifestyles Research Center
- Herberger Institute Research Center
- Hispanic Research Center
- Information Assurance Center
- Institute of Human Origins
- Institute for Humanities Research
- Institute for Social Science Research
- International Institute for Species Exploration
- JP Morgan Economic Outlook Center
- Knight Center for Digital Media Entrepreneurship
- L. William Seidman Research Institute
- Laboratory for Algae Research and Biotechnology (LARB)
- Learning Sciences Institute
- LeRoy Eyring Center for Solid-State Science
- Lincoln Center for Applied Ethics
- LightWorks Initiative
- Lodestar Center for Philanthropy & Nonprofit Innovation
- Mathematical, Computational and Modeling Sciences Center (MCMSC)
- McCain Institute for International Leadership
- Melikian Center: Russian, Eurasian and East European Studies
- Morrison Institute for Public Policy
- National Center for Excellence on SMART Innovations

- North American Center for Transborder Studies
- Partnership for Research in Spatial Modeling
- Power Systems Engineering Research Center
- Practice, Research and Innovation in Mathematics Education Center
- Prevention Research Center
- Quantum Energy and Sustainability Solar Technologies
- Security and Defense Systems Initiative
- Sensor Signal and Information Processing Center
- Solar Power Laboratory
- Southwest Interdisciplinary Research Center
- Southwest Ct. for the Study of Human Rights
- Stardust Center for Affordable Homes and the Family
- Sustainable Algal Biofuels Consortium
- Swette Center for Environmental Biotechnology, Biodesign Institute
- The Spirit of Enterprise Center
- TUV Rheinland Photovoltaics Test Lab
- Virginia G. Piper Center for Creative Writing
- Wireless Integrated Nano Technology Center

Major Partnerships and Collaborations

As a New American University, ASU has become a force, not only a place; and is globally engaged, in service to the state, the nation and the world. Partnerships and collaboration with other groups and institutions are central to achieving our mission. Since FY2002, we have developed the following domestic partnerships:

- ASU-Mayo Clinic partnership: In 2005, ASU and Mayo Clinic formed several collaborations, including joint educational and research programs. In 2011, this partnership was elevated to greater heights as a joint presence on the web was launched, additional research and educational programs were initiated, seed grant funding continued, and the commitment to work together on plans for an Arizona campus of the Mayo Medical School. Students attending the Mayo Medical School when it opens in Scottsdale, Ariz., will get both a medical degree from Mayo and a Master of Science in the Science of Health Care Delivery from ASU as the program will be embedded in the medical degree curriculum.

  Joint degree programs exist in medicine/law, medicine/business, medicine/communications, medicine/biomedical informatics, and medicine/biologic and health systems engineering. ASU nursing students can receive clinical training at the Mayo Hospital and are often extended job offers from Mayo upon degree completion. Mayo Clinic participates in an innovative undergraduate capstone program centered on the design of medical devices for real life problems.

  Collaborative research areas include biomedical informatics, metabolic and vascular biology, and cancer, with shared lab and office space on both ASU and Mayo Clinic Arizona campuses. Joint seed funding is $1.3 million to date for research projects in cancer, Alzheimer's disease, cellular and molecular biomedicine, genetics, dual energy CT applications and sensory motor coordination. We have begun to make strategic joint faculty hires key to shared translational research missions. The first hire is in the area

of cancer research. Mayo Clinic faculty have also been given appointments in many ASU departments.

- ASU-Barrow Neurological Institute partnership: The ASU-Barrow Neurological Institute partnership includes research collaborations in magnetic resonance imaging (MRI); neuroscience; cardiovascular disease; biomedical informatics; infectious diseases; immunology; cancer and tissue bank collaboration. A joint interdisciplinary neuroscience graduate program, ABOR approved, has been created to utilize the strengths of both institutions, with joint appointments for ASU faculty members and BNI clinicians. A joint small animal 7T imaging center, housed at BNI, was created in connection with the Keller Imaging Lab at BNI. The imaging center, which opened in spring 2009, is funded in part by an NIH grant as well as funds from Barrow Neurological Institute.
- ASU-Banner Health partnership: Banner Health and ASU collaborate on cancer, diabetes, spinal cord injury and rehabilitation, Alzheimer's disease, Parkinson's disease, interventional biomaterials and haptics research. With a grant from the Dept of Health and Human Services, ASU faculty have worked with Banner Health administrators to develop innovative changes in the patient process flow to reduce walkout rates in their emergency rooms.

  Banner and ASU's College of Nursing & Health Innovation are collaborating to provide a career path for nurses and nurse assistants in Arizona with funding from a Department of Labor grant. They are also collaborating in educational efforts for evidence-based practice and the treatment of childhood obesity.

  Banner Health and ASU's College of Nursing & Health Innovation are sub recipients of a $4.96 million Department of Labor grant in collaboration with Arizona Diversity Business Development Center. This grant will provide a career path for nurses and nurse assistants in Arizona. Other partners include Chicanos Por la Causa, Inc., and Maricopa Workforce Connections.
- ASU-Carl T. Hayden VA Medical Center partnership: ASU and Veterans' Affairs are working together to develop research projects in diabetes and mental health studies in post-traumatic stress disorder. This involves joint research projects and joint faculty appointments. Other key areas of collaborative research include: cardiovascular disease, metabolic disorders, mental health/sleep disorders, and musculo-skeletal disorders. ASU's College of Nursing & Health Innovation is also working with the medical center on a dedicated educational unit project.
- ASU-Phoenix Children's Hospital: Phoenix Children's is in the midst of a major expansion to meet the needs of the Southwest's rapid population growth. ASU has established research collaborations with Phoenix Children's hospital and the Children's Neuroscience Institute in the area of brain-computer interfaces, bioinformatics, cancer research and biomarkers. ASU's College of Nursing and Health Innovation is partnering with the hospital on the Latino Childhood Asthma Project and childhood obesity.
- ASU-Maricopa Integrated Health System partnership: ASU researchers and MIHS clinicians work together in the fields of orthopedics, burns, depression, trauma, obstetrics and gynecology, coronary artery disease and diabetes. Partnerships between MIHS and ASU's Southwest Interdisciplinary Research Center have led to the Familias Sanas (Healthy Families) project to assist special populations. Partnerships between

MIHS and ASU's College of Nursing and Health Innovations have led to studies unique to the challenges of special populations for healthy outcomes in aging.

- ASU-TGEN partnership: The ASU-TGEN partnership in genetic and molecular research has resulted in more than two-thirds of TGEN's faculty members submitting joint extramural grant proposals with ASU faculty and staff in areas of research that include neurogenomics, cancer and diagnostics, regenerative medicine, and biological database integration and modeling. Other partnering initiatives include the maintenance of a joint cluster supercomputer facility, shared educational programs, TGEN's assistance in recruiting ASU senior faculty hires and internships for ASU students.
- Center for Health Information and Research has established a network of hospital partners in the Phoenix area for the development of the Arizona HealthQuery. This is a model of a community health data system, which could act as a centralized repository of health information. By combining the administrative data from a variety of health organizations into one data system, the health care of individuals and populations could be tracked over time and across providers.
- ABC News on Campus: ABC News chose the Walter Cronkite School of Journalism and Mass Communication to be one of its partners in ABC News on Campus, an initiative that provides an opportunity for students to report on stories in their region and produce a wide array of content for ABC News' broadcast platforms.
- Renewable biofuels partnership: With support from federal, state and industry funding, ASU has spearheaded a project that utilizes photosynthetic microbes, called cyanobacteria, as a major source for the renewable production of carbon-neutral fuels for the United States. With Arizona's year-round sunshine, this project has the potential to be a catalyst for new industrial development that will contribute to high-quality employment and overall economic growth for the region. The project has developed cyanobacteria as a feedstock for biodiesel production, as well as benchtop and large scale photobioreactors to optimize growth and production. The initial two-year, $4.7 million project began in 2007, made possible by funding from Science Foundation Arizona, British Petroleum and ASU. Since 2009, a $5.2 million continuation of this project, led by ASU School of Life Sciences professor Wim Vermaas and Biodesign Institute researchers, has been funded by a branch of the US Department of Energy, the Advanced Research Projects Agency-Energy (ARPA-E), and achieved several critical research milestones.
- TUV Rheinland PTL: As a partnership between the Photovoltaic Testing Laboratory at ASU, TUV Rheinland and Arizona Public Service, TUV Rheinland PTL is the most comprehensive, sophisticated, state-of-the-art facility for testing and certification of solar energy equipment in the world.
- Arizona Indicators Project: ASU partnered with the Arizona Community Foundation, Valley of the Sun United Way, Arizona Republic and Arizona Department of Commerce to create a Web tool that popularizes data describing Arizona's development. The easy-to-understand visuals contained on the Web site include data on economics, education, innovation, sustainability, quality of life, health, human services, criminal justice and children and families.
- Ashoka: Innovators for the Public: As part of Ashoka's Changemaker Campus initiative, in 2010 ASU joined a consortium of nine other colleges and universities to set a new standard of excellence for social entrepreneurship education. Since its founding in 1980,

Ashoka has provided long-term support to more than 2,500 social entrepreneurs in more than 70 countries. ASU is working in partnership with Ashoka and its network of Ashoka Fellows to foster and accelerate teaching, research and action in social entrepreneurship.

- Teacher Preparation and Evaluation Project: The mission of T-PREP is to ensure that every student in the state of Arizona is taught by a highly-effective teacher. Data is gathered from multiple triangulated sources, including K-12 student achievement scores; teacher candidate passing rates on the educator proficiency standards; teacher performance observations; and the attitudes of students, teachers, and administration to examine the impact of the Mary Lou Fulton Teachers College teacher preparation program. Data from recent graduates indicates that they exit our teacher preparation program "workforce ready," as indicated by their mastery of practices that are typically seen in experienced teachers, and importantly, are associated with positive student growth.
- ASU-Teach for America partnership: ASU partners with Teach For America university-wide on TFA recruitment, alumni leadership and the Phoenix Institute. Within the Mary Lou Fulton Teachers College, the partnership focuses on teacher support and development through a tailored master's program for TFA corps members and the Sanford Inspire Program, which aims to redefine undergraduate teacher preparation. ASU was named one of the top fifteen universities for its size in 2013 graduating TFA corps members. Since 2007, more than 640 corps members have graduated from ASU with master's degrees in education. In fall 2013, about 275 corps members in the Phoenix metro were teaching approximately 15,125 students. During 2013, about 660 corps members impacted roughly 3,500 students during the Phoenix Summer Institute.
- iTeachAZ program: Since 1998, ASU's Mary Lou Fulton Teachers College has partnered with school districts statewide to prepare teachers in the districts using on-site faculty, satellite video conferencing, mentoring, internships, and the signature full year student teaching model which was recognized as "exemplary" in 2013 by the National Council on Teacher Quality. In fall of 2011, 436 student teachers began the iTeachAZ Senior Year Residency. Of those students, 91 percent were awarded an Institutional Recommendation for certification in Arizona's public schools, the majority of whom went on to teach in Arizona, predominantly in iTeachAZ partner school districts.

  Since Teachers College pledged three years ago to infuse state school districts with more teachers better prepared to enter a classroom, it has scaled up by 400 percent the number of iTeachAZ student teachers it places in Arizona's pre-K through 8th grade classrooms—from only 200 in fall 2010 to 1,000 aspiring teachers completing the 2012-13 academic year. At the same time, the college expanded its number of partner school districts statewide from seven to 35. In January 2013, 100 percent of surveyed principals from school districts partnering with iTeachAZ indicated they would hire Teachers College graduates. In the last year, 12 universities from around the country visited ASU to learn about iTeachAZ, highlighting the impactful and innovative nature of the program. In April 2013, iTeachAZ won the President's Award for Innovation for its significant contributions to ASU and higher education.
- The International Leaders in Education Project (ILEP) funded by the U.S. Department of State Bureau for Educational and Cultural Affairs (implemented by IREX—international research and exchange board) brings outstanding secondary school teachers from around the globe to the United States to further develop expertise in their subject areas,

enhance their teaching skills, and increase their knowledge about the United States. Participating secondary teachers come from the following countries: Bangladesh, Brazil, Egypt, Ghana, India, Indonesia, Kenya, Lebanon, Malaysia, Morocco, Philippines, Senegal, and Uganda.

- The India Support for Teacher Education Project (In-STEP), funded by the U.S. Agency for International Development (USAID) and in partnership with the Government of India. 110 educators from teacher training institutes in India to ASU's Mary Lou Fulton Teachers College will participate in a three-month program of professional development. The training programs will cover a range of topics including teaching methods, in-service and pre-service teacher education, and assessment techniques. As part of this customized program, Indian educators will observe American schools and educational best practices. In addition, the Indian participants will work closely with ASU faculty to prepare proposals for reform in specific areas of education, which they would then be able to implement in their respective states. The ultimate goal is better-trained teachers and improved educational outcomes for Indian students.
- The Arizona Ready-for-Rigor Project is a five-year, $43.8-million Teacher Incentive Fund grant from the U.S. Department of Education, working with underperforming schools to increase their student achievement. By utilizing the TAP System for Teacher and Student Advancement, the project provides teachers and educators with mentors and support groups, professional development, and a performance-based compensation system based on student growth and teacher evaluation. During the 2012-13 academic year, 60 schools from 12 Arizona school districts participated, with 58 percent of the schools improving their A-F School Label scores from 2011-12. During the first two years of the program, more than $5 million was awarded to 2,200 educators involved in the program, including $4 million to 1,700 teachers, assistant principals and principals in November 2012.
- Teachers College was awarded nearly $1 million in funding for the project, "Common Core Collaborative: A Collaboration of the State Universities and Education Stakeholders in Implementing the Math Common Core in Schools Across Arizona." The project joins ASU's Teachers College with colleges of education at Northern Arizona University and the University of Arizona to provide teacher training and resources aimed at raising mathematics achievement among Arizona's K-8 students to meet new state-mandated Common Core State Standards in Mathematics (CCSSM). Funding for this project comes from the U.S. Department of Education's annual Improving Teacher Quality state grants program.
- Under the guidance and direction of an advisory board, Project RISE (Re-entry Intervention and Support for Engagement) is a $1.5 million grant from the U.S. Department of Education's Office of Special Education Programs using evidence-based reentry practices, project leaders and team members work to seamlessly transition participants from the Arizona Department of Juvenile Corrections back into their schools and communities. The transition program is open to youths in secure care and may continue throughout the parole process.

ASU has signed partnership agreements with every public community college in the State of Arizona to "create a culture of transfer." We have jointly built curricular pathways that are web-accessible and understandable to students and parents. We are reducing student time to graduation and reducing the costs associated with higher education, while partnering to help more students achieve associate's and bachelor's degrees.

- The Maricopa to ASU Pathways Program (MAPP) launched in October of 2009 with 32 majors available. Today, there are more than 160 majors available and thousands of students from the Maricopa Community Colleges sign up for the program each year. MAPP creates a win-win-win scenario for the community college, the university, and the student: the program helps community colleges increase their number of associate degree completers; the students on a MAPP are taking the right courses to be well-prepared for success at ASU; and most importantly, the program works in the best interests of students, incenting them to complete the steps along the path that leads to success.
- Transfer Admission Guarantee (TAG) programs have been developed with Arizona Western College, Central Arizona College, Cochise College, Coconino Community College, Eastern Arizona College, Mohave Community College, Northland Pioneer College, Pima Community College, and Yavapai College. With dozens of majors available, hundreds of community college students are now participating in these seamless pathway programs every year.
- In addition to MAPP and TAG programs, ASU has worked with the state's community colleges to develop pathways for students who study in career and technical education areas through the Associate of Applied Science to Bachelor of Applied Science (AAS to BAS) pathways program. This allows a student who has studied in an area such as aviation maintenance or respiratory therapy to apply those credits towards specified Bachelor of Applied Science degrees.
- There is also a specialized partnership program for community college nursing students called the RN to BSN (Registered Nurse to Bachelor of Science in Nursing) pathway. This allows students throughout the state to proceed from their Associate of Applied Science in Nursing into a bachelor's degree program, and all of the remaining ASU coursework is available online. This partnership program is in place with all public community colleges throughout Arizona.
- Beginning in fall 2012, in partnership with Eastern Arizona College, ASU began offering on-site bachelor's degrees in Thatcher. Students can now pursue four different bachelor's degrees at a reduced level of tuition. Thus, the partnership helps students obtain an affordable, accessible higher education, while addressing community needs for qualified employees in key areas.
- ASU has worked closely with tribal colleges in Arizona to provide direct student support and engage faculty and staff in joint activities.
- The Guaranteed Program for Admission (GPA) is now available at more than 40 California community colleges, attracting well-prepared transfer students to study in Arizona.
- MAG/Brookings Institute: ASU is partnering with the Maricopa Association of Governments, Thunderbird, and GPEC on a pilot program supported by the Brookings Institute to help regions develop economic development strategies. This initiative seeks to develop new levels of coordination, and bring business expertise to regional economic development.
  Alion: Along with the City of Mesa, ASU is partnering with Alion Science and Technology Corp to reconfigure the Air Force Research Laboratory into a public-private, classified research facility that will augment the Valley's aerospace and defense industry.

- GSV Asset Management: GSV and ASU partner to host the ASU SkySong Education Innovation Summit, an annual education conference that brings together innovative small business in the education sector, capital investors, and policymakers to bring about change in education. GSV principals have a long history in educational technology investment and business development.
- Global business development partner and ASU SkySong provides soft landing services to client companies seeking to start operations in the US, including SPRING Singapore, Iaxil, Multimedia Development Corporation (Malaysia), Pontifícia Universidade do Rio Grande do Sul (PUCRS, Brazil), Kotra the Korea Trade-Investment Promotion Agency in Los Angeles, the Israeli General Counsel, the Selangor State Accelerator in Malaysia, the Malaysian Industrial Development Corporation, and the National University of Singapore.
- Industrial Technology Research Institute (ITRI): ASU signed a collaboration agreement with ITRI Taiwan to investigate research partnerships and potential entrepreneurship training and soft landing services.
- QESST (Quantum Energy and Sustainable Solar Technologies), an Engineering Research Center funded by both the National Science Foundation and the Department of Energy, is the leading U.S. university center focused on photovoltaic technology. The QESST ERC works solely to advance photovoltaic science, technology, and education in order to address one of society's greatest challenges: sustainably transforming electricity generation to meet the growing demand for energy.
- The Ira A. Fulton Schools of Engineering Career Center is collaborating on an ongoing basis with the Greater Phoenix Economic Council, the Arizona Commerce Authority and the City of Phoenix Community and Economic Development Department to provide workforce solutions for high-tech industries in the region – including companies whose operations are already located in Arizona and other companies the state seeks to bring to the Arizona.
- A partnership of the Gore company (formerly W.L. Gore) and ASU's Ira A. Futon Schools of Engineering Career Center focuses on a strategic plan for the university and the company to develop a "talent pipeline" that would provide skilled employees and student interns for Gore's Phoenix and Flagstaff operations. In return, Gore will support the university mentoring programs, entrepreneurship, student research projects, and job and internship events to provide students a path into the workforce.
- Healthcare Transformation Institute: Directed by ASU faculty members, Drs. Denis Cortese and Robert Smoldt, this nonprofit joint venture between ASU, the Chan Soon-Shiong Family Foundation and the University of Arizona seeks to assist hospital teams across a broad range of topics, including governance, leadership, clinical model and outcomes development, data analysis, business case development, and financial management. They have worked with Banner Health and Sun Health on their Care Transitions Program, a partnership with Banner hospitals, community physicians and other health providers that will assist residents living with chronic health issues in effectively self-managing their conditions and reducing hospitalizations. They are also working with Banner Health and the University of Arizona College of Medicine to develop innovative approaches for providing the full spectrum of care from disease prevention/wellness promotion, using new models of primary care, to quaternary care.

