White Paper

San Antonio’s Skills Gap Problem

A Call to Action

September 13, 2013
Executive Summary

San Antonio’s Skills Gap Problem
Mayor’s Call to Action

In a commentary by Thomas Snyder, president of Ivy Tech Community College, he stated that, “When faced with a challenge as daunting as our nation’s skills gap, it’s tempting to believe the solution lies in broad, sweeping initiatives requiring significant investments of time and resources—and it’s true that there are few easy answers. However, one key to closing the gap may require little more than a simple shift in our thinking.” (The Community College Times, September 13, 2012).

This shift in thinking, Snyder goes on to say, is the community college and the opportunities existing between the high school diploma and the bachelor’s degree. In the white paper, San Antonio’s Skills Gap Problem - A Call to Action, the opportunities and challenges to close the gap are laid before us. San Antonio holds many strategic advantages, such as leading the state in the percentage of adults (25 years and over) who have completed associate degrees, a labor force younger than the national median age and its large number of military veterans. Challenges include: the almost 20% of the adult population in San Antonio (25 years and older) defined as high school non-graduates; the 80% of students who enroll at the Alamo Colleges and are not college ready; and the fact that, because of the skills gap, some employers are faced with recruiting from outside the region, reducing operations or relocating elsewhere.

The skills gap is a national phenomenon, requiring deliberate action, unwavering partnerships, resolve and indeed, a Call to Action.

I. A Call to Action to Address San Antonio’s Skills Gap

- In March 2013, there were 62,956 persons actively looking for work in San Antonio. Yet, Workforce Solutions - Alamo has identified 7,885 Critical Skill job openings that pay an average of $18.80 an hour. There are 38 demand, Critical Skill occupations in the Alamo Region (2013-2014).

- Critical Skill jobs are those that require some post-secondary training, certificate or associate degree, but less than a four-year baccalaureate degree. Many of these jobs go unfilled in San Antonio.

- Several organizations (Workforce Solutions - Alamo, the San Antonio Manufacturing Association (SAMA), SA Chambers of Commerce, Port of San Antonio, Alamo Academy Board), as well as civic and business leaders, report thousands of unfilled job openings.

- The skills gap is a real and growing problem in San Antonio, leading some employers to recruit from outside the region, reduce operations or consider relocating elsewhere.

- A Call to Action to address San Antonio’s growing skills gap challenge will be championed by: Mayor Julián Castro; Dr. Bruce Leslie, chancellor, Alamo Colleges; and Patrick W. Newman, executive director Workforce Solutions - Alamo.

II. Mayor’s Call to Action - SA Skills Gap
Four Strategic Imperatives (4S)

1. Triple the number of Alamo Colleges graduates and completers in Critical Skill occupations and careers. The goal would be to increase Critical Skill technical graduates from 2,088 in Fall 2012 to 6,000 graduates/completers by 2015. Alamo Colleges’ new initiatives would include:

- Reorganizing instructional programs to align to economic clusters through Alamo Institutes and Employer Engagement Model.

- Creating comprehensive career advising systems that require every student to have a prescribed pathway to success, utilizing a common Virtual Career Development and Placement System (Alamo Colleges and Workforce Solutions - Alamo).

- Redesigning remedial education programs to incorporate career training options.

2. Align (HB-5) High School Career and Technology Programs (CTE) to Alamo Colleges Critical Skill Career Pathways

- Increase enrollments at Alamo Academies - Work with area public schools to increase the number of high school juniors and seniors who enroll in the Alamo Area Academies.

- Establish early colleges Critical Skill career pathway programs

- Increase CTE dual and articulated credit program of studies pathways

3. Align Workforce Training and Adult Literacy Programs with Critical Skill Careers/Jobs

- Produce a pool of 500 Critical Skill technicians utilizing accelerated “Just in Time” training programs to connect job seekers to high-demand jobs that
require complete industry certifications, marketable skill certificates or degrees.

- Enroll up to 1,000 students in Alamo Colleges workforce-based adult literacy and developmental education/I-BEST and Vocational ESL models that increase the pipeline of workforce education students.

4. Community Awareness and Access - Launch a public information campaign to create an awareness of and a positive image for Critical Skill careers. The campaign would see the Mayor's Office, Alamo Colleges, Workforce Solutions - Alamo and others come together to tell the story of great jobs and good careers and of the numerous local opportunities. This collective endeavor would be led by the Mayor's Office and include outreach efforts, marketing and major advertisements.

III. The Workforce

- The City of San Antonio sustains a labor force of approximately 867,400 persons with a median age of 34.3 years, significantly younger than the national median age of 37.

- The region also benefits from the large number of military veterans. Approximately 13.5% of the labor force is identified as being a civilian veteran, compared to 9.3% statewide.

The adult education attainment rates (adults age 25 and over) show that San Antonio lags behind the state in high school completion (24.81% vs. 25.55%) and bachelor's degrees (16.46% vs. 18.23%).

- According to the 2010 census, San Antonio has more adults (25 years and over) who have completed associate degrees (7.34% vs. 6.34%) and more adults with some college (23.42% vs. 21.99%) than the rest of the state. In the "some college" category, San Antonio also exceeds the national measure (23.42% vs. 20.56%). This is important data because it confirms that San Antonio's labor pool is better aligned to Critical Skill occupational demand than the rest of the state. This alignment provides the city with a competitive advantage in sustaining and expanding the local economy.

- The demographic bubble of employed and highly skilled baby boomers (1946-1965) will likely retire over the next decade. Many boomers are expected to vacate Critical Skill jobs, further diminishing the skilled labor force pool and intensifying the need for replacement workers.

