



To: Gulf Coast Workforce Board Members

From: Mike Temple
David Baggerly
Michelle Ramirez
Brenda Williams

Date: May 31, 2017

Subj: Board Meeting Materials for Tuesday, June 6, 2017

The next meeting of the Gulf Coast Workforce Board is scheduled for **10:00 a.m., Tuesday, June 6, 2017** in H-GAC's second floor conference rooms A, B and C, 3555 Timmons Lane, Houston.

Reports. Chair Guthrie will provide a report to members on items of interest. Audit/Monitoring Committee Chair Joe Garcia will report on the committee's May review of monitoring activities. Education Committee Chair Birgit Kamps will discuss initiatives the committee has recommended. Government Affairs Committee Chair Guy Jackson will have an update on the Texas Legislature's general session, which ended May 29.

Action. Employer Service Committee chair Gerald Andrews will provide information on the committee's May meeting and ask consideration for recommendations to identify the high-skill, high-growth occupations authorized for scholarship support.

Information. We will report on our performance/production and expenditures to-date and provide an update for the region's employment outlook.

Recognition. We have two items at the close of the meeting – recognition for outstanding customer service from Workforce Solutions staff and for some of our education and training providers.

We look forward to seeing you on June 6th. As always, please call or email us if you have questions, or if we can be of assistance.

The Gulf Coast Workforce Board Tentative Agenda

Tuesday, June 6, 2017 at 10:00 a.m.

H-GAC Conference Room A/B/C

3555 Timmons Lane, Second Floor, Houston, Texas 77027

1. **Call to Order and Determine Quorum**
2. **Adopt Agenda**
3. **Hear Public Comment**
4. **Review April 2017 meeting minutes**
5. **Declare Conflicts of Interest**
6. **Consider Reports**
 - a. *Chair's Report.* The Board Chair will discuss items of interest.
 - b. *Audit/Monitoring.* The Committee Chair will report on the committee's May meeting.
 - c. *Education.* The Committee Chair will update members on committee recommendations for new initiatives.
 - d. *Government Relations.* The Committee Chair will review materials on current legislative items of interest.
7. **Take Action**
 - a. *Employer Service.* The Committee Chair will update members on the committee's May meeting and present recommendations to target high-skill, high-growth occupations for scholarship assistance
8. **Receive Information**
 - a. *Performance and Production.* Report on the system's performance and production.
 - b. *Budget and Expenditures.* Report on the Board's budget and expenditures.
9. **Look at the Economy**

Report on current economic data and trends in the Houston-Gulf Coast region.

10. Recognize Outstanding Performance

- a. *Career Office.* Recognize outstanding customer service from Workforce Solutions staff.
- b. *Education and Training Network.* Recognize performance of training providers.

11. Take Up Other Business

12. Adjourn



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**MINUTES OF
THE GULF COAST WORKFORCE BOARD
TUESDAY, APRIL 4, 2017**

MEMBERS PRESENT:

Karlos Allen	Gerald Andrews	Betty Baitland
Peter Beard	Sara Bouse	Joe Garcia
Mark Guthrie	Bobbie Henderson	Alan Heskamp
Eduardo Honold	Guy Robert Jackson	Sarah Janes
Birgit Kamps	Doug Karr	Paulette King
Jeff LaBroski	Kendrick McCleskey	Steve Mechler
Linda O'Black	Dale Pillow	Allene Schmitt
Richard Shaw	Gil Staley	Evelyn Timmins
Shunta Williams		

H-GAC STAFF MEMBERS PRESENT

Mike Temple
David Baggerly
Ron Borski

Mr. Mark Guthrie, Chairman, called the meeting to order at approximately 10:00 a.m., on Tuesday, April 4, 2017, in the 2nd floor, H-GAC Conference Rooms A/B/C, at 3555 Timmons Lane, Houston, Texas. Chair Guthrie determined a quorum was present.

ADOPTION OF AGENDA

Before adopting the Agenda, Chair Guthrie took a moment to reflect that Board member Tony Jones passed away since the last meeting. Chair Guthrie reminded the Board that Tony was a forceful advocate for the disabled and at his request, the Board observed a moment of silence, reflection and/or prayer in his honor.

Next, Chair Guthrie asked for adoption of the agenda as presented. A motion was made and seconded to adopt the agenda. The motion carried and the agenda was adopted as presented.

Chair Guthrie welcomed guest Dr. Valerie Segovia who is in the process of joining the Board. Dr. Segovia introduced herself and stated that she is looking forward to participating on the Board.

Dr. Segovia was warmly received and welcomed by the Board.

PUBLIC COMMENT

No one signed up for public comment.

MINUTES FROM FEBRUARY 7, 2017 MEETING

Chair Guthrie asked if there were any additions or corrections to minutes for the February 7, 2016 Board meeting and if not, for approval of the minutes as presented. A motion was made and seconded to approve the minutes as presented. The motion carried.

DECLARE CONFLICTS OF INTEREST

Chair Guthrie asked for a declaration of any conflicts of interest with items on the agenda. No one declared a conflict of interest. Chair Guthrie reminded the members that they were welcome to declare conflicts with items as they are considered.

CONSIDER REPORTS

Chair's Report

Chair Guthrie reported that he, Mike Temple and several board members attended the annual National Association of Workforce Boards conference in Washington, DC in late March. Chair Guthrie commended Eduardo Honold, Cheryl Guido, and Shunta Williams, who, along with Mike Temple, gave an excellent breakout presentation about how the Gulf Coast Workforce Board oversees a number of consolidated programs and how we have added vocational rehab and adult basic education programs to the other work that we do, which is unique in the country. Chair Guthrie invited comments from the presenters. Mike Temple commented that the presentation went well and noted that a number of good questions were received.

Chair Guthrie also commented that each year at this NAWB conference he is reminded how far ahead of other Workforce Boards and states around the country this Board and the State of Texas are in terms of efficiently operating consolidated workforce development programs. He noted that other boards and states are struggling with implementing WIOA and with putting together many of the programs that we've operated in a consolidated manner since 1997. Chair Guthrie also observed that we are ahead in terms of how we integrate ourselves in various workforce-related stakeholders such as Education, Economic Development Organizations and Chambers of Commerce. He stated that he appreciates the Board members' efforts very much.

Chair Guthrie also informed the Board that he has been appointed to the Board of the National Association of Workforce Boards during this meeting. He stated that he looks

forward to serving and reporting back with information and insights from those NAWB Board meetings.

Next, Chair Guthrie reported that the nominated Labor Secretary, Alexander Acosta from Florida, has not yet been confirmed for the position. He was voted out of the Senate committee favorably but has not yet been confirmed by the full Senate.

Chair Guthrie also reported on President Trump's proposed budget which reportedly cuts 20-21% from the Department of Labor's allocation. Specific information is not known yet on where those cuts would fall, but Chair Guthrie said he has heard that a number of programs, such as the Job Corps program serving disadvantaged youth, are subject to cuts in this budget. Chair Guthrie encouraged Board members to pay attention to information about these proposed cuts and to consider reaching out to elected representatives to express concerns over cutting these programs at the appropriate time. He reminded the Board that we don't have enough resources as things stand now and certainly, given the integration of our Board programs, we are good administrative stewards of those funds. Chair Guthrie will keep the Board posted on those developments as things move along.

Chair Guthrie concluded his report and no action was taken.

Audit/Monitoring Committee Report

Committee Chair Joe Garcia reported that the Audit/Monitoring Committee met Monday, March 20, 2017 at the Northshore career office. Committee Chair Joe Garcia, Committee Vice Chair Guy Jackson, Board Chair Mark Guthrie and Board members Kendrick McCleskey, Gerald Andrews, Carl Bowles, Cheryl Guido, Allene Schmitt, Evelyn Timmins and Doug Karr attended the meeting. Chair Garcia provided the following report from the meeting:

Career Offices

Committee members reviewed data from quality assurance monitoring reports completed through February 2017

- **Southwest office (NCI).** Rated: Solid Performance. All findings have been resolved.
- **Tracking Unit (NCI).** Rated: Solid Performance. All findings are resolved.
- **Tracking Unit (Interfaith).** Rated: Solid Performance. All findings are resolved.

Financial Aid

The quality assurance team reviewed cash card accounts offered to customers for education, transportation, or work-related expenses. The career offices issue these cards when it is the appropriate method to provide financial assistance to customers.

Cash card accounts from the period of June 2016 to December 2016 were reviewed by the quality assurance team and a questionable entry was identified on one of the cards. This was a small issue overall and steps have been taken to resolve this in the future.

Financial Systems

We contract with outside audit firms to conduct financial system reviews in addition to internal reviews.

Reviews were conducted for the contractors listed below:

- **College of the Mainland (Adult Education).** There were findings in the areas of the cost allocation plan, accruals, spending levels and monitoring of a subcontract. All findings are resolved.
- **San Jacinto College District (Adult Education).** A benchmark requirement was not on target; however, San Jacinto submitted a new spending plan while monitors were on-site which resolved the issue.
- **Lone Star College (Adult Education).** There were findings regarding a variance in the current and historical general ledger and the billing reports and policies for procurement, bank reconciliations, property management and inventory require updating. *The variances have been resolved and a plan implemented to reduce variances. Policies are to be provided by March 31, 2017. Staff will review the polices upon receipt.*
- **Houston Community College (Adult Education).** There were findings in the areas of travel expenses and submitting the cost allocation plan. All findings are resolved.

Direct Placements

During December, we became concerned about the reporting of credit for some of the direct job placements in our system.

A direct placement occurs when a Workforce Solutions staff member refers a candidate to an opening listed in WorkInTexas and that candidate is hired. The employment counselors and many of the other staff have direct placement goals as part of their individual performance plans.

Contractors and board staff conducted reviews of direct placements for the period May 2016 to September 2016 and identified staff members who appeared to take credit for placements not due to their intervention. We consider this to be unethical behavior and a violation of Workforce Solutions policy, procedure, and code of conduct.

- We identified 49 staff members at Interfaith and Neighborhood Centers with questionable credit for direct placements. We did not see any evidence of this

practice at Employment and Training Centers. We cited 25 Interfaith staff in six offices and 24 Neighborhood Centers staff in nine offices.

- 21% of the staff we reviewed showed questionable direct placements, representing 6% of the total direct placements from May to September 2016.
- “Questionable credit” means that the staff member entered data in such a way to make it appear as if he or she referred a candidate into an open job listed with us and was hired, when in fact the candidate had already been hired before the staff made the referral or the staff member was not responsible for the referral.

On February 20, Board staff met with 108 contractor leaders, managers, and supervisors to discuss the findings and a plan of action. The purpose of that meeting was to resolve this issue and ensure that it does not continue.

Board staff also notified the Texas Workforce Commission of our review, findings, and plan of action. We believe that our contractors will take the appropriate steps to emphasize and enforce policies and ethical behavior regarding taking credit for service we deliver to customers.

We have stepped up our reviews of contractors and will review this issue in depth before our expected procurement later this year. The issue was identified, we believe it has been addressed and we will continue to take a look at it. When we have an opportunity to vote on procurement, we will also have an opportunity to ask questions of these contractors. If, between now and then, we are not satisfied with what is happening in this area Board staff will certainly take another look at it.

Outside reviews

- In February 2017, the Workforce Commission provided us a report on its June 2016 review of our system. We received a management letter noting no findings were identified.
- In March 2017, the U.S. Department of Labor’s regional office visited us as part of a review of the state of Texas. DOL recommended that we tighten up the process, procedures and documentation for our on-the-job training service and that H-GAC, as administrative agent for the Board, complete an update of its internal financial policy/procedure manual and ensure its physical inventory records contain all elements required by federal circular.
- In April 2017, the U.S. Department of Agriculture’s Food and Nutrition Service will visit to look at how we use resources to help food stamp recipients go to work.

H-GAC is currently undergoing its annual comprehensive audit of the 2016 fiscal year. Results should be available in July 2017.

Board members may access comprehensive annual financial reports for H-GAC online any time at www.h-gac.com under H-GAC Resources.

Chair Garcia concluded his report and no action was taken.

Education Committee Report

Committee Chair Birgit Kamps reported that the Education Committee met on March 8, 2017, at the H-GAC offices to continue exploration and discussion of how the Workforce Board's Education Committee can most effectively support the Texas Higher Education Coordinating Board's 60x30 plan.

Committee Chair Birgit Kamps led the meeting with the following members in attendance: Board Chair Mark Guthrie, Committee Co-Chair Allene Schmitt, Bill Crouch, Joe Garcia, Cheryl Guido, Alan Heskamp, Doug Karr, Sara Janes, Scott Marshall, Dale Pillow, Richard Shaw and Sarah Wroblewski. Betsy Broyles Breier of the Center for Houston's Future attended as a guest of Bill Crouch.

As a summary, the goal of the 60x30 plan is to ensure that 60% of Texans age 25-34 will have a certificate or degree by the year 2030.

When the Committee met in January it requested staff recommendations on:

- How the Board can provide intensive support to the most economically disadvantaged school districts in the region
- Performing a gap analysis between the demand for and supply of candidates with Level 1 workforce certificates.

The Committee supports the idea of focused and intensive outreach to school districts to:

- Create awareness of the local labor market data and career readiness resources available from Workforce Solutions
- Train teachers, counselors and staff how to access and use labor market data and When I Grow Up curriculum
- Provide follow-up support to districts in using our resources as a foundation to expand career and technology education, internships or other district workforce readiness efforts.

The Committee provided feedback on targeting schools and a success matrix and asked Board staff to develop and implement a plan.

With the Texas Higher Education Coordinating Board's focus on credentials in the 60x30 plan, we anticipate more activity around Level 1 workforce certificates.

Level 1 workforce certificates provide the shortest timeline to a certification. They:

- require 15-42 semester credit hours;
- can be completed in one calendar year or less; and,

- are excluded from Texas Success Initiative postsecondary entrance requirements.

Level 1 certificates provide the shortest timeline to post-secondary credentials. From a Workforce perspective, the Committee is interested in looking at Level 1 certificates in terms of supply and demand to determine if a region is producing the correct number and type of credentialed job candidates to meet the local employer needs. Staff provided the Committee with an initial overview of data on Level 1 certificates.

The discussion of Level 1 certificates produced a number of questions and revealed a need for greater understanding among our Committee members of how and where Level 1 certificates are awarded as well as the availability of data about the awarded credentials. The Committee requested that staff develop a plan on how the Board might collect data on the Level 1 certificates and compare that to employer demand.