- ASU - the Smithsonian Tropical Research Institute (STRI) in Panama: Preparing Preservice Teachers for Science Success (PPSS) is a collaboration between ASU and the Smithsonian Tropical Research Institute in Panama focused on helping teachers overcome their anxiety about science and preparing them to teach science effectively. In June 2013, seven aspiring teachers from ASU's Teachers College traveled to Panama for the 10-day PPSS field experience, engaging in hands-on science and learning how to design effective science lessons once they graduate.
- ASU-University of Arizona partnership:
  - ASU partnered with the University of Arizona to establish the first allopathic medical school in Maricopa County. This included cross appointments of scores of faculty from departments across ASU and the newly formed department of Biomedical Informatics, who developed and delivered the curriculum.
  - Research in Diabetes, Cancer, Regenerative Medicine, Neuroscience, Alzheimer's: ASU's Southwest Interdisciplinary Research Institute partnered with 35 Phoenix middle schools to develop, test and evaluate keepin' it Real, a culturally grounded substance abuse prevention program. An adapted and enhanced version of keepin' it Real is being tested in a randomized trial with seven Phoenix School Districts, 32 schools, 96 teachers and over 2000 students.
- Under the Graduate Nurse Education Demonstration project (GNE), the Center for Medicare and Medicaid Services (CMS) is providing funding to five sites to increase the number of advanced practice nursing student graduates. Scottsdale Healthcare Medical Center was selected as one of the sites in collaboration with ASU College of Nursing & Health Innovation, Grand Canyon University, Northern Arizona University, and the University of Arizona. Funding will be used to increase the number of advanced practice nursing student graduates in the state and to support clinical training of more than 400 nurse practitioners and clinical nurse specialists.

ASU has developed global partnerships with the following institutions since FY2002:

- Instituto Tecnologicó De Monterrey (Mexico): including an on-campus network, online network, Binational Lab and Entrepreneurial Network. ASU and Tecnológico de Monterrey jointly launched the Latin America Office of the Global Institute of Sustainability. This extension of ASU's Global Institute at Tecnológico de Monterrey will conduct applied transdisciplinary research, offer an innovative curriculum, and develop business solutions that accelerate the adoption of a sustainable culture. The Latin America Office of ASU's Global Institute of Sustainability will offer academic programs to educate future leaders in the transition to a green economy. It will conduct applied research to address Latin American issues, particularly the adoption of sustainable development. It will also leverage linkages with the Technology Park at Tecnológico de Monterrey, Mexico City Campus, to promote clean technologies and entrepreneurial projects that will create green jobs and businesses, and promote public policies that preserve natural capital through active participation of all sectors of society.
- Sichuan University (PRC): includes the Confucius Institute, creative writing/English and University Design Consortium. ASU and SCU recently launched the Center for American Culture, a new model for public diplomacy funded by the US Embassy and the US Department of State.
- Arizona State University and Sichuan University (China) are addressing the challenge of improving cross-cultural understanding through the creation of the SCU-ASU Center for American Culture. By drawing upon the intellectual expertise of faculty at both

universities, the center is designed to reach Chinese students—the next generation of leaders—at one of the largest universities in the PRC. This is a new model for American outreach to the broad public in China. Rather than official pronouncements by U.S. government officials, the Center relies on literature, media, arts, history, philosophy, religion, ethnography and other academic disciplines to tell the American story. Speakers have included Arizona State University faculty and administrators and will engage U.S. business executives, musicians, Peace Corps volunteers, and ordinary citizens to explore with Chinese students, professors and the public the challenging question: What is America? The SCU-ASU Center for American Culture is viewed by the U.S. Embassy in Beijing as a model for engagement that goes beyond movies, television, music, and more superficial American cultural products. The goal is a series of university-to-university partnerships throughout China devoted to serious study of American topics. Specific outcomes include a large cohort of educated young Chinese who will move into positions of responsibility in business, government, education, and other key fields with a deep understanding of American values and culture. As a result, they will understand why the United States does what it does, why Americans behave as they do, what the future brings for the Sino-American relationship. The success of the world economy, even world peace, will be determined in part by the extent to which China and the United States have a positive and sophisticated relationship with one another.

- Dublin City University (Ireland): includes technology transfer, a binational lab (biosensors) and conflict management and innovation.
- The Vocational and University Leadership and Innovation Institute (VULII) is designed to contribute directly to the national goal of increasing the quality of higher education while strengthening the human and institutional capacity to contribute to Vietnam's economic growth. VULII focuses on engineering and technical education at the tertiary level, but its outcomes will touch universities and colleges nationwide. VULII will provide capacity-building and training programs at multiple levels, ranging from government officials and university rectors to mid-level administrators and engineering professors who are preparing the next generation of the technical workforce. Strategic planning at the policy level requires significant change at all relevant parts of the whole, so VULII will focus on five different levels of the institution. This integrated approach, involving leadership at the highest levels in conjunction with quality assurance at the delivery level, is the best way to influence systemic change across institutions and across the tertiary education sector in Vietnam. VULII builds upon the experience of the Higher Engineering Education Alliance Program (HEEAP), funded through a partnership of USAID, Intel Corporation, and a growing list of industry partners, directed by ASU. The main thrust of HEEAP is strengthening core faculty and curriculum efforts, and will contribute this expertise to VULII. The participating institutions in both VULII and HEEAP are Ho Chi Minh City University of Technology, Hanoi University of Science and Technology, Ho Chi Minh City University of Technical Education, Cantho University, Danang University of Technology, Cao Thang Technical College, Industrial University of Ho Chi Minh City and Ho Chi Minh Vocational College of Technology.
- The Ira A. Fulton Schools of Engineering has launched a long-term collaborative endeavor with Aerojet Rocketdyne, an aerospace industry leader in technologies to support strategic missile and armament defense systems and space exploration. The focus spans a range of research and education efforts, engineering projects, workforce development and philanthropic activities. The Fulton Engineering Schools will provide

continuing education and professional development opportunities for Aerojet Rocketdyne employees, while ASU serves as a source for new employees and student interns for the company, and provides access to research by faculty and graduate students in Aerojet Rocketdyne's areas of interest. The company and the Fulton Engineering Schools plan to develop proposals for research funding. Aerojet Rocketdyne will also collaborate with the Fulton Engineering Schools' Engineering Career Center to support students. The company will participate in the center's career fairs, and develop and implement an Aerojet Rocketdyne Student Co-op Program. It will also sponsor student scholarships and fellowships

- The Vocational Training & Education for Clean Energy (VOCTEC) is a multi-institutional, global public/private partnership between higher education institutions and service providers to offer clean energy training and education to develop and implement programs worldwide. VOCTEC has assembled a dynamic management and faculty team from Arizona State University, Appalachian State University and Green Empowerment. The team members are internationally recognized experts in the fields of clean energy technology, operational and policy implementation, educational assessment and design, and gender-conscious programming. VOCTEC is funded through a cooperative agreement with USAID.
- The Decision Theater and the School of Earth and Space Exploration at ASU are partnering with Tec De Monterrey (ITESM), FEMSA and the Inter-American Bank (IDB) to study, develop and deploy a sustainable water planning model in Nuevo Leon, Mexico. This international collaboration will address the prevention of future flooding and optimal water sustainability and planning in the wake of Hurricane Alex and the severe flood which damaged the center of Monterrey, Mexico in the summer of 2010. Sustainable water planning continues to be a critical component of scalable and sustainable energy progress.
- The Decision Theater at ASU has co-founded the Global Decision Theater Alliance (GDTA) with Huazhong University of Science and Technology and Harbin Institute of Technology in China. The Alliance builds on the experience and expertise of members to increase resource efficiency and sustainability through the integration of the best science, research and decision systems. With Decision Theaters in China, ASU can partner to create powerful immersive decision making environments for China's leaders and stakeholders.
- ASU's Center for Sustainable Health launched the Global Biosignatures Network to harness scientific, academic, industry, and healthcare system resources to make a major impact on 21st century healthcare practice. A global network of Biosignatures Centers is also needed to properly scale the effort, provide rigorous standards of practice needed to overcome barriers, and supply a global platform to share methods, results and experiences. In keeping with CSH's mission to sustain human health, the GBN will work with forward-thinking partners to establish additional Biosignatures Centers within member systems. Each Biosignatures Center will serve as a virtual coordinating center to discover, develop, validate, and implement diagnostic tests based on new enabling molecular and digital technologies for managing disease with an emphasis on prevention, early detection and effective therapeutic interventions.
- TechBA Arizona: A business accelerator that is the result of a partnership between the State of Arizona, the United States-Mexico Foundation, the Ministry of the Economy of Mexico and ASU's SkySong brought representatives of knowledge-based Mexican

businesses to Arizona. With the assistance of ASU SkySong, TechBA's success caused them to outgrow their accelerator space in the project, and they have moved into larger space in Phoenix while maintaining a collaborative relationship with SkySong.

- Japan Technology Group: Arizona Technology Enterprises established a formal partnership in 2010 with eight top Japanese research universities represented by JTG to cross-market technologies.

Infrastructure Investment

In FY2002, ASU's infrastructure was inadequate for the university's existing student population, let alone able to serve the growing numbers of qualified high school graduates who would need near-term access to higher education. Classrooms, research laboratories and offices were cramped and poorly equipped. Major institutional software systems were in need of replacement. There were few residence halls available, so the vast majority of students lived off campus even as freshmen, exacerbating problems with retention and graduation.

The university had one main campus in Tempe with two satellite campuses that were viewed as providing duplicate, but lesser quality, programs than those offered on the Tempe campus. Relations with the City of Tempe were strained by concerns over traffic congestion and the negative impact on property values of large numbers of students living in off-campus rental housing.

The buildings on the West campus were relatively new and in good condition, but many buildings in Tempe were in a significant state of disrepair. The Polytechnic campus was composed of World-War-II-era Air Force base buildings that had been retrofitted for use as classrooms, offices, research labs and residences. None of the buildings on any ASU campus had been designed and built with consideration for minimizing utility costs and impact on the environment.

In the 10 years since, during one of the nation's worst economic recessions, ASU has managed to complete an unprecedented amount of new construction, as well as upgrades and renovations to existing facilities. It has increased available space by 178 percent and has even opened a new campus. The university has done this by becoming an entrepreneurial entity, seeking investment and partnerships to make it happen.

In an innovative partnership, the university entered into an agreement with the City of Phoenix in 2005 to develop the Downtown Phoenix campus, with the city providing land and buildings and ASU the academic programs, student housing and parking. The plan received approval from the citizens of Phoenix in a March 2006 bond election, and classes began for students that fall. The endeavor has brought more than 18,000 students and 1,000 employees to a sluggish urban core.

ASU has partnered with American Campus Communities to provide more than 2 million square feet of new student housing on the Tempe campus on long-term leases, including a state-of-the-art campus for Barrett, the Honors College. It also has partnered with Inland American Communities for housing and a new dining facility at Polytechnic. ASU now provides on-campus living for 13,532 students, with more student housing coming online in fall 2013.

The Scottsdale City Council voted to approve a 198-year lease to the ASU Foundation for a $41.5-million, 42-acre parcel of land in Scottsdale they purchased for the university to build a research/innovation park. SkySong opened in 2008 with 20 global start-up and midsized

companies from eight foreign countries. At build-out, SkySong will consist of 900,000 square feet of office, research and retail space, along with a hotel/conference center.

ASU also has formed a community partnership to bring programs to western Arizona, partnering with Lake Havasu City, the Lake Havasu United School District and the Lake Havasu Foundation for Higher Education. Phase 1 of the campus, including the renovation of a middle school, opened in Fall 2012.

ASU began working with all of the university's stakeholders, including local governments, utilities and other suppliers in 2003 to establish a long-term build-out plan that would meet the needs of all. The resulting Comprehensive Development Plan was published in 2005 and updated in 2012, and serves as the framework for new construction and renovation of existing facilities.

We established that it would be necessary for ASU to grow to accommodate 100,000 students by 2020 in order to meet our commitment to the citizens of Arizona that no qualified Arizona student would be denied access to a college education. We further instituted a strategic redesign called One University in Many Places that established distinct but equal missions for all ASU campuses and set the expectation that academic quality would be equally rigorous for all programs.

We overhauled the university's information technology organization and infrastructure, replacing high-cost internally developed applications such as e-mail with free, state-of-the-art programs provided by Google and other companies. We deployed wireless network service on all campuses, greatly expanding network and computing capacity. We replaced fragile legacy software with new platforms that greatly enhanced the student experience and set the stage for a significant expansion of online course delivery.

As a result of these and other actions, we increased classroom, classroom laboratory, library, office, residence hall and other space by 190 percent, adding a new campus, a global innovation park and expanding capacity in existing locations. We increased research laboratory space by 55 percent, investing almost $600 million in renovations and new facilities. The details by location are:

Tempe campus

- ASU currently is ahead of schedule on its Campus Solarization Project which, at build out, will enable the university to generate 20 percent of its own power. ASU has a university-wide, 25-megawatt capacity goal by 2014. By November 2013, all four ASU campuses and the ASU Research Park are projected to have solar power generating systems totaling 24.8 megawatts DC, producing nearly 41 million kWh of electricity a year. ASU's Tempe campus already holds the distinction of hosting the largest solar energy capacity on a single U.S. university campus. It is funded entirely funded through a public/private university partnership.
- The ASU Foundation acquired an office-retail complex called the Brickyard at the main intersection in Tempe, which contains more than 204,000 square feet of mixed-use space. The complex now houses the Decision Theater, the dean's office of the Ira A. Fulton Schools of Engineering and the School of Computing, Informatics, and Decision Systems Engineering.
- Completed in January 2004, Lattie F. Coor Hall houses classrooms and offices for the School of Politics and Global Studies; School of Historical, Philosophical and Religious Studies; and School of Geographical Sciences and Urban Planning. It is also home to the Institute for Social Science Research; the Department of Speech and Hearing Science; and the Centers for

Russian and East European Studies, Medieval and Renaissance Studies, Jewish Studies and Geospatial Analysis and Computation.

- The Fulton Center was completed in 2005 and houses the College of Liberal Arts and Sciences, the ASU administration and the ASU Foundation for a New American University.
- Hassayampa Academic Village is a living-learning facility focused on the goal of creating an integrated, self-contained academic and residential community with classrooms, computer labs, tutorial spaces, residential dining, and retail venues. The complex, opened in two phases in 2006 and 2007 through a public-private partnership, provides a residential and academic village for up to 2,000 freshmen. It earned a silver rating from the U.S. Green Building Council's LEED system.
- Vista del Sol, completed in fall 2008, provides 1,850 beds of housing for upperclassmen and graduate students, located on the southernmost boundary of the Tempe campus. The units are apartment-style, and the student programming is directed to a more mature, independent, residential population. The Villas at Vista del Sol, opening in fall 2012, will include three- and four-bedroom living units as well as 16 townhouse units. Both are third-party projects with American Campus Communities.
- ASU renovated the former nursing building, which was renamed Wrigley Hall, to house the Global Institute of Sustainability. It is one of the most eco-friendly buildings on campus.
- The Biodesign Institute Building A, at 188,149 square feet, was completed in August 2004. With the Biodesign Institute Building B, and Interdisciplinary Science and Technology Buildings I and II and IV, the latter having just opened in June 2012, ASU added more than 700,000 square feet of research space.
- A new facility was constructed to house the ASU Police Department, doubling the size of the previous building and significantly improving access for faculty, staff and students.
- The Weatherup Indoor Basketball Facility, which provides 51,290 sq. ft. of needed practice space, was completed in May 2009. The Verde Dickey dome, completed in August 2008, provides 105,505 square feet of indoor practice space for the Sun Devil football team and is also used by the marching band, summer football camps, ASU intramurals and other athletic department events.
- Barrett Honors College is the nation's first complete honors college campus, with 510,000 square feet of space for ASU's honors students. It was completed in August 2009 in a public/private university partnership.
- In July 2010, ASU purchased Centerpoint Building A, a four-story office building built in 1985 at the northwest corner of Mill Avenue and University Drive, adjacent to the Tempe Campus. ASU purchased the building to consolidate leased office space for University uses that are currently geographically dispersed. The building is 79,288 square feet and has 320 structured parking spaces. Prior to the purchase, the university had leased more than 40,000 square feet of space in the building.
- The university renovated nearly 87,000 square feet in Psychology North, Coor Hall, Schwada, and Wilson Hall to accommodate the expansion of Psychology programs. The renovation, completed in fall 2010, provides improved and additional research space for the Psychology Department.
- Building on its institutional commitment to sustainability, ASU re-purposes existing facilities whenever possible. ASU at the Tempe campus has recently added and expanded

programs into renovated space, including the Learning Sciences Institute, a program that promotes interdisciplinary research in the learning sciences; the Herberger Digital Studio; and the new School of Transborder Studies, all completed in spring 2011.

- The highly-ranked W.P. Carey School of Management required a 22,000-square-foot expansion to the Computing Commons building to alleviate space shortages. Included in the project was the creation of over 40 faculty and staff offices, student collaboration space, and university classrooms. The project was completed January 2011.
- The Aberration Corrected Electron Microscopy Center (ACEM) is a 5,200 square foot building addition completed in January 2011 at the Tempe campus. This new facility provides space for four aberration-corrected electron microscopes which are capable of unprecedented resolution, and the facility was designed to provide an environment that will maximize the microscopes' performance by mitigation of electromagnetic fields, mechanical vibrations, noise, room temperature and barometric pressure fluctuations. The facility will allow researchers from across the Southwest to perform cutting edge research in materials and biological sciences.
- A major renovation and expansion of the Health Services building, completed in March 2012, added around 20,000 square feet, creating space for acute care services. It will allow more patients to be seen per day and decrease their wait times.
- The Interdisciplinary Science and Technology Building 4, completed in May 2012, provides flexible laboratories with adjoining workspace for the School of Earth and Space Exploration, the College of Liberal Arts and Sciences, and Fulton School of Engineering research programs including Environmental Engineering and Energy Research Initiatives. On the ground floor, a 250-seat auditorium and gallery area serves as university classrooms as well as an outreach function for both K-12 educational programs and public events. The building added 327,256 gross square feet of space.
- McCord Hall, a 129,000 square-foot addition to the W.P. Carey School of Business, is under construction, with completion scheduled for fall 2013. The $57 million building will provide technologically advanced classrooms, lecture halls and team-study rooms suited for 21st century business education, as well as world-class conference rooms for public conferences and executive education.
- Also under construction are an 84,500 square-foot addition to the Sun Devil Fitness Complex, with the $32 million financed by student fees, and an extensive $50 million renovation to Manzanita residence hall being completed by American Campus Communities. Both are slated for completion in 2013.

Downtown Phoenix campus

- ASU opened an entirely new campus in Downtown Phoenix in fall 2006, as a result of an unprecedented public referendum.
- On Aug. 15, 2006, ASU opened its doors to the Downtown Phoenix campus. By fall 2012, enrollment reached 18,488 students. The first phase of the campus included the colleges of Nursing and Health Innovation, Public Programs, and University College.
- The University Center building boasts 296,212 square feet of modern classrooms, offices, labs, seminar rooms and study areas. It houses student services, Information Commons (student computing/ASU Library), the ASU Bookstore and a small café/coffee house. The

College of Public Programs, School of Letters and Sciences, University College administration offices and student services also operate within this building.

- ASU completed a major renovation to the 101,154 square-foot historic Post Office building on January 4, 2013, kicking off the New Year with enhanced engagement space for downtown students. The renovations provide additional student services space for student advocacy, rights and responsibilities, career services, campus services hotline, conference rooms, recreation space, lounges, and more.
- The Walter Cronkite School of Journalism and Mass Communication/KAET 8 building, with 244,964 square feet of space, opened in the summer of 2008, bringing the school closer to more major metropolitan news operations than any journalism school in the country. In fall 2009 Arizona PBS affiliate Eight/KAET-TV moved into a new, state-of-the-art studio in the shared facility.
- Taylor Place is Arizona State University's premier Downtown Phoenix residential community. The two towers, each 12 stories above a shared first floor, were completed in 2008 and 2009 to house 1,250 students as well as a dining facility and retail store. The facility is financed by a public/private university partnership.
- The Nursing and Health Innovation Building, Phase 2, brought 83,641 additional square feet. It was completed in July, 2009, with third party financing. In fall 2010, the Department of Nutrition, Exercise and Wellness was consolidated within the College of Nursing and moved from the Polytechnic campus to the Downtown Phoenix Campus. In spring 2011, the university renovated the first floor of the College of Nursing and Health Innovation Phase I building to accommodate a new commercial-grade instructional kitchen facility for nutrition students. Completed summer 2011, instructional exercise and wellness rooms as well as faculty offices were built on the fourth floor of Nursing and Health Innovation Phase 2 and additional instruction space was renovated through a partnership with the local YMCA to accommodate the instructional needs of the school on the downtown campus. Research functions were added in fall 2012.
- Adjacent to the YMCA and connected at ground level, the Downtown Sun Devil Fitness Center will open in fall 2013. The five-story, 73,800-square-foot building gives students, faculty and staff access to gymnasiums, a weight room, an indoor track, group activity gyms, multipurpose areas, and a rooftop leisure pool. The $25 million fitness center houses classrooms and exercise labs for the ASU Kinesiology program and was financed through student fees.