V. Demographics

- According to the 2010 U.S. census, San Antonio's population grew by approximately 15.9%, from 1,144,646 to 1,326,539, during the past decade. The 15.9% increase moves San Antonio from the 9th largest city in the nation to 7th largest and the second largest city in Texas, behind Houston (population 2,099,451). The population of San Antonio is projected to grow by 35% by 2015.

- The diversity of the San Antonio population is reflected in its community profile. The city has a large and growing Hispanic population that grew by almost 25%, from 671,394 to 838,454 (+24.9%) in the last decade.
Hispanics represent the largest proportion of the total population at 63%, followed by Whites (27%); Blacks or African Americans (7%); Asians (2%); and American Indians (1%).

- San Antonio's largest population growth groups are Hispanic and African-American, yet these populations tend to have lower education attainment rates and lower per capita income than any other sectors of the state population.

**VI. Examples of How Other Communities Are Addressing Critical Skills Gaps**

- Gateway Community College, City of Racine (WI), and Johnson Control Industries have established a new “Manufacturing Training Center” featuring accelerated boot camps in high demand occupational areas, such as the Computer Numerical Control (CNC) boot camp that has already graduated 16 cohorts with a 95% placement rate. Other boot camps focus on industrial design and rapid prototyping, welding and fabrication. Each boot camp is accelerated and connects graduates to employers.

- The North Carolina Community College System is focusing on addressing Critical Skill gaps in the aviation industry cluster. The community colleges, in collaboration with industry, are focusing on short-term training programs that lead to industry certifications, in order to address the need for Critical Skill technicians to fill vacant jobs in the state’s growing aerospace sector.

- Ten community colleges in the state of Massachusetts are collaborating to respond to education and workforce training needs within 90 days of a company’s request.

- Edmonds Community College and the Boeing Company partnered to develop accelerated training programs to fill the 2,500 jobs created in Snohomish County, Washington, during the past year. Their center has already graduated 140 students. Almost half of those graduates attained jobs at Boeing.

- Chicago Mayor Rahm Emanuel launched the “College to Careers” partnerships to address local workforce skills gaps. The goal of the initiative is to produce 75,000 more health care practitioners than currently exist, with one third of those positions filled by associate degree completers. An important dimension of the Chicago “College to Careers” partnership is that it requires employers from the targeted industry clusters to commit to provide graduates from these programs with internships and jobs, or, at minimum, guaranteed job interviews.

- “Just in Time” (JIT) training in San Antonio is a promising Critical Skill gap initiative that was launched in September 2012 by Workforce Solutions - Alamo, the San Antonio Manufacturers Association and Alamo Colleges. The goal of the initiative is to create a regional talent development network that will increase the pool of highly skilled technicians for manufacturing, aerospace, information technology and related industries by up to 500 skilled technicians annually. During the past six months, the program has already produced almost 100 Manufacturing Skill Standards Certificate (MSSC) certified production technicians and National Institute for Metalworking Skills (NIMS) certified machinists. An information technology “Just in Time” program, in collaboration with Rackspace, was launched in Fall 2013. Almost 30% of JIT graduates are veterans.
White Paper
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Introduction
At a meeting of the San Antonio Manufacturers Association (SAMA), John Dewey, vice president of operations at Innovation, Technology, Machinery (ITM), reported that the SAMA workforce survey found that there were as many as 2,500 unfilled job openings for skilled technicians in production operations, machining, facility equipment maintenance, industry control systems and manufacturing technology in the San Antonio region. On the other side of town, Graham Weston, chief executive officer for Rackspace, reported that most of the 800 employees hired in 2012 were recruited from outside the region, because Rackspace could not "fuel the growth" from the San Antonio population.

Conversely, at the annual banquet of the Hispanic Chamber of Commerce, Alex Briseño, former city manager and chairman, was calling for a workforce initiative to put the thousands of unemployed to work. In March 2013, 62,956 individuals were actively seeking work in San Antonio. The skills gap is a real and growing problem in San Antonio, leading some employers to recruit from outside the region, reduce operations or consider relocating elsewhere.

This paper was written in response to Mayor Julian Castro’s request for a better understanding of the skills gap issues in San Antonio. The paper examines several variables that contribute to the skills gap phenomena, including demographics, a dynamic labor market, structural alignment, low graduation outcomes and the mismatch between the skills being taught in San Antonio schools, colleges and universities and the needs of 21st century employers.

Labor Market Demand and Critical Skill Occupations
San Antonio is experiencing unprecedented economic and job growth in various sectors. The city also continues to create and sustain many low-paying jobs. According to the Bureau of Labor Statistics (BLS), approximately 15% of all hourly employees in San Antonio earn minimum wage, compared to a state rate of 9.5% and a national rate of 6%. However, these are not the "high skill, high wage jobs" addressed in this paper. In this paper, we are concerned with the jobs that Georgetown University economist Tony Carnevale refers to as Critical Skill, which provide high wages, benefits and pathways to a middle class standard of living. These are the very same jobs that have been identified by industry, economic development and workforce professionals as critical for sustaining and growing the San Antonio region’s economy.