The Committee also received information about the Board's Education Industry Workgroup. Over the last decade, the Workgroup has actively supported the demand for qualified teachers across the region through its support of this education industry group. This group, currently with 17 members representing almost 80% of the total public school student population in the region, is composed of school districts working together as employers to identify and find solutions for common human resource needs and issues.

The committee heard information about the Workgroup, its signature policy piece -- the Teacher Preparation and Quality Standards -- and annual teacher externship programs sponsored by the Board.

The Committee requested that staff develop implementation plans including measurable results to execute on the concepts presented above.

Chair Kamps informed the Board that the next meeting of the Education Committee is scheduled to take place on Wednesday, May 17 at 1:00pm at the H-GAC office.

Chair Kamps concluded her report and no action was taken.

Government Relations Legislative Update

Committee Chair Guy Robert Jackson reported on current activities of the 85th Texas Legislative session. He reported as follows:

- We have seen only modest movement on legislation of interest.
 - SB 1091 (Seliger) to restrict dual credit programs to courses in a higher education institution's core curriculum, career and technology, or foreign languages has reported favorably out of committee and has been placed on the intent calendar.

- The Legislative Budget Board has published decision documents relating to the state's appropriations act.
 - The Workforce Commission requested an additional \$16 million in funding for three efforts: (1) grants to school districts and community colleges for equipment to conduct high-skill, high-growth career and technical training programs, (2) funds to expand adult education instruction, and (3) a demonstration project placing workforce development specialists in high schools. The House has tentatively approved \$10 million.
 - The workforce development specialist demonstration would work through selected local workforce boards and place up to six staff members at area high schools to provide guidance and information about apprenticeships/schools in the building trades, guidance and information about middle skill jobs and occupations, and guidance about training opportunities with employers, technical colleges, and community colleges. The Commission requested \$2 million for the biennium and the initial response from the House is to fully fund this request.

We will continue to monitor and track additional bills that will be debated on the House floor.

Chair Jackson concluded his report and no action was taken.

RECEIVE INFORMATION

- a. Performance and Production. Report on the system's performance and production.

Mr. David Baggerly reviewed the Performance measures for October 2016 through February 2017.

More Competitive Employers

Measure	Annual Target	Current Performance	Performance Last Year
<u>Employers Receiving Services (Market Share)</u> We expect to provide services to 22,000 employers this year. We provided services to 9,827 employers in the period October 2016 through February 2017	22,000	9,827	23,591
<u>Employer Loyalty</u> Of a possible 20,763 employers, 6,386 returned to Workforce Solutions for additional services in the period October 2016 through February 2017	60.0%	30.8%	56.0%

More and Better Jobs

Measure	Annual Target	Current Performance	Performance Last Year
<u>New jobs created</u> New jobs created in the region as a result of Workforce Solutions partnering with economic development organizations. This information is captured quarterly and reflects a two-year average through December 2016.	3,200	547	612
<u>Customers employed by the 1st Qtr. after exit</u> 112,617 of the 145,259 customers who exited service in the period October 2015 through March 2016 were employed by the quarter after exit.	76.0%	77.5%	80.3%

Higher Real Incomes

Measure	Annual Target	Current Performance	Performance Last Year
<u>Earnings Gains of at least 20%</u> 47,091 of the 160,337 customers who exited in the period April 2015 through September 2015 had earnings gains of at least 20%.	36.0%	29.4%	33.4%

A Better Educated Workforce

Measure	Annual Target	Current Performance	Performance Last Year
<u>Customers pursuing education diploma, degree or certificate who achieve one</u> 658 of 943 customers who pursued an education diploma, degree or certificate and exited from July 2016 through December 2016, attained a diploma, degree or certificate by the end of the quarter after exit.	74.0%	70.2%	74.2%

In addition to the Board’s measures, Workforce Solutions works to meet Texas Workforce Commission expectations for production.

For the performance year that began October 1, 2016, we are meeting or exceeding the target for sixteen of twenty state measures. Based on the most recent report from the state, January 2017, these are the measures we are not achieving:

- Number of Employers Receiving Workforce Assistance: The target for this measure is 11,754. Our performance for customers who exited from October 2017 through January 2017 was 9,148.
- Median Earnings Q2 Post Exit – Adult: The target for this measure is \$3,910. Our performance for customers who exited from July 2015 through December 2015 was \$3,590.
- Median Earnings Q2 Post Exit – Dislocated Worker: The target for this measure is \$6,980. Our performance for customers who exited from July 2015 through December 2015 was \$6,017.
- Credential Rate – Dislocated Worker: The target for this measure is 66.6%. Our performance for customers who exited from January 2015 through June 2015 was 59.8%.

Adult education measures for the period July 2016 through February 2017 include:

- Total enrollments are the number of individuals who begin an adult education class.
- 12+ hour enrollments count the number of individuals who are in class 12 or more clock hours.
- Transitions enrollments count the number of individuals in adult education classes designed to lead to further post-secondary training.
- Career Pathways enrollments counts the number of individuals in contextualized learning (basic education and occupational skills at the same time) classes.
- Integrated English Language and Civics courses will be integrated with some workforce training that result in a job and/or certificate/credential.

- TWC Accelerate Texas includes individuals enrolled in an integrated education and training module.

Mr. Baggerly concluded his report and no action was taken.

Expenditure Report

Mr. Mike Temple reviewed the Financial Status Report for the first two months of the year. We are running slightly under our estimate of expenditures and are in the black in all categories. By the end of the 2nd quarter these estimates are expected to be closer to on target.

Mr. Temple concluded his report and no further action was taken.

LOOK AT THE ECONOMY

Mr. Ron Borski presented a look at the current economy. The Bureau of Labor Statistics Texas Workforce Commission has revised their benchmark estimates of growth across the various industries in our area. Originally in 2015 the estimate showed we added 15,200 jobs December to December. The revision shows that, while we stayed positive, we only added 200 jobs over that time.

While we have discussed growth in previous meetings, we have never discussed a year over year job loss. However, now we have found that, according to current estimates, we had 3 months during 2016 where our payroll employment was lower than the prior year. This occurred during June, July and August.

Original estimates showed that May was the low point for growth and that by the end of December we had near 15,000 growth, however, the revised numbers show that we were bottoming out a little more and the growth was weaker. But by the end of December growth was slightly higher year over year than the original estimate.

Part of the reason we did not see any growth in 2015 is Educational and Health Services, Leisure and Hospitality, and Construction were shown to be having very strong growth. Revisions have scaled this back but we still saw positive growth.

Losses in Mining and Logging and Manufacturing were quite a bit deeper than what was originally thought. If we look at the two year period of revisions, we see that most of the new jobs were related to population growth. Educational and Health Services, Leisure and Hospitality and Government were the top three job producers. All of the losses were tied to the slowdown in energy. Our original estimates indicated a loss of 19,000 jobs in Professional Business Services. Following revisions, the net change over that time is 9,300. Losses have increased from approximately 26,000 to 31,000 in Mining and Logging and from about 32,000 to 44,000 in Manufacturing.

Actual unemployment rates for February went up to 5.9% while the State unemployment rate went up to 5.1%. Our year over year growth rate for February is 0.6%. This is largely related to population growth and the remainder of the losses are typically related to Oil and Gas Exploration production downturn including Wholesale Trade. We see that the rig count bottomed out in May of last year at 409. This number rose to 744 by February which is more than an 80% increase. According to current estimates, we hit a bottom in October and have added approximately 2,500 jobs since then.

Mr. Borski concluded his report and no action was taken.

OTHER BUSINESS

Dr. Sarah Janes invited members of the Board to the Spring Apprenticeship Forum scheduled to take place on April 25, 2017.

ADJOURN

There was no further business to come before the Board, and Chair Guthrie adjourned the meeting at approximately 10:50 a.m.

Audit/Monitoring Committee

Update for June 2017

Background

The Audit/Monitoring Committee met Tuesday, May 23, 2017 at the H-GAC office. Committee Chair Joe Garcia, Committee Vice Chair Guy Jackson, and members Ray Aguilar, Kendrick McCleskey, Gerald Andrews, Cheryl Guido, Allene Schmitt, Scott Marshall, and Doug Carr attended the meeting. Board Chair Mark Guthrie and Willie Alexander also attended.

Current Situation

Committee members reviewed data from quality assurance monitoring reports completed through March 2017

- **Texas City office (BakerRipley - NCI).** Rated: Solid Performance. The team recommended coaching for the greeter and adjustments to improve customer support. All findings have been resolved.
- **Bay City (Interfaith).** Rated: Solid Performance. The team noted customer service, engaging customers and documenting complaints needed improvement and recommended coaching. Training for staff on entering referrals, providing bonding information and financial aid was recommended. All findings are resolved.
- **Humble (Interfaith).** Rated: Solid Performance. The location of phones needed to be moved to protect customer information. Training and coaching was needed for staff regarding resources and applicable service, quality of referral, navigating WorkInTexas, documentation for financial aid and security of data. All findings are resolved.
- **Financial Aid Call Center (Interfaith).** Rated: Solid Performance. The quality assurance team reviewed review eligibility process and authorization of financial aid. The team noted improvements from the prior year; however, a backlog existed in the receiving unit. A change in eligibility rules has affected the Call Center's ability to stay abreast of the number of customers requesting service. The team recommended staff practice active listening skills and develop a checklist to ensure customer information is not compromised and emails are encrypted. Management review emails and provide coaching to staff on courtesy, professionalism, complaint documentation, as well as, training for all staff on eligibility for financial aid for scholarships. All findings are resolved.

- **Cuney Homes – (BakerRipley/NCI).** Not yet rated. Nine agencies are participating to provide quality, affordable housing options and promote education and economic self-sufficiency for residents of the Houston Housing Authority’s Cuney Homes. Workforce Solutions has a presence onsite at the development, in partnership with HHA, Texas Southern University, Houston Community College, the Houston Food Bank, SER-Jobs for Progress, the Houston Area Urban League, and the United Way. Workforce Solutions began onsite in October 2015 on a limited basis and in March 2017 on a full-time basis. The monitoring team recommended staff use the available resources to connect residents with work based learning through partner agencies. The individuals hired will be a source to contact other residents and inform them of services. The team will conduct a follow up review during August 2017.

- **U.S. Department of Labor Review.** DOL visited us in February 2017 as a part of its review of the Texas Workforce Commission and the Commission’s implementation of a special grant of funds. DOL complimented us on our system, but also recommended that we improve customer records and support for customers engaged in on-the-job training and that H-GAC ensure its financial policies and property records are updated to federal requirements. We have worked with Employer Service to address the records and support for on-the-job training, and H-GAC’s Finance Department is working on the internal policies and procedures updates.

- **Board Oversight Capacity Rating.** The Texas Workforce Commission evaluates each workforce board’s overall capacity to oversee and manage local funds and the delivery of local workforce services on an annual basis. This includes a board’s ability to:
 - ✓ Develop, maintain, and upgrade comprehensive fiscal management systems
 - ✓ Hire, train, and retain qualified staff to carry out the Board’s oversight activities
 - ✓ Select and oversee local contractors to improve the delivery of workforce services
 - ✓ Oversee and improve the operations of Workforce Solutions offices served by the Board
 - ✓ Manage each contractor’s performance across multiple Board programs, and
 - ✓ Identify and resolve any long-standing Board oversight problems and contract provider performance issues.

Our Board met five of the six requirements and missed one of the targets under “Manage each contractor’s performance across multiple Board programs”.

We missed the target for meeting at least 80% of our production requirements. In 2016, we had nine production requirements, and we met seven. One requirement is no longer in force (Youth Literacy/Numeracy Gains) and for the other requirement -- Employers Receiving Workforce Assistance -- we were at 92% of target.

The Audit/Monitoring Committee asked the Employer Service Committee to address the missed production requirement with the Employer Service contractor.

Education Committee

Integrating Education and the Workforce Proposed Activities

On Wednesday, May 17, 2017, the Workforce Education Committee met at H-GAC. Chair Birgit Kamps led the meeting. Other members in attendance were Vice Chair Allene Schmitt, Board Chair Mark Guthrie, Cheryl Guido, Alan Heskamp, Eduardo Honold, Doug Karr, Scott Marshall and Bill Crouch.

The Committee reviewed plans from Board staff to support 60x30TX and received information on research efforts from the Texas Workforce Investment Council (TWIC.) The three reports from TWIC are included in the Board packet as part of Item 7a, as they were also shared with the Employer Services Committee.

Background

At its March meeting, the Education Committee continued exploration and discussion on how the Board might most effectively support the Texas Higher Education Coordinating Board's 60x30 plan. The Committee is focused on two strategies.

1. Supporting the most economically disadvantaged districts in the Gulf region through focused and intensive outreach that will:
 - Create awareness of the local labor market data and career readiness resources available from Workforce Solutions;
 - Train teachers, counselors and staff how to access and use labor market data and the Board's When I Grow Up curriculum; and,
 - Provide follow-up support to districts in using our resources as a foundation to expand their own career and technical education, internships or other district workforce readiness efforts.

2. Conducting a gap analysis on demand and supply of candidates with level 1 workforce certificates to include:
 - A survey to issue to colleges to inquire about the number and types of level one workforce certificates offered as well as any embedded industry recognized credentials within each pathway
 - A survey to issue to employers to inquire about the types of industry recognized credentials, skills, and competencies needed for positions for which they recruit from the community colleges

Current Situation

1. Supporting the most economically disadvantaged districts in the Gulf Coast region

The goal of 60x30TX is ensure that at least 60% of Texans ages 25-34 will hold either a certificate or degree by the year 2030. The Board is committed to providing the best high-quality labor market information so that students, parents and educators can make informed about college and career decisions.

As the 60x30TX report recognizes, the pipeline to the state's higher education starts with a K-12 public school population in which 60 percent of students qualify for free or reduced-price lunches. The graduation reports for Texas for fiscal years 2004 to 2014 show that only about 10 percent of the poorest eighth-grade students in Texas attain a postsecondary credential when tracked for 11 years.

To achieve the 60x30TX goal in the Gulf Coast area, staff researched and analyzed school and district data to target schools with high concentrations of disadvantaged students. Staff identified the following six candidate schools/districts for this effort.