Polytechnic campus

- Completed in summer 2008, the Polytechnic Academic Complex provides general university classrooms, classroom laboratories and other specialized instructional spaces, as well as faculty and departmental offices to serve a campus enrollment of 12,029 students in spring 2013. The complex, which consists of Santan Hall, Picacho Hall, Peralta Hall, Santa Catalina Hall and the Applied Arts Pavilion, added 286,686 square feet of space to the campus.
- Interdisciplinary Science and Technology Building III is a 50,385-square-foot facility, opened in 2006, devoted to laboratories that support applied research in biological sciences, psychology, healthy lifestyles and plant-made pharmaceuticals.
- Space was re-purposed in the Exercise and Wellness building for the ASU Preparatory Academy, a tuition-free 9-12 grade public school. The 16,770 gross square foot facility accommodates classrooms, multi-purpose space, a learning lab, and administrative space.

The project was completed July 2010. In fall 2013, ASU converted a 28,000 square-foot portion of Creativity Hall into innovative educational space for elementary school students, allowing the school to accommodate both traditional instruction and smaller, focused breakout areas.

- In fall 2012, students welcomed the completion of Century Hall, a 318-bed freshman residence hall and dining facility. The complex includes access to academic resources and student services, along with a 20,000 square-foot dining facility and a recreation/fitness center. It is part of a public-private partnership between ASU and Inland American Communities.

West campus

- On-campus student housing was introduced at West campus in 2004 with the opening of Las Casas apartments, a three-story, $11.5 million project. Opening in fall 2012 will be Casa de Oro, a 365-bed freshman residence hall that is part of a new academic village. The three-story hall, built by American Campus Communities at a cost of $7.2 million, includes a social lounge, gaming lounge, study rooms, a community kitchen, laundry facilities, a business center and an interior landscaped courtyard. Also under construction for fall 2012 is a new 20,000 square-foot dining facility.
- The Devils Den, a major remodeling project, opened in fall 2009 to provide more space for students in the University Service Building. The area includes food service, a student lounge and patio, student meeting rooms, student offices and an office of the State Press (the university's student newspaper). In addition the ASU Bookstore and cafeteria were expanded and enhanced. The ASU Student Health Services clinic was expanded and relocated.
- ASU renovated 6,200 square feet at the Fab Annex for an outreach program for middle school students. Designed for gifted youth who thrive in a highly engaging learning environment, the Herberger Young Scholars Academy personalizes students' education by merging individual's academic talents and interests with advanced college preparatory coursework and mentorship opportunities. The project was completed March 2011.
- A new Sun Devil Fitness Complex opened in January 2013. The $25 million, 63,800 square-foot complex, funded by student fees, offers fitness equipment, an outdoor pool and fields, gym, racquetball courts and wellness service space as well as a demonstration kitchen.

ASU Research Park

- ASU acquired a unique $100-million flat panel display building that Motorola was closing for $29 million and acquired a Motorola research group that was being disbanded. Both were instrumental in ASU's winning an Army research award for flexible display computers. The Flexible Display Center at ASU is a government–industry–academia partnership that is advancing full-color flexible display technology and fostering development of a manufacturing ecosystem to support the rapidly growing market for flexible electronic displays. Within its 250,000 square-foot capacity, the Center includes 43,500 square feet of advanced clean-room space, 22,000 square feet of wet/ dry laboratories and extensive office and meeting areas.

Skysong, the ASU Scottsdale innovation Center

- The Scottsdale City Council voted to lease to the ASU Foundation for 198 years a $41.5-million, 42-acre parcel of land in Scottsdale they purchased for the university to build a research/innovation park. SkySong opened in 2008 with 20 global start-up and midsized companies from eight foreign countries. At build-out, SkySong will consist of 900,000 square feet of office, research and retail space, along with a hotel/conference center.
- In FY 2012, ASU SkySong's two existing buildings, which contain 314,000 square feet of space, reached a combined occupancy of 98 percent, including 44 companies representing six foreign countries. In addition, four virtual companies, representing an additional two foreign countries, utilize the services and support of ASU SkySong without a physical presence at the project. These buildings were constructed through a public/private university partnership. Construction on Building 3 began August 2013, Building 4 is in the planning stages, and a $44 million, 325-unit apartment complex is under construction, with the first phase opening in late fall 2013.

Community Engagement

Our New American University design aspirations also include connecting with our communities and serving their needs through mutually beneficial partnerships. Our accomplishments in this area since the end of FY2002 include:

- Every year since 2008, ASU has been named to the President's Higher Education Community Service Honor Roll—the highest federal recognition a university can receive for its commitment to volunteering, service learning and civic engagement. In academic year 2011-2012 more than 12,000 students engaged in 757,000 hours of community service.
- ASU's commitment to higher education as an agent for positive social transformation earned the university a coveted place in the Changemaker Campus Consortium, announced in Sept. 2010 by Ashoka, a global non-profit network of more than 2,500 social entrepreneurs. Today, ASU is one of an elite group of 23 colleges and universities, including Johns Hopkins University, Cornell University, Tulane University and Duke University.
- In fall 2011, Changemaker Central opened on all four of ASU's campuses. Changemaker Central develops and nurtures students by providing the opportunities and resources to inspire, catalyze and sustain student-driven social change. This student-run effort works to cultivate a culture that tackles local and global challenges through its signature programs: 10,000 Solutions, the Innovation Challenge and Ignite @ ASU.
- Every year since 2010, Arizona State University has earned a spot on the annual list of Peace Corps Top Colleges and Universities. In 2013, ASU ranked 14th among all large universities, up from 19th last year and 20th the year before. Currently, 62 ASU alumni are participating, adding to the 944 ASU total alumni who have served overseas with the Corps since its inception in 1961. We were awarded the Carnegie Foundation for the Advancement of Teaching's two social engagement classifications: curricular engagement, and outreach and partnerships.
- The Lodestar Foundation donated $5 million, the largest gift in its history, to the ASU Center for Nonprofit Leadership and Management, which was renamed the Lodestar Center for Philanthropy and Nonprofit Innovation.
- ASU at present has 499 community outreach programs in 178 locations, offered by 123 units, totaling 782 outreach opportunities.

- ASU Preparatory Academy, an affiliate of ASU, opened its first school, the ASU Preparatory Academy Polytechnic, in August 2008, and opened its Phoenix location in August 2009. In 2011, the academy opened the first year of high school, ninth grade, at both locations and will expand to 12th grade by 2014.
- American Dream Academy, a program helping parents in low-income, disadvantaged areas learn how to transform their children's educational experience, won the regional and national 2009 C. Peter Magrath University Community Engagement Award. More than 25,000 parents have graduated from the American Dream Academy. Since 2006, the program has served over 400 schools and organizations, and indirectly impacted more than 60,000 low-income, minority youth throughout the greater Phoenix region.
- In 2004, we launched the President's Medal for Social Embeddedness. The award recognizes ASU teams that demonstrate excellence in both identifying a community need and cultivating mutually-supportive partnerships with Arizona communities to address that need.
- We established the Stardust Center for Affordable Homes and the Family in 2003 to engage in design/build efforts to create models of affordable, sustainable housing that are also designed to be culturally specific.
- Since 2010, we have hosted Ignite @ ASU giving over 70 speakers the opportunity to share their ideas for change with over 700 students, staff and community members across all four campuses. Attendees learned about collaborative efforts to make an impact in our local and global communities and ways to get involved. Community partners included the Arizona State Credit Union and Ignite Phoenix.
- Since 2008, ASU has placed in the top 20 large universities for Teach for America Corps Member Placement. In 2013, ASU ranked 14th for overall Corps Member placement with a total of 42 placed Corps Members, up three spots from 2012, which included 41 Corps Members. Moreover, ASU ranked 3rd for total applications produced, and 1st for total Latino applicants.
- In 2010, ASU launched the Sanford Inspire Program as part of a five-year, $18.85-million investment from entrepreneur and philanthropist T. Denny Sanford. ASU, in partnership with Teach For America, will bring major substantive changes to the way ASU recruits, selects, and prepares future K-12 teachers.
- For the second year in a row, ASU has placed in the top 50 for the public good. The 2013 Washington Monthly rankings, which measure a school's social mobility, research, and service, listed ASU 49th overall and 7th for social mobility, which measures the recruitment and graduation of low-income students.
- ASU has strengthened its partnership with the Valley of the Sun United Way by forming a Student United Way group. This group is only one of six student United Way groups in the Western region. The ASU Student United Way received the 2012 Signature Program Award from the United Way Worldwide for its commitment to the Alternative Spring Break Program.
- ASU is one of 33 universities in the Clinton Global Initiative University Network, which signifies its dedication to the development of student-led social innovation. As a member of this consortium, ASU supports, mentors, and provides seed funding to leading Sun Devil student innovators and entrepreneurs.
- The College of Nursing & Health Innovation has two nurse-managed health clinics. The NP Health Care Clinics offer Nursing Practitioner students and international cohorts clinical hours and experience while serving the local community. One clinic is located inside the Nursing & Health Innovation building and serves the downtown Phoenix community, including ASU students and employees. The NP Health Care Clinic–Grace,

located at Grace Lutheran Church, provides free or low-cost reproductive health services for adolescents and adults who do not have health insurance.

- The Department of Speech and Hearing Science operate clinics that provide high quality professional services to individuals of all ages with needs in communication and hearing improvement. In addition to serving the community, these clinics serve as training and research facilities for students studying audiology and speech-language pathology.
- In 2013, students from ASU, Northern Arizona University and the University of Arizona began collaborating on implementing a student-run health care clinic. Student Health Outreach for Wellness: A Free Clinic (S.H.O.W) and will utilize the Health Care for the Homeless clinic already located on the Human Services Campus. Guided by faculty, student volunteers will provide holistic, client-centered health services to the homeless after-hours. Clinic volunteers will be immersed in inter-professional collaboration through team-based training and hands-on experience.

ASU has also strengthened its relationship with communities and municipalities, creating opportunities for learning. The Community and Municipal Relations team has embedded ASU in thecommunity through faculty, student, staff, community and municipal relationships, partnerships, collaborations, events and other community engagement activities. The team collectively participatee on more than 50 boards of directors, chambers of commerce, committees and community groups at any given time.

Since 2002, ASU has held hundreds of forums, community relations programs and cultural programs in Arizona; Washington, D.C.; and other locations around the U.S. In FY2013, for example, Community and municipal Relations held Challenges Forums for African-American and Asian-American outreach, Arizona forums on immigration reform, a Tribal Government Leadership forum and two national-level forums at the National Press Club in Washington, D.C.

Initiated in 2006, the State of Arizona Reports have highlighted issues facing Arizona's diverse populations with ideas for solving these concerns. The reports are designed to inform policy makers and community members alike, while promoting growth throughout Arizona. Each report is the result of community-driven efforts led by independent groups working in partnership with ASU. There are seven reports reflecting on the challenges and contributions of Latinos, African Americans, American Indians, Asian Americans and Pacific Islanders who call Arizona home.

Athletics

A member of the academically and athletically gifted Pacific-12 Conference, Arizona State has nine intercollegiate sports for men and 12 for women at the Division I level. The university has produced excellence in both team and individual sports (seven NCAA team titles and 37 national collegiate individual titles) while producing some of the nation's best and well-known athletes (Anthony Robles, James Harden, Phil Mickelson, Jacquelyn Johnson, Amy Lepeilbet, Dustin Pedroia and Terrell Suggs). A perennial contender for Pac-12 Conference championships and the Top-10 of the NACDA Directors' Cup, Sun Devil Athletics also excels academically, with the second-most Academic All-Americans in the Pac-12 over the last 10 years.

Sun Devils Win

Both student-athletes and coaches not only upheld the long-standing winning tradition of Sun Devil Athletics, but enhanced it over the past 10 years. From the gridiron to the diamond to the

hardwood, SDA experienced an unprecedented growth in all varsity sports, highlighted by a school-best fourth-place finish in the Directors' Cup in 2007-08.

- 276 All-American Student-Athletes
- 71 Olympic Appearances
- 40 Individual National Championships
- 29 Pac-10/Pac-12 Coach of the Year Awards
- 16 Pac-10/Pac-12 Championship Teams
- 8 National Coach of the Year Awards
- 7 National Championship Teams
- 12 teams have posted top-10 finishes in the past three years
- In 2013, Baseball secured their 51st consecutive season with more than 30 wins, Women's Golf was selected to participate in its 22nd consecutive NCAA Championships and Women's Tennis made its 26th consecutive NCAA Tournament appearance
- In 2011, Softball won their second national championship in four years under Coach Clint Myers

Sun Devils Graduate

With the seventh-most Academic All Americans in the nation since 2000, SDA has successfully integrated the New American University model into its varsity sports programs. ASU created and implemented the "Scholar Baller" program becoming the first institution to acknowledge academic success on the game jersey. Sun Devil Athletics also developed cohort programming for each class, resulting in marked improvement in all areas of the student-athlete experience. This evolution is exemplified by the women's tennis team, which has earned a perfect APR score every year the measurement has been in existence while advancing to the NCAA tournament for 25 consecutive years.

- 64 Academic All-Americans
- ASU is 21st All-Time in Division I for Academic All-Americans, and 13th since 2000
- Baseball was recognized for being among the Top 10% in the nation while tennis was praised for being in the Top 10% for the 8th consecutive year with its 1000 average since 2003-04
- In 2012-13, Sun Devil student-athletes achieved an all-time high GSR of 80%, tied 5th in the Pac-12 Conference, although we were just 1% away from a tie for 3rd
- Sun Devil student-athletes have garnered 16 NCAA Post-Graduate scholarships in the past five years and 18 since 2000

Sun Devils Serve

Whether it is visiting local elementary schools and children's hospitals, teaming up with non-profit organizations in the community or volunteering at events across the valley, SDA has been at the forefront in increasing ASU's prominence and influence in not only the Phoenix area, but also the state as a whole.

- The Sun Devil Club has had 78,715 donations over the last 10 years and gained 750 new members in the past year
- The Sun Devil Club has tripled the athletic departments Endowments to just under $14 million
- Sun Devil Wrestler Anthony Robles won the 2011 NCAA National Title and was honored at the 2011 ESPY's with the Jimmy V Award for Perseverance and named the Best Male Athlete with a Disability

- A good example of Sun Devil Athletics helping the community during a tragedy is during Hurricane Katrina, when ASU hosted LSU's football game with only a five-day notice and donated $1,000,000 for relief efforts
- Pat's Run, an annual 4.2-mile run/walk fundraising event run by the Pat Tillman Foundation and hosted by ASU, has grown to a 35,000-plus person event in just eight years
- More than 1,200 student-athletes have participated in Sun Devils Serve Projects since 2010, totaling 10,251 hours

Sun Devil Athletics Attendance

Nearly seven million fans have attended an ASU sporting event in the past 10 years, helping to create a unique and inclusive atmosphere around ASU's Tempe campus. SDA has also hosted a litany of ancillary events, including President Barack Obama's ASU commencement speech in May 2009 before a crowd of more than 70,000, which is the largest U.S. audience for Obama since his inauguration.

- 10,858,700 people have attended events in Sun Devil Athletics' facilities since 2002
- Sun Devil Athletics hosted events, along with ASU sporting events, such as NCAA events, ancillary and community events, Arizona Cardinal games, Bowl games, and many others over the past 10 years
- Sun Devil Athletics has had 7,434,887 fans attend ASU sporting events since 2002
- Sun Devil Athletics has hosted 59 NCAA Events in the past 10 years drawing 846,522 spectators
- Sun Devil Athletics has hosted 682 ancillary and community events in Sun Devil Athletics' facilities with 919,104 people attending those events
- The Arizona Cardinals played its home games in Sun Devil Stadium until 2006, drawing 1,532,642 fans from 2002-06

Sun Devil Facility Improvements

SDA has invested more than $100 million into its facilities over the past 10 years to ensure its varsity sports remain in the upper echelon of athletic programs. State-of-the-art indoor practice facilities for both football and basketball, among others, have made Arizona State a destination for student-athletes all over the country and across the globe.

- Capital Projects
  - Sun Devil Athletics has built over $45,000,000 in capital projects over the last 10 years
  - The projects include the following new facilities: wrestling facility, women's gymnastics training facility, the Weatherup Center basketball facility, Verde Dickey Dome (indoor football practice facility), and the Sun Devils Sports Performance
  - The projects also include improvements to the existing facilities: Sun Angel Stadium, Mona Plummer Aquatic Complex, Wells Fargo Arena, Sun Devil Stadium, Carson Student-Athlete Center, Farrington Stadium, Kajikawa Football Practice Field, Whiteman Tennis Center, Hobbs Practice Facility
- Deferred Projects
  - Sun Devil Athletics has spent over $100,000,000 the last 10 years to upkeep the current facilities

    - Some of the major projects include: Sun Devil Stadium structural improvements, baseball's eventual transition to the Phoenix Municipal Stadium, and improvements to Camp Tontozona, among others
- Future
    - The past year has seen exciting announcements about the future of Sun Devil Stadium, the announcement of a new baseball stadium and plans for renovations for many of the sporting venues

Sun Devil Athletics Achievements

A regular fixture in the NACDA Directors' Cup, SDA has achieved success in all varsity sports while enabling its student-athletes to excel during both their time at ASU and after graduation. Evidenced by its representation at the Women's World Cup, NBA Finals, Super Bowl and The Master's, among others, SDA has proven to be a training ground for those looking to shine on the world's brightest athletic stages.

- Arizona State has seven top 10 finishes in the NACDA Directors' Cup and finished in the top 20 for the 15th time in the 19-year history of the award. Sun Devil Athletics posted a school-best fourth-place finish in 2008 and was named the nation's top college athletics program by Sports Illustrated. ASU has placed in the top 15 11 times.
- In May 2011, Sun Devil Athletics unveiled a massive rebranding campaign of the athletic department, including a new primary logo, to massive media coverage. The event, new logo, and new uniforms were acclaimed across the nation.

Alumni Engagement

The rate of alumni engagement is a broad and significant indicator of institutional quality. Alumni who have a positive experience while in college through their student engagement, a strong belief in the value of their degrees, and sustained positive feelings about their alma mater, are more likely to want to be involved with the institution over the course of a lifetime. In FY2005, the Alumni Association undertook a major assessment of alumni demographics and interests. The staff learned that ASU alumni, like the rest of the university, are unique in their profile. We have continued our monitoring of demographic trends, and today's (FY2013) statistics indicate that ASU alums are much younger than expected, with 55 percent younger than 45 and 33 percent younger than 35. The majority of alums live in Arizona (213,835) and in particular Maricopa County (176,311); the 10 highest states where alums reside outside of Arizona are California, Texas, Colorado, Illinois, Washington, New York, Florida, Oregon, Virginia, and Nevada.

In response to the assessment, the association launched a major rebuilding of the alumni volunteer chapter network and a broad series of new programs, events, benefits and services. The following highlights these new efforts and their results.

- The Alumni Association developed Arizona State Young Alumni (ASYA), a program aimed at engaging alumni under age 35 with social, career and community service programming and events. ASYA was launched in FY2010 in Maricopa County.
- In order to reach alumni living outside Arizona, the Alumni Association has put increased emphasis and staff resources into strengthening its chapter and club network.
- We have grown the number of chapters and clubs to 106, which includes 73 chapters and clubs in targeted geographic locations throughout the United States, as well as 33 international connection groups.

- In FY2009, we took ownership of the ASU Cares day of service project and transformed it from a primarily local Valley of the Sun event into a national day of service. Since the transformation, Alumni Association chapters and clubs have participated in 76 service projects in four years through ASU Cares Across the Nation.
- In FY2009, we inaugurated the tradition of participation by our geographic chapters in "shadow runs" held across the nation in conjunction with the 4.2 mile Pat's Run held in Tempe each April. The number of chapters hosting shadow runs has increased: in FY2009, 2; in FY2010, 14; in FY2011, 21; in FY2012, 25; and in FY2013, 28.
- During FY2011 and FY2012, the association developed a chapter specifically for ASU alumni who are military veterans. The chapter reaches more than 3,500 graduates who have served their country; the group has participated in ASU events such as the annual Salute to Service and has held networking events for its members. The chapter has started a new tradition and now hosts receptions two times per year for the ASU students who are veterans and presents them with special military chords to be worn at commencement ceremonies.
- The chapters also have increased their fundraising efforts for student scholarships in their geographic area or affiliated with their special interest area.
- We have increased the number of ASU collegiate license plates (also known as Sparky plates) on the road in Arizona to more than 15,000. The plates' support for the Medallion Scholarship Program has increased from $89,107 in FY2003 to $300,000 in FY2013, an increase of 236 percent. In FY2011, the ASU Alumni Association rolled out a new design featuring an all-gold background and Sparky.
- ASU Magazine
    - The ASU Alumni Association increased circulation of the magazine by 67 percent from FY2005-FY2012. It is delivered to 348,984 households including alumni, dues-paying Alumni Association members, faculty/staff, and select donors.
    - Since FY2007, the magazine has been printed on paper that is FSC and SFI Chain of Custody certified and printed with vegetable-based soy ink.
    - Since FY2007, the magazine has received 50 writing, design and overall excellence awards.
    - During FY2012, Alumni Association staff created an enhanced website for ASU Magazine. The site at http://magazine.asu.edu/ will provide content from the print edition, as well as online-only features, additional photos, videos and audio segments, and a blog. The organization also developed an iPad application, available at no charge in Apple's iTunes store, that allows users to view the latest edition of ASU Magazine and review university developments by reading past issues of the publication.