Workforce Solutions - Alamo (WSA) has identified 7,885 Critical Skill job openings that pay an average of $18.80 an hour in the technology, health care and knowledge-based sectors (Table 1). Critical Skill jobs are those that require some post-secondary training, certification or an associate degree, but less than a four-year baccalaureate degree. Many of these jobs/occupations are designated “demand occupations” and are embedded in seven growth industry clusters—aerospace, health care, construction, manufacturing, information technology, oil and gas (Eagle Ford Shale) and business and finance. These are the “good” jobs that go unfilled in San Antonio.

| Table 1 |
| Educational Requirements for 2013-2014 Workforce Solutions - Alamo Critical Skill Demand Occupations |

<table>
<thead>
<tr>
<th>Education Requirements</th>
<th>N</th>
<th>2010</th>
<th>2020</th>
<th>Change</th>
<th>Percent</th>
<th>Percent of Total</th>
<th>Average Job Openings</th>
<th>2011 Average Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School/Job Training/Some College</td>
<td>27</td>
<td>143,610</td>
<td>174,690</td>
<td>31,080</td>
<td>22%</td>
<td>80%</td>
<td>7,545</td>
<td>$16.35</td>
</tr>
<tr>
<td>Associate/Certificate</td>
<td>8</td>
<td>29,150</td>
<td>37,800</td>
<td>8,650</td>
<td>30%</td>
<td>16.21%</td>
<td>2,285</td>
<td>$19.77</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>3</td>
<td>7,040</td>
<td>9,100</td>
<td>2,060</td>
<td>29%</td>
<td>3.92%</td>
<td>340</td>
<td>$30</td>
</tr>
<tr>
<td>Totals</td>
<td>38</td>
<td>179,800</td>
<td>221,590</td>
<td>41,690</td>
<td>23%</td>
<td>100%</td>
<td>7,885</td>
<td>$18.80</td>
</tr>
</tbody>
</table>
or more per year, while some pay significantly more. Nearly 10 million jobs pay upwards of $50,000 a year, and 3.6 million pay more than $75,000.

A separate study by the Harvard University Pathways to Prosperities researchers found that Critical Skill jobs pay more than many of the jobs held by those with a bachelor’s degree. In fact, 27% of people with post-secondary licenses or certificates—credentials short of an associate degree—earn more than the average bachelor’s degree recipient. Moreover, the lesson for San Antonio educators is that there are many job seekers and underemployed workers who would like to be able to enter these fields.

**Many Critical Skill STEM Occupations**

A recently released study by the Brookings Institute (Hidden STEM Economy) found that many Critical Skill occupations are part of the STEM (Science, Technology, Engineering and Math) economy. The report noted that while STEM occupations have been traditionally linked to graduate school education and research universities, there is a second STEM economy composed of skilled technicians that produce, install, and repair the products and production machines patented by professional researchers. The report also found that half of STEM jobs are in Critical Skill occupations in the manufacturing, health care or construction industries, in installation, maintenance and repair clusters. These Critical Skill occupations are projected to represent a large share of total employment growth.

**San Antonio’s 38 Critical Demand Occupations**

In their 2013-2014 demand occupations survey, Workforce Solutions - Alamo identified 38 occupations/jobs representing 7,885 job openings. These positions are often in continuous recruitment due to lack of qualified applicant pools. A total of 96% of demand occupations in the Alamo region are Critical Skill occupations and represent a wide range of occupations including, but not limited to, machinists, sales representatives, electricians, network and computer systems administrators, dental hygienists, radiologic technologists and accounting clerks (Table 2). Job openings requiring associate degrees and certificates paid an average of $19.77. The shortages are in the occupations requiring the greatest skill, though not necessarily the most formal education.

It is projected that by 2018, nearly two-thirds of all available jobs will require at least some post-secondary education, and that an estimated 30% of new jobs will go to workers with some college or a two-year degree (Carnevale, Smith & Strohl 2010). The creation of jobs requiring an associate degree will outpace any other education and training category (Lacey & Wright 2010). It is noted that not all demand occupations are Critical Skill occupations, as evidenced by the 4% of the demand occupations that require bachelor's degrees.

According to the Georgetown University Center for Education and the Workplace (CEW), while these Critical Skill jobs may not be as prestigious as those filled by bachelor's degree holders, they pay a significant premium over many jobs open to those with just a high school degree. They pay, on average, $35,000
<table>
<thead>
<tr>
<th>Aerospace/Advanced Manufacturing</th>
<th>Finance</th>
<th>Health Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft Mechanics and Service Technicians</td>
<td>Bookkeeping, Accounting, and Auditing Clerks</td>
<td>Medical and Clinical Laboratory Technologists</td>
</tr>
<tr>
<td>Machinists</td>
<td>Sales Representatives, Services, all other</td>
<td>Registered Nurses</td>
</tr>
<tr>
<td>Assemblers and Fabricators, all other</td>
<td>Tellers</td>
<td>Radiologic Technologists and Technicians</td>
</tr>
<tr>
<td>Team Assemblers</td>
<td>Customer Service Representatives</td>
<td>Licensed Practical and Licensed Vocational Nurses</td>
</tr>
<tr>
<td>Industrial Truck and Tractor Operators</td>
<td>Construction</td>
<td>Medical Secretaries</td>
</tr>
<tr>
<td>Electrical and Electronic Equipment Assemblers</td>
<td>Heating, Air Conditioning, and Refrigeration Mechanics and Installers</td>
<td>Nursing Aides, Orderlies, and Attendants</td>
</tr>
<tr>
<td>Energy (Oil and Gas)</td>
<td>Plumbers, Pipefitters, and Steamfitters</td>
<td>Pharmacy Technicians</td>
</tr>
<tr>
<td>Bus and Truck Mechanics and Diesel Engine Specialists</td>
<td>Helpers, Pipelayers, Plumbers, Pipefitters, and Steamfitters</td>
<td>Dental Assistants</td>
</tr>
<tr>
<td>Industrial Machinery Mechanics</td>
<td>Helpers, Electricians</td>
<td>Medical Assistants</td>
</tr>
<tr>
<td>Electricians</td>
<td>Information Technology</td>
<td>Business Support Miscellaneous</td>
</tr>
<tr>
<td>Welders, Cutters, Solderers, and Brazers</td>
<td>Network and Computer Systems Administrators</td>
<td>Secretaries Except Legal, Medical and Executive</td>
</tr>
<tr>
<td>Petroleum Pump System Operators, Refinery Operator and Gaugers</td>
<td>Computer Systems Analyst</td>
<td>Receptionists and Information Clerks</td>
</tr>
<tr>
<td>Derrick Operators, Oil and Gas</td>
<td>Computer Support Specialists</td>
<td>Office Clerks, General</td>
</tr>
<tr>
<td>Roustabouts, Oil and Gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy and Tractor-Trailer Truck Drivers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
San Antonio Workforce Demographics