Galena Park ISD

- 79.9% of the students in the district were economically disadvantaged
- North Shore Senior HS is at the top of every list, regardless of sorting method
 - a. In 2016, 4,633 student count (largest in the region)
 - b. 71.2% of students on campus were economically disadvantaged
 - c. 79.9% of students in the district were economically disadvantaged
- Galena Park HS 77.8% (2,049)

Spring Branch ISD: Northbrook HS and Spring Woods HS

- The district's economically disadvantaged student population was 55.8% in 2016
- However, there is a geographic disparity in the district with Memorial HS and Stratford HS serving more affluent student populations and biasing the district percentage
 - Northbrook HS, 79.7% (2,330)
 - Spring Woods HS, 75.1% (2,216)

All ISDs in Liberty County

- While there is a noticeable disparity between the highest percentage of economically disadvantaged students (Cleveland ISD, 80.1%) and lowest (Tarkington ISD, 46.8%), the districts in Liberty county have existing collaborations that can be engaged to capitalize on reaching more students in our rural area

Aldine ISD

- 88.3% of the students in the district were economically disadvantaged
- All of the district's high schools (grades 10-12) appear near the top of each list, regardless of sorting method

- MacArthur HS, 89.1% economically disadvantaged, (2,903 student count)
- Davis HS, 80.9% (2,680)
- Aldine HS, 81.8% (2,483)
- Eisenhower HS, 80.7% (1,759)
- Nimitz, 75.7% (1,887)
- Victory College HS, Carver Applied Technology HS, and five 9th Grade campuses also represent an additional 5,574 students with similar economically disadvantaged student population percentages

Damon ISD/HS

- A small rural district in Brazoria county with one high school
- 100% of the district's and high school's (195) student populations were economically disadvantaged
 - This is the only school and district on any list that isn't an alternative school or juvenile justice recovery program that holds these characteristics

Galveston ISD/Ball HS

- With absorption of LaMarque ISD into Texas City ISD, Galveston ISD has the highest percentage of economically disadvantaged students (74.3%) in Galveston County
- Ball HS is the largest HS in the County (1,935) with 60.3% of the students economically disadvantaged

Implementation Steps

- Targeted districts and schools would be offered a 3-hour professional development workshop for educators on:
 - Labor Market Information
 - Career Readiness Resources (including WIGU demonstrations)
 - Workforce Solutions service
- The content focus would be on how to access and use labor market and career readiness resources, how to understand labor market information, and to begin to devise strategies for using the information and resources with students.
- The educator workshop would include a description of the career readiness workshops offered by the Regional Facilitator team with coordinated effort to schedule and deliver curriculum to students ongoing.
- After the educator workshop has been delivered and the student workshop plan has been developed, follow up with the district to consult and help develop a sustainable plan of action for student and educator awareness of workforce resources and information will occur. As part of this plan, Workforce Solutions staff will advise on the development of work-based learning opportunities for students and faculty as well as potential business partnerships.

Timeline

The recommendation also offers that, due to scope and scale, the implementation occurs in two phases over the Fall 2017 and Spring 2018 academic semesters:

- Fall 2017: Galena Park ISD, Spring Branch ISD High Schools, and Liberty County ISDs
- Spring 2018: Aldine ISD, Damon ISD/HS, and Galveston ISD/Ball HS

Evaluation

To measure effectiveness, a draft pre- and post-assessment is included in the committee packet for review.

2. *Conducting a gap analysis on supply and demand of candidates with Level 1 Workforce Certificates*

To supplement the data that is already available and accessible, Board staff has developed a draft survey for community colleges and a similar survey for employers for review.

Implementation

- We will issue a survey to colleges to inquire about the number and types of level one workforce certificates offered as well as any embedded industry recognized credentials within each pathway
- We will issue a survey to employers to inquire about the types of industry recognized credentials, skills, and competencies needed for positions for which they recruit from the community colleges

Timeline

Surveys will be conducted during June. We will perform analysis of the results during July and present results in August.

Evaluation

Following this exercise, staff will make a recommendation for possible action on the survey results.

Next Steps

Committee will meet again in late August or early September to receive a progress report on targeted support efforts and review survey results.



Labor Market and Career Readiness for Educators

Pre- and Post-Assessment

Name _____

Campus _____

School District _____

Job Title _____

Primary Content Area _____ (write Counselor or Administrator if not a classroom teacher)

Grade Level served: **Elementary** **Secondary-Middle** **Secondary-High**

Please mark an "x" in the box that best describes your knowledge and experience level with each of the following prompts	1 No knowledge	2 Limited Knowledge	3 Solid Knowledge	4 Expert Knowledge
<i>Labor Market Information</i>				
I know what the high skill, high growth jobs are in our region				
I know where to find the most current labor market information about jobs in our region				
I feel comfortable talking to my students about their job prospects as supported by current labor market information				
<i>Career Readiness Resources</i>				
I know where to find local career readiness resources, like the When I Grow Up curriculum				
I know at least three websites that will help me advise students about career planning				
<i>Workforce Solutions</i>				
I know about the services offered by Workforce Solutions				
I can find and direct my students to the calendar of events for hiring opportunities and job readiness workshops throughout the region				
I know about the opportunities available for work-based learning for my <u>students</u>				
I know about the opportunities available for work-based learning for <u>educators</u>				
<i>In the space below, please feel free to provide any comments about what you would like to learn (pre-) or found most/least useful from today's workshop (post-).</i>				

Level 1 Certificate-Credential

Survey Draft – Community Colleges

The Gulf Coast Workforce Board is responding to the call to action presented by 60x30TX, which challenges the State to achieve the target of 60% of Texans 25-34 years old with at least a 1-year post-secondary certificate or more by 2030.

In order to contribute to this goal, we need your assistance.

We are specifically examining **Level 1 Workforce Certificates** awarded by Community Colleges in the Gulf Coast Workforce Development Area in skilled trades (i.e., Welding, HVAC, Plumbing, and similar), Healthcare, and Business. The purpose is to compare results of this survey with both the demand from industry and labor market statistics about the targeted occupations for our region. We have raw data on the local college completion rates by pathway but need your assistance to get more detailed and accurate information. Ultimately, the data and knowledge gained from this inquiry will help inform our regional workforce strategy and hopefully guide your curricular decisions so that our region's employers can meet their workforce needs.

We look forward to the results and are happy to share our findings.

Please complete and return this survey no later than _____.

Thank you,

(Mike, Mark, and Birgit?)

1. This survey will be completed for which college/college system?
 - a. Alvin Community College
 - b. Blinn College
 - c. Brazosport College
 - d. College of the Mainland
 - e. Galveston College
 - f. Houston Community College
 - g. Lee College
 - h. Lone Star College
 - i. San Jacinto College
 - j. Texas State Technical College
 - k. Wharton County Junior College

2. Full name of individual responsible for submitting survey
3. Job title of individual responsible for submitting survey
4. Contact phone number
5. E-mail address

As you complete the survey, keep in mind the definition of a Level 1 Workforce Certificate:

- Must award 15-42 semester credit hours
 - Must be completed in 1 calendar year or less
 - Exempt from Texas Success Initiative (TSI) requirements
6. During the **2014-2015** Academic Year, how many Level 1 Certificates were awarded by your institution in [bulleted list] Welding, Plumbing, HVAC, Machining, Electrical, Petroleum Technology, Other Skilled Trades, Nursing, Radiologic Technology, Other Medical Technology, Medical Billing, and Business (any)? If the program has a dual-credit option available for secondary students, please indicate in the check box next to the respective program.
 7. During the **2015-2016** Academic Year, how many Level 1 Certificates were awarded by your institution in [bulleted list]...?
 8. Using the list from Q7 (included here), please list any *industry recognized credentials* awarded as part of the respective Level 1 Certificate program.
 9. Referring again to your Level 1 Certificate programs, which of the programs continue along a pathway to more education and credentials, including Level 2+ Certificates, Associates degrees, or more?
 10. In 2014-2015, how many students completed more education (obtained the next credential) from each of the programs that have a developed pathway after the Level 1 Certificate?
 11. Same question for the 2015-2016 Academic Year.
 12. For each of the Level 1 Certificate programs you listed, how many individuals continued to permanent employment after the 2014-2015 school year?
 13. If you have existing partnerships with employers to employ Level 1 Workforce Certificate graduates, please list the company names here (these will not be shared).

Level 1 Certificate-Credential

Survey Draft – Employers

The Gulf Coast Workforce Board is responding to the call to action presented by 60x30TX, which challenges the State to achieve the target of 60% of Texans 25-34 years old with at least a 1-year post-secondary certificate or more by 2030.

In order to contribute to this goal, we need your assistance.

We are specifically examining **Level 1 Workforce Certificates** awarded by Community Colleges in the Gulf Coast Workforce Development Area and how these meet or fail to meet both the demand from industry and labor market statistics about the targeted occupations for our region. Ultimately, the data and knowledge gained from this inquiry will help inform our regional workforce strategy and hopefully help you meet your workforce needs.

We look forward to the results and are happy to share our findings.

Please complete and return this survey no later than _____.

Thank you,

(Mike, Mark, and Birgit?)

1. Employer/Business Name
2. Full name of individual responsible for submitting survey
3. Job title of individual responsible for submitting survey
4. Contact phone number
5. E-mail address

6. From which of the following Community Colleges/Systems do you consistently recruit graduates for employment? (Check all that apply)
 - a. Alvin Community College
 - b. Blinn College
 - c. Brazosport College
 - d. College of the Mainland
 - e. Galveston College
 - f. Houston Community College
 - g. Lee College
 - h. Lone Star College
 - i. San Jacinto College

- j. Texas State Technical College
 - k. Wharton County Junior College
7. During the last calendar year (2016), how many graduates did you employ from the colleges you indicated in Q6?
 8. In the space below, please list the jobs for which you most consistently recruit from those colleges you indicated in Q6.
 9. In the space below, please indicate the *industry recognized credentials* new hires need for each of the positions listed in Q8.
 10. Are graduates from each of the colleges shared Q6 entering employment with the credentials you need from new hires?
 11. If you answered no to Q10, how are your new hires obtaining these credentials if not through one of the Community Colleges indicated in Q6?
 - a. We send them to training from a 3rd party and pay for it
 - b. We send them to the Community College to obtain the credential
 - c. We provide information on training and individuals must acquire on their own
 - d. We provide the training and credentialing in-house
 12. In the space below, if *not* a Community College listed in Q6, indicate your preferred educational institution for recruiting individuals with the training and credentials you need? This can include a trade school, four year institution, for-profit training organization, union, or other training provider.
 13. Do you currently have a formal internship program with any local secondary (high school) or postsecondary (college, any level) institution? (If yes, which schools?)
 14. In the space below, please share any concerns or kudos about the pipeline of college graduates address by this survey. Consider best practices you might want to share, new practices you might want to develop as witnessed in other areas or at other companies, and process or structural items that need attention to improve the quality of graduate from your recruiting sources.

Government Relations

Legislative Update

Current Situation

The 85th Texas Legislative session ended on May 29, 2017. Governor Abbot has until June 18, 2017 (20th day following final adjournment) to sign or veto bills passed during the regular session.

Some of the bills of interest that were passed in both chambers:

- [SB 2105](#)
 - **Sen. Miles**

Requires the Texas Workforce Commission to provide information on all CTE partnership opportunities with business and industry, and professional development and learning opportunities (i.e., internships, industry mentorships, summer programs, after-school programs, career-based student leadership opportunities) that are available regionally.

Status: Signed by Governor, Effective on 9/1/2017

- [SB 160](#)
 - **Sen. Rodríguez**

Would prohibit the TEA from adopting or implementing a performance indicator in any agency monitoring system that evaluates the total number of students or the percentage of enrolled students of a school district or open-enrollment charter school who receive special education services.

Status: Signed by Governor, Effective immediately

- [HB 1638](#)
 - **Rep. Guillen**

Intended to increase quality and consistency among dual credit programs by requiring TEA and THECB to create joint statewide goals for academic dual credit programs and requiring high schools and postsecondary institutions to enter into Memoranda of Understanding for dual credit programs that align with new TEA/THECB joint statewide goals.

Status: Signed by Governor, Effective immediately

- [HB 2994](#)
 - **Rep. Ashby**

Amends the Education Code to require contact hours attributable to the enrollment of a student in a workforce continuing education course offered by a public junior college to

be included in the contact hours used to determine the college's proportionate share of state money appropriated and distributed to public junior colleges, regardless of whether the course is taken by a student who is not an adult or whether the college waives all or part of the tuition or fees for the course.

Status: Passed by House, Passed by Senate and amended, Signed in the House

- [HB 136](#)
 - **Rep. Bell**

Would amend the definition of a well-balanced curriculum in the Education Code to add success in a variety of post-secondary activities, including employment, workforce training, and enrollment in institutions of higher education. The bill also would add the objective for TEA to assist school districts and charter schools in providing career and technology education and effective workforce training opportunities to students.

Status: Sent to the Governor

- [HB 639](#)
 - **Rep. Charles Anderson**

Relating to authorizing the purchase of certain insurance coverage by public school districts for the benefit of businesses and students participating in career or technology training programs and providing for immunity from liability of certain public school students participating in career or technology programs.

Status: Signed by Governor, Effective Immediately

- [HB 3349](#)
 - **Rep. Gervin-Hawkins**

Would create an abbreviated educator preparation program for a person seeking certification in trade and industrial workforce training who has 10 years of experience and holds with respect to that occupation a current license, certificate, or registration. The bill also would establish a trade and industrial workforce training certificate that may be obtained through an abbreviated educator preparation program.

Status: Passed by House, Passed by Senate and amended, Signed in the House

The 115th Congress is currently voting on the reauthorization of the Carl D. Perkins Career and Technical Education Act.

- [HR 2353](#)
 - **Rep. Glenn Thompson**

Strengthening Career and Technical Education for the 21st Century Act: The U.S. House Education and the Workforce Committee held a hearing on May 17th to consider HR 2353, the Strengthening Career and Technical Education for the 21st Century Act. The bill reauthorizes the Carl D. Perkins Career and Technical Education Act as well as makes changes to the program by adding more flexibility, streamlining reporting processes, encouraging innovation, and improving transparency and accountability.

The Committee adopted a committee substitute which delays the implementation date of the bill to align with the school year as well as makes technical corrections. The Committee approved the bill by a voice vote. HR 2353 will now go to the U.S. House of Representatives for consideration.

We will continue to monitor and track the bills that follow on the next several pages.

Legislative Tracking

As of May 30, 2017, we are tracking 49 bills in 85th Texas Legislature.