Digital Assets

- ASUAA continues to enhance its website for simplified navigation and more robust content to create an interactive and engaging experience for the Sun Devil community. Since FY 2005 nearly 1.5 million visits to the ASUAA website have occurred.
- The ASU Alumni Association engages with alumni on Facebook and Twitter sharing university, alumni and athletics-related news as well sharing photos and updates from alumni around the world. The Facebook account was launched in November 2008, and has more than 22,064 fans while the Twitter account has more than 8,917 followers. Additionally, the association hosts the largest group of ASU graduates on its LinkedIn account, where relevant discussions and professional development opportunities occur with Sun Devils around the world. More than 30,687 alumni are a part of this account.

Constituent Relations and Programs

- The Alumni Association instituted the Sun Devil Advocates Network, which enlists supporters to advocate on behalf of the university and higher education, and now has more than 2,150 participating in the effort.
- The association revitalized its Homecoming Week activities to include an annual pre-game luncheon known as the Legends Luncheon in FY2008. Since its inception, the event has become a fall signature event for the university. During FY2013, the event honored the more than 200+ Sun Devils who have played in the NFL with nearly 700 guests.
- The Alumni Association's spring signature event, Founders' Day, has grown significantly since FY2003, moving from a budgeted expense to a revenue producer. In FY2009, the association partnered with the ASU Foundation to unveil the Challenges Before Us Initiative at ASU and honor faculty and alumni exemplars of the work that the university is doing to solve the most pressing issues of our time. Attendance at that event was 620. In FY2010, the first Founders' Day Award to go to an international recipient was presented to His Excellency Sultan Saeed Nasser Al Mansoori '88 B.S.E., and Gregory and Emma Melikian received the inaugural Philanthropist of the Year Award. Attendance at the event was 600. In FY2011, event attendance reached 680, and in FY2012, and paid attendance exceeded 775. In FY2013, honored all Sun Devils who served or are currently serving in the military by recognizing the highest ranking officer in each brank. The attendance reached 780 for this event.
- We partnered with Educational Outreach and Student Services to recruit 925 volunteer Alumni Admissions Ambassadors nationally, and currently is in partnership with Undergraduate Admissions to continue recruiting and training international ambassadors.
- In FY2011, in response to economic conditions and response from alumni, we launched Alumni Career Resources in partnership with ASU Career Services. In the inaugural year, the program consisted of 3 programs and a webinar on professional development topics, one-on-one career coaching both in person and online, a career newsletter distributed quarterly, a blog focused on career issues and a series of networking events.
- During FY2013, 172 alums attended Alumni Career Resource development events, which included a two breakfast events, The Executive Athlete: Developing Mental Toughness featuring Chris Dorris, and Painless Performance Management featuring Marnie Green. The Spring evening reception featured John Hill of Linkedin who presented how to maximize linkedin benefits for you and your organization. 540 alums participated in Maroon & Gold Mixers and 156 in Women in Business Mixers hosted throughout the year; and 320 combined, attended a Women in Business Fall event Title IX: inspiring Opportunity, celebrated 40 years of advancing Women's opportunities in education and sports and Spring event Life Stories of Courage featuring Marie Tillman and Anthony Robles.
- To meet the lifelong educational needs of alumni, the Alumni Association re-launched its travel program during FY08. At the end of FY2012, the name of this program changed from Sun Devil Destinations to ASU Travel & Tours. The association also supported alumni returning to the Valley of the Sun for ASU-themed events by creating a travel portal, where local hotels offer Sun Devils discounted rates and other special deals. Launched in FY2011, the program currently has 10 hotels offering discounts to alumni through the portal.
- To establish a connection with ASU families with young children, Sun Devil Generations, launched in FY2008, provides children from birth through eighth grade the foundation for a lifelong relationship with ASU and the values and culture of a major public

research university. The program has grown from 78 enrolled members in its inaugural year to a total membership of 118 children during FY2013.

- The Alumni Association has developed service/volunteer opportunities as part of its mission to connect and unite alumni, as well as advance the university and enhance the alumni experience. In FY2013, more than 700 volunteers of all ages provided more than 10,000 hours of service to the association.
- Through its programs, events and services ranging from board-level leadership to event and chapter participation, an additional 10,000 Sun Devils engage with the ASU Alumni Association and the university. Whether it's being a part of the Washington, D.C., Capital Alumni Network flag football team or serving as a reader of Medallion Scholarship applications, Sun Devils across the globe actively serve as volunteers and engage with us.

Membership

- Membership has increased since FY 2003 with a current total of 32,913 dues-paying members.
- Since the launch of a strategic partnership with the ASU Bookstore, we have increased membership among new graduates by 260 percent since FY 2008.
- Three New Membership Categories
  - In FY 2006, we revitalized the Student Alumni Association into a dues-paying membership organization to support the program more fully. SAA experienced a 300 percent growth in membership in FY2011, after forming a partnership with the Student Sun Devil Club. At the end of FY2013, membership in SAA stood at 4,153.
  - In FY 2006, the Alumni Association established the U Devils group for faculty and staff. This membership program has grown to represent 750 ASU employees by the end of FY2013.
  - In FY 2008, we established Gold Life Membership and have grown this category to 1,257 members.

Student Engagement

- With the revitalization of the Student Alumni Association, the group actively supported the Game Day initiatives and played an integral part in the Pep Rallies, and continued to uphold vital Sun Devil traditions, including whitewashing the A and protecting the A.
- We implemented a Senior Year Experience program in FY 2008 that included the development of a council and resulted in seniors attending programs and events on all four campuses to assist with their transition to graduate studies or their first professional position.
- We reconstructed the Medallion Scholarship during FY2005 with Undergraduate Admissions from a one-year stipend to a four-year scholarship program, which now selects 27 recipients each year from throughout Arizona. During the same time period, the scholarship amount was increased from $2,000 to $3,000. The program is supported by the ASU license plate program and donors, and provided the more than 100 students in the program $300,000 in direct support in FY2012.
- Since FY2006, we have hosted 203 Sun Devil Send-Offs nationally with our geographic chapters. The Send-Offs are receptions for freshman and incoming new students in geographic areas across the country.
- In FY2010, we launched the Legacy Scholarship program, which offers $1,200 scholarships ($600 per semester) to relatives of ASU Alumni Association members. Three inaugural scholarship recipients were selected for the 2010-11 school year, and

10 recipients for the 2011-2012 school year, 10 for the 2012-2013 school year, and 11 for the 2013-2014 school year.

From FY2003-FY2013, the Alumni Association presented 756 Moeur Awards to honor undergraduates with the highest academic standing, who complete course work while attending ASU in eight consecutive fall and spring semesters.

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[i] Figures include all outright gifts, new pledges and face value of planned gifts, but exclude contributed services and payments on pledges.

Chairman KLINE. Thank you, Dr. Crow.

Dr. Hart, you are recognized.

STATEMENT OF ANN WEAVER HART, Ph.D., PRESIDENT, THE UNIVERSITY OF ARIZONA, TUCSON, ARIZONA

Dr. HART. Got it. I appreciate it.

Chairman KLINE. A little cooperation here.

Dr. HART. A little cooperation between—

Dr. CROW. We are not playing them in the tournament yet.

Dr. HART. It will be years, Michael. Years.

[Laughter.]

Dr. CROW. We are coming up from another bracket.

Dr. HART. Well, unlike Nick Johnson, my vertical jump is not 47 inches, but we are working at it at the University of Arizona.

I am so honored to have the opportunity to speak with you this morning and talk with you about the role the University of Arizona plays in helping our state and our nation and our world to meet the challenges that we are facing.

I also want to thank the committee for the work that you are doing with the reauthorization of the Higher Education Act. Congressman Salmon knows we appreciate your attention and thought. We have at the University of Arizona an internal task force that brings together those interested in the University's issues. Congressman Salmon, thank you for taking the time to meet with our task force and speaking with them about ways in which we can be good partners.

Now, in our brief five minutes here today, I want to focus on just three key issues related to our shared interest in the role of higher education in advancing the well-being of our nation. And I am going to limit my remarks to those with the hope that we will have a chance to extend this dialogue over time in the years to come.

The first is of great interest to all of us, and it is, in fact, STEM research and education. And as you have heard from my colleagues from other institutions, just being able to be successful with the students who are already interested in STEM makes a huge difference in the quality and numbers of young people who come out of those majors. As the public land grant research university and in the sense —a super land grant. We have a medical school, but, no, we have two medical schools.

You can imagine how deeply engaged and involved we are in the pipeline of talent from the STEM disciplines and how invested we are in discoveries of high-tech and high-wage fields that are so important to the well-being of our state and nation. And these are also high-income and compensation skills.

So in the STEM disciplines, the U of A has a tremendous contribution in medicine and healthcare, in space sciences and optical sciences in which we lead the world in many of those important issues, in land and arid environments and water studies, which are critical to two-thirds of the agricultural lands around the world, and a focus on defense and security. And our research enterprise, which is currently over 600 million a year in external funding, is a huge economic driver in the state of Arizona. And overall, with the spinoff and amplifying effect, about $8.3 billion in the Arizona economy alone.

Now, because of our high level of achievement in those high tech fields, we are not engaged or involved in remedial education, and rely for that —those fundamentals—very, very tightly in our partnerships with community colleges and with our other higher education institutions. We are a system of providers that together and working closely together have a big impact on a positive future.

A second of the major initiatives at the University of Arizona that I want to highlight this morning is an initiative we call 100 percent engagement. As you know, the process of taking formally acquired learning from a laboratory or a classroom and applying it to new settings is a very, very difficult process to achieve. And we are committed at the University of Arizona to making sure that every one of our students has a carefully structured and formal experience, require them to do that, and to take what they are learning and apply it in many, many, many settings, a critical way in which we help to create opportunities for students to be more than a student. And as my colleagues have emphasized, a critical step in the effectiveness of higher education.

Our students work with world class scientists and scholars, with partners from industry and business. Our UA students learn cutting-edge work in their fields. One example I would use is the University of Arizona-led OSIRIS–REx Mission, which will be bringing a soil sample back to Earth from a near-Earth asteroid, and which involves students directly from the undergraduate level in all the scientific disciplines, but also engineering, management, information science, public relations, and communication, where students are working directly in those important fields.

And then finally, our partnerships with local industry, as you have heard, are very deep and extend into the high-tech fields that are so much a part of the University of Arizona's commitment to synergy in all aspects of our high-tech industry and the application of education to our future.

[The statement of Dr. Hart follows:]

Reviving our Economy: Supporting a 21st Century Workforce
US House of Representatives
Education and Workforce Committee
Written Testimony

Dr. Ann Weaver Hart
President, University of Arizona

Chairman Kline, Ranking Member Miller, Representative Salmon, Member (s) of the Committee, thank you for inviting us here today. My name is Ann Weaver Hart and I am President of the University of Arizona, and I am honored to have the opportunity to speak with you about the role that the University of Arizona plays in helping Arizona and the United States address the needs of the 21st century global economy.

I also want to take the opportunity to thank the committee for the work that you are doing on the reauthorization of the Higher Education Act. This work is vital to the future of higher education and its role in workforce development in the United States and the UA wishes to provide input. As Congressman Salmon knows, the UA has created an internal taskforce that brings together elements of the University most interested and most impacted by the reauthorization. Congressman, I want to thank you for speaking with the taskforce late last year, and I very much look forward to continued partnership with you as this work continues.

To address how the UA fulfills its role in Arizona and the nation, I want to cover three main points:

1. The importance of STEM education and research fields and the need for a strong pipeline of student success and research innovation.
2. The University's 100% Engagement Initiative, which helps ensure that UA graduates are ready to tackle the challenges of the 21st century economy because they have worked with faculty and industry partners on cutting edge research with the most up-to-date methods and practices in a given field.
3. The partnerships that we have fostered with local, national, and international industry, which are at the heart of our success in the educating our students and innovating new knowledge and technologies.

STEM Research and Education

Within this broad goal of furthering workforce development and innovation, the UA places particular focus on being a world leader in STEM education fields.

This focus is in part because of the University of Arizona's mission as a land-grant university, founded to broaden access to what the first Morrill Act of 1862 called "liberal and practical education," which designates areas of learning and inquiry that are inherently engaged in the lives of the communities that we serve. Thus, the UA's mission is, in part, to improve the prospects and enrich the lives of the people of Arizona and the world.

This mission means that we are tasked with innovating new knowledge that can then be applied to the grand challenges of the contemporary world and also to the seemingly mundane problems of everyday life. While it does place focus on STEM fields, this focus is not at the expense of other disciplines (the liberal arts or fine art, for example), but rather enriches their efforts to understand and express truths about the human condition. Because the UA is a public land-grant research university, the core of our mission is high quality education and research that creates a pipeline of talent and discoveries in high-tech and high-wage fields. This research enterprise, currently at just over $600 million a year in research expenditures and going to $1.2 billion by 2023, drives the economic and civic well-being of Arizona and the region and contributes to the nation's competitiveness in the global economy.

As a land-grant university, the UA develops new knowledge, with a specific focus and tradition of excellence in agriculture, engineering, mining and other fields, and we provide ways to apply that knowledge in partnership with Arizona's diverse communities, businesses, and individuals. To ensure that the UA has a strong future serving Arizona, the southwest and the entire nation, we recently completed a comprehensive strategic planning process that sets out ambitious goals for the academic future of the University, and which integrates that academic vision with a specific business plan.

The resulting academic and business plan, Never Settle, targets areas of needed workforce development within the state. These areas also draw on our historic and emerging strengths as a university and our specific geographic location and cultural heritage so that the opportunities we pursue leverage what makes our learning community and our state unique. By positioning ourselves as a leader in these core areas of research and teaching, the UA will be able to compete internationally as these fields develop around the world while creating new knowledge and addressing the areas of greatest need for Arizona and the nation:

1. Medical and health professions – especially population health and health outcomes, healthcare disparities, precision health, neurosciences, and clinical trials.
2. Water and the arid environment
3. Space sciences
4. Defense and security

It is critical that these and other areas of inquiry also drive the education of our students so that the UA and Arizona's other educational institutions create a pipeline of talent to sustain the state and nation's workforce. This is one of the reasons that the University is embarking on a 100% Engagement initiative, which I will discuss in more depth in a moment.

We are, however, not positioned to conduct remedial education programs effectively – either in terms of quality or cost management. In the contemporary higher education ecosystem, our specialization as a public land-grant research university complements other institutions with different roles. This is why the UA's partnership with the other public universities in the Arizona higher education enterprise is so critical, as are our partnerships with community colleges and K-12 systems throughout the state.

We have specific transfer pathways and 2+2 transfer programs throughout Arizona with more being added continually. For instance, the UA Bridge program connects the University with Pima, Maricopa and Mohave Community College Districts. By summer 2014, all Arizona community colleges will have similar agreements with the UA, which will allow students to connect early and successfully with the UA. Our Office of Enrollment Management is also leading an Information Technology project that will expand the UA's existing SmartPlanner tool to allow prospective in-state transfer students to map out a degree plan and progress tracking prior to applying for admission.

Beyond Arizona, University policy opens the potential for transfer credits through the general education core curriculum programs in California's community college system, and we accept hundreds of courses from other community colleges across the U.S.

These agreements provide students with access to the UA's degree programs in high-demand fields like STEM at the time that they are ready for those programs.

100% Engagement

The University of Arizona's 100% Engagement initiative targets the needs for workforce development that I have described above by providing students with opportunities to take the knowledge they gain in the classroom and laboratory and apply it in real time in other settings.

By working with world-leading scientists and scholars, and with partners from industry and business, UA students learn how to apply their classroom and laboratory knowledge to problems and opportunities as they arise in real time. If the research conducted by the University of Arizona in partnership with scientists and industry leaders from around the world provides the knowledge for the state's future success, the application of that knowledge by our graduates is the fuel that powers Arizona's economic engine.

For example, on December 9, 2013 the UA began a 999-day countdown to the mission launch in 2016 of OSIRIS-REx. The billion-dollar mission, funded through NASA's New Frontiers program, will send a spacecraft to the near-earth asteroid 101955 Bennu, named by a North Carolina third-grader in a UA contest, and return with a sample of surface material for analysis. The project is driven by an international consortium of more than 60 institutions. These partners include other world-class universities, industry leaders like Lockheed Martin, government agencies, and research centers like NASA. On the UA campus, the OSIRIS-REx mission involves more than 50 undergraduate interns, who, when they graduate, will be ready to work in some of the most advanced areas of science, engineering, and management, among other fields.

In the UA Department of Mining and Geological Engineering, undergraduate students work in a fully operational mine south of Tucson, where they gain experience with cutting-edge technology and up-to-date industry best practices. Graduates from the department's undergraduate degree program have a 100% placement rate, often going on to work with top companies in the mining and rock products industry throughout Arizona and around the world.

Similarly, students in the College of Agriculture and Life Science's Department of Animal Sciences take classes and help run the Food Product and Safety Laboratory, which includes a retail operation that gives students experience in meat product safety and testing, harvesting, nutritional testing, and catering.

In every case, our ability to partner with industry leaders provides students with an education that deeply integrates knowledge and application, which ultimately fulfills our land-grant mission to support both liberal and practical education.

To promote this 100% Engagement initiative, we will hire leadership for the program, college engagement advisors to assist students, and staff to work directly with business and industry to expand internships and engagement opportunities. These positions will allow the University to implement a full Engagement program on campus with pre-qualified experiences, engagement success colloquia, and enhanced opportunities in partnership with local, regional and national employers.

To further emphasize the importance of this kind of learning experience, the UA is establishing a Graduation with Engagement designation for the UA transcript, which will position UA graduates as employment-ready with top businesses and graduate programs around the world. This step will further our current success, indicated recently by the third annual Global Employability Survey, which ranked the UA's graduates the 13th most employable among American public universities.

Partnerships with Local Industry

This significance and success of our 100% Engagement initiative depends in part on the expertise of UA faculty. Because of our robust research enterprise, students have the opportunity to work with world-leading scientists, scholars, and artists in a variety of fields. This synergy between research and teaching is one of the things that make the public research university such an important and distinct model within the higher education landscape in the United States.

To encourage faculty success in innovation and discovery, we have focused on developing partnerships with business and industry through the new Tech Launch Arizona (TLA), which centralizes UA tech transfer operations and streamlines vital processes like startup licensing and research compliance protocols.

For instance, TLA's Wheelhouse Arizona provides a unified resource for commercialization assessment and development, and is building a network of partners who have experience in a given field and are able to donate time and expertise to foster new technologies.

We have also implemented one of the key elements of the Never Settle plan by adjusting tenure and promotion guidelines so that faculty whose work integrates basic research with its application can be recognized for their innovative work in both areas.

Students benefit from this environment in two predominant ways:

First, because faculty are at the cutting edge of their fields, UA students learn the most up-to-date methods of research, the most current knowledge, and – importantly for our 100% Engagement initiative – the most advanced applications of that knowledge.

Secondly, because faculty members are working with industry and business partners in their basic and applied research, students develop working relationships with leaders in their respective fields, both in academia and in industry.

With these two outcomes, the UA is fortunate to have many foundational partnerships in Tucson and Southern Arizona. For instance:

- Raytheon and Honeywell are key partners in the new Defense and Security Research Institute that the UA recently launched.

- The Mining and Geological Engineering Department is partnering with the Laborers' International Union of North America on a cooperative health and safety training program for underground construction and tunneling.