The emphasis of this section of this paper is on the size, availability and quality of the San Antonio workforce, significant variables affecting the goal of sustaining and growing the local economy. U.S. census data has been used to determine changes during the ten year interval between surveys (2000 and 2010).

Large, Young and Diverse Workforce - San Antonio is one of the fastest growing, youngest and most diverse cities in the nation. According to the 2010 census, San Antonio’s population grew by approximately 15.9%, from 1,144,646 to 1,326,539, during the past decade. The 15.9% increase moves San Antonio from the 9th largest city in the nation to the 7th largest, and makes it the second largest city in Texas, behind Houston (population 2,099,451). The population of San Antonio is projected to grow by 35% by 2015.

The diversity of San Antonio is reflected in its racial and ethnic composition. The city has a large and growing Hispanic population that grew by almost 25% in the last decade, from 671,394 to 838,454 (+24.9%). Hispanics represent the largest proportion of the total population at 63%, followed by Whites (27%); Blacks or African Americans (7%); Asians (2%); and American Indians (1%). From a workforce perspective, these statistics are significant, in that Hispanic and African-American populations tend to have lower educational attainment rates and lower per capita income than any other sectors of the state population.

Availability of Workforce - San Antonio sustains a labor force of approximately 887,400 workers, with a median age of 34.3 years, significantly younger than the national median age of 37.1. The region also benefits from the large number of military veterans. Approximately 13.5% of the labor force is identified as being a civilian veteran, compared to 9.3% statewide. In March 2013, there were 62,956 people actively looking for work in San Antonio. However, labor force participation data includes a demographic bubble of employed and highly skilled baby boomers (born 1946-1965) who are projected to retire over the next decade. Many boomers are expected to vacate Critical Skill jobs, further diminishing the skilled labor force pool and intensifying the need for Critical Skill replacement workers. Unless educational attainment rates for Hispanic and African-American populations improve, the quality of San Antonio’s workforce will decline, as highly skilled baby boomers are replaced by Hispanics and African Americans with less educational and skills attainment levels.

Quality of the Workforce - The primary indicator by which to gauge the quality of the workforce is the level of educational attainment of the adult population. Texas ranks below the nation in most educational attainment measures (Table 3). In San Antonio, the educational attainment levels show mixed results. The adult education attainment rates (adults age 25 and over) show that San Antonio lags behind the state in high school completion (24.81% vs. 25.55%) and bachelor’s degrees (16.46% vs. 18.23%). However, the census data also provides important and encouraging news. San Antonio has more adults (25 years and over) who have completed associate degrees (7.34% vs. 6.34%) and more adults with some college (23.42% vs. 21.99%) than the rest of the state. In the “some college” category, San Antonio also exceeds the national measure (23.42% vs. 20.56%). This is important data because it confirms that San Antonio’s labor pool is better aligned to Critical Skill occupational demand than the rest of the state. This alignment provides the city with a competitive advantage in sustaining and expanding the local economy.

<table>
<thead>
<tr>
<th>2010 US Census Highest Education Levels</th>
<th>San Antonio</th>
<th>Texas</th>
<th>United States</th>
<th>Above State Level</th>
<th>Above National Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed High School</td>
<td>24.81%</td>
<td>25.55%</td>
<td>29.24%</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Some College</td>
<td>23.42%</td>
<td>21.99%</td>
<td>20.56%</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Completed Associate Degree</td>
<td>7.34%</td>
<td>6.34%</td>
<td>7.50%</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Completed Bachelors Degree</td>
<td>16.46%</td>
<td>18.23%</td>
<td>17.52%</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Completed Graduate Degree</td>
<td>9.64%</td>
<td>8.80%</td>
<td>9.84%</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
Accountability and Skills Gap

From a workforce perspective, the bottom line is that San Antonio’s schools, colleges and universities are not producing the number of graduates with the skills or credentials required by area employers. The current public education and workforce development systems are underperforming at all levels. In San Antonio, too many students fail to graduate from high school. Of those who graduate, most are not college ready; and, of those who enroll in colleges or universities, few go on to earn degrees or certifications that are aligned to high-demand Critical Skill occupations.

While there are many proprietary and non-profit education and training providers, the public education institutions have the responsibility to produce an educated and skilled workforce. In San Antonio, the public education system is comprised of three highly interrelated but independent systems—K-12, the Alamo Colleges and universities. Although each of these education systems is addressing its own respective funding, performance and accountability issues, there is little evidence to support the premise that the systems are focused on addressing area skills gap issues.

K-12 - The public school curriculum is focused on a single university pathway that requires all students to complete a four-year (4x4) sequence of English, math, science and social studies. While the intent of the 4x4 curriculum is to increase academic rigor, it also eliminates the periods that previously allowed students to enroll in career and technology courses classified as electives. At the same time, the single university pathway does not align to labor market realities which show that 80% of local and state jobs do not require a bachelor’s degree.