Education

85(R) [HB 852](#) Author: Parker

Last Action: 05/10/2017 *H Laid on the table subject to call*

Caption: Relating to adult high school diploma and industry certification charter school pilot program requirements.

Companion: [SB 276](#) by Watson | et al., Identical, 05/23/2017 Effective immediately

85(R) [HB 595](#) Author: Workman | et al.

Last Action: 05/06/2017 *H Committee report sent to Calendars*

Caption: Relating to a franchise tax credit for entities that employ certain students in certain paid internship or similar programs.

Companion: [SB 518](#) by Miles | et al., Identical, 05/02/2017 H Referred to Ways & Means

85 (R) [HB 2431](#) Author: Deshotel

Last Action: 05/25/2017 *E Sent to the Governor*

Caption: Relating to the participation of public state colleges in the Jobs and Education for Texans (JET) Grant Program.

85(R) [SB 1091](#) Author: Seliger

Last Action: 05/28/2017 *E Sent to the Governor*

Caption: Relating to limitations on courses that may be offered for dual credit by school districts and public institutions of higher education.

85(R) [HB 1700](#) Author: Lucio III

Last Action: 03/13/2017 *H Referred to Economic & Small Business Development*

Caption Text: Relating to the establishment by the Texas Workforce Commission of a career and technical education workforce specialist pilot program.

Companion: [SB 154](#) by Hinojosa, Identical, 01/25/2017 S Referred to Education

85 (R) [SB 1220](#) Author: Miles

Last Action: 05/23/2017 *E Sent to the Governor*

Caption: Relating to ensuring continuity of education and access to higher education, career information, and skills certification for foster care youth and former foster care youth.

85(R) [HB 1007](#) Author: Alonzo

Last Action: 05/04/2017 *H Committee report sent to Calendars*

Caption: Relating to the establishment of veterans' resource centers at certain institutions of higher education.

85(R) [HB 1828](#) Author: Howard

Last Action: 04/27/2017 *H Left pending in committee*

Caption: Relating to authorization by the Texas Higher Education Coordinating Board for certain public junior colleges to offer baccalaureate degree programs.

Companion: [SB 645](#) by Watson, Identical, 02/13/2017 S Referred to Higher Education

85(R) [SB 1103](#) Author: Watson

Last Action: 03/07/2017 *Referred to Higher Education*

Caption: Relating to the establishment of the Texas Returning Adult Student Grant Program for certain students enrolled in baccalaureate degree programs at certain postsecondary educational institutions.

Companion: [HB 2290](#) by Lozano | et al., Identical, 05/11/2017 H Placed on General State Calendar

85(R) [HB 1638](#) Author: Guillen

Last Action: 05/23/2017 *E Effective immediately*

Caption: Relating to statewide goals for dual credit programs provided by school districts.

Companion: [SB 1903](#) by West, Identical, 05/03/2017 S Committee report printed and distributed

85 (R) [HB 2729](#) Author: Lucio III

Last Action: 05/30/2017 *E Sent to the Governor*

Caption: Relating to an inventory of credentials and certificates that may be earned by a public high school student through a career and technology education program.

85 (R) [HB 2730](#) Author: Lucio III

Last Action: 04/27/2017 *H Left pending in committee*

Caption: Relating to the authority of the commissioner of education to create career and technical credentials and certificates that may be earned through a career and technology education program and to a study to identify unmet needs in career and technology education programs.

85 (R) [HB 971](#) Author: Giddings

Last Action: 05/10/2017 *H Placed on General State Calendar*

Caption: Relating to authorization by the Texas Higher Education Coordinating Board for certain public junior colleges to offer early childhood education baccalaureate degree programs.

Companion: [SB 534](#) by West, Identical, 02/08/2017 S Referred to Higher Education

85(R) [SB 748](#) Author: Zaffirini

Last Action: 05/28/2017 *E Sent to the Governor*

Caption: Relating to transition planning for a public-school student enrolled in a special education program

Companion: [HB 4027](#) by Allen, Identical, 05/12/2017 H Returned to Calendars Committee

85(R) [HB 2155](#) Author: Howard

Last Action: 05/11/2017 *H Placed on General State Calendar*

Caption Text: Relating to a college readiness memorandum of understanding between a school district and a public institution of higher education.

85(R) [SB 885](#) Author: Seliger

Last Action: 05/11/2017 *S Removed from local & uncontested calendar*

Caption: Relating to the maximum number of semester credit hours allowed for and funding sources used to supplement a TEXAS grant and to the removal of obsolete references related to the Teach for Texas grant program.

85(R) [SB 574](#) Author: Miles

Last Action: 02/08/2017 *Referred to Education*

Caption: Relating to the expansion of applied workforce learning opportunities in this state, including through the establishment of the Texas Industry Internship Challenge.

85(R) [SB 534](#) Author: Watson

Last Action: 02/08/2017 *Referred to Higher Education*

Caption: Relating to authorization by the Texas Higher Education Coordinating Board for certain public junior colleges to offer early childhood education baccalaureate degree programs.

Companion: [HB 971](#) by Giddings | et al., Identical, 05/10/2017 H Placed on General State Calendar

85(R) [SB 367](#) Author: Garcia

Last Action: 02/01/2017 *Referred to Higher Education*

Caption Text: Relating to authorization by the Texas Higher Education Coordinating Board for certain public junior colleges to offer baccalaureate degree programs.

Companion: [HB 1212](#) Similar to [HB 1628/SB 644/SB 645](#)

85(R) [SB 276](#) Author: Watson – Companion [HB 852](#)

Last Action: 05/23/2017 *E Effective immediately*

Caption: Relating to adult high school diploma and industry certification charter school pilot program requirements.

Companion: [HB 852](#) by Parker | et al., Identical, 05/10/2017 H Laid on the table subject to call

85(R) [SB 154](#) Author: Hinojosa

Last Action: 01/25/2017 *Referred to Education*

Caption Text: Relating to the establishment by the Texas Workforce Commission of a career and technical education workforce specialist pilot program.

Companion: [HB 1700](#) by Lucio III | et al., Identical, 03/13/2017 H Referred to Economic & Small Business Development

Business & Commerce

85(R) [SB 452](#) Author: Hancock

Last Action: 05/16/2017 *H Committee report sent to Calendars*

Caption: Relating to the effect of certain agreements with a collective bargaining organization on certain state-funded public work contracts.

Companion: [HB 648](#) by Parker | et al., Identical, 04/17/2017 H Committee report sent to Calendars

85(R) [HB 108](#) Author: Alvarado

Last Action: 05/27/2017 *E Sent to the Governor*

Caption: Relating to the creation of the Recruit Texas Program to facilitate the relocation to or expansion in this state of employers offering complex or high-skilled employment opportunities.

85(R) [HB 992](#) Author: Walle

Last Action: 03/20/2017 *H Left pending in committee*

Comment: Raising minimum wage to \$15.00

Companion: [SB 229](#) by Menéndez, Similar, 01/30/2017 S Referred to Natural Resources & Economic Development

85(R) [HB 924](#) Author: Turner, Chris

Last Action: 03/20/2017 *H Left pending in committee*

Comment: Raising minimum wage \$10.10 (HB 954/SB 427/HJR 56)

Companion: [SB 229](#) by Menéndez, Identical, 01/30/2017 S Referred to Natural Resources & Economic Development

85(R) [HB 475](#) Author: Reynolds

Last Action: 03/20/2017 *H Left pending in committee*

Caption: Relating to the minimum wage to \$15.00.

Companion: [SB 229](#) by Menéndez, Similar, 01/30/2017 S Referred to Natural Resources & Economic Development, [HB 285](#) by Alonzo, Duplicate, 03/20/2017 H Left pending in committee

85(R) [SB 474](#) Author: Rodríguez | et al. (Companion to HB 863)

Last Action: 02/06/2017 *Referred to Business & Commerce*

Caption: Relating to required provision of workers' compensation insurance coverage for employees of building and construction contractors and subcontractors.

Companion: [HB 1477](#) by Walle, Similar, 04/03/2017 H Left pending in committee

85(R) [SB 388](#) Author: Burton

Last Action: 02/01/2017 *Referred to Business & Commerce*

Caption: Relating to the repeal of the authorization for a governing body to conduct economic development

negotiations in a closed meeting under the open meetings law.

85(R) [SB 255](#) Author: Zaffirini

Last Action: 05/28/2017 *E Sent to the Governor*

Caption: Relating to training for governmental entities and vendors, including purchasing and contract management training; authorizing fees.

Companion: [HB 1695](#) by Shaheen, Identical, 04/04/2017 H Left pending in subcommittee

85(R) [SB 85](#) Author: Hall

Last Action: 01/24/2017 *Referred to Business & Commerce*

Caption: Relating to the verification of employment authorization by state contractors and state grant recipients, including the use of the federal E-verify program, and to authorization for the suspension of certain licenses held by private employers for the knowing employment of persons not lawfully present in this state; authorizing a fee.

Health and Human Services

85(R) [SB 497](#) Author: Uresti

Last Action: 05/23/2017 *E Sent to the Governor*

Caption: Relating to the creation of an office of workforce development and analytics in the Department of Family and Protective Services.

85(R) [SB 818](#) Author: Watson

Last Action: 03/29/2017 *S Left pending in committee*

Caption Text: Relating to nutrition and fitness standards for certain child-care facilities and training for employees at those facilities.

Companion: [HB 2664](#) by Miller | et al., Identical, 05/05/2017 H Failed to pass to engrossment

85(R) [SB 482](#) Author: Miles

Last Action: 02/06/2017 *Referred to Health & Human Services*

Caption: Relating to the creation of a program to assist foster care youth and former foster care youth in accessing higher education, career information, and skills certifications.

Companion: [HB 1640](#) by Vo | et al., Identical, 05/22/2017 S Referred to Education

Intergovernmental Relations and State Affairs

85(R) [SB 1113](#) Author: Garcia | et al.

Last Action: 03/07/2017 *Referred to State Affairs*

Caption: Relating to regulations and policies for entering or using a bathroom or changing facility in buildings operated by certain governmental entities and public schools; authorizing a civil penalty.

Companion: [HB 4243](#) by Hinojosa, Gina, Identical, 04/03/2017 H Referred to State Affairs

85(R) [SCR 19](#) Author: Perry

Last Action: 02/27/2017 *Referred to Natural Resources & Economic Development*

Caption: Requesting the Texas Workforce Commission to seek a TANF waiver that would allow TWC to partner with charitable organizations and community colleges for child care, education, and job training.

85(R) [HB 793](#) Author: Capriglione

Last Action: 04/24/2017 *H Left pending in committee*

Caption: Relating to the definition of a governmental body for the purposes of the public information law.

Companion: [SB 408](#) by Watson | et al., Identical, 04/18/2017 H Referred to Government Transparency & Operation

Finance

85(R) [SB 9](#) Author: Hancock | et al.

Last Action: 04/18/2017 *H Referred to Appropriations*

Caption: Relating to the constitutional limit on the rate of growth of appropriations.

Companion: [HB 936](#) by Schofield, Very Similar, 02/21/2017 H Referred to Appropriations
[HB 1025](#) by Leach, Identical, 03/06/2017 H Referred to Appropriations

85(R) [HB 3554](#) Author: Gervin-Hawkins

Last Action: 04/27/2017 *H Left pending in committee*

Caption: Relating to the application for funding for certain workforce development programs.

85(R) [SB 518](#) Author: Miles

Last Action: 05/02/2017 *H Referred to Ways & Means*

Caption: Relating to a franchise tax credit for entities that employ certain students in certain paid internship or similar programs.

Companion: [HB 595](#) by Workman | et al., Identical, 05/06/2017 H Committee report sent to Calendars

85(R) [SB 446](#) Author: Burton

Last Action: 04/03/2017 *S Left pending in committee*

Caption: Relating to the acceptance or expenditure of federal funds by a political subdivision.

Companion: [HB 135](#) by Krause | et al., Similar, 02/14/2017 H Referred to Appropriations

TAWB Bills of Interest:

85(R) [SB 802](#) Author: Seliger

Last Action: 05/29/2017 *E Effective Immediately*

Caption: Relating to a study and report regarding best practices in the transfer of course credit between public institutions of higher education.

85(R) [HB 257](#) Author: Hernandez

Last Action: 05/26/2017 *E Effective on 9/1/2017*

Caption: Relating to a report by the Texas Workforce Commission regarding the transition from military service to employment.

85(R) [HB 136](#) Author: Bell

Last Action: 05/27/2017 *E Sent to the Governor*

Caption: Relating to inclusion of career and technology education and workforce training in the mission of public education.

85(R) [HB 1212](#) Author: Phillips

Last Action: 04/27/2017 *H Left pending in committee*

Caption: Relating to authorization by the Texas Higher Education Coordinating Board for certain public junior colleges to offer baccalaureate degree programs.

85(R) [HB 374](#) Author: Johnson, Jarvis

Last Action: 05/05/2017 *H Laid on the table subject to call*

Caption: Relating to the requirement that the Texas Workforce Commission provide certain employment information for secondary school students.

Companion: [SB 2105](#) by Miles | et al., Identical, 05/19/2017 *E Effective on 9/1/17*

85(R) [HB 713](#) Author: Wu

Last Action: 05/09/2017 *H Laid on the table subject to call*

Caption: Relating to a prohibition of a monitoring system performance indicator based on the number or percentage of students receiving special education services.

Companion: [SB 160](#) by Rodríguez | et al., Similar, 05/22/2017 *E Effective immediately*

[SB 214](#) by Menéndez, Identical, 01/25/2017 *S Referred to Education*

Employer Service Committee

Supporting Education and Training For High Skill, High Growth Occupations

On May 23, 2017, the Employer Service Committee met at H-GAC. The meeting was led by Chair Gerald Andrews. Also attending were Board Chair Mark Guthrie, Alan Heskamp, Cheryl Guido, Guy Robert Jackson, Connie Smith and Gil Staley. The Committee took action on supporting High Skill, High Growth occupations with scholarship. Additionally, the Committee received information on research reports from the Texas Workforce Investment Council (TWIC) and Registered Apprenticeship activities. Finally, Guy Robert Jackson relayed a performance issue from the Audit/Monitoring Committee. Board staff will gather relevant data for a follow-up meeting in June that will include the Employer Service contractor.

Background

The Gulf Coast Workforce Board targets the resources it controls — and influences those controlled by its partners in the regional workforce system — with its strategic plan and a series of three supporting lists: 1) *Targeted Industries*, 2) *High-Skill, High-Growth Occupations*, and 3) *Where the Jobs Are*, a list of occupations likely to provide the largest number of job opportunities in the region over the next ten years.