- The Department of Teaching, Learning and Sociocultural Studies in the College of Education has created the Teach Arizona Master of Education Program, which includes a full year, half-day internship and student teaching experience. Teach Arizona works in partnership with local school districts to place students with mentor teachers while also partnering with designated Human Resources or Curriculum and Instruction professionals. UA students in this program participate in the internship for the entire year, as opposed to the single semester that is more common. They start their internship based on the school district's calendar, rather than the University calendar as in traditional internships, and so their phase-in process at the school where they intern takes place in the fall semester. This includes time observing their mentor teacher as they set up their physical classroom and class management rules, which student-teachers normally do not see. During this period they also work with small groups of students before working with the mentor teacher on lesson planning and team teaching and eventually teaching full lessons units. In the spring semester, the student-teachers have full responsibility for two classes. The result of this program's unique structure is that the UA students are seen and treated as regular teachers, giving them the experience necessary for their first year after graduation to be more like their second year as an instructor.

Conclusion: Synergy and the Application of UA Research

While I have described these three elements of the UA's efforts to support the 21st economy distinctly, it is important to note that they are, in fact, melded together in the UA's strategic plan and in the way that we work with students and partners. As we envision the University's future in the Never Settle academic and business plan, higher education is most effective when all parts of an institution work together for increased effectiveness, achievement and impact. Our goal, in other words, is to create a unity of purpose and a harmony of effort that allows our students, our faculty, and our partners to fulfill potential that would be otherwise unimaginable.

This component of the strategic plan, which we refer to as synergy, emphasizes interdisciplinarity – which you see in the promotion and tenure adaptations that I mentioned earlier – to foster a problem-based approach to research, teaching and partnership rather than a discipline based one. The UA's research centers achieve this same goal by fostering collaborative research across disciplines.

For example, the BIO5 Institute brings together researchers from the UA Colleges of Science, Agriculture, Engineering, Medicine, and Pharmacy to address problems in biology-based problems facing the contemporary world. Among the innovative programs housed at the BIO5 Institute is the iPlant Collaborative, a multi-institution and international project that is developing computing-based methods for plant science research. The project allows researchers from across the world to work together and to analyze massive sets of data to solve increasingly complex problems in agriculture, biofuels and biodiversity.

The Institute also has Dr. Carol Barnes as a member. Dr. Barnes is Regents' Professor in the UA's Departments of Psychology and Neurology, the Evelyn F. McKnight Endowed Chair for Learning and Memory in Aging, Associate Director of BIO5, and recent recipient of the Ralph W. Gerard Prize in Neuroscience – the highest recognition conferred by that society. She and other world-class scientists at the University are working together at the intersections of physics, nanotechnology, medicine, imaging, optical sciences, engineering, information technology, genomics, and other rapidly emerging fields. Together, their work is revolutionizing how we study the brain and respond to the scourge of diseases like Alzheimer's. We also continue to forge and strengthen partnerships with research consortiums like the Arizona Alzheimer's Consortium, state and federal governments, philanthropic organizations, and industry stakeholders to accelerate the discovery of prevention and treatments for the more than 100 million people suffering with 1,000 different brain diseases worldwide.

The Institute also has close ties to the UA Cancer Center, housing the Center's Shared Molecular Modeling facility in its Oro Valley site, and numerous faculty from the Cancer Center are members of the BIO5 Institute. Both organizations are models for the kind of innovative, collaborative, and ambitious research that will meet the health and wellness needs of Arizona and the nation's aging and expanding population.

Similarly, our newly formed Defense and Security Research Institute will create a forum of interaction in materials science, energy, environmental research, medical technologies and social sciences, among others. The Institute will enable researchers at the UA and in partner institutions from business, industry, and academia to pursue large scale projects and funding opportunities much as BIO5 has done in the biological sciences. Both centers allow the University to deepen regional roots while expanding global connections.

The University then applies the outcomes of this and other research through partnerships throughout the state, nation and world that advance knowledge and create high paying and high tech jobs. For instance, the UA-led Phoenix Mars Lander mission was an international collaboration that sent the first NASA's Mars Scout spacecraft, and we are continuing this work with the OSIRIS-REx mission that I mentioned earlier. Similarly, our Steward Observatory Mirror Lab (SOML) makes the world's largest telescope mirrors, including the pair in the Large

Binocular Telescope (LBT) on Mount Graham – the largest telescope in human history – and the Mirror Lab is at the heart of the Giant Magellan Telescope Organization, a worldwide consortium building a telescope that will gather more light and resolve images more clearly than any telescope now in existence. This advancement will allow researchers from the UA and around the world to solve some of the most complex and fundamental questions about the nature of our existence while maintaining the position of Arizona and the U.S. at the forefront of research in optics, astronomy, engineering and related fields. These projects also make far-reaching contributions to Arizona's economy. For example, over the next five years, SOML will finish casting the seven 8.4 meter (27.6 ft.) mirrors that will be used in the Giant Magellan Telescope. The mirrors have an estimated total contract value of $177 million over the course of the telescope's construction and allow SOML to employ 35 – 40 people annually.

The UA has numerous other partnerships throughout the state that directly benefit Arizona's residents while also making contributions to the advancement of human knowledge in biomedical and other vital fields. For example, the UA Cancer Center partners with the University of Arizona Health Network in Tucson to offer clinical care that applies the most cutting edge research available. The UA is expanding the reach of the Cancer Center, and broke ground on a new facility in Phoenix that will open in 2015 and will operate in partnership with Dignity Health Arizona, St. Joseph's.

Similarly, our telemedicine program, which has nearly 50 sites in Arizona, brings the benefits of UA biomedical research to patients in rural and other underserved communities. Similarly, our Cooperative Extension system has offices in 5 tribal reservations and in each of Arizona's 15 counties, and in 2013 had 585,110 participants in programs ranging from agriculture and food safety to 4-H Youth Development and natural resource management. Finally, Tech Launch Arizona has rapidly developed a network of community and business partnerships that are transforming Arizona's economy with new licensing and startup opportunities. All of these efforts promote an environment that will support high-tech and high-wage jobs throughout Arizona and the region, bring new innovations to the market, and educate the workforce who will continue to fuel progress well into the future.

As a public land-grant research university, the UA has much to offer the state of Arizona, the U.S. as a nation, and the entire human family. We face many challenges and it is hard to know what to attempt first, but the critical point for all three universities in the Arizona state system and for public universities across the country is to work together in partnership with each other to form a sustainable higher education system, and to work with business and government partners to ensure that our degree programs, research, and outreach efforts are suited to the needs of our communities.

Chairman KLINE. Thank you, Dr. Hart.

Dr. Lara, you are recognized.

STATEMENT OF ERNEST A. LARA, PH.D., PRESIDENT, ESTRELLA MOUNTAIN COMMUNITY COLLEGE, AVONDALE, ARIZONA

Dr. LARA. Chairman Kline, Representative Grijalva, Representative Salmon, Representative Rokita, thank you for the opportunity to testify before the committee today. I am Ernie Lara, president of Estrella Mountain Community College, and I appreciate the committee's interest in the vital role community colleges play in the economy through our workforce development.

Estrella Mountain Community College offers transfer-ready academic courses and job-specific occupational training to the western metropolitan Phoenix population. Estrella Mountain is surrounded by six distinct municipalities. We make it our mission to determine the workforce needs of our community, our region, and our state.

We are committed to the type of systemic, meaningful engagement and participation in the environment that provides insight into unmet needs, emerging industries, and new markets required for trained workers. Our faculty and staff are involved with local, regional, and national advisory boards and associations to keep abreast of emerging issues in industries.

We are data driven. Routine environmental schemes identify needs and potential workforce opportunities. As one of the 10 Maricopa Community Colleges, we benefit from our Office of Workforce Development, which leverages expertise in the greater Phoenix work base and ongoing research regarding issues and trends.

Estrella Mountain is working to fulfill the needs of energy in the mining sectors as a lead partner in the Arizona Sun Corridor and Energy Consortium. Alignment to engineering programs provides a labor pipeline for our energy partners. Sequence certificates allow students to climb a career ladder directly into higher paying jobs, while gaining the necessary education.

Credentials are earned at three different points in the program: basic training, industry fundamentals, and job specific. And they are stackable, supported by trade adjustment, assistance community college, and career training or TAC grant. Five colleges, including Chandler Geller Community College, are working with each other, workforce entities, and our industry partners to create best practices training programs that prepare workers for the jobs of today and tomorrow in the energy industry.

Estrella Mountain is finalizing curriculum for certificates and a degree in cybersecurity information assurance, and is planning on offering these programs in the fall of 2014. We have begun the process to receive designation as a center for academic excellence for 2-year colleges. The new cybersecurity information assurance program is built on the foundations of the college's strong networking and information technology programs. Students will earn credentials in these fast-growing and high-demand fields.

Transferring to a 4-year institution is an important part of preparing the workforce for a 21st century career. Estrella Mountain offers the Maricopa Pathways Program and provides students and their families time and cost-saving options in high demand degree

programs with our nearest 4-year transfer partner, Arizona State University, ASU.

Community college students who meet certain requirements are offered tuition incentives and guaranteed admissions into specified degree programs on transfer to ASU without loss of credit. Students will have earned an Arizona general education curriculum, an associate's degree, while at the community college. Students and their families save time and money.

Pell grants are vital to the students at Estrella Mountain. Pell Grants often go further at a community college because costs are generally less and students have a lower income on average. If Pell or other federal aid programs were cut, over half of Estrella Mountain's degree/certificate seeking students would not have access to the funding they need to attend college.

In closing, I would like to point out that Estrella Mountain, like Chandler Gilbert Community College, is one of the 10 Maricopa Community Colleges. Together, the Maricopa colleges are the largest provider of workforce training in the state. We generate an estimated $3 billion in annual direct and indirect economic benefit within our county through the increased skills learned at Maricopa, the increased output of businesses due to these skills, and through the higher earnings of our students. We know that two-thirds of all jobs available in Maricopa County will require the skills we teach, and we are training students in 95 percent of the highest demand occupations.

Thank you for the opportunity to speak to you today. I will provide additional materials for your reference in the record with the Chairman's permission. Mr. Chairman, I yield.

[The statement of Dr. Lara follows:]

Statement of Dr. Ernest Lara
Education & the Workforce Committee
March 20, 2014
"Reviving Our Economy: Supporting a 21st Century Workforce"

Chairman Kline, members of the committee, thank you for the opportunity to testify before the committee today. I am Ernie Lara, President of Estrella Mountain Community College (EMCC) and I appreciate the committee's interest in the vital role community colleges' play in our economy through workforce development.

Assessing Workforce Needs
Estrella Mountain Community College offers transfer-ready academic courses and job-specific occupational training to the western metropolitan Phoenix population. Our campuses are surrounded by six distinct municipalities. We make it our mission to determine the workforce needs of our communities, our region, and our state. We are committed to the type of systemic meaningful engagement and participation in our environment that provides insight into unmet needs, emerging industries, and new markets requiring trained workers. Our faculty and staff are involved with local, regional, and national advisory boards and associations to keep abreast of emerging issues and industries.

We are data driven. Routine environmental scans identify needs and potential workforce opportunities. As one of the ten Maricopa Community Colleges, we benefit from the Office of Workforce Development which leverages its expertise about the Greater Phoenix workforce by conducting research and collecting data regarding issues and trends.

Arizona Sun Corridor - Get Into Energy - Consortium
Estrella Mountain is working to fulfill the needs of the energy and mining sectors as the lead partner in the Arizona Sun Corridor - Get Into Energy – Consortium. The "Lineman to Engineer" program provides a labor pipeline for our energy partners with sequenced certificates that allow students to climb a career ladder directly into a higher paying job while gaining the necessary education. Credentials are earned at three different points in the program – basic training, industry fundamentals, and job specific – and are stackable. Supported by a Trade Adjustment Assistance Community College and Career Training - or TAACCCT - grant, five colleges are working with each other, workforce entities, and our industry partners to create best practice training programs that prepare workers for the jobs of today and tomorrow in the energy industry.

Cyber Security/Information Assurance Program
Estrella Mountain is finalizing curriculum for certificates and a degree in Cyber Security/Information Assurance and is planning on offering these programs in fall of 2014. EMCC has begun the process to receive designation as a Center of Academic Excellence for 2-year colleges. The new Cyber Security/Information Assurance program is being built on the foundation of the college's strong networking and information technologies programs. Students will earn credentials in these fast growing and high demand fields.

Maricopa Pathways Program
Transfer to a four-year institution is an important part of preparing the workforce for 21st Century careers. Estrella Mountain offers the Maricopa Pathways Program to provide students and their families time and cost savings options in high demand degree programs with our

Statement of Dr. Ernest Lara
Education & the Workforce Committee
March 20, 2014
"Reviving Our Economy: Supporting a 21st Century Workforce"

nearest four-year transfer partner, Arizona State University (ASU). Community college students who meet certain requirements are offered tuition incentives and guaranteed admission into their specified degree program upon transfer to ASU without loss of credit. Students will have earned an Arizona General Education Curriculum (AGEC) and an associate's degree while at the community college. Students and their families save time and money.

The Importance of Pell Grants
Pell Grants are important to the students at Estrella Mountain. Pell Grant funds often go further at the community college because costs are generally less and students have lower incomes on average. If Pell or other Federal Aid programs were cut, over half of Estrella Mountain's degree/certificate seeking students would not have access to the funding they need to attend college.

Maricopa Community Colleges
In closing I would like to point out that Estrella Mountain is one of the ten Maricopa Community Colleges. Together, the Maricopa Community Colleges are the largest provider of workforce training in the state. We generate an estimated $3 billion in annual direct and indirect economic benefit within our County through the increase in skills learned at Maricopa, the increased output of businesses due to those, and through the higher earnings of our students. We know that two-thirds of all jobs available in Maricopa County will require the skills we teach, and we are training students in 95 percent of the highest demand occupations.

Thank you for the opportunity to speak to you today.

Mr. Chairman, I yield.

Chairman KLINE. Thank you very much. Thanks.

Ms. Farley, you are recognized.

STATEMENT OF CHRISTY FARLEY, VICE PRESIDENT OF GOVERNMENT AFFAIRS AND BUSINESS PARTNERSHIPS, NORTHERN ARIZONA UNIVERSITY, PHOENIX, ARIZONA

Ms. FARLEY. Thank you, Mr. Chairman, and members. Thank you for having us here today, and we are glad to have you in Arizona. We appreciate the opportunity to talk about the success of Northern Arizona University. And you have heard the themes throughout the morning of change and collaboration. So those really are, as President Crow mentioned, integrated from the inside of our university out.

And NAU's main campus in Flagstaff positively impacts the Arizona community in a number of ways. For northern Arizona, from the basic standing, we are the largest employer in that region. Our faculty and staff have made Flagstaff their home, and they are engaged in the community in a number of ways.

Institutionally, we are a significant partner throughout the state, engaging enterprises that address community and statewide needs. From our High Country Conference Center in Flagstaff, which supports the nationally-recognized Hotel and Restaurant Management School at Northern Arizona University that was built in partnership with City of Flagstaff and a private hotelier, Drury Hotels, who was attracted to the area to be on our campus to support this project. That is one example of the combination of educational opportunities along with business opportunities and support for the community.

In addition, we have the Keim lab that partners with TGen North. Al Keim has been nationally recognized as an expert in the field of biodefense agents, and we do a lot of infectious disease research. We have recently signed an understanding with the Flagstaff Medical Center to facilitate research on infectious diseases and population health in the northern Arizona community. And we are recognized as experts in land management and forest health, and support not only Arizona, but our tri-state group of Colorado, New Mexico, and northern Arizona on those areas.

The universities can no longer afford to operate as silos who are simply responsible for imparting education. We are integrated in the communities in a number of ways. To explain the ways that we have adapted, I want to touch on two particular programs through Northern Arizona University.

We are nationally-recognized for our statewide delivery methods throughout the state. In the old days, that used to mean flying faculty all over Arizona to work with the community colleges to impart bachelor's degrees and master's degrees. That model is very different today as we move from taking faculty to the site, through ITV, through online delivery. And I want to thank Congressman Salmon for advancing the discussion of competency-based education.

Northern Arizona University is very proud to talk about our progressive model of competency-based education, and in the spring of 2013, we received approval from the accrediting body to move forward with this project. We then received permission from the U.S.

Department of Education through the model of competency-based education and awarding credits for those competency demonstrations in order to begin providing financial aid for the students in that program.

So it just began over the summer. We now have approximately 122 students enrolled in this competency-based education program. And what it is a program geared towards adult learners where prior learning competencies are assessed and credits awarded. Faculty members from the specific fields of study contact students at least weekly to help guide their learning, and assessments are measured through rigorous testing, including writing-intensive projects and at least one presentation.

As detailed in H.R. 3136, introduced by Congressman Salmon, direct measures of learning would include projects, papers, exams, presentations, or portfolios. These are all demonstrations of success that are looked for in the workforce, and we believe adequately assessed and measured by universities in order to establish direct assessment and learning. We support the pilot program.

The cost for the personalized learning program at Northern Arizona University is $2,500 for 6 months' worth of education. So as has been outlined, individuals may enroll at any time. They take an assessment to ensure that they can manage those competencies of learning in this delivery method, and they can advance based on the skills that they come in with and their dedication to move through the programs. We currently offer three degrees: computer information technology, small business administration, and general liberal studies.

To just briefly mention, we are a partner with the University of Arizona at the Phoenix Biomedical Campus to respond to the growing healthcare workforce needs in Arizona. Northern Arizona University has provided the only public physical therapy program in this state, and we have now added physician's assistant, and will add occupational therapy on that site in the fall of this year.

So in order to address those workforce needs, we have met with the healthcare providers to see how best we can fit that niche in partnership with the College of Medicines existing in the state and to add to the need for nurses and other fields.

Mr. Chairman, members, I know I am out of time. I am happy to answer questions.

[The statement of Ms. Farley follows:]

U.S. HOUSE EDUCATION COMMITTEE ON EDUCATION AND WORKFORCE
Christy Farley, Vice President, Government Affairs and Business Partnerships
Northern Arizona University
March 20, 2014

Good morning, Mr. Chairman and invited guests:

Thank you for the opportunity to share the work of Arizona's universities and our very real connection to economic and workforce development.

Since its modest beginning with 23 students in 1899, Northern Arizona University has grown to more than 26,600 students attending four major campuses and 29 education sites throughout Arizona.

NAU's main campus in Flagstaff positively impacts the northern Arizona community in incalculable ways. The university is the area's largest employer, providing good-paying jobs to individuals who have made Flagstaff and the surrounding area their home. Our faculty and staff are truly an engaged part of the community, purchasing goods and services, paying taxes, serving on community boards and volunteering.

Institutionally, NAU is a significant partner engaging in extensive enterprises that address community and statewide needs. The award-winning High Country Conference Center is a public-private partnership among NAU, the city of Flagstaff and Drury Hotels; genomics research has achieved international recognition with the Keim Lab and TGen North; a new MOU with Flagstaff Medical Center facilitates research on infectious diseases and population health; local, state and federal governments work with NAU experts on land management and forest health; and the university partners with local entrepreneurs for small-business opportunities.

Of course, NAU's foremost mission is to provide our students with an outstanding undergraduate residential education strengthened by research, graduate and professional programs, and sophisticated methods of distance delivery. Choices abound in higher education, with students deciding not just where to go but how to matriculate: in a traditional campus setting, online, in hybrid courses or at branch campuses. Northern Arizona University offers all of these options and more, reaffirming our dedication to quality, affordable education.

Statewide education is delivered through innovative models on three campuses, NAU-Yuma, NAU-Yavapai and the Phoenix Biomedical Campus in partnership with the University of Arizona. NAU also utilizes 29 community campuses, primarily in partnerships with community colleges, online education and our new Personalized Learning Initiative. All of NAU's options provide opportunities for individuals who can't take advantage of a traditional on-campus college experience.

NAU's Personalized Learning is a progressive higher-education model that we began in late spring 2013. It features a competency-based curriculum that is geared for adult learners in particular. Prior learning competencies are assessed and credits awarded. Faculty mentors from the specific fields of study contact students at least weekly to help guide learning. Assessments are measured through rigorous testing that includes writing-intensive projects and at least one

presentation. Credits are accumulated based on a student's demonstration of competencies rather than seat time. Personalized Learning is high-tech and high touch.

The cost for a Personalized Learning program is $2,500 per six-month segment with individual students demonstrating competencies as quickly or slowly as they are comfortable. The distinctive concept challenged accrediting and government agencies at first, but the program's demonstrated quality and financial-aid challenges were overcome in summer 2013. Currently Northern Arizona University's Personalized Learning Program has 122 active paid students, 63 of whom are utilizing financial aid. Of these, 44 have Pell Grants, 26 have loans of more than $2,500, 15 have loans of less than $2,500 and the total amount awarded to date is $420,756.