The single pathway university curriculum continues to produce high dropout rates, as reflected in the 2010 census data showing that 25% of the adult population in San Antonio are defined as high school non-completers. Of those who graduated and enrolled in Alamo Colleges, almost 80% were not college ready. Many of these students would benefit from a graduation pathway that provides opportunities to engage in rigorous career and technology education and training programs, including college-level, dual credit training aligned to Critical Skill careers.

A recent report of the Texas Workforce Investment Council (TWIC, 2012) found that a lack of high school career and technology education opportunities leads to higher dropout rates and reduces the eligible post-secondary pools that feed the “middle occupations” post-secondary education pipeline. In San Antonio, we are now witnessing both high dropout rates and declining enrollment in post-secondary workforce education programs at the Alamo Colleges.

![Figure 1: The Workforce Gap](image)

**Figure 1**

**The Workforce Gap**

<table>
<thead>
<tr>
<th>Where 9th Graders Are Headed</th>
<th>VS.</th>
<th>Where the Jobs Are</th>
</tr>
</thead>
<tbody>
<tr>
<td>28% will enter a 4-year college</td>
<td>20% require a 4-year college degree</td>
<td></td>
</tr>
<tr>
<td>32% will enter an associate degree program or advanced training</td>
<td>65% require an associate’s degree or advanced training</td>
<td></td>
</tr>
<tr>
<td>10% will lack the skills needed for employment</td>
<td>15% require minimum skills for employment</td>
<td></td>
</tr>
<tr>
<td>30% will drop out of the system before completing high school</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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*As of 2010 census data.*

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*Highlighting the discrepancy between educational pathways and labor market demands.*
Community Colleges – The Alamo Colleges maintains one of the most expansive inventories of workforce education and training programs aligned to Critical Skill occupations in the state. The Alamo Colleges currently offers 118 associate of applied science and 241 certificate and degree programs. And, in spite of funding constraints, this year (2013) two new associate degree and certificate programs that align to the emerging regional needs of the Eagle Ford Shale energy sector were approved—Oil and Gas Production and Advanced Water Management. However, Alamo Colleges is not producing sufficient graduates in the Critical Skill occupations to meet market demand. In 2012, there were 10,594 students enrolled in workforce education programs, producing 2,088 graduates. At best, the current graduation rates address 26% of the total graduates needed to fill the 7,885 annual Critical Skill job openings (Table 4).

The Alamo Colleges' workforce education enrollment has declined by 3,831 students in the past three years. This represents a 26.6% decline in workforce education enrollment over this period (Table 5). The overall decline in enrollment was influenced by the need to reduce the number of course offerings and by the deactivation of 48 low-producing workforce education programs. Alamo Colleges experienced a 28% reduction of state contact hour reimbursement (a reduction of $3.85 to $7.75) that produced a $21 million reduction in state funding for Alamo Colleges between 2010-2013.

Alamo Colleges also reports a shift in the proportion of workforce education majors, from a high of 25% in 2010 to a low of 20% in 2012 (Table 5). According to Harvard University and Georgetown University research, a primary factor impacting the number of students seeking Critical Skill careers stems from the single university pathway model that reinforces the negative image associated with Critical Skill training and job opportunities.

### Table 4
Alamo Colleges - 2012 Workforce Education Graduates By Program Instructional Areas (Codes)

<table>
<thead>
<tr>
<th>CIP</th>
<th>Programs</th>
<th>Alamo</th>
</tr>
</thead>
<tbody>
<tr>
<td>51</td>
<td>Health Professions and Related Programs</td>
<td>1,081</td>
</tr>
<tr>
<td>52</td>
<td>Business, Management, Marketing, Support</td>
<td>306</td>
</tr>
<tr>
<td>47</td>
<td>Mechanic and Repair Technologies/Technicians</td>
<td>246</td>
</tr>
<tr>
<td>11</td>
<td>Computer and Information Sciences and Support</td>
<td>232</td>
</tr>
<tr>
<td>15</td>
<td>Engineering Technologies and Engineering Related</td>
<td>172</td>
</tr>
<tr>
<td>48</td>
<td>Precision Production</td>
<td>28</td>
</tr>
<tr>
<td>46</td>
<td>Construction Trades</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>2,088</strong></td>
</tr>
</tbody>
</table>

### Table 5
Alamo Colleges - Workforce Education Enrollment Declining Enrollment Trend

<table>
<thead>
<tr>
<th>Major</th>
<th>2010</th>
<th>Percent</th>
<th>2011</th>
<th>Percent</th>
<th>2012</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>44,372</td>
<td>75%</td>
<td>46,510</td>
<td>81%</td>
<td>41,760</td>
<td>80%</td>
</tr>
<tr>
<td>Workforce</td>
<td>14,425</td>
<td>25%</td>
<td>10,776</td>
<td>19%</td>
<td>10,594</td>
<td>20%</td>
</tr>
<tr>
<td>Total (Census Date)</td>
<td>58,797</td>
<td>100%</td>
<td>57,286</td>
<td>100%</td>
<td>52,354</td>
<td>100%</td>
</tr>
</tbody>
</table>
A study by the Community College Research Center at Columbia University found that enrolling students in defined programs of study, as early as possible, increases retention and completion rates. The vast majority of students who enroll after high school graduation at the Alamo Colleges are ill-prepared academically (80% need remedial education) and/or do not possess an understanding of their career options. As a result, a relatively small percentage of first-time-in-college students (9%) complete a degree or certificate within three years of enrollment, compared to a 21% graduation rate for regular full-time students. To address this, Alamo Colleges is in the midst of a major institutional transformation designed to improve completion and graduation rates. A new “My Map” enrollment and student support system is in place that requires students to declare a major in the first semester, and curriculum is being refocused and contextualized to career pathways.