We use these lists to guide not only the Board’s strategic investments, but also to help our residents build careers in industries and occupations with good prospects and higher wages. We use the High-Skill, High-Growth Occupations list to decide which occupations we will support with our education scholarship dollars.

The Employer Service Committee reviewed and recommended the initial lists for the target industries, demand occupations and “hot jobs” to the Board in December 2016. We have attached each of these lists in Attachment 2.

We noted at the time that we would come back to the committee and the Board with recommendations on which occupations on the High-Skill, High-Growth list would be appropriate to support with our scholarship funds.

Current Situation

We select the High-Skill, High-Growth Occupations using the employment projections and current labor market data and intelligence, deriving the list from the Board’s targeted industries.

The basic criteria for placing an occupation on our list include:

- Projected employment for 2024 equal to or greater than the average for all occupations in the region. (> 5,633)
- Projected growth rate equal to or greater than the average of all occupations in the region. (> 22.4%)
- Minimum education requirements of a postsecondary degree or certificate, moderate on-the-job training, long-term on-the-job training, or work experience in a related occupation.
- Median hourly wages equal to or greater than the median for all occupations in the region. (> \$18.06)

While we promote career opportunities for all the Board's high-skill, high-growth occupations, we provide scholarship assistance where we believe we can make the most impact. We offer scholarships for subset of occupations on our list.

- Using the scholarship occupations list, we solicit training providers offering programs that lead to certifications and degrees in those occupations for the Board's education & training vendor network.
- We distinguish between "career advancement training" and "new career training" programs in the network to make sure we provide access to short-term, short-course advancement options as well as occupational entry education/training.
- To the extent practicable, we solicit providers that offer programs and courses that are linked to career paths associated with our high-skill, high-growth occupations.
- We avoid soliciting providers that offer classroom skills training in jobs that are low-wage/high-turnover and jobs that are normally or usually trained for on-the-job. For this reason, many of the jobs that show up on Where the Jobs Are list are not supported with scholarships.
- Working through our career offices, individuals who want or need education or skill training to get a job, keep a job, or get a better job can use our scholarship dollars at training providers in the network.
- We target funds for talent development with employers in our targeted industries, but we do not limit this support to the occupations on the scholarship list. When an employer or group of employers approaches us for assistance with custom training, on-the-job training, or current worker training, we check to make sure the assistance will result in skilling or upskilling new or current workers for that employer.

Attachment 1 is a chart showing the recommended scholarship occupations by the targeted industry in which they are primarily employed. Most of occupations are found in multiple targeted industries.

Out of the 76 high-skill, high-growth occupations, we recommend not supporting 24 with scholarship assistance:

- The general category of **Doctors and Dentists and its subsets**. This category includes 12 occupations. Currently our scholarships are limited in length (to two years) and in amount (up to \$6,000 per year) which restricts our ability to support individuals training to be physicians or dentists.
- **Insurance Claims & Policy Processing Clerks**. Most job openings do not require credentialing, and the usual path to these jobs are certificates or degrees in business management or administration or on-the-job training.
- **Insurance Sales Agents**. This is a variable compensation occupation, and most opportunities are 100% commission only.
- **Market Research Analysts & Marketing Specialists**. This occupational category has become a catch-all for many related occupational titles and a wide range of varying job duties. Although we can advise individuals about the occupations, we do not see standard training available for entry into the field.
- **Lawyers**. As with physicians and dentists, the limits on our scholarship dollars make it difficult to offer meaningful assistance to individuals training to be lawyers.
- **Personal Financial Advisors**. This is a variable compensation occupation, and many opportunities are 100% commission only.
- **Flight Attendants**. Industry practice is to hire candidates with customer service experience for the airlines' in-house, employer-specific training.
- **Medical Records & Health Information Technicians**. We included this occupation in prior versions of the list, anticipating the growth in electronic medical records systems. We learned that rapidly changing technology and the proprietary software that hospitals used rendered traditional provider training ineffective. Moreover, there are many lower skilled occupations that fall into this general category, and many of the training programs in our network focused on developing people for entry-level medical billing and coding jobs and not skilled health information/medical records jobs. This is an occupation which we can support through employer-based custom training, on-the-job training, or current worker training.
- **Preschool Teachers**. Because of the Board's commitment to early education and care quality, we provide scholarship support for Certified Development Associate training and Early Education Associate Degrees for child care staff, some of whom move on to head

start and preschool settings. We support this occupation through employer-based training.

- **Heavy & Tractor Trailer Truck Drivers.** We have a significant number of trained and certified truck drivers who are not working in the occupation for a variety of reasons. While we recognize the demand for drivers, we believe training for this occupation is also best supported through employer-based projects.
- **Geological & Petroleum Technicians.** There are three occupations in the this group; all have negative growth projections through 2024. We propose placing these occupations on a watch list because of the importance to the upstream and midstream oil and gas industry. Should demand rebound, we would place them back on the scholarship list. We can also support employer-based training efforts.

Next Steps

1. Release scholarship occupation list as part the target occupations list to staff, education/training partners and employers.
2. Map scholarship occupations to other regional efforts, such as UpSkill Houston
3. Assess, update and expand training provider network to align with Board's updated target occupations.
4. Update/expand career planning materials for customers, staff, students, educators, parents and workforce development professionals.
5. Develop training for staff and partners to support use of labor market data and career planning materials.

Action

Recommend the Board adopt the Occupations Supported by Scholarship.

Attachment 1
Occupations Supported by Scholarship – Updated May 22, 2017

Mining	Construction	Manufacturing	Trade, Transportation & Utilities	Professional & Business Services	Education & Health Services
Petroleum Engineers	Heating, AC, & Refrigeration Mechanics & Installers	Chemical Plant and System Operators	Bus & Truck Mechanics & Diesel Engine Specialists	Accountants & Auditors	Career & Technical Teachers, Secondary
Petroleum Pump System Operators, Refinery Operators, & Gaugers	Plumbers, Pipefitters, & Steamfitters	Chemical Engineers	Mobile Heavy Equipment Mechanics, Except Engines	Paralegals & Legal Assistants	Education, Guidance, School & Vocational Counselors
Geoscientists, Ex. Hydrologists & Geographers	Electricians	Machinists		Computer Systems Analysts	Elementary School Teachers, Ex. Special Ed
	Cost Estimators	Industrial Engineers		Network and Computer Systems Administrators	Kindergarten Teachers, Ex. Special Ed.
	Operating Eng. & Other Construction Equipment Operators	Industrial Machinery Mechanics		Software Developers, Applications	Middle School Teachers, Ex. Special Ed. & CTE
	Welders, Cutters, Solderers, and Brazers	Electrical and Electronics Engineering Technicians		Software Developers, Systems Software	Secondary School Teachers, Ex. Special Ed. & CTE
	Civil Engineers	Aerospace Engineers		Engineers, All Other	Special Ed. Teachers (4): Kinder/Elem; Preschool; Middle: Secondary
		Health and Safety Engineers		Electrical Engineers	Registered Nurses
				Environmental Engineers	Licensed Practical & Licensed Vocational Nurses
				Electronics Engineers, Ex. Computer	Radiologic Technologists & Technicians
				Marine Engineers & Naval Architects	Medical & Clinical Laboratory Technologists
				Materials Engineers	Occupational Therapists

Attachment 1
Occupations Supported by Scholarship – Updated May 22, 2017

Mining	Construction	Manufacturing	Trade, Transportation & Utilities	Professional & Business Services	Education & Health Services
				Mechanical Engineers	Physical Therapists
					Speech-Language Pathologists
					Respiratory Therapists
					Biomedical Engineers

Attachment 2

The following pages are the Board's approved lists:

- Targeted Industries
- High-Skill, High-Growth Occupations
- Where the Jobs Are

GULF COAST WORKFORCE REGION

Industries Targeted by the Gulf Coast Workforce Board^{1,2}

NAICS	Industry Title	Employment Growth			1st Qtr 2016 Avg. Weekly Wages	
		Annual Averages 2014	2024	Absolute Change		Percent Change
	Mining	107,030	91,590	-15,440	-14.4%	-
2111	Oil & Gas Extraction	54,140	48,610	-5,530	-10.2%	\$5,341
2131	Support Activities for Mining	52,890	42,980	-9,910	-18.7%	\$2,793
	Construction	174,600	229,720	55,120	31.6%	
2362	Nonresidential Building Construction	43,120	54,870	11,750	27.2%	\$1,830
2371	Utility System Construction	29,600	38,680	9,080	30.7%	\$1,498
2382	Building Equipment Contractors	44,170	60,750	16,580	37.5%	\$1,157
2381	Building Foundation & Exterior Contractors	20,920	28,260	7,340	35.1%	\$1,101
2389	Other Specialty Trade Contractors	18,800	23,850	5,050	26.9%	\$1,025
2383	Building Finishing Contractors	17,990	23,310	5,320	29.6%	\$881
	Manufacturing	92,210	86,830	-5,380	-5.8%	-
3241	Petroleum & Coal Products Manufacturing	10,050	11,730	1,680	16.7%	\$3,738
3251	Basic Chemical Manufacturing	21,890	26,270	4,380	20.0%	\$2,940
3331	Agriculture, Construction, & Mining Machinery Manufacturing	42,680	33,860	-8,820	-20.7%	\$2,365
3329	Other Fabricated Metal Product Manufacturing	17,590	14,970	-2,620	-14.9%	\$1,402
	Trade, Transportation & Utilities	100,840	128,510	27,670	27.4%	-
4251	Wholesale Electronic Markets & Agents & Brokers	21,880	29,960	8,080	36.9%	\$2,560
4238	Machinery & Supply Merchant Wholesalers	35,440	44,970	9,530	26.9%	\$1,600
4411	Automobile Dealers	25,760	31,410	5,650	21.9%	\$1,187
4811	Scheduled Air Transportation	17,760	22,170	4,410	24.8%	\$2,124

GULF COAST WORKFORCE REGION

Industries Targeted by the Gulf Coast Workforce Board^{1,2}

NAICS	Industry Title	Employment Growth			1st Qtr 2016 Avg. Weekly Wages	
		Annual Averages 2014	2024	Absolute Change		Percent Change
5242	Finance and Insurance	18,170	22,940	4,770	26.3%	-
	Insurance Agencies & Brokerages	18,170	22,940	4,770	26.3%	\$1,566
	Professional and Business Services	298,520	377,480	78,960	26.5%	-
5411	Legal Services	24,060	28,860	4,800	20.0%	\$2,045
5412	Accounting & Bookkeeping Services	22,260	27,080	4,820	21.7%	\$1,294
5413	Architectural & Engineering Services	73,470	93,740	20,270	27.6%	\$2,007
5415	Computer Systems Design & Related Services	30,230	38,870	8,640	28.6%	\$2,073
5416	Management & Technical Consulting Services	34,220	43,420	9,200	26.9%	\$2,173
5419	Other Professional & Technical Services	15,300	19,920	4,620	30.2%	\$1,190
5611	Office Administrative Services	22,220	28,190	5,970	26.9%	\$2,462
5613	Employment Services	76,760	97,400	20,640	26.9%	\$937
	Education and Health Services	418,760	538,090	119,330	28.5%	-
6111	Elementary & Secondary Schools, Public & Private ³	187,470	236,120	48,650	26.0%	\$1,090
6113	Colleges & Universities, Public & Private ³	53,270	64,800	11,530	21.6%	\$1,749
6211	Offices of Physicians	48,210	69,460	21,250	44.1%	\$1,522
6214	Outpatient Care Centers	10,030	14,940	4,910	49.0%	\$1,216
6221	General Medical & Surgical Hospitals, Public & Private	81,370	103,250	21,880	26.9%	\$1,201
6223	Specialty Hospitals, Public & Private	22,220	28,980	6,760	30.4%	\$1,029
6212	Offices of Dentists	16,190	20,540	4,350	26.9%	\$903
	Other Services	18,560	24,170	5,610	30.2%	-
8111	Automotive Repair & Maintenance	18,560	24,170	5,610	30.2%	\$716

GULF COAST WORKFORCE REGION

Industries Targeted by the Gulf Coast Workforce Board^{1,2}

NAICS	Industry Title	Employment Growth		1st Qtr 2016 Avg. Weekly Wages
		Annual Averages 2014	Absolute Change 2024	

Notes

1. Criteria used to identify the targeted industries:

- Industries with a projected employment growth of at least 4,000 new jobs from 2014-2024 (an average of 400 jobs per year)
 - Industries with projected employment growth rate greater than or equal to 80% of the average growth rate for all industries in the region for the period 2014 to 2024. (17.9%)
 - Industries with an average weekly wage of at least \$700 per week.
 - Absolute changes do not represent total demand for labor because they do not reflect demand due to replacements, attrition, turnover, etc.
 - Employment and average weekly wage information is from the first quarter 2012 ES-202 data based on employers' employment and wage reports to Texas Workforce Commission. Average weekly wages for NAICS 6111 and 6113 are based on a 9 month year.
- Authorized for use by the Gulf Coast Workforce Board December 6, 2016