Three specific degree programs—Computer Information Technology, Small Business Administration and General Liberal Studies—follow the themes we hear from the business community and employers, who want employees who can adapt, communicate, think creatively, and are self-starters and self-learners. Personalized Learning is dynamic and adaptable, responsive to workforce demands. There are no "legacy" programs or deep university history ties. NAU is teaching students how to continuously adapt to their changing workplace, advance and help their employers advance.

Also answering employer demands is Northern Arizona University's partnership at the Phoenix Biomedical Campus, which began seven years ago when NAU embarked on a new initiative to help meet the needs of a local and national shortage of healthcare professionals. While all the Arizona universities and community colleges were addressing nursing shortages and the University of Arizona was expanding its College of Medicine, NAU offered the only public physical therapy program in Arizona.

NAU heard from Arizona healthcare providers regarding the need for additional allied health programs. NAU joined the University of Arizona on the Phoenix Biomedical Campus to educate students in three allied health fields in an interdisciplinary education model, which include Physician's Assistant, Physical Therapy and soon Occupational Therapy.

NAU operates in collaboration with the College of Medicine-Phoenix sharing space, faculty and some of the same courses to train doctors, physician assistants and physical therapists in interdisciplinary teams creating team-based case management and patient support. NAU's graduates in the allied health fields are sure to secure high wage jobs and fill the state's needs.

Enrollment trajectory for NAU's programs at the downtown Phoenix campus is from 49 current students to 355 students in six years.

It's an exciting era in higher education and at Northern Arizona University. Through innovative thinking, creative use of technology and old-fashioned hard work, NAU will continue to offer pathways for Arizona citizens and well-qualified graduates for Arizona employers.

Thank you.

Chairman KLINE. Thank you. Thanks to all the witnesses. As always, we are going to run out of time pretty quickly.

Let me start the questioning with you, Ms. Farley. I do not know why I tend to go to the last person who spoke. But what you are talking about is innovation and how you provide the instruction to provide reason. And we are very interested in the competency-based model. It is incredible how hard it has been, how some schools have really had to struggle through the sort of government morass in order just to get the approval to start this.

So my question to you is what can the federal government do to ensure that we are not standing in the way? And I am thinking of that from the administration's perspective, but also legislatively. What can we do to free that up?

Ms. FARLEY. Well, Mr. Chairman, I think that it has been a struggle to be able to get to this point, not only through the regulatory side of the financial aid that is awarded, but through the accreditation process. I would like to think that we now have a very strong program, but it is still fitting—we have stretched the circle for the peg to fit in to be more of an oval to award credits in order to comply with financial aid. But as these programs evolve, we have to think differently about how students can be eligible for financial aid in order to adjust to the competency-based education.

So awarding credits works in the short term, but it does slow the ability of us to add additional degrees quickly because we have to de-structure that education and pull apart the pieces to show how the competencies and the direct assessment match with the award of credit. So it is a time consuming process, which slows the entrance of degrees.

I think that with adequate accountability measures, pilot programs certainly offer an opportunity for innovation to occur more quickly for us to gather data on that and then to provide demonstration of success. And I think that we will quickly be able to do that.

Chairman KLINE. So, Dr. Crow, you wanted to say something.

Dr. CROW. Yeah. Just very quickly, one idea that comes to mind, and Dr. Lara mentioned it, we put in place these pathway programs which move from community college into the university as automatic admission and automatic moving forward.

One thing that the committee might think about is encouraging the military, in particular, to have these exact same pathways. So in your case, helicopter pilot training, all the things that you went through, there was no automatic movement of those things you had done in the military that then would move you exactly into the university in a particular position.

As far as I know, that has never been done on the level that it could be done. And so, one thing that the committee might do is encourage the military and the universities to build these automatic pathway programs, then to move into the corporate world where we do the same thing. So what Christy is talking about is it takes too much time to do it on a one-person-by-one-person-by-one-person kind of basis. We need to make it systematic, and then there would be a way for this to occur.

Chairman KLINE. I am thinking in terms of a Marine helicopter pilot, we can do just about anything. So it would be pretty easy to set that up.

Dr. CROW. I am sure that we would do that.

[Laughter.]

Chairman KLINE. Dr. Hart, picking up how this works here, but I was interested when you said you do not do remedial education. One of the things that we hear and I hear as I travel around the country is how many students show up for college, and they are just not ready. They simply are not ready. And so, they have to have remedial education. You have apparently got an arrangement with the community college. Could you take a minute and explain how that works, how that system works?

Dr. HART. Sure, I would be happy to. And as my colleagues on the panel here this morning have said, all of us are engaged in those innovative programs that provide a pathway.

One of the worst things I think you can do to a young person is admit them to a university for which they are unprepared to succeed, help them borrow money and invest their time and energy, and then say farewell and watch them flunk out, with no degree and the debt that goes with that. And as you know, that is a downward spiral for a young person to get involved in.

So like ASU, we have partnerships with our community colleges, including the 10 Maricopa Community Colleges, that involve, as you have heard, dual admission so that when students complete the program at the community college that brings them to a level of achievement, then they can make a smooth transition and be successful. And when they walk and receive that degree after those four years, nobody asks them how they spent their first two. A degree from the U of A is a degree from the U of A, and those are critically important.

And my colleagues and I are very concerned about the number of high school graduates who do not even take a curriculum that allows them to be eligible to apply for admission to our institutions.

Chairman KLINE. Thank you. My time has expired. Mr. Grijalva?

Mr. GRIJALVA. Ms. Farley, the accreditation for the competency-based education programs, and congratulations on that. The accreditation process is different from the other regulatory issues that you mentioned in terms of financial aid and how financial aid can be more flexible in order to adjust to this. Two different things?

Ms. FARLEY. Congressman Grijalva, yes, they are two separate things. The accreditation of our academic programs is a process that we go through, and it affects the basic programs that we have on the Flagstaff campus. So that is a separate issue which we were able to navigate prior to being able to work out all of the issues related to financial aid.

Mr. GRIJALVA. Thank you. The advisor for the subcommittee on our side of the aisle, Mr. Williams is an alumni of NAU and he didn't want me to say anything, but I thought I could—

Ms. FARLEY. Congressman Grijalva, thank you. We had a nice chance to visit in advance, and we are happy to see our alumni in great positions.

Mr. GRIJALVA. Well, you should have seen the—

[Laughter.]

Mr. GRIJALVA. Very easy. Dr. Hart, the financing of a public institution like University of Arizona, the corresponding reduction at the state level in terms of support for the university, how do you compensate for that reduction? And how does that impact the course offerings, the adjustments that are having to be made for the demands for a new workforce? How do you compensate for that?

Dr. HART. It is a very complex question, thank you, Congressman. I appreciate the opportunity to respond. As you know, our funding here provided by the state of Arizona for the public universities—the three of us, and our community colleges have other challenges as well—has been reduced by about 40 percent since 2008. And we have been able to gradually adjust to some of those cuts with increases in tuition, but we do not cover the difference. The delta is much larger than the 2008 state funding would have provided.

So we are doing a number of things at the University of Arizona, diversifying our revenue streams that support the key activities. And at the University of Arizona, that includes major high tech partners who work with us to provide a world class education, but also fill the needs of their workforce. I will use as an example we have one of the world's leading mining engineering programs. Dr. Mary Poulton is someone that I think some of you have already met. And we, in fact, are taking your congressional staffers to our mine. We are the only program in the country that has one. And we have a very, very tight partnership with the mineral extraction industry that leads us to be able to do more high tech world class things, but also provide a workforce that is 100 percent employed when they graduate at an average of about $80,000 a year. Those are huge partnerships.

Then we have to cut our overhead. We are constantly in a position of doing more and better with less of our total revenue going to the business of running our institutions.

Mr. GRIJALVA. Is there a tipping point? There's a tipping point, I assume?

Dr. HART. I think there would be a tipping point. If we reached the point where the balance of our ability to deliver the programs and the research that is so critical to the prosperity of our nation, and with so little support from the state, there will be a point where we will just have to say what is that relationship and how might we have to revise it.

Mr. GRIJALVA. Dr. Crow, you described that scenario, the pathways. Thank you. You talked about the alignment that has to happen, with regard to the military as an example, you go down to the corporate world. What prevents the public institution from doing that now?

Dr. CROW. Well, nothing prevents it. It is basically a lesson learned. It is something we should have been doing that we have not been doing. We have been now applying it in a new way. Part of it is the academic culture itself, which is where I started my comments. So in most academic cultures, the dealing with community colleges or the military or something is someone else's business.

And so, now we realize it is not someone else's business, it is our business. And so, that has been the prevention up to this point has been ourselves. And can we do it? The answer is yes.

Mr. GRIJALVA. Dr. Lara, we have ten seconds left. The chairman is strict about that. How many students in the pathways? And you mentioned savings. What are the savings?

Dr. LARA. Right now we projected approximately 12,000 students in the pathway programs that are moving to Arizona state universities. And we have also figured that it is about a 60 percent savings if they complete the first two years with us and then transfer to Arizona State University.

Chairman KLINE. Thank you. Mr. Salmon?

Mr. SALMON. Thank you. I am going to piggyback on a question that Mr. Grijalva had. The state of Arizona's Constitution says, and I am going to paraphrase, that higher education should be as close to free as possible. Given the fact that the funding levels at the state have so dramatically dropped in the last several years, how do you meet that obligation? And I am asking both you, Dr. Crow and Dr. Hart.

And I have a second question I would like you to address, too. I am going to try to get it all in so I can cheat the system.

[Laughter.]

Chairman KLINE. That is not going to happen.

Mr. SALMON. The second question is, one of my top priorities is international trade, and especially for the Arizona economy. I think that would really bolster our economy. We have relied way too much on home building and good weather, and I think we have to diversify dramatically our economic development portfolio. And I would like to ask how the universities can help us to get more international trade in the state of Arizona.

And then thirdly, and this would be more for you, Dr. Hart. My son just finished his fourth year of medical school, and one of my biggest concerns is residencies. We are woefully inadequate here in Arizona with the number of residency spots that we have. And we know that typically speaking, where a person does their residency, that is where they are going to stay. And I would like to know, I have co-sponsored a bill that would dramatically increase the number of residencies across the country, and I would like to hear your thoughts on that. So, Dr. Crow?

Dr. CROW. Quickly on the first two questions, on the issue of the cost of instruction being as close to free as possible, obviously all of us are deeply committed to that. There is commitment and there is actually figuring out how to do it.

In our particular case, it has focused on an unbelievable focus, unrelenting focus on innovation. So for instance, where we had been suffering relative to incoming students relative to math, it is not so much their lack of preparation. It is their lack of understanding the rigor they are about to encounter. It is the rigidity of the rigor with which we have presented it. So we have in that particular area, math alone, freshman math, now completely changed the way that we do everything through the introduction of adaptive learning systems.

And so, we are introducing technology, reorganization of the university, restructuring of the institution, analytics, tools, everything

you can possibly imagine. And we have continued to keep the university accessible in relative terms through those activities and a deep commitment to financial aid. We could spend more time on that at some point.

To your second question, international trade, probably the three most important things that we can do to stimulate international trade, which is, as you know, a way to generate new capital in the United States rather than just recycling the capital that we have, are basically export-oriented startups. So ASU has received about $400 million in venture capital for export-oriented startup companies in the last few years in battery technology and materials technology and device technology. They are all export or export-oriented. Some of them, in fat, are export only.

Working these new technologies invented in the United States, developed in the United States, sold first overseas, and then working our way back to American markets, that is one part of the strategy. The second part of the strategy is international students, international students, international students, with huge incentives for them, once, in a sense attracted from the best and brightest around the world, to stay in the United States and to apply their wares.

And then I think finally relative to international trade is the university actually being involved, all the universities being involved, in the actual acquisition of foreign direct investment in the U.S. for trade back to other countries. And so, we are involved in a number of these missions and ventures. And so, that is the way that we are working.

Just a small point. We run an office now in of all places, Congressman, Ho Chi Minh City in Vietnam in collaboration with the American government, the Vietnamese government, and 40 companies, with our main partner being Intel, which help the businesses they have in the United States to be more successful. So you have to be able to operate on that kind of scale also.

Dr. HART. Thank you. I appreciate the question. I will just add to what my colleague has already said, that the question of as close to free as possible also is relative for different families. And while the Constitution does not recognize that, all of us have worked very, very hard to take maximum advantage of the Pell Grants, which are huge, but also large proportions of institutional aid.

And in Arizona, that aid comes from our institutional budgets, and we are and continue to remain very, very committed to that. Our in-state students, in fact, pay a tiny proportion of the sticker price of tuition at the University of Arizona, and up to 50 percent of last year's entering class of freshmen who were in-state students paid no tuition at all.

The challenges that presents for us is in balancing the world class institutions that we represent against trying to keep those costs down for the individual families as much as possible. And there are many policy initiatives that would be helpful to us in making that happen. So it is critically important, and we focus on it a lot. But we need partners in our federal government as represented by this committee, but also in our state leaders to see what those needs are.

In regard to international trade, it is interesting that you would ask. Dean Joaquin Ruiz is leading a delegation right now represented by and including Mayor Stanton and others to Mexico City to advance and establish trade there. And we are deeply engaged, especially in our high tech and science fields, how that trade among our countries could be advanced.

We personally have been invited by DP World in Dubai to be a partner with them, and our huge alumni base in the Arab Gulf states is working with us to make sure that we at the University of Arizona are represented in the future of the economies in that part of the world as well.

Chairman KLINE. The gentleman's time has expired.

Dr. HART. GME, we will get back to that.

Chairman KLINE. Yes, the residency question will have to wait for another day. Mr. Rokita?

Mr. ROKITA. That was a good trick, Matt. Residency in ten seconds.

Dr. HART. Residency in ten seconds? We not only have a lower number of graduate medical education slots per capita than other states, but the national policy is critical. In 1996, Congress placed a cap on the number of Medicare-supported residencies. Our major population growth has been since then. And so, the support is unbalanced and deeper in parts of the country with a flat or declining population.

Mr. ROKITA. So you heard the federal government is broke. You heard we have $17 trillion in debt driven by 60 percent of our spend is in Medicare, social security, net interest for ourselves and other countries, and the smorgasbord of other welfare entitlement programs. So if the residencies are the priority and they are Medicare-funded right now, what is not a priority in Medicare? Where would you see the shift?

Dr. HART. Where funds would be taken from in order to invest—

Mr. ROKITA. Instead of printing the money.

Dr. HART. Well, you do not have print the money, but we need to be partners, and also encouraging the healthcare providers who sponsor some of our GME sites—

Mr. ROKITA. So public/private partnerships?

Dr. HART. So partnerships are huge.

Mr. ROKITA. Okay. Thank you.

Dr. HART. And our medical schools need to be involved with those providers.

Mr. ROKITA. Thank you. Dr. Crow, I want to get to your testimony. I appreciate that. You mentioned at the end of your testimony two points. The first one was—

Dr. CROW. The first one of the points that I made?

Mr. ROKITA. Yeah, to reiterate, at the end of your testimony you said two take-aways. What was the first one again?

Dr. CROW. The second one I know was about transparency. The first one was to focus on innovative institutions. That is, right now what happens in the policy making process, people tend to want to correct everything at one time. It is not possible. Find the innovators. Work with them. Move on.

Mr. ROKITA. So hold everyone accountable was your second point. You rattled off real quick. I just want to make sure we have it for the record some things to—

Dr. CROW. Oh, three things. So it is about you are held accountable for graduation, you are held accountable for the performance of your graduates, and you are held accountable for the debt defaults of your graduates. And what I mean is that at some scale in some ways, everybody has to be accountable.

Mr. ROKITA. Right, right, right. So on this gainful employment regulation concept that you are familiar with—

Dr. CROW. Yes.

Mr. ROKITA.—you say that should apply to you, too.

Dr. CROW. I think everything should apply to everyone.

Mr. ROKITA. Great. Do you agree with that, Dr. Hart?

Dr. HART. Yes, and we are very proud of our outcomes.

Mr. ROKITA. Great. Thank you. Dr. Lara?

Dr. LARA. Yes. We also agree that the gainful employment—

Mr. ROKITA. So not just the for-profits is what I am getting at.

Dr. LARA. It applies to all of us.

Mr. ROKITA. Great. For the record, Ms. Farley agrees. Thank you very much.

What percentage of your total—I am going to try to go real quick here. What percentage of your total spend in a budget every year is on teachers' salaries?

Dr. CROW. You mean on the faculty itself?

Mr. ROKITA. Yes, as a percentage—

Dr. CROW. My instructional costs within the institution are about half the institution's operating—

Mr. ROKITA. That is teachers' salaries. That is faculty salaries.

Dr. CROW. Well, it is the faculty, the librarians, the instructional activity. The teachers, the instructors, the faculty members, we have about 3,000 faculty members. It would be about 75 percent of that half.

Mr. ROKITA. Okay. Doctor?

Dr. HART. About $700 million of our 7.18 billion is directly general fund unrestricted and goes to the education—

Mr. ROKITA. What percentage is that of your total spend?

Dr. HART. That is about 50.

Mr. ROKITA. Fifty? Doctor?

Dr. LARA. Our percentage is very close. Ours is about 51 percent.

Mr. ROKITA. Oh, so a pattern here. Ms. Farley?

Ms. FARLEY. Yes, we would be in the same pool.

Dr. HART. Congressman, I would add that in our case, those other dollars are restricted and are often from the federal government and research grants. They are not dollars that are just spent on other things than supporting education.

Mr. ROKITA. Right, right. So my question goes to tenure, I guess. Is tenure past is prime?

Dr. CROW. So tenure is basically an urban myth in the following sense. Tenure is not lifetime employment. Tenure is lifetime ability to pursue any idea you want to pursue without being interfered or crushed by—

Mr. ROKITA. So you are for tenure still. That is not a problem. Does it hinder competition?

Dr. CROW. No. So we are for what we call tenure with responsibilities. So we dismiss tenured faculty members on a regular basis for their non-performance, including yesterday.

Mr. ROKITA. Thank you. Dr. Lara?

Dr. LARA. I would agree. Tenure is something that is important, but also Maricopa Community Colleges has just instituted new policies on the way we evaluate faculty. So it is critical that they are performing.

Mr. ROKITA. So you are recognizing change is needed in the tenure process.

Dr. LARA. Yes, I believe changes are needed.

Mr. ROKITA. Mr. Farley?

Ms. FARLEY. Congressman, I would say that we have already integrated those changes into the tenure process to make sure that it is not a problem and making sure that we have quality tenures.

Mr. ROKITA. When was the last time you got rid of a tenured professor?

Ms. FARLEY. Mr. Chairman, I would have to look at that because I do not do that academic side of the house.

Mr. ROKITA. Fair enough. Dr. Hart, I think you will have the last word.

Dr. HART. We have two faculty right now involved in the process. And the issue is that we need to make sure that we have post-tenure review and that we use our own policies to take action when faculty are not performing.

Mr. ROKITA. Yes. So this panel seems, Mr. Chairman, to have the courage to do that. I appreciate your leadership.

Chairman KLINE. The gentleman's time has expired. All time for questions has expired.

We have got a couple of closing statements, and I am going to turn to Mr. Salmon first for any closing remarks that he might have.

Mr. SALMON. I think that the panel or the members of the delegation up here, the members of the committee, I think have been given a rare treat, to be able to see in America how education leaders are pioneering new things, breaking outside of existing paradigms, and focusing on not just education outcomes, but employment outcomes.

And I am really proud of the job that our universities are doing in the state of Arizona. I think they are second to none. I mean that from the bottom of my heart. I have had a chance to work very closely over the years with Dr. Crow, and to say I am one of his biggest fans would be the understatement of the world. I am really proud of the way you have shaken up the way of thinking here in Arizona about higher education. And I think it is becoming infectious across the land. I think it is a good thing.

And, Dr. Hart, you know, what a breath of fresh air. Welcome to Arizona. We are so thrilled to have you and excited to work with you. I have known Christy for a lot of years and Dr. Lara. You guys, you exemplify everything that we want to see happening in education as we move forward. And it is just an honor to have you here.

I asked for this field hearing because I knew that you would not disappoint, that you would show this panel and hopefully the rest

of America that some really wonderful things in higher education are happening in Arizona. I am proud of my relationship with the University of Phoenix, too, who testified in the first panel. And they have tried some very, very innovative things that pioneered online programs that have been replicated successfully all throughout the country, actually the world.

But, Mr. Chairman, thank you so much for bringing this committee to Arizona. I am proud of what we got here, as you can see, and I am just thrilled that you got a taste of what I have been seeing for a very long time. Thank you.

Chairman KLINE. I thank the gentleman. Mr. Grijalva?