“If our students continue, in such large numbers, to be unsuccessful with us, and if employers continue to have vacant jobs and are unable to expand because we can’t produce the numbers with the skills required, then others willing and able to do better will replace us.”

Dr. Bruce Leslie, Chancellor, Alamo Colleges

How Other Communities Are Addressing Critical Skills Gaps

A growing number of communities across the country are already organizing major initiatives to address their own skills gap challenges. Some of the better known efforts include Gateway Community College in the city of Racine, Wisconsin, and Johnson Control Industries. They have established a new manufacturing training center featuring accelerated boot camps in high-demand occupational areas. Their Computer Numerical Control (CNC) boot camp has already graduated 16 cohorts with a 95% placement rate. Other boot camps focus on industrial design and rapid prototyping, welding and fabrication. Each boot camp is accelerated and connects graduates to employers.

A second effort by the North Carolina Community College System is focusing on addressing critical skills gaps in the aviation industry cluster. The community colleges, in collaboration with industry, are focusing on short-term training programs that lead to industry certifications, in order to address the need for Critical Skill Technicians to fill vacant jobs in the state’s growing aerospace sector.

In a third initiative, ten community colleges in the Massachusetts area are collaborating to respond to education and workforce training needs within 90 days of a company’s request. Elsewhere, Edmonds Community College and the Boeing Company have partnered to develop accelerated training programs to fill 2,500 jobs created in Snohomish County, Washington, during the past year. Their center has already graduated 140 students; about half of those graduates already have jobs at Boeing.

In Chicago, Mayor Rahm Emanuel launched the “College to Careers” partnership to address local workforce skills gaps. The “College to Careers” partnership is a high priority initiative for Mayor Emanuel that includes the city colleges, business and industry, and economic development partners. The goal of the initiative is to produce 75,000 more health care practitioners than currently exist, with one third of those positions filled by associate degree completers. An important dimension of the “College to Careers” partnership is that it requires employers from the targeted industry clusters to commit to providing graduates from these programs with internships and jobs or, at a minimum, guaranteed job interviews.

While each of these respective skills gap initiatives vary according to the local workforce needs, they all have similar components:

- **Business and Industry** - Representatives from local business and industry leaders to identify credentials and validate skill sets for their respective industries.

- **Target Occupations** - Identify skills gaps for high-demand sectors or clusters. For example, in Chicago initial efforts are targeting health care, distribution and logistics clusters. North Carolina is targeting aerospace, and Racine is targeting manufacturing.
• **Community Colleges** - Leadership and commitment from their respective community colleges to align their programs to respond to high-demand occupations in the targeted industry clusters.

• **Economic and Workforce Development** - Representation and active engagement of federal and local organizations that are involved in job creation and that administer federal job training programs (Local WIA Workforce Boards) are key.

• **Customized and Accelerated Training Programs** - Accelerated short-term training programs that allow job seekers to complete industry certifications or degrees that provide a pathway into targeted demand occupations.

• **High Tech Training Facilities** - Commitment from local stakeholders to establish high-tech training facilities that meet industry standards. For example, in Racine, Wisconsin, the local community college and Johnson Controls built a 20,000-square-foot manufacturing training center with the primary purpose of addressing skills gaps in the manufacturing sector.

• **Community Champion(s)** - Recognizable and influential community and business leaders utilize their community “bully pulpit” to create a sense of urgency and rally community support. Their support provides the foundation necessary to educate, promote and support successful skills gap efforts. For example, Chicago Mayor Rahm Emanuel has become the spokesperson and champion for the Chicago critical skills gap initiative.

“We need skilled workers to rebuild our infrastructure; we need them to care for the sick; we need them to welcome the millions who visit Chicago each year in our hospitality industry; we need them to make the products people want to buy and to write the code that powers new technologies. But employers can’t find skilled workers and workers can’t find jobs. Like the rest of the country, Chicago has a skills gap.”

Chicago Mayor Rahm Emanuel

In San Antonio, a promising Critical Skills gap initiative was launched in September 2012 by Workforce Solutions - Alamo (WSA), the San Antonio Manufacturers Association (SAMA) and Alamo Colleges. The goal of the initiative is to create a regional talent development network that will increase the pool of highly skilled technicians for manufacturing, aerospace, information technology and related industries by up to 500 skilled technicians annually. During the past six months, the program has already produced almost 100 Manufacturing Skills Standards Certificate (MSSC) certified production technicians and National Institute for Metalworking Skills (NIMS) certified machinists.

An information technology “Just in Time” program, in collaboration with Rackspace, was launched in August, 2013. But while the recent “Just in Time” Critical Skills gap initiative is producing encouraging results, it must be part of a much larger comprehensive and systemic community collaboration effort in order to produce the thousands of persons with degrees and certifications needed to fill existing and future Critical Skill jobs.

**San Antonio’s Critical Skills Gap Proposal**

**Mayor’s Call to Action** - San Antonio possesses unique advantages and institutional assets that position the City of San Antonio to not only address the skills gap issue, but to be at the national forefront of workforce innovation and leadership. A top asset is the strong leadership and collaboration of the government sector. Mayor Julián Castro has emerged as a national figure, a respected leader and an opinion maker. His focus on education, as reflected in SA2020, early childhood education (Pre-K 4 SA) and advocacy for higher education access, make him the ideal champion for an SA2020 College to Careers - Critical Skills gap initiative.