GULF COAST WORKFORCE REGION

High-Skill, High-Growth Jobs Targeted by the Gulf Coast Workforce Board^{1,2}

SOC	Occupational Title	Annual Averages		Employment Growth Absolute Change	Percent Change	Annual Average Job Openings		Median Hourly Wage 2015
		2014	2024			Growth	Replacement	
13-1000	Business Operations Specialists	88,590	106,210	17,620	19.9%	1,760	1,675	3,435
13-1161	Market Research Analysts & Marketing Specialists	7,050	9,310	2,260	32.1%	225	85	310
13-1051	Cost Estimators	4,940	6,180	1,240	25.1%	125	140	265
13-2000	Financial Specialists	65,510	79,490	13,980	21.3%	1,400	1,620	3,020
13-2052	Personal Financial Advisors	4,190	5,650	1,460	34.8%	145	105	250
13-2011	Accountants & Auditors ²	39,640	48,220	8,580	21.6%	860	1,060	1,920
15-1100	Computer Occupations	79,430	96,820	17,390	21.9%	1,740	1,125	2,865
15-1121	Computer Systems Analysts	18,010	22,990	4,980	27.7%	500	230	730
15-1132	Software Developers, Applications	11,590	14,280	2,690	23.2%	270	165	435
15-1133	Software Developers, Systems Software ²	8,470	10,090	1,620	19.1%	160	120	280
15-1142	Network and Computer Systems Administrators ²	8,660	10,150	1,490	17.2%	150	110	260
17-2000	Engineers	59,050	69,020	9,970	16.9%	1,005	1,630	2,635
17-2031	Biomedical Engineers ³	280	380	100	35.7%	10	5	15
17-2081	Environmental Engineers ²	910	1,170	260	28.6%	25	25	50
17-2051	Civil Engineers	11,070	14,000	2,930	26.5%	295	325	620
17-2072	Electronics Engineers, Ex. Computer ²	3,050	3,740	690	22.6%	70	65	135
17-2071	Electrical Engineers ³	4,470	5,380	910	20.4%	90	100	190
17-2041	Chemical Engineers ³	4,270	5,130	860	20.1%	85	115	200
17-2121	Marine Engineers & Naval Architects ³	1,380	1,640	260	18.8%	25	35	60
17-2111	Health & Safety Engineers, Ex. Mining Safety Engineers & Inspectors ³	1,500	1,780	280	18.7%	25	45	70
17-2199	Engineers, All Other ³	2,880	3,380	500	17.4%	50	60	110
17-2141	Mechanical Engineers ²	8,670	10,140	1,470	17.0%	145	275	420
17-2131	Materials Engineers ³	660	770	110	16.7%	10	25	35
17-2011	Aerospace Engineers ³	2,450	2,850	400	16.3%	40	70	110
17-2112	Industrial Engineers ³	4,990	5,470	480	9.6%	50	145	195
17-2171	Petroleum Engineers ²	10,700	11,400	700	6.5%	70	290	360
17-2151	Mining & Geological Engineers, Inc. Mining Safety Engineers ³	700	630	-70	-10.0%	0	20	20

GULF COAST WORKFORCE REGION

High-Skill, High-Growth Jobs Targeted by the Gulf Coast Workforce Board^{1,2}

SOC	Occupational Title	Annual Averages		Employment Growth Absolute Change	Percent Change	Annual Average Job Openings Replacement		Median Hrly Wage 2015	
		2014	2024			Growth	Total		
17-3000 17-3023	Drafters, Engineering Technicians, & Mapping Technicians Electrical and Electronics Engineering Technicians ²	27,360	31,020	3,660	13.4%	365	515	880	-
		5,400	6,200	800	14.8%	80	130	210	\$28.89
19-2000 19-2042	Physical Scientists Geoscientists, Ex. Hydrologists & Geographers ²	12,360	14,010	1,650	13.3%	170	340	510	
		6,150	6,740	590	9.6%	60	190	250	\$66.66
19-4000 19-4041	Life, Physical, & Social Science Technicians Geological & Petroleum Technicians ³	13,910	16,260	2,350	16.9%	245	510	755	-
		3,380	3,280	-100	-3.0%	0	125	125	\$33.66
23-1000 23-1011	Lawyers, Judges, & Related Workers Lawyers	16,760	20,390	3,630	21.7%	365	245	610	-
		15,710	19,230	3,520	22.4%	350	230	580	\$69.50
23-2000 23-2011	Legal Support Workers Paralegals & Legal Assistants	10,770	12,760	1,990	18.5%	200	235	435	-
		5,700	7,260	1,560	27.4%	155	125	280	\$25.87
21-1000 21-1012	Counselors/Social Workers/Other Social Service Specialists Educational, Guidance, School, & Vocational Counselors	24,660	30,980	6,320	25.6%	630	530	1,160	-
		4,690	5,950	1,260	26.9%	125	100	225	\$28.33
25-2000 25-2022	Preschool, Primary, Secondary, & Special Ed School Teachers⁴ Middle School Teachers, Ex Special/Career/Technical Ed	93,140	117,840	24,700	26.5%	2,470	2,170	4,640	
		16,470	20,940	4,470	27.1%	445	365	810	\$36.43
25-2053	Special Education Teachers, Middle School ²	1,290	1,640	350	27.1%	35	25	60	\$38.30
25-2054	Special Education Teachers, Secondary School ²	1,960	2,490	530	27.0%	50	35	85	\$38.21
25-2031	Secondary School Teachers, Ex Special/Career/Technical Ed	22,550	28,640	6,090	27.0%	610	535	1,145	\$36.75
25-2021	Elementary School Teachers, Ex. Special Education	33,980	43,150	9,170	27.0%	915	750	1,665	\$36.71
25-2052	Special Education Teachers, Kindergarten & Elementary School ²	2,080	2,640	560	26.9%	55	40	95	\$38.11
25-2051	Special Education Teachers, Preschool ³	300	380	80	26.7%	5	5	10	\$38.99
25-2012	Kindergarten Teachers, Ex. Special Education ²	4,120	5,200	1,080	26.2%	110	120	230	\$34.01
25-2011	Preschool Teachers, Ex. Special Education ³	8,470	10,470	2,000	23.6%	200	250	450	\$11.50
25-2032	Career/Technical Education Teachers, Secondary School ³	1,550	1,870	320	20.6%	30	35	65	\$38.99

GULF COAST WORKFORCE REGION

High-Skill, High-Growth Jobs Targeted by the Gulf Coast Workforce Board^{1,2}

SOC	Occupational Title	Annual Averages		Employment Growth		Percent Change	Annual Average Job Openings		Median Hourly Wage 2015
		2014	2024	Absolute Change	Change		Growth	Replacement	
29-1000	Health Diagnosing & Treating Practitioners	85,460	113,500	28,040	32.8%	2,805	2,030	4,835	-
29-1061	Anesthesiologists ²	1,290	1,830	540	41.9%	55	35	90	\$130.42
29-1069	Physicians & Surgeons, All Other	5,950	8,230	2,280	38.3%	230	160	390	\$84.78
29-1064	Obstetricians & Gynecologists ³	470	650	180	38.3%	20	15	35	\$24.08
29-1067	Surgeons ²	500	690	190	38.0%	20	15	35	\$106.63
29-1127	Speech-Language Pathologists ³	2,690	3,610	920	34.2%	90	70	160	\$35.95
29-1122	Occupational Therapists ³	1,590	2,130	540	34.0%	55	30	85	\$40.45
29-1141	Registered Nurses	46,340	61,920	15,580	33.6%	1,560	1,095	2,655	\$36.73
29-1123	Physical Therapists ²	2,390	3,190	800	33.5%	80	65	145	\$42.77
29-1126	Respiratory Therapists ²	2,330	3,070	740	31.8%	75	55	130	\$27.64
29-1063	Internists, General ²	950	1,230	280	29.5%	30	25	55	\$71.62
29-1062	Family & General Practitioners ²	2,260	2,920	660	29.2%	65	60	125	\$96.75
29-1066	Psychiatrists ³	220	280	60	27.3%	5	5	10	\$72.87
29-1021	Dentists, General ²	1,890	2,370	480	25.4%	50	40	90	\$70.85
29-1065	Pediatricians, General ²	830	1,030	200	24.1%	20	20	40	\$85.87
29-1041	Optometrists ³	830	1,020	190	22.9%	20	30	50	\$30.16
29-1011	Chiropractors ³	720	810	90	12.5%	10	15	25	\$11.72
29-1081	Podiatrists ³	90	100	10	11.1%	0	0	0	\$74.70
29-2000	Health Technologists & Technicians	55,130	72,370	17,240	31.3%	1,725	1,060	2,785	-
29-2011	Medical & Clinical Laboratory Technologists ²	3,240	4,250	1,010	31.2%	100	75	175	\$29.30
29-2061	Licensed Practical & Licensed Vocational Nurses	13,280	17,620	4,340	32.7%	435	380	815	\$22.63
29-2071	Medical Records & Health Information Technicians ²	3,960	5,220	1,260	31.8%	125	90	215	\$18.47
29-2034	Radiologic Technologists & Technicians ²	3,850	4,890	1,040	27.0%	105	75	180	\$27.54
41-3000	Sales Representatives, Services	48,520	58,950	10,430	21.5%	1,045	1,050	2,095	-
41-3021	Insurance Sales Agents	9,130	11,490	2,360	25.8%	235	240	475	\$21.89
43-9000	Other Office & Administrative Support Workers	99,250	114,900	15,650	15.8%	1,590	2,105	3,695	-
43-9041	Insurance Claims & Policy Processing Clerks	4,950	6,220	1,270	25.7%	130	125	255	\$18.60
47-2000	Construction Trades Workers	139,100	177,290	38,190	27.5%	3,820	2,265	6,085	-
47-2111	Electricians	18,450	24,130	5,680	30.8%	570	280	850	\$22.13
47-2152	Plumbers, Pipefitters, & Steamfitters	13,570	17,390	3,820	28.2%	380	180	560	\$23.60
47-2073	Operating Engineers & Other Construction Equipment Operators	10,380	12,740	2,360	22.7%	235	175	410	\$18.57

GULF COAST WORKFORCE REGION

High-Skill, High-Growth Jobs Targeted by the Gulf Coast Workforce Board^{1,2}

SOC	Occupational Title	Annual Averages		Employment Growth Absolute Change	Percent Change	Annual Average Job Openings		Median Hrly Wage 2015	
		2014	2024			Growth	Replacement		Total
47-5000 47-5013	Extraction Workers Service Unit Operators, Oil, Gas, & Mining ²	27,460	23,320	-4,140	-15.1%	5	750	755	-
		7,860	6,540	-1,320	-16.8%	0	270	270	\$21.48
49-3000 49-3031 49-3042	Vehicle & Mobile Equip Mechanics, Installers, & Repairers Bus & Truck Mechanics & Diesel Engine Specialists Mobile Heavy Equipment Mechanics, Except Engines ³	36,250	44,700	8,450	23.3%	845	875	1,720	-
		6,780	8,720	1,940	28.6%	195	115	310	\$21.96
		4,680	5,720	1,040	22.2%	105	110	215	\$24.48
49-9000 49-9021 49-9041	Other Installation, Maintenance, & Repair Occupations Heating, AC, & Refrigeration Mechanics & Installers Industrial Machinery Mechanics	70,820	88,100	17,280	24.4%	1,730	1,775	3,505	-
		5,750	7,670	1,920	33.4%	195	90	285	\$21.46
		11,270	14,370	3,100	27.5%	310	290	600	\$24.66
51-4000 51-4121 51-4041	Metal Workers & Plastic Workers Welders, Cutters, Solderers, and Brazers ³ Machinists ³	62,320	61,310	-1,010	-1.6%	350	1,610	1,960	-
		18,800	21,630	2,830	15.1%	285	540	825	\$20.91
		13,620	13,720	100	0.7%	10	395	405	\$19.81
51-8000 51-8091 51-8093	Plant & System Operators Chemical Plant and System Operators ³ Petroleum Pump System Operators, Refinery Operators, & Gaugers ³	11,900	13,840	1,940	16.3%	195	420	615	-
		3,370	4,000	630	18.7%	60	125	185	\$33.14
		4,310	4,850	540	12.5%	55	165	220	\$32.85
53-2000 53-2031	Air Transportation Workers Flight Attendants	12,680	15,930	3,250	25.6%	325	275	600	-
		6,360	8,110	1,750	27.5%	175	115	290	\$24.73
53-3000 53-3032	Motor Vehicle Operators Heavy & Tractor-Trailer Truck Drivers	84,790	105,080	20,290	23.9%	2,030	1,415	3,445	-
		42,360	52,100	9,740	23.0%	975	720	1,695	\$18.47

GULF COAST WORKFORCE REGION

High-Skill, High-Growth Jobs Targeted by the Gulf Coast Workforce Board^{1,2}

SOC	Occupational Title	Employment Growth		Annual Average Job Openings Replacement	Annual Average Growth	Percent Change	Total	Median Hrly Wage 2015
		Annual Averages 2014	2024					

Notes

1. High-skill jobs targeted by the Gulf Coast Workforce Board are those that offer the best employment opportunities for Gulf Coast residents now and in the immediate future.

Criteria used to identify these occupations are:

- | Projected employment for 2024 equal to or greater than the average for all occupations in the region. ($\geq 5,633$)
- | Projected growth rate equal to or greater than the average of all occupations in the region. ($\geq 22.4\%$)
- | Minimum education requirements of a postsecondary degree or certificate, moderate on-the-job training, long-term on-the-job training, or work experience in a related occupation.
- | Median hourly wages equal to or greater than the median for all occupations in the region. ($\geq \$18.06$)

2. Occupations from the prior year list meeting three of the four qualifying criteria and projected to have at least 50 percent of their 2024 employment in those industries targeted by the Gulf Coast Workforce Board have been retained.

3. Other occupations meeting some but not all of the above criteria have also been included based on the best regional labor market intelligence available. Employers can petition to have other occupations added or deleted as labor market conditions change.