Mr. GRIJALVA. Thank you, Chairman, and I really appreciate the hearing. And it was a very good hearing and a very good dialogue as we proceed on the path to reauthorization of the Higher Education Act. In doing so, I think a lot has been learned. For one thing, I think the issue is accountability for that 140 billion investment that taxpayers make in our higher education and colleges across this country.

And we hear during this reauthorization a lot about increased accountability, expanded accountability, new means to deal with the issue of accountability. And I think that exploration is worth undertaking, but it must, as you said, extend to all.

And I thank the people who are here with us today. Congress would need to expand that gainful employment, that applies to career colleges right now, mostly community colleges and for-profits, so we need to expand what that definition is in terms of information.

I do not think it is wrong to ask for-profit colleges in this rule what is your placement rate and how do you define placement. Do you count short-term placements? Question. What percentage of students default on their federal loans? Question. Do any of your professional programs lack programmatic accreditation? Question. What percentage of your income comes from all types of federal aid, including military and veterans education? Question. I think that question is applicable to all, and everybody is accountable for that.

I want to thank the institutions here today in Arizona facing the cuts that they faced at a state level, particularly the universities. They have been able to in many ways increase opportunity, the diversity of students, and careers, and degrees that are available now are more. And I think the discussion about the tipping point is a very valid discussion for the people of Arizona as to do they want to continue to expand this growth, or are we going to reach a point where we begin to shrink?

I want to thank you again. I think that this hearing is important, Mr. Chairman, as you lead us down the discussion of the reauthorization of that and Carl Perkins. And I think that is an opportunity do some collaboration with the private sector to look at internships and to look at some other partnerships that we are not doing now.

So with that, thank you so much. Appreciate your presence here. And to all the witnesses, thank you. I yield back.

Chairman KLINE. Thank you. I want to thank the witnesses for really great testimony, great discussion. As you could tell by the way we were going through this, we are looking at reauthorizing the Higher Education Act, and we want to, in that process we want

to make sure that we are addressing some of the issues of accreditation that were raised here today, innovation, and making sure that colleges and universities, whether they are for-profit, not-for-profit, land grant, and so forth, have the ability to be responsive, and adaptive, and meet the needs as they see them developing. And it has been our observation that in some cases that has proven to be very hard to do because of federal law and regulation.

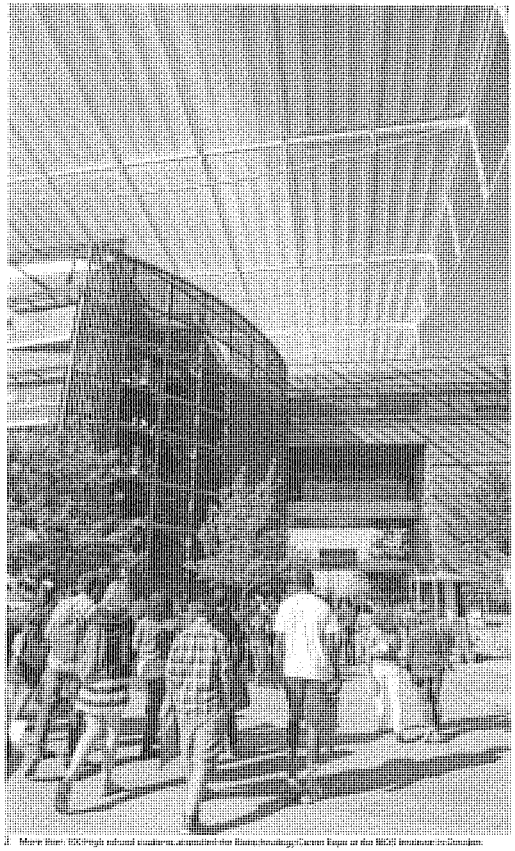
So I thank the witnesses for shedding some light on that. And I must say that perhaps secondly to the fine colleges and universities in Minnesota, I have been very impressed with what I have seen here in Arizona.

There no being no further business, the committee stands adjourned.

Mr. GRIJALVA. Thank you, Mr. Chairman.

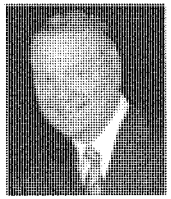
[Additional Submissions by Mr. Lambert follow:]

MEETING
TOMORROW'S
WORKFORCE
DEMANDS
TODAY
Pima County Workforce Investment Board
2012 • 2013



Above from: BIOS's high school students are introduced to the Biotechnology Career Expo at the BIOS Institute in Oracle.

MEETING TOMORROW'S WORKFORCE DEMANDS TODAY



The Workforce Investment Board is proud to work with the thousands of businesses and more than 400,000 workers in Pima County. A trained workforce fuels our community's economic well-being. In our current economic climate, the Pima County Workforce Investment Board's role in providing local employers with skilled and qualified employees has never been more important.

In this year's annual report, we highlight the key decisions, activities, and actions that demonstrate the accomplishments of the WIB and One-Stop Career Center staff in strengthening our workforce.

As you can see on p. 19, more than 750 local businesses hired One-Stop clients in fiscal year 2012-2013, and the WIB and One-Stop partnered with local employers and educational and nonprofit organizations to provide training that helped employees advance in competitive companies.

Many business owners and managers who search for people with the qualifications they need are surprised to find that other companies in their industry often face the same skill-set challenges. Our WIB meetings are often a forum for presentations and panel discussions that begin this dialogue. The One-Stop system follows up with surveys and collaborative efforts with training institutions that may result in the redesign of training curriculum.

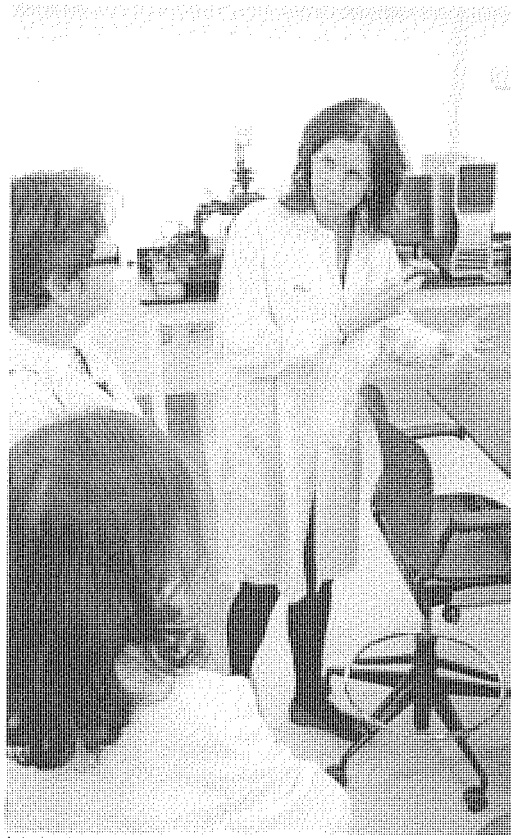
We are currently focusing on six sectors critical to our region's economy. You can read our strategy and activities on p. 9.

Smart, skilled young people are a primary key to Pima County's economic future. The WIB hosted an Aerospace Career Expo at Tucson International Airport in the spring and a Biotechnology Career Expo in the fall at BIOS at the University of Arizona. At the same time, One-Stop worked with local manufacturing companies to establish a machinist internship program for graduating seniors and provided 20 other seniors with tuition for a biotech class at the University of Arizona. We must continue to seek creative ways to connect young people to decent careers.

The WIB's monthly business meetings give its members an opportunity to network with other business and community leaders; and to participate in and benefit from industry-related presentations and discussions.

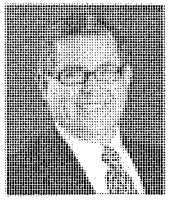
The Pima County Workforce Investment Board works for all of us.

Gregg R. Johnson, Chair



4 Accelerate Diagnostics is a biotechnology company that recently relocated to Pima County from Colorado.

MESSAGE FROM BOARD OF SUPERVISORS



On behalf of the Board of Supervisors, I thank the Workforce Investment Board (WIB) members for their volunteer work. We recognize the importance of their experience and knowledge of business patterns and talent development. We also thank the Pima County staff and all our partners for their professionalism and dedication in preparing qualified workers for quality job opportunities, and for their innovative practices that help us leverage millions of dollars and local resources.

As we work together to stabilize and expand the local economy, Pima County has recognized that we must continue to be responsive and creative. As such, we recently dedicated Kino Veterans' Workforce Center to help military veterans redeploy their talents in the civilian economy. We are also exploring the establishment of a Business Resource "One-Stop" Center that will offer local companies an integrated menu of services from multiple organizations. It is this spirit of innovation that originally led to the creation of the first One-Stop Career Center in the United States. Thus, we continue to explore how to best serve our clients.

We are proud of the volunteer work the WIB has done and we look to a continued partnership. We thank all our business, community-based and faith-based partners who have worked side by side with our staff. The Pima County One-Stop continues to bring together critical expertise and resources to meet the employment and training needs of our community.

Ramón Valadez, Chairman, Pima County Board of Supervisors

6 The Workforce Investment Board met in April at the Pima Community College Aviation Technology Center.

THE WORKFORCE INVESTMENT BOARD

The Pima County Workforce Investment Board (WIB) is made up of leaders from local businesses, nonprofits and educational institutions who are appointed by the Pima County Board of Supervisors and who, as unpaid volunteers, provide recommendations on local workforce policy and oversight of the Pima County One-Stop Career Center.

PIMA COUNTY ONE-STOP CAREER CENTER

The One-Stop Career Center is a part of Pima County government and administers funding and programs under the Workforce Investment Act and is part of the Arizona Workforce Connection, a statewide network of career centers. One-Stop works to fulfill the Workforce Investment Board's vision of "Quality Jobs • Qualified Workers."

SECTOR STRATEGY

The WIB continually seeks input from local industry in order to identify short- and long-term skills shortages through several avenues:

- *Most WIB meetings feature a speaker or panel from a specific industry.*
- *The WIB's Planning Committee reviews data and trends.*
- *One-Stop's Business Services team surveys businesses in specific industries.*

As a result the WIB has identified six industry sectors that show the potential for long term growth of quality jobs:

Aerospace and Defense: The nation's fifth-largest aerospace-defense industry cluster accounts for 50,000 jobs in southern Arizona, including a concentration of the highest-paid jobs, with military bases, defense contractors, and supporting manufacturers.

Health Science: Health care and bioscience are large and vibrant industries that provide a significant number of high-paying jobs in Southern Arizona from traditional health occupations and state-of-the-art health information systems to cutting-edge biotechnology businesses.

Logistics: The region's strategic location along the U.S.-Mexico border and key trade routes account for the prominence of transportation and logistics, with career opportunities in purchasing, expediting, distribution, fleet management, import-export, inventory management, supply-chain management and warehousing.

Emerging Technologies encompasses entrepreneurship research and development, innovation, and commercialization. These activities create primary jobs and drive competitiveness.

Natural and Renewable Resources: This sector focuses on the creation of "green" jobs, facilities and systems that help reduce or eliminate reliance on non-replaceable energy sources.

Infrastructure: The foundations of a safe, clean, and connected community include occupations in construction, extracting natural resources, communication and utilities.

Cynthia Stadhouse counts on a number-bearing automatic drill to stay ahead of Desert View High School.

SECTOR ACTIVITIES

As they run day-to-day operations, managers may not realize that they share skill shortages with other businesses in their sector. The WIB and One-Stop strive to find sector solutions by engaging industry groups and linking hands-on experts with educators and workforce professionals.

AEROSPACE AND DEFENSE

When Jim Mize, One-Stop Business Services team manager, heard an Aerospace and Defense sector report in late 2012 that there was a serious shortage of entry-level and trained machinists in the area, he surveyed sector employers and 22 verified that current technology training was not meeting their needs. The companies formed the Machining Industry Sector Engagement Group and began working with Pima Community College (PCC) to more closely align coursework with industry needs. At the same time, Desert View High School and the Joint Technical Education District (JTED) identified a group of graduating seniors who had enough basic machine tool training to qualify for internships through Tucson Youth Development Inc. with participating companies. The companies now have the youth working part time while they attend classes in the revamped Pima College program. Additionally, a tighter connection between college faculty and the businesses allows for timely dialogue about changing needs as the industry evolves.

In other developments:

- The WIB's input to Pima County's Economic Development Plan emphasized the long-term strength of the County's aerospace industry. Working with local planners to improve transportation access to the major aerospace hub will make it even more fertile ground for expansion and attraction. Nurturing the aerospace sector can provide large-scale and supplier production and maintenance positions at all levels, from entry level to research and development.

- 118 young people ages 14-21 explored career opportunities in aerospace, defense, manufacturing and machining at the WIB's free Youth Career Expo on April 10.

HEALTH SCIENCE

Both the WIB and the One-Stop system have been actively involved in health and bioscience. The WIB presented a free Affordable Care Act Forum for small businesses on Aug. 28 that included Pima County Public Health Director Dr. Francisco Garcia; Peter Beahan, a CPA with BeachFleischman PC; attorney Joel Wakefield; Jay Heydt with Crest Insurance Group; and Kathy Oestreich, CEO of Meritus Health Partners, the only nonprofit cooperative selling insurance through the state exchange. More than 200 attended.

One-Stop and Pima Community College completed the third year of the highly successful Health Professions Opportunity Grant to train low-income Pima County residents for PCC's Pathways to Healthcare Program.

Top: A [illegible] graduation at the Milwaukee Area Technical College [illegible] in August.

HEALTH SCIENCE (continued)

The program provides training from the college's rich menu of offerings that lead to high-paying, high-demand jobs in health care. As its part in this grant from the U.S. Department of Health and Human Services, One-Stop recruits, evaluates and provides its highly regarded case management support system. The collaboration has already generated 628 enrollments, 406 graduates and 340 jobs.

More than 200 young people ages 16-18 explored career opportunities at the WIB's free Youth Career Expos on health care in November 2012 and biotechnology in October 2013.

For 15 years Pima County has sponsored youth as they transition from high school to Tucson Medical Center (TMC). The LEAP (Learn, Earn, Advance and Prosper) program, managed by Tucson Youth Development, helps youth obtain nursing assistant certification. TMC follows up with tuition reimbursement. Several early graduates are now registered nurses.

In a pilot collaboration with local high schools, 20 graduating seniors were enrolled in a biotechnology class at the University of Arizona during their last semester of high school.

Each spring Pima County conducts a summer youth employment program recruitment process that identifies many youth who qualify not only for its programs but also for programs of other organizations, such as the Fred G. Acosta Job Corps Center. Sandra dropped out of high school after finishing ninth grade to care for her elderly grandmother. But she was unable to find a good-paying job without a diploma or GED. She enrolled in Job Corps' Medical Office Support program and obtained her GED in February 2013 at age 21. She is working as a front office support staff in training at a local plastic surgeon's office.

100 health-care workers have completed specialized workforce training in Health Information Technology.

A new Behavioral Health career pathway was launched in partnership with Tucson Indian Center, UA Healthcare and Community Partnership of Southern Arizona.

LOGISTICS

The region's strategic location along the U.S.-Mexico border and key trade routes are driving a dynamic transportation and logistics industry sector that offers career opportunities in purchasing, expediting, distribution, fleet management, import/export, inventory management, supply-chain management and warehousing.

Members of SALEO, Southern Arizona Logistics Education Organization, made a presentation as a panel to the WIB's monthly meeting in June, and Stefan Baumann, director of business development at the Port of Tucson, updated the WIB on the inland port near Interstate 10 and Union Pacific's El Paso-Los Angeles mainline.

12 The Port of Tucson is expanding and becoming a true hub of logistics in the Southwest.

LOGISTICS (continued)

It has 50,000 feet of track; manages dry, cold, and frozen storage; and provides domestic/international intermodal, box car freight, steel coils/gondola cars, and tank cars/acid transload.

Several years ago Pima County learned that "logistics" curriculum did not really exist. Working with the One-Stops in Yuma, Cochise, and Santa Cruz Counties, Pima County One-Stop Grant Writer Dorothee Harmon obtained a grant that:

- Established a regional logistics education program.
- Created new certificates in Hazardous Materials, Forklift, Commercial Truck Driving, Food Safety.
- Created an Associates of Applied Science degree in Logistics and Supply-Chain Management at Cochise, Arizona Western and Pima colleges.
- Facilitated the development of a Bachelor of Applied Sciences degree in Logistics Supply Chain from Northern Arizona University and added a Logistics concentration to the Bachelors of Applied Sciences in Supervision from the University of Arizona.
- Resulted in more than 600 credentials being awarded – a dramatic increase in the industry's talent pipeline.

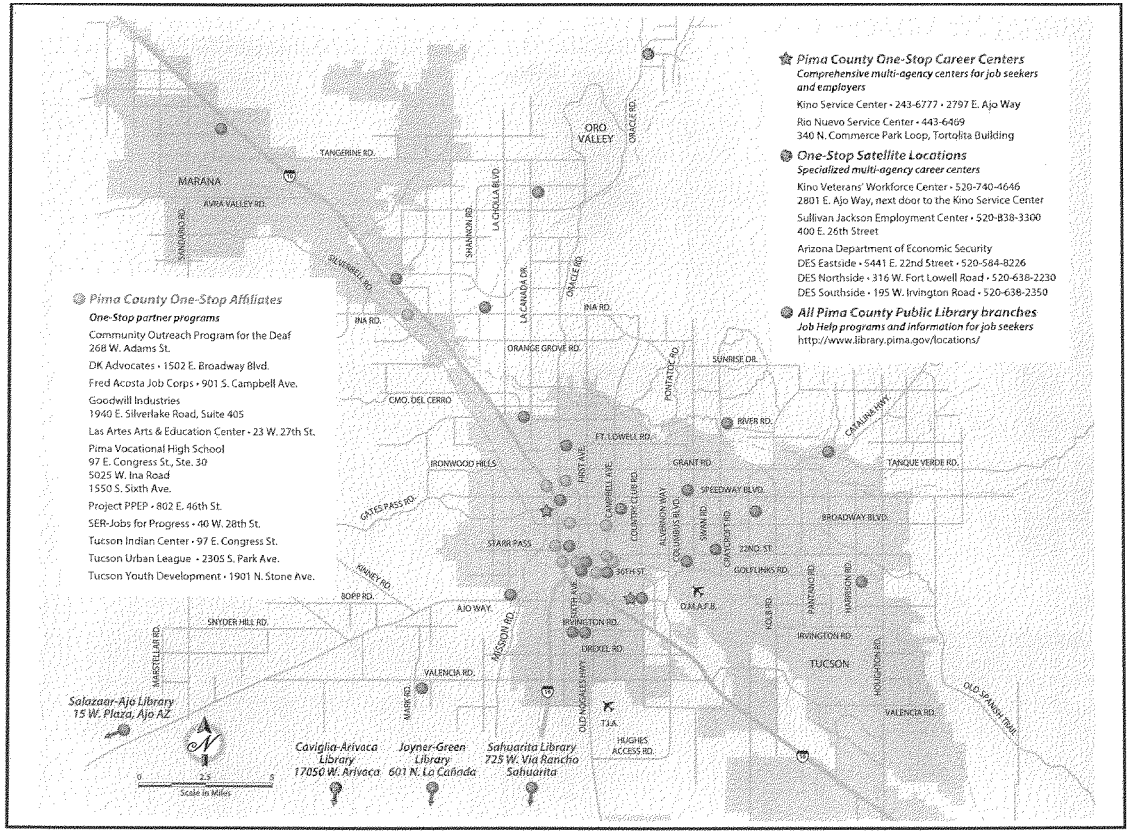
One of those credentials went to Sean, who had retired from Raytheon but realized he still enjoyed working. He took the newly created Certification from Pima Community College. At the end of it he got an internship. He did so well that the company hired him and he now makes $50 an hour.

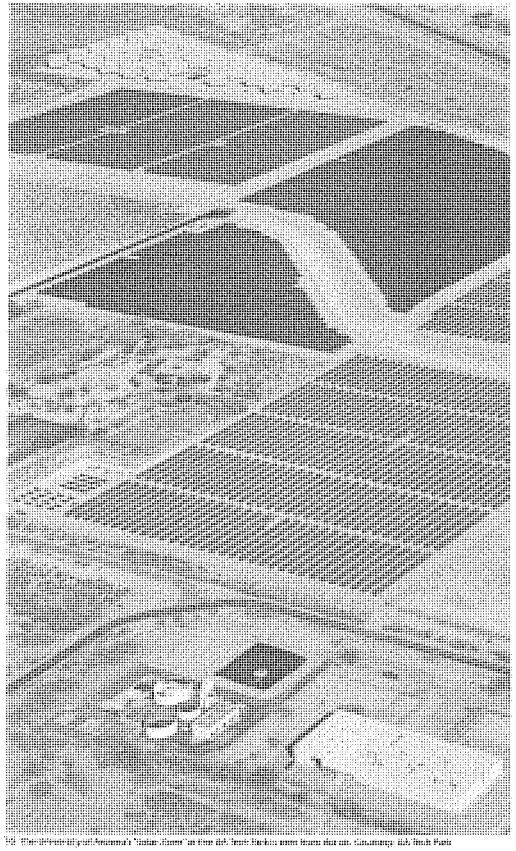
EMERGING TECHNOLOGIES

In August 2013, Entrepreneur Magazine, recognized Tucson as one of five cities in the United States that have laid the foundation for small companies to find the investors and operational footing they need to grow big.