**Recommended Approach**

The Mayor’s Call to Action would not entail appointment of a task force or committee. Instead, it would be an effort to encourage three existing systems to work together to develop and incorporate Critical Skill pathways into their existing organizations. The mayor's office would facilitate cabinet-type meetings between the CEOs of Alamo Colleges, Workforce Solutions - Alamo, the San Antonio Economic Development Foundation,
area chambers of commerce and the P-16 Council to implement short- and long-term strategic workforce objectives.

These objectives are:

To increase the number of Alamo Colleges’ graduates and completers in Critical Skill careers. The target goal would be 6,000 Critical Skill graduates. Due to the scale and capacity of Alamo Colleges, increasing graduates would be a major thrust of the Mayor’s Critical Skills gap initiative. To that end, Alamo Colleges would need to continue and intensify institutional and instructional transformational efforts that promote high completion rates and alignment to high-demand career pathways. This goal would entail doubling existing community college workforce education enrollment and increasing graduation rates. The graduation and completion rates would increase to 30% (from 20%) and enrollment levels would climb to 20,000 (from 10,594) students for workforce education programs.

To meet the target goal, the Alamo Colleges’ Call To Action plan would continue its student success initiatives in four focus areas:

- Institutional reorganizations to implement comprehensive career development and advising systems that require every student to have a clear pathway to graduation.

- Redesign of remedial education programs to incorporate national best practices.

- Reorganization of instructional departments into six career (cluster) institutes to promote synergy and integration of STEM and career readiness competencies, facilitate student advising and career alignment, and focus student recruitment efforts.

- Launch of a major campaign to increase community awareness and access to Critical Skill career pathways.

Alamo Institutes – New Curriculum and Employer Engagement Model (Figure 2) – All existing academic and workforce education programs would be reorganized into one of the following institutes—(1) Creative & Communication Arts, (2) Business & Entrepreneurship, (3) Health & Biosciences, (4) Advanced Manufacturing & Logistics, (5) Public Service and (6) Science & Technology. All programs would incorporate a leadership and career readiness dimension to produce graduates who are equipped for 21st century jobs. There would be an emphasis on contextualizing curriculum, internships and increased utilization of technology to improve learning outcomes and graduation rates. Alamo Institute employer committees would be established, in collaboration with Workforce Solutions - Alamo, the San Antonio Economic Development Foundation, area chambers of commerce and business organizations, such as SAMA, to establish an institute employer/industry advisory committee structure for each of the six Alamo Institutes.

Each Alamo Institute employer committee would help to determine effectiveness, needs and specifications for existing and new Critical Skill career programs at Alamo Colleges, public schools and Workforce Solutions - Alamo training providers. The goal would be to consolidate the fragmented and duplicative existing business advisory committees into a single institute to provide a strong employer voice. The Alamo Institute employer committees would:

- Determine skills, competencies and job readiness requirements for each occupation/program

- Approve curriculum and program of study pathways

- Consolidate common instructional programs when appropriate

- Help identify a common technical and academic core

- Determine demand for programs and emerging occupations

- Forecast future employer needs from trends

- Determine occupational categories and map pathways (within career institute)

- Define program content for secondary and post-secondary levels

- Evaluate, select and/or create appropriate curricula (industry, not employer, specific)

- Develop sample four-year courses of study/schedules detailing academic and technical course sequences/requirements that articulate with post-secondary components

- Assist in community-wide mapping of P-16 articulation gaps
• Provide work-based and internship opportunities
• Assess adequacy of facilities/equipment requirements
• Determine faculty requirements and qualifications
• Encourage tuition reimbursement/scholarships for post-secondary education
• Create institute subcommittees, if necessary, at the occupational or program level to:
  ° Review and assess effectiveness of current programs
  ° Establish or validate curriculum and program standards (certifications)
  ° Assist with acquisition of specialized equipment, if required
  ° Assist with marketing the program to students
  ° Provide job opportunities and tuition reimbursement, when possible
  ° Assist in recruiting qualified faculty
  ° Identify professional development opportunities for faculty and staff

Align (HB-5) High School to Alamo Colleges’ Critical Skill Career Pathways

Increase Enrollments at Alamo Academies - Work with area public schools to increase the number of high school juniors and seniors who enroll in the Alamo Area Academies. The Academies provide direct access into higher education and employment in Critical Skill careers in aerospace, manufacturing, nursing and information technology assurance (cybersecurity). The goal would be to double the number of students enrolled and graduating, from an estimated 125 to 250 students annually. It is estimated that 50% of the academy graduates would enroll in higher education immediately after graduation. Therefore, the increase in academy graduates supports both the enrollment growth requirement for Alamo Colleges workforce education students and also would produce a pool of 125 qualified job applicants.

Establish Early Colleges Critical Skill Career Pathway - Work with area public schools to establish additional early colleges with a Critical Skill career pathway for students. Alamo Colleges currently operates three early college programs in partnership with Judson, Comal, and San Antonio independent school districts (ISD’s). The Alamo Colleges is in discussion with various other ISD’s to increase the number of early college programs. However, the opportunity would be to align early college to career pathways. For example, Texas A&M - San Antonio and Alamo Colleges have already developed an articulated pathway that allows early college students to earn a bachelor's of applied science in information security for $10,000, by completing an associate degree, plus one year, at the Alamo Colleges. This approach could be expanded to align to other high-demand career fields. A goal would be to add three new early college programs in 2014 and to produce 500 early college graduates who would pursue higher education or job opportunities in Critical Skill careers. It is estimated that 70% of the early college graduates would enroll in higher education immediately after graduation. Thus the increase in early college graduates supports both the Alamo Colleges’ workforce education enrollment growth requirement and also would produce a pool of 150 qualified job applicants.