4. Wages are based on a 9 month year.
 Authorized for use by the Gulf Coast Workforce Board December 6, 2016

GULF COAST WORKFORCE REGION

Where The Jobs Are ^{1,2,3}

SOC	Occupational Title	Annual Average Employment 2014	Annual Average Employment 2024	Number Change 2014-2024	Percent Growth 2014-2024	Annual Openings due to Growth	Annual Openings due to Replacements	Total Annual Average Openings ³	Typical Education Needed for Entry into Occupation	Work Experience in a related Occupation	Typical on-the-job training	PCT 50 Median Wage 2015
11-0000	Management Occupations	166,700	198,120	31,420	18.8%	3,140	3,690	6,830				\$55.25
11-1021	General & Operations Managers	47,300	57,500	10,200	21.6%	1,020	1,195	2,215	Bachelor's	5 years or more	None	\$58.53
11-2022	Sales Managers	6,690	8,040	1,350	20.2%	135	160	295	Bachelor's	Less than 5 years	None	\$62.97
11-3011	Administrative Services Managers	5,530	6,800	1,270	23.0%	125	105	230	Bachelor's	Less than 5 years	None	\$48.02
11-3021	Computer & Information Systems Managers	5,680	7,050	1,370	24.1%	135	65	200	Bachelor's	5 years or more	None	\$68.74
11-3031	Financial Managers	8,770	10,280	1,510	17.2%	150	210	360	Bachelor's	5 years or more	None	\$67.00
11-9013	Farmers, Ranchers, & Other Agricultural Managers	20,920	22,030	1,110	5.3%	110	355	465	High school	5 years or more	None	\$14.51
11-9021	Construction Managers	13,440	16,010	2,570	19.1%	255	190	445	Bachelor's	None	Moderate	\$41.22
11-9032	Education Administrators, Elementary/Secondary School	5,370	6,840	1,470	27.4%	145	155	300	Master's	5 years or more	None	-
11-9041	Architectural & Engineering Managers	4,720	5,460	740	15.7%	75	145	220	Bachelor's	5 years or more	None	\$81.11
11-9051	Food Service Managers	4,310	5,630	1,320	30.6%	130	85	215	High school	Less than 5 years	None	\$25.73
11-9111	Medical & Health Services Managers	4,840	6,390	1,550	32.0%	155	120	275	Bachelor's	Less than 5 years	None	\$48.46
11-9141	Property, Real Estate, & Community Association Managers	5,930	6,940	1,010	17.0%	100	105	205	High school	Less than 5 years	None	\$30.59
11-9199	Managers, All Other	9,490	11,130	1,640	17.3%	165	210	375	Bachelor's	Less than 5 years	None	\$59.68
13-0000	Business & Financial Operations Occupations	154,100	185,700	31,600	20.5%	3,160	3,295	6,455				\$35.09
13-2011	Accountants & Auditors	39,640	48,220	8,580	21.6%	860	1,060	1,920	Bachelor's	None	None	\$36.89
13-1071	Human Resources Specialists	12,250	14,450	2,200	18.0%	220	300	520	Bachelor's	None	None	\$29.24
13-1199	Business Operations Specialists, All Other	16,290	19,130	2,840	17.4%	285	195	480	Bachelor's	None	None	\$38.59
13-1111	Management Analysts	12,000	14,680	2,680	22.3%	265	165	430	Bachelor's	Less than 5 years	None	\$46.15
13-1023	Purchasing Agents, Ex. Wholesale, Retail, & Farm Products	8,920	9,930	1,010	11.3%	100	245	345	Bachelor's	None	Long-term	\$32.92
13-1161	Market Research Analysts & Marketing Specialists	7,050	9,310	2,260	32.1%	225	85	310	Bachelor's	None	None	\$29.57
13-1151	Training & Development Specialists	6,280	7,600	1,320	21.0%	135	155	290	Bachelor's	Less than 5 years	None	\$33.22
13-1051	Cost Estimators	4,940	6,180	1,240	25.1%	125	140	265	Bachelor's	None	None	\$32.05
13-2051	Financial Analysts	6,630	7,850	1,220	18.4%	120	135	255	Bachelor's	None	None	\$40.68
13-2052	Personal Financial Advisors	4,190	5,650	1,460	34.8%	145	105	250	Bachelor's	None	Long-term	\$34.43
15-0000	Computer & Mathematical Occupations	81,750	100,060	18,310	22.4%	1,830	1,170	3,000				\$41.01
15-1121	Computer Systems Analysts	18,010	22,990	4,980	27.7%	500	230	730	Bachelor's	None	None	\$44.67
15-1151	Computer User Support Specialists	13,430	16,380	2,950	22.0%	295	175	470	Some college	None	None	\$25.73
15-1132	Software Developers, Applications	11,590	14,280	2,690	23.2%	270	165	435	Bachelor's	None	None	\$48.54
15-1133	Software Developers, Systems Software	8,470	10,090	1,620	19.1%	160	120	280	Bachelor's	None	None	\$50.54
15-1142	Network & Computer Systems Administrators	8,660	10,150	1,490	17.2%	150	110	260	Bachelor's	None	None	\$42.52

Where The Jobs Are ^{1,2,3}

SOC	Occupational Title	Annual Average Employment 2014	Annual Average Employment 2024	Number Change 2014-2024	Percent Growth 2014-2024	Annual Openings due to Growth	Annual Openings due to Replacements	Total Annual Average Openings ³	Typical Education Needed for Entry into Occupation	Work Experience in a related Occupation	Typical on-the-job training	PCT 50 Median Wage 2015
17-0000	Architecture & Engineering Occupations	92,380	107,360	14,980	16.2%	1,505	2,275	3,780				\$43.94
17-2051	Civil Engineers	11,070	14,000	2,930	26.5%	295	325	620	Bachelor's	None	None	\$49.41
17-2141	Mechanical Engineers	8,670	10,140	1,470	17.0%	145	275	420	Bachelor's	None	None	\$46.68
17-2171	Petroleum Engineers	10,700	11,400	700	6.5%	70	290	360	Bachelor's	None	None	\$74.24
17-3023	Electrical & Electronics Engineering Technicians	5,400	6,200	800	14.8%	80	130	210	Associate's	None	None	\$28.89
17-2041	Chemical Engineers	4,270	5,130	860	20.1%	85	115	200	Bachelor's	None	None	\$55.85
17-2112	Industrial Engineers	4,990	5,470	480	9.6%	50	145	195	Bachelor's	None	None	\$47.50
17-2071	Electrical Engineers	4,470	5,380	910	20.4%	90	100	190	Bachelor's	None	None	\$49.90
19-0000	Life, Physical, & Social Science Occupations	33,060	38,460	5,400	16.3%	555	1,015	1,570				\$31.35
19-4099	Life, Physical, & Social Science Technicians, All Other	3,720	4,700	980	26.3%	100	155	255	Associate's	None	None	\$18.49
19-2042	Geoscientists, Ex. Hydrologists & Geographers	6,150	6,740	590	9.6%	60	190	250	Bachelor's	None	None	\$66.66
21-0000	Community & Social Service Occupations	41,860	50,850	8,990	21.5%	900	905	1,805				\$22.78
21-2011	Clergy	12,960	14,800	1,840	14.2%	185	280	465	Bachelor's	None	Moderate	\$24.95
21-1012	Educational, Guidance, School, & Vocational Counselors	4,690	5,950	1,260	26.9%	125	100	225	Master's	None	None	\$28.33
23-0000	Legal Occupations	27,530	33,150	5,620	20.4%	560	480	1,040				\$41.44
23-1011	Lawyers	15,710	19,230	3,520	22.4%	350	230	580	Doctoral or prof.	None	None	\$69.50
23-2011	Paralegals & Legal Assistants	5,700	7,260	1,560	27.4%	155	125	280	Associate's	None	None	\$25.87
25-0000	Education, Training, & Library Occupations	169,180	212,850	43,670	25.8%	4,365	3,650	8,015				\$24.78
25-2021	Elementary School Teachers, Ex. Special Education ⁴	33,980	43,150	9,170	27.0%	915	750	1,665	Bachelor's	None	Internship/residency	\$36.71
25-2031	Secondary School Teachers, Ex. Special/Career/Technical Ed ⁴	22,550	28,640	6,090	27.0%	610	535	1,145	Bachelor's	None	Internship/residency	\$36.75
25-9041	Teacher Assistants	17,090	21,690	4,600	26.9%	460	410	870	Some college	None	None	\$14.03
25-2022	Middle School Teachers, Ex. Special/Career/Technical Ed ⁴	16,470	20,940	4,470	27.1%	445	365	810	Bachelor's	None	Internship/residency	\$36.43
25-3098	Substitute Teachers	17,070	21,540	4,470	26.2%	445	320	765	Bachelor's	None	Internship/residency	\$11.92
25-2011	Preschool Teachers, Ex. Special Education	8,470	10,470	2,000	23.6%	200	250	450	Associate's	None	None	\$11.50
25-3021	Self-Enrichment Education Teachers	5,780	7,420	1,640	28.4%	165	110	275	High school	Less than 5 years	None	\$17.84
25-2012	Kindergarten Teachers, Ex. Special Education ⁴	4,120	5,200	1,080	26.2%	110	120	230	Bachelor's	None	Internship/residency	\$34.01
27-0000	Arts, Design, Entertainment, Sports, & Media Occupations	36,910	44,660	7,750	21.0%	780	850	1,630				\$21.35
27-2022	Coaches & Scouts	3,450	4,230	780	22.6%	80	115	195	Bachelor's	None	None	-
27-1026	Merchandise Displayers & Window Trimmers	3,880	4,810	930	24.0%	95	90	185	High school	None	Moderate	\$11.69
27-3031	Public Relations Specialists	5,160	6,280	1,120	21.7%	110	60	170	Bachelor's	None	None	\$25.89

Where The Jobs Are ^{1,2,3}

SOC	Occupational Title	Annual Average Employment 2014	Annual Average Employment 2024	Number Change 2014-2024	Percent Growth 2014-2024	Annual Openings due to Growth	Annual Openings due to Replacements	Total Annual Average Openings ³	Typical Education Needed for Entry into Occupation	Work Experience in a related Occupation	Typical on-the-job training	PCT 50 Median Wage 2015
29-0000	Healthcare Practitioners & Technical Occupations	146,970	193,450	46,480	31.6%	4,650	3,215	7,865				\$32.24
29-1141	Registered Nurses	46,340	61,920	15,580	33.6%	1,560	1,095	2,655	Bachelor's	None	None	\$36.73
29-2061	Licensed Practical & Licensed Vocational Nurses	13,280	17,620	4,340	32.7%	435	380	815	Postsecondary non-degree	None	None	\$22.63
29-1069	Physicians & Surgeons, All Other	5,950	8,230	2,280	38.3%	230	160	390	Doctoral or prof.	None	Internship/residency	\$84.78
29-2052	Pharmacy Technicians	8,380	10,630	2,250	26.8%	225	85	310	High school	None	Moderate	\$16.43
29-1051	Pharmacists	5,400	6,550	1,150	21.3%	115	125	240	Doctoral or prof.	None	None	\$56.80
29-2071	Medical Records & Health Information Technicians	3,960	5,220	1,260	31.8%	125	90	215	Postsecondary non-degree	None	None	\$18.47
29-2041	Emergency Medical Technicians & Paramedics	4,050	5,420	1,370	33.8%	135	65	200	Postsecondary non-degree	None	None	\$15.30
29-2034	Radiologic Technologists	3,850	4,890	1,040	27.0%	105	75	180	Associate's	None	None	\$27.54
29-2011	Medical & Clinical Laboratory Technologists	3,240	4,250	1,010	31.2%	100	75	175	Bachelor's	None	None	\$29.30
31-0000	Healthcare Support Occupations	63,910	87,030	23,120	36.2%	2,310	1,390	3,700				\$12.56
31-1014	Nursing Assistants	18,740	25,250	6,510	34.7%	650	425	1,075	Postsecondary non-degree	None	None	\$11.72
31-9092	Medical Assistants	14,090	19,580	5,490	39.0%	550	295	845	Postsecondary non-degree	None	None	\$13.66
31-1011	Home Health Aides	10,430	15,550	5,120	49.1%	510	235	745	No formal credential	None	Short-term	\$8.75
31-9091	Dental Assistants	6,580	8,400	1,820	27.7%	180	165	345	Postsecondary non-degree	None	None	\$16.99
33-0000	Protective Service Occupations	74,290	88,900	14,610	19.7%	1,460	1,690	3,150				\$17.88
33-9032	Security Guards	27,790	35,170	7,380	26.6%	740	390	1,130	High school	None	Short-term	\$11.38
33-3051	Police & Sheriff's Patrol Officers	16,080	18,410	2,330	14.5%	235	530	765	High school	None	Moderate	\$29.85
33-3012	Correctional Officers & Jailers	10,920	12,300	1,380	12.6%	140	300	440	High school	None	Moderate	\$18.83
33-2011	Firefighters	6,480	7,570	1,090	16.8%	110	190	300	Postsecondary non-degree	None	Long-term	\$22.13
35-0000	Food Preparation & Serving Related Occupations	258,540	354,120	95,580	37.0%	9,560	9,980	19,540				\$9.14
35-3021	Food Preparation & Serving Workers, Incl. Fast Food	61,010	87,330	26,320	43.1%	2,635	1,970	4,605	No formal credential	None	Short-term	\$8.87
35-3031	Waiters & Waitresses	53,290	71,350	18,060	33.9%	1,805	2,565	4,370	No formal credential	None	Short-term	\$8.95
35-3022	Counter Attendants, Cafeteria/Food Concession/Coffee Shop	17,760	24,700	6,940	39.1%	695	1,070	1,765	No formal credential	None	Short-term	\$8.63
35-2014	Cooks, Restaurant	20,600	31,070	10,470	50.8%	1,045	545	1,590	No formal credential	Less than 5 years	Moderate	\$10.54
35-1012	First-Line Supervisors of Food Preparation & Serving Workers	19,160	27,300	8,140	42.5%	815	570	1,385	High school	Less than 5 years	None	\$16.76
35-9031	Hosts & Hostesses, Restaurant, Lounge, & Coffee Shop	10,700	14,740	4,040	37.8%	405	760	1,165	No formal credential	None	None	\$8.78
35-2021	Food Preparation Workers	15,970	21,450	5,480	34.3%	550	445	995	No formal credential	None	Short-term	\$10.13
35-9011	Dining Room & Cafeteria Attendants & Bartender Helpers	9,490	12,910	3,420	36.0%	340	475	815	No formal credential	None	Short-term	\$8.78
35-3011	Bartenders	8,900	12,640	3,740	42.0%	375	335	710	No formal credential	None	Short-term	\$8.96
35-9021	Dishwashers	8,510	10,410	1,900	22.3%	190	370	560	No formal credential	None	Short-term	\$9.16
35-2011	Cooks, Fast Food	11,580	12,960	1,380	11.9%	140	305	445	No formal credential	None	Short-term	\$8.84
35-2012	Cooks, Institution & Cafeteria	6,420	7,810	1,390	21.7%	140	170	310	No formal credential	None	Short-term	\$11.41
35-2015	Cooks, Short Order	5,470	6,580	1,110	20.3%	110	145	255	No formal credential	None	Short-term	\$9.22
35-3041	Food Servers, Nonrestaurant	4,240	5,500	1,260	29.7%	125	105	230	No formal credential	None	Short-term	\$9.02