Pima County has 1,200 high-tech companies, ranging from established Fortune 500 companies to small start-ups, some of them resulting from technology transfer activities from the University of Arizona. The UA Tech Park features an incubator that houses start-ups and last year, the UA opened a Bio Park that will ultimately foster additional innovation.

Tech Launch Arizona, Arizona Center for Innovation and groups like Startup Tucson, Gangplank Tucson and the Arizona Technology Council all have added to the development of a foundation for a start-up ecosystem in downtown Tucson. This is enabling budding tech entrepreneurs to find like-minded peers at a growing number of shared workspace sites like Spoke6, Gangplank Tucson, Xerocraft and Coworking Connect Beta.


Pima County One-Stop Career Centers
Comprehensive multi-agency centers for job seekers and employers
Kino Service Center • 243-6777 • 2797 E. Ajo Way
Rio Nuevo Service Center • 443-6469
340 N. Commerce Park Loop, Tortolita Building
One-Stop Satellite Locations
Specialized multi-agency career centers
Kino Veterans' Workforce Center • 520-740-4646
2801 E. Ajo Way, next door to the Kino Service Center
Sullivan Jackson Employment Center • 520-838-3300
400 E. 26th Street
Arizona Department of Economic Security
DES Eastside • 5441 E. 22nd Street • 520-584-8226
DES Northside • 316 W. Fort Lowell Road • 520-638-2230
DES Southside • 195 W. Irvington Road • 520-638-2350
All Pima County Public Library branches
Job Help programs and information for job seekers
http://www.library.pima.gov/locations/
Pima County One-Stop Affiliates
One-Stop partner programs
Community Outreach Program for the Deaf
268 W. Adams St.
DK Advocates • 1502 E. Broadway Blvd.
Fred Acosta Job Corps • 901 S. Campbell Ave.
Goodwill Industries
1940 E. Silverlake Road, Suite 405
Las Artes Arts & Education Center • 23 W. 27th St.
Pima Vocational High School
97 E. Congress St., Ste. 30
5025 W. Ina Road
1550 S. Sixth Ave.
Project PPEP • 802 E. 46th St.
SER-Jobs for Progress • 40 W. 28th St.
Tucson Indian Center • 97 E. Congress St.
Tucson Urban League • 2305 S. Park Ave.
Tucson Youth Development • 1901 N. Stone Ave.
Salazaar-Ajo Library
15 W. Plaza, Ajo AZ
Caviglia-Arivaca Library
17050 W. Arivaca
Joyner-Green Library
601 N. La Cañada
Sahuarita Library
725 W. Via Rancho Sahuarita
Scale in Miles
0
2.5
5
MARANA
ORO VALLEY
TUCSON
TANGERINE RD.
AVRA VALLEY RD.
SANDERS RD.
SILVERBELL RD.
SHANNON RD.
LA CHOLLA BLVD.
LA CAÑADA DR.
ORACLE RD.
INA RD.
ORANGE GROVE RD.
SUNRISE DR.
PONTATOZE RD.
CMO. DEL CERRO
RIVER RD.
CATALINA HWY.
FT. LOWELL RD.
IRONWOOD HILLS
FIRST AVE.
CAMPBELL AVE.
COLUMBUS BLVD.
GRANT RD.
TANQUE VERDE RD.
SPEEDWAY BLVD.
BROADWAY BLVD.
GATES PASS RD.
STARR PASS
22ND ST.
GOLF LINKS RD.
KINNEY RD.
BOPP RD.
AJO WAY
30TH ST.
O.M.A.F.B.
SOUTH AVE.
IRVINGTON RD.
DREXEL RD.
SNYDER HILL RD.
MISSION RD.
HOLE RD.
HANTANO RD.
HARRISON RD.
HOUGHTON RD.
MARSTELLAR RD.
VALENCIA RD.
MARK RD.
OLD NOGALES HWY.
T.I.A.
HUGHES ACCESS RD.
OLD SPANISH TRAIL



EMERGING TECHNOLOGIES (continued)

Pima County is part of a government, education and business collaboration that has been awarded $457,000 by the U.S. Department of Commerce to develop a strategic plan for manufacturing in the southern Arizona and New Mexico region. Pima County will work with Tech Parks Arizona, The University of Arizona, to build a regional strategy for manufacturing, utilizing the region's strength in border technology.

Pima County WIB and One-Stop:

- Continued to explore new opportunities through its four-county southern Arizona workforce partnership, Innovation Frontier Arizona (IFA).
- Partnered with the University of Arizona Office of University Research Parks to link training resources with innovation.
- Trained seven entrepreneurs through the Microbusiness Advancement Center.

NATURAL AND RENEWABLE RESOURCES

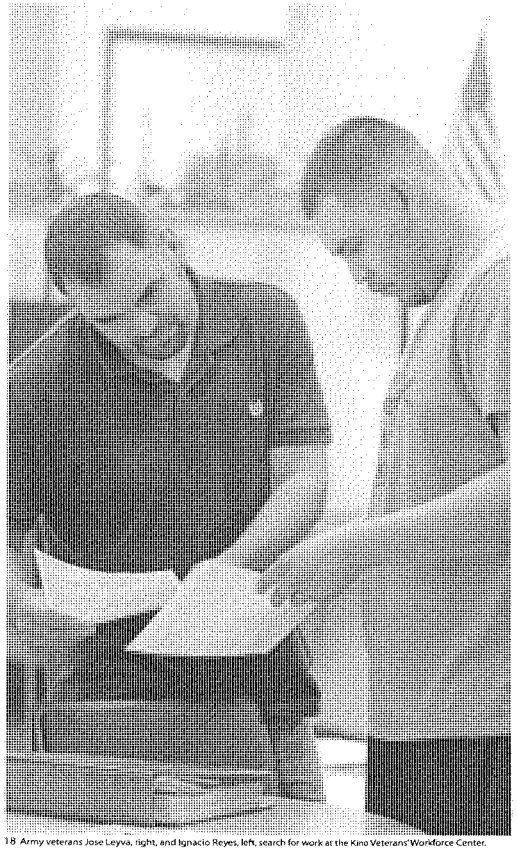
The "Solar Zone" at the University of Arizona Tech Park is designed to allow companies to conduct research for new photovoltaic and other sun powered systems under the area's 311 days of sun each year. The Zone attracts both proven energy suppliers and smaller, innovative energy companies. A number of years ago local building codes were adjusted to require stub outs for solar installations in new buildings, easing the decision to install solar hot water and/or electric generation panels at the time of new construction.

One-Stop Business Services Representative Ben Barela worked with the International Brotherhood of Electrical Workers to introduce a solar module into its apprenticeship program. This module, which has since become part of the local's curriculum, has helped make many local apprentices and journeymen and the companies they work for more competitive.

One-Stop also worked with Pima Community College to develop several new offerings.

During the past few years One-Stop connected workers at 66 local companies to training in hybrid automotive technologies; Smart Grid Management; Home Energy Auditing Weatherization; Energy Efficient HVAC; rainwater harvesting and solar hot water systems certifications.

In October 2012, Gregg took the first of eight classes in Green Building and Project Management. He earned both a CompTIA Project Plus and Project Management Professional Certifications. In addition to the certifications, the classes expanded Gregg's network of business contacts. He is a Project Manager for Southern Arizona Land Trust.



18 Army veterans Jose Leyva, right, and Ignacio Reyes, left, search for work at the Kino Veterans' Workforce Center.

INFRASTRUCTURE

The foundations of a safe, clean, and connected community include occupations in construction, extracting natural resources, communication and utilities.

A Construction Worker Training Grant funded rapid rollout of training or retraining assistance for 225 unemployed or under-employed adults who were previously employed in the local construction industry.

Several years ago the One Stop's Business Outreach team found that a number of construction companies had difficulty recruiting Grade Checkers. The team worked with the companies and developed a Grade Checker Apprenticeship program, recruited potential participants who went through the program and obtained decent paying jobs.

WHAT THE WIB AND ONE-STOP DO FOR EMPLOYERS

Pima County received $4,026,613 in Workforce Investment Act funds in fiscal year 2012-13, with $2,033,803 of the funds assisting adult and dislocated workers with training scholarships.

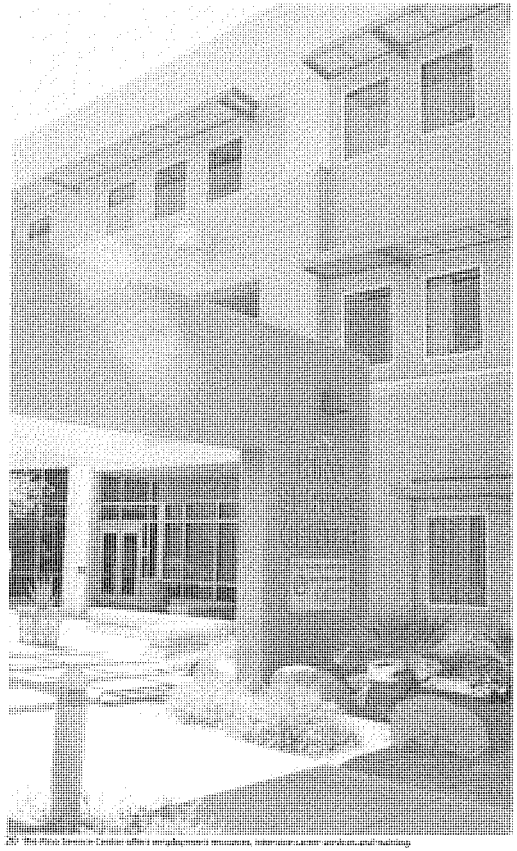
The work done in the industry sectors has resulted in unemployed adults and youth earning the following average wages in the following sectors:

Sector	Average Wage
Emerging Technologies	$14.36
Aerospace & Defense	$14.64
Logistics	$13.50
Health Science	$13.21
Natural & Renewable	$18.67
Infrastructures	$11.56

More than 750 businesses hired One-Stop clients in the fiscal year ended June 30, 2013.

15,553 job seekers utilized our One-Stop self-service system. Of the 3,879 job seekers enrolled for Workforce Investment Act case-managed services, 86% of the adults and dislocated workers, and 77% of the youth were successfully placed in employment.

For more information about the WIB and One-Stop services, please visit **http://www.pimaworks.com.**



The Kino Service Center offers employment resources, information and educational training.

PIMA COUNTY ONE-STOP CAREER CENTER

Kino Service Center

2797 E. Ajo Way
Tucson, AZ 85713
Phone: 520-243-6777
Fax: 520-243-6796, 243-6797

Serves local employers and persons who have been laid off.

Rio Nuevo Service Center

340 N. Commerce Park Loop, Tortolita Building
Tucson, AZ 85745
Phone: 520-798-0500
Fax: 520-798-0597
Serves local employers and unemployed adults and youth.

PIMA COUNTY ONE-STOP SATELLITE LOCATIONS

Kino Veterans' Workforce Center

2801 E. Ajo Way (next door to the Kino Service Center)
Tucson, AZ 85713
Phone: 520-740-4646
Helps employers hire veterans and helps veterans find jobs and get training, benefits and support services.

Sullivan Jackson Employment Center

400 E. 26th St.
Tucson, AZ 85713
520-838-3300
Fax: 520-838-3320
Serves local homeless youth and adults.

Arizona Department of Economic Security (DES)

East
5441 E. 22nd, Tucson, AZ 85711
520-584-8226

North
316 W. Fort Lowell Road, Tucson, AZ 85705
520-638-2230

South
195 W. Irvington Road, Tucson, AZ 85714
520-638-2350

PIMA COUNTY PUBLIC LIBRARY

Works with the WIB and One-Stop to provide workforce services at its 27 branches.

[illegible]

YOUTH SERVICES

Pima County One-Stop Career Center offers a continuum of career development services for both youth and adults and conducts special outreach to special populations, including low-income youth with barriers to employment. Target populations include:

- Young adults who can get basic job search assistance at the One-Stop's Rio Nuevo location. Here they have access to work stations and office equipment as well as Internet Access and e-mail accounts, job leads, career exploration, interviewing skills, and employability skills.

- Youth who need additional assistance or skill training may be eligible for intensive services such as individualized career development, paid summer and after-school opportunities, Las Artes' GED Program, Pima Vocational High School, La Casita Homeless Youth Employment, occupational training, and supports services.

SUMMER YOUTH PROGRAM

One-Stop connects Pima County residents ages 14-21 with summer employment and basic education opportunities every year.

This year, more than 1,450 young people were placed with private employers and in government agencies; 30 attended Pima Vocational High School. All participants attended an employability skills workshop and learned a variety of workplace skills.

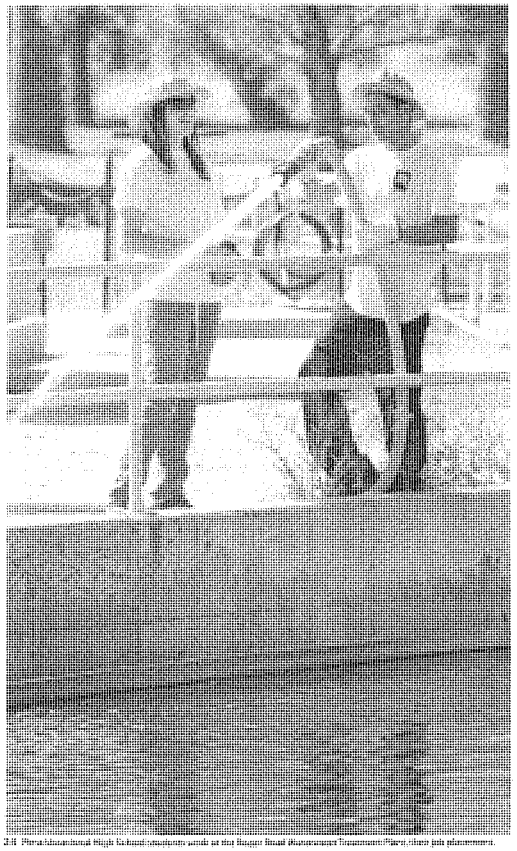
Participants earn $7.80 per hour for workforce experience placements and a stipend (variable) for basic education. They in turn spent their nearly $2 million in income at local businesses.

More than 4,500 young people applied to participate in the program this year. The goal for 2013-14 is to increase private employers' pledges of paid or matching-funds summer jobs or internships to 500.

PLEDGE-A-JOB

The program matches youth ages 16-21 with job openings pledged by local employers who are interested in hiring youth for summer, year round, full time and part time jobs.

Employment counselors prescreen and match each youth to employers' job requirements.



Left: Pima Vocational High School students work at the Bigger Road Maintenance Department. Photo: Steve Jobe photography.

PIMA VOCATIONAL HIGH SCHOOL

Pima Vocational High School (PVHS) is a School-to-Work Charter School started by Pima County in 2000 to help young people ages 16-21 earn a high school diploma and obtain a sustainable job through career-oriented work experience in an applied academic setting. Students also have the opportunity to work as interns in various work placements to gain on-the-job experience.

PVHS offers small classes at three campuses: John A. Valenzuela Youth Center, 1550 S. Sixth Ave.; Downtown Tucson, 97 E. Congress St., Ste. 30; and Northwest, 5020 W. Ina Road.

PVHS graduated 62 students in fiscal year 2012-2013.

LAS ARTES ARTS & EDUCATION CENTER

Las Artes Arts & Education Center combines structured classroom study at 23 W. 27th St. in South Tucson with community art projects to help youth ages 17-21 prepare for general education development (GED) testing and build employability skills. Las Artes graduates make a positive transition into the workplace and higher education and have greater opportunities for sustainable employment and education with marketable job skills.

In fiscal year 2012-2013, 43 young people obtained their GEDs through Las Artes.

OTHER ONE-STOP SERVICES

Sullivan Jackson Employment Center (SJEC), in collaboration with other homeless service providers, offers training and employment services to meet the needs of homeless people seeking to enter the workforce. The Jackson Center is the only program of its type in Arizona and one of a handful of similar programs in the nation.

SJEC opened in 1986 and now assists an average of 200 homeless people to secure unsubsidized employment and transitional housing every year. At last year's average wage of $9.17/hour and 65% retention rate, that translates into nearly $2.5 million of taxable annual income added to the local economy, in addition to savings from reduced dependency on public services.

Outplacement Services assists employers and their employees in advance of a layoff or company closure. The services can be customized to each layoff and to each company's needs in order to help manage the workforce reduction and transition of employees into new jobs, at no cost to employers or employees.

Outplacement Services were made available to 18 companies carrying out closures or workforce reductions affecting 1,300 employees in fiscal year 2012-2013.

WORKFORCE INVESTMENT BOARD 2012-2013 MEMBERS

Linda Arzoumanian
Office of Pima County School Superintendent

Hank Atha
Pima County

Steven Banzhaf
Retired Attorney and Bank Executive

Jacob Bernal
Tucson Indian Center

Johnson Bia
Pima Community College

Duane Bock
Consultant Tucson Electric Power

Clarence Boykins
Tucson-Southern Arizona Black Chamber of Commerce

Rose Capono
Southwest Gas Corporation

Judy Clinco
Catalina In-Home Services, Inc.

Vaughn Croft
Office of Pima County School Superintendent

Wilette Diggs
Raytheon Missile Systems

Deborah Embry
Tucson Urban League

Peggy Feenan
DES – Employment Administration

Michael Guymon
Tucson Regional Economic Opportunities, Inc.

Clayton Hamilton
Outside Input LLC

Peg Harmon
Catholic Community Services of Southern Arizona

Chris Hazen-Molina
Heartfelt Workforce

Kari Hogan
Portable, Practical Education Preparation, Inc.

Gregg Johnson
University of Phoenix

Doug Jones
Sabino Electric, Inc.

Lydia Kennedy
ReActivate, New & Used Activewear

Dorothy Kret
DK Advocates, Inc.

Zara Larsen
The Larsen Group: Architects of Change

Suzanne Lawder
Goodwill Industries

Rita Martinez-Purson
University of Arizona

Sharon Mikrut
Rehabilitation Services Administration

Charles Monroe
Lutheran Social Services

Kim Murray
Universal Avionics Systems Corporation

Noreen Nelson
Retired Aerospace & Defense

Arnold Palacios
Tucson Youth Development, Inc.

Jill Pearson
Self-Management System Corp.

Lea Márquez Peterson
Tucson Hispanic Chamber of Commerce

Beverly Price
HeathTrio, LLC

Regina Romero
Tucson City Council-Ward 1

Carld Rosborough
Fred Acosta Job Corps/Res Care

Paul Roughton
New Horizons Computer Learning Center

Alan Storm
Pima County Joint Technical Education District

Pamela Sutherland
Connecting the Dots

Mike Verbout
Int'l Brotherhood of Electrical Workers (IBEW) Local 570

Frank Watts, Jr.
U.S. Federal Government/Military

James Zarling
Excel Mechanical, Inc.

WORKFORCE INVESTMENT BOARD 2012-2013 LEADERSHIP

- *Chair*
- *Executive Committee*
- *1st Vice-Chair*
- *Planning Committee*
  Gregg Johnson
  University of Phoenix

- *2nd Vice-Chair*
- *Performance & Accountability Committee*
  Noreen Nelson
  Retired Aerospace and Defense

- *3rd Vice-Chair*
- *Board Development Committee*
  Dot Kret
  DK Advocates, Inc.

- *4th Vice-Chair*
- *Youth Council*
  Vaughn Croft
  Office of Pima County Superintendent

- *Past Chair*
  Clayton Hamilton
  Outside Input LLC

THE FOLLOWING MEMBERS LEFT THE BOARD DURING THE YEAR AND WE THANK THEM FOR THEIR SERVICE:

Nicholas Clement
Flowing Wells Unified School District #8

Linda Nichols
ASARCO

Jonathan Peck
Tucson Urban League

Laurie Vance
CAID Industries

Meredith Wilson
UniSource Energy/Tucson Electric Power

[Whereupon, at 1:56 p.m., the committee was adjourned.]

○