Increase Dual and Articulated Credit Program of Studies (POS) Programs - Increase the number of students in high school career and technology programs that lead to completion of a defined program of studies that allows students to earn industry certifications and/or marketable skill college certificates as part of an articulated pathway into Critical Skill jobs or college. The goal would be to produce 500 high school graduates with the foundation skills to enter higher education or job opportunities in Critical Skill careers. It is estimated that 50% of the POS graduates would enroll in higher education immediately after graduation. So the increase in POS graduates supports both the enrollment growth requirement for Alamo Colleges’ workforce education students and also would produce a pool of 250 qualified job applicants.
Align Adult Job Training and Literacy Programs to Critical Skill Careers/Jobs

Adult Job Training Critical Skill Programs - Collaborate with Workforce Solutions - Alamo to provide accelerated short-term and “Just in Time” training programs that allow job seekers to complete industry certifications, marketable skill certificates or degrees that provide entry into targeted Critical Skill demand occupations. The programs would be customized to meet industry specifications and would require that employers provide graduates with internships, on-the-job training and job interviews. Approximately 25% of full-time and 27% of part-time Alamo Colleges’ students leave prior to graduation. Many of these students (approximately 15,000) would benefit from an accelerated (fast track) Critical Skill job training opportunity. The goal would be to produce 1,500 completers in Critical Skill careers annually.

Adult Literacy and Developmental Education - Collaborate with Workforce Solutions - Alamo, the city of San Antonio, Alamo Colleges and an adult basic education provider to create I-BEST and occupational basic skills training programs. These would provide limited English speaking populations with access to bilingual and ESL training programs that integrate language acquisition and occupational skills training to connect to Critical Skill career pathways. There are approximately 1,000 Alamo Colleges’ developmental education students that could benefit from I-BEST or job training program opportunities. The goal would be to produce 100 completers in targeted Critical Skill occupations annually.

Community Awareness and Access - Launch a public information campaign to create an awareness of and a positive image for Critical Skill careers. The campaign would see the Mayor’s Office, the Alamo Colleges, Workforce Solutions - Alamo and others come together to tell the story of great jobs and good careers and of the numerous local opportunities. This collective endeavor would be led by the Mayor’s Office and include outreach efforts, marketing and major advertisements. The Alamo Colleges and Workforce Solutions - Alamo would also launch a virtual career development and placement center that would provide real-time, no cost career and job placement information and assistance to all area schools and the general public.

Conclusion and Summary
San Antonio’s economic position is diluted when employers are unable to find qualified workers. Moreover, the documented skills gaps are more pronounced in San Antonio’s knowledge-based health care and technology clusters, whose growth is outpacing the nation’s. San Antonio educators and economic and workforce development professionals know, with a high degree of certainty, the jobs and skills critical to the local economy. At its core, the skills gap is an education problem, but current initiatives (SA2020, P-16 and THECB - Closing the Gaps) are not designed with the laser focus, accountability mechanism or leadership to seriously address local skills gap issues. Therefore, this paper concludes that A Call to Action be championed by Mayor Julián Castro to address the area skills gap phenomena.
Alamo Institutes

Creative & Communication Arts Institute
Art director, artist, graphic designer, actor, choreographer, dancer, musician, broadcast news analyst, editor, photographer, technical writer, reporter, fashion designer, desktop publisher, craft artist, multimedia artist, camera operator
Arts, Audio/Video Technology & Communications

Business & Entrepreneurship Institute
Manager, computer and Information systems manager, human resources manager, management analyst, event planner, audit clerk, executive assistant, procurement clerk, financial advisor, budget analyst, actuary, credit analyst, food service manager, chef, travel guide, real estate broker, public relations specialist
Business Management & Administration, Finance, Hospitality & Tourism, Marketing

Health & Biosciences Institute
Registered nurse, dental hygienist, physician, pharmacy technician, psychiatrist, radiologic technologist, phlebotomist, biomedical engineer, veterinary technician, speech-language pathologist, physician assistant
Health Science

Advanced Manufacturing & Logistics Institute
Architect, civil engineer, landscape architect, carpenter, electrician, hoist and winch operators, plumber, dental laboratory technician, tool and die maker, welder, mechanical drafter, commercial pilot, aircraft mechanic, motorcycle mechanic, air traffic controller, drafter
Architecture & Construction, Manufacturing, Transportation & Distribution & Logistics

Public Service Institute
Educator, archivist, librarian, farm and home management advisor, interpreter, special education teacher, teacher assistant, financial examiner, radar and sonar technician, counselor, social worker, funeral service manager, firefighter, correctional officer, court reporter, paralegal, emergency medical technician
Education & Training, Government & Public Administration, Human Services, Law, Public Safety, Corrections & Security

Science & Technology Institute
Food scientist, animal breeder, geological technician, environmental protection technician, water and wastewater treatment plant operator, computer programmer, chemical engineer, chemist, physicist, statistician, mathematician, hydrologist, geographer, economist, historian
Agriculture & Food, Natural Resources, Information Technology, Science, Technology, Engineering & Mathematics

*National Career Clusters Framework
ALAMO COLLEGES

NORTHEAST LAKEVIEW COLLEGE
NORTHWEST VISTA COLLEGE
PALO ALTO COLLEGE
SAN ANTONIO COLLEGE
ST. PHILIP'S COLLEGE

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