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SOC	Occupational Title	Annual Average Employment 2014	Annual Average Employment 2024	Number Change 2014-2024	Percent Growth 2014-2024	Annual Openings due to Growth	Annual Openings due to Replacements	Total Annual Average Openings ³	Typical Education Needed for Entry into Occupation	Work Experience in a related Occupation	Typical on-the-job training	PCT 50 Median Wage 2015
37-0000	Building & Grounds Cleaning & Maintenance Occupations	98,740	126,430	27,690	28.0%	2,770	1,990	4,760				\$10.10
37-2011	Janitors & Cleaners, Ex. Maids & Housekeeping Cleaners	47,980	61,830	13,850	28.9%	1,385	955	2,340	No formal credential	None	Short-term	\$9.72
37-2012	Maids & Housekeeping Cleaners	21,540	27,330	5,790	26.9%	580	515	1,095	No formal credential	None	Short-term	\$9.13
37-3011	Landscaping & Groundskeeping Workers	19,900	25,460	5,560	27.9%	555	360	915	No formal credential	None	Short-term	\$11.05
39-0000	Personal Care & Service Occupations	104,610	137,940	33,330	31.9%	3,335	2,035	5,370				\$9.07
39-9021	Personal Care Aides	39,210	57,430	18,220	46.5%	1,820	315	2,135	No formal credential	None	Short-term	\$8.67
39-9011	Childcare Workers	22,580	27,250	4,670	20.7%	465	665	1,130	High school	None	Short-term	\$9.15
39-5012	Hairdressers, Hairstylists, & Cosmetologists	10,790	13,460	2,670	24.7%	270	280	550	Postsecondary non-degree	None	None	\$10.43
39-3091	Amusement & Recreation Attendants	3,750	4,730	980	26.1%	100	155	255	No formal credential	None	Short-term	\$8.64
39-2021	Nonfarm Animal Caretakers	4,470	5,710	1,240	27.7%	125	90	215	High school	None	Short-term	\$9.04
39-9032	Recreation Workers	4,370	5,450	1,080	24.7%	110	80	190	High school	None	Short-term	\$11.05
39-1021	First-Line Supervisors of Personal Service Workers	4,240	5,200	960	22.6%	95	80	175	High school	Less than 5 years	None	\$16.26
39-9031	Fitness Trainers & Aerobics Instructors	4,190	5,170	980	23.4%	100	75	175	High school	None	Short-term	\$20.76
41-0000	Sales & Related Occupations	323,480	392,980	69,500	21.5%	6,950	9,225	16,175				\$13.53
41-2031	Retail Salespersons	91,830	113,230	21,400	23.3%	2,140	3,185	5,325	No formal credential	None	Short-term	\$10.59
41-2011	Cashiers	61,450	74,290	12,840	20.9%	1,285	2,615	3,900	No formal credential	None	Short-term	\$9.26
41-4012	Sales Reprs, Wholesale/Mfg, Exc Tech/Scientific Products	35,540	43,410	7,870	22.1%	790	730	1,520	High school	None	Moderate	\$29.66
41-1011	First-Line Supervisors of Retail Sales Workers	29,150	35,070	5,920	20.3%	590	650	1,240	High school	Less than 5 years	None	\$20.51
41-3099	Sales Representatives, Services, All Other	26,860	32,810	5,950	22.2%	595	570	1,165	High school	None	Moderate	\$26.11
41-2021	Counter & Rental Clerks	12,430	14,870	2,440	19.6%	245	310	555	No formal credential	None	Short-term	\$11.86
41-3021	Insurance Sales Agents	9,130	11,490	2,360	25.8%	235	240	475	High school	None	Moderate	\$21.89
41-3031	Securities, Commodities, & Financial Services Sales Agents	9,460	11,220	1,760	18.6%	175	165	340	Bachelor's	None	Moderate	\$27.48
41-1012	First-Line Supervisors of Non-Retail Sales Workers	11,120	13,190	2,070	18.6%	205	130	335	High school	Less than 5 years	None	\$38.24
41-4011	Sales Reprs, Wholesale/Mfg, Technical/Scientific Products	7,040	8,420	1,380	19.6%	140	145	285	Bachelor's	None	Moderate	\$41.01
41-9022	Real Estate Sales Agents	9,940	11,730	1,790	18.0%	180	70	250	High school	None	Moderate	\$30.24
43-0000	Office & Administrative Support Occupations	470,970	550,660	79,690	16.9%	8,050	9,585	17,635				\$16.36
43-9061	Office Clerks, General	83,470	97,510	14,040	16.8%	1,405	1,800	3,205	High school	None	Short-term	\$15.88
43-4051	Customer Service Representatives	55,940	69,430	13,490	24.1%	1,350	1,380	2,730	High school	None	Short-term	\$14.94
43-5081	Stock Clerks & Order Fillers	37,970	46,190	8,220	21.6%	820	1,205	2,025	No formal credential	None	Short-term	\$11.76
43-6014	Secretaries & Admin Assistants, Ex. Legal/Medical/Executive	46,070	53,720	7,650	16.6%	765	485	1,250	High school	None	Short-term	\$16.31
43-1011	First-Line Supervisors of Office & Admin Support Workers	28,340	34,300	5,960	21.0%	595	430	1,025	High school	Less than 5 years	None	\$28.05
43-6013	Medical Secretaries	22,280	30,100	7,820	35.1%	780	235	1,015	High school	None	Moderate	\$15.27
43-5071	Shipping, Receiving, & Traffic Clerks	18,600	20,870	2,270	12.2%	225	405	630	High school	None	Short-term	\$14.45
43-4171	Receptionists & Information Clerks	13,970	16,370	2,400	17.2%	240	375	615	High school	None	Short-term	\$12.97
43-3021	Billing & Posting Clerks	11,200	14,270	3,070	27.4%	305	235	540	High school	None	Moderate	\$17.85
43-3031	Bookkeeping, Accounting, & Auditing Clerks	32,510	33,680	1,170	3.6%	115	320	435	Some college	None	Moderate	\$18.74
43-3071	Tellers	10,780	10,940	160	1.5%	15	420	435	High school	None	Short-term	\$11.99

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43-5061	Production, Planning, & Expediting Clerks	9,200	10,590	1,390	15.1%	140	250	390	High school	None	Moderate	\$22.18
43-4081	Hotel, Motel, & Resort Desk Clerks	3,320	4,270	950	28.6%	95	170	265	High school	None	Short-term	\$9.23
43-5032	Dispatchers, Ex. Police, Fire, & Ambulance	5,340	6,620	1,280	24.0%	130	135	265	High school	None	Moderate	\$17.77
43-9041	Insurance Claims & Policy Processing Clerks	4,950	6,220	1,270	25.7%	130	125	255	High school	None	Moderate	\$18.60
43-3011	Bill & Account Collectors	6,780	7,180	400	5.9%	40	165	205	High school	None	Moderate	\$16.01
43-5052	Postal Service Mail Carriers	5,510	6,420	910	16.5%	90	105	195	High school	None	Short-term	\$28.50
43-4151	Order Clerks	5,060	5,570	510	10.1%	50	135	185	High school	None	Short-term	\$18.53
43-6011	Executive Secretaries & Executive Administrative Assistants	12,420	12,910	490	3.9%	50	130	180	High school	Less than 5 years	None	\$26.90
45-0000	Farming, Fishing, & Forestry Occupations	15,440	16,060	620	4.0%	60	405	465				\$10.29
45-2092	Farmworkers & Laborers; Crop, Nursery, & Greenhouse	8,440	8,600	160	1.9%	15	225	240	No formal credential	None	Short-term	\$8.88
45-2093	Farmworkers; Farm, Ranch, & Aquacultural Animals	5,520	5,830	310	5.6%	30	145	175	No formal credential	None	Short-term	\$11.17
47-0000	Construction & Extraction Occupations	206,690	250,260	43,570	21.1%	4,775	3,485	8,260				\$18.37
47-2061	Construction Laborers	41,780	53,510	11,730	28.1%	1,175	835	2,010	No formal credential	None	Short-term	\$13.69
47-2111	Electricians	18,450	24,130	5,680	30.8%	570	280	850	High school	None	Apprenticeship	\$22.13
47-1011	First-Line Supervisors: Construction Trades/Extraction Wkrs	22,970	27,480	4,510	19.6%	450	180	630	High school	5 years or more	None	\$31.31
47-2152	Plumbers, Pipefitters, & Steamfitters	13,570	17,390	3,820	28.2%	380	180	560	High school	None	Apprenticeship	\$23.60
47-2031	Carpenters	14,810	18,310	3,500	23.6%	350	170	520	High school	None	Apprenticeship	\$16.92
47-2141	Painters, Construction & Maintenance	11,050	13,720	2,670	24.2%	265	175	440	No formal credential	None	Moderate	\$16.88
47-2073	Operating Engineers & Other Construction Equip Operators	10,380	12,740	2,360	22.7%	235	175	410	High school	None	Moderate	\$18.57
47-5013	Service Unit Operators, Oil, Gas, & Mining	7,860	6,540	-1,320	-16.8%	0	270	270	No formal credential	None	Moderate	\$21.48
47-2051	Cement Masons & Concrete Finishers	5,010	6,550	1,540	30.7%	155	60	215	No formal credential	None	Moderate	\$14.39
49-0000	Installation, Maintenance, & Repair Occupations	132,420	163,410	30,990	23.4%	3,115	3,100	6,215				\$20.58
49-9071	Maintenance & Repair Workers, General	28,050	33,870	5,820	20.7%	580	735	1,315	High school	None	Long-term	\$16.95
49-3023	Auto Service Technicians & Mechanics	12,840	15,490	2,650	20.6%	265	345	610	Postsecondary non-degree	None	Short-term	\$19.57
49-9041	Industrial Machinery Mechanics	11,270	14,370	3,100	27.5%	310	290	600	High school	None	Long-term	\$24.66
49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	10,730	12,880	2,150	20.0%	215	215	430	High school	Less than 5 years	None	\$31.79
49-3031	Bus & Truck Mechanics & Diesel Engine Specialists	6,780	8,720	1,940	28.6%	195	115	310	High school	None	Long-term	\$21.96
49-9021	Heating, AC, & Refrigeration Mechanics & Installers	5,750	7,670	1,920	33.4%	195	90	285	Postsecondary non-degree	None	Long-term	\$21.46
49-9098	Helpers--Installation, Maintenance, & Repair Workers	4,880	6,090	1,210	24.8%	120	160	280	High school	None	Short-term	\$12.71
49-3042	Mobile Heavy Equipment Mechanics, Ex. Engines	4,680	5,720	1,040	22.2%	105	110	215	High school	None	Long-term	\$24.48
49-9051	Electrical Power-Line Installers & Repairers	2,800	3,670	870	31.1%	85	110	195	High school	None	Long-term	\$27.79

Where The Jobs Are ^{1,2,3}

SOC	Occupational Title	Annual Average Employment 2014	Annual Average Employment 2024	Number Change 2014-2024	Percent Growth 2014-2024	Annual Openings due to Growth	Annual Openings due to Replacements	Total Annual Average Openings ³	Typical Education Needed for Entry into Occupation	Work Experience in a related Occupation	Typical on-the-job training	PCT 50 Median Wage 2015
51-0000	Production Occupations	206,560	224,070	17,510	8.5%	2,210	4,980	7,190				\$17.17
51-4121	Welders, Cutters, Solderers, & Brazers	18,800	21,630	2,830	15.1%	285	540	825	High school	None	Moderate	\$20.91
51-9061	Inspectors, Testers, Sorters, Samplers, & Weighers	17,800	19,250	1,450	8.1%	145	450	595	High school	None	Moderate	\$20.64
51-9198	Helpers--Production Workers	13,290	14,470	1,180	8.9%	120	435	555	No formal credential	None	Short-term	\$12.58
51-4041	Machinists	13,620	13,720	100	0.7%	10	395	405	High school	None	Long-term	\$19.81
51-1011	First-Line Supervisors of Production & Operating Workers	15,200	16,730	1,530	10.1%	155	240	395	High school	Less than 5 years	None	\$32.77
51-9011	Chemical Equipment Operators & Tenders	7,390	8,640	1,250	16.9%	125	235	360	High school	None	Moderate	\$31.87
51-2092	Team Assemblers	11,040	12,090	1,050	9.5%	105	235	340	High school	None	Moderate	\$14.16
51-9111	Packaging & Filling Machine Operators & Tenders	4,740	5,430	690	14.6%	70	170	240	High school	None	Moderate	\$11.57
51-8093	Petroleum Pump System Operators/Refinery Operators/Gaugers	4,310	4,850	540	12.5%	55	165	220	High school	None	Long-term	\$32.85
51-4011	Computer-Controlled Machine Tool Operators, Metal/Plastic	5,240	5,710	470	9.0%	45	160	205	High school	None	Moderate	\$19.25
51-8091	Chemical Plant & System Operators	3,370	4,000	630	18.7%	60	125	185	High school	None	Long-term	\$33.14
53-0000	Transportation & Material Moving Occupations	215,610	264,510	48,900	22.7%	4,900	5,375	10,275				\$15.40
53-7062	Laborers & Freight, Stock, & Material Movers, Hand	45,050	55,160	10,110	22.4%	1,010	1,340	2,350	No formal credential	None	Short-term	\$11.80
53-3032	Heavy & Tractor-Trailer Truck Drivers	42,360	52,100	9,740	23.0%	975	720	1,695	Postsecondary non-degree	None	Short-term	\$18.47
53-7051	Industrial Truck & Tractor Operators	15,340	18,550	3,210	20.9%	320	380	700	No formal credential	None	Short-term	\$15.11
53-3033	Light Truck or Delivery Services Drivers	15,300	18,960	3,660	23.9%	365	260	625	High school	None	Short-term	\$14.29
53-3031	Driver/Sales Workers	11,840	15,360	3,520	29.7%	350	200	550	High school	None	Short-term	\$11.32
53-7061	Cleaners of Vehicles & Equipment	8,260	10,480	2,220	26.9%	225	290	515	No formal credential	None	Short-term	\$9.89
53-7064	Packers & Packagers, Hand	10,760	12,820	2,060	19.1%	205	285	490	No formal credential	None	Short-term	\$9.57
53-2031	Flight Attendants	6,360	8,110	1,750	27.5%	175	115	290	High school	Less than 5 years	Moderate	-
53-3022	Bus Drivers, School or Special Client	8,250	10,050	1,800	21.8%	180	110	290	High school	None	Short-term	\$15.20
53-6021	Parking Lot Attendants	3,370	4,120	750	22.3%	75	190	265	No formal credential	None	Short-term	\$9.32
53-1031	First-Line Supervisors: Trans./Material-Moving Mach./Veh Oprs	4,690	5,670	980	20.9%	100	150	250	High school	Less than 5 years	None	\$29.38
53-1021	First-Line Supervisors: Helpers/Labors/Material Movrs, Hand	3,290	3,910	620	18.8%	65	105	170	High school	Less than 5 years	None	\$22.63

1. Where The Jobs Are represents those occupations projected to offer the largest number of employment opportunities for Gulf Coast residents now and in the immediate future.

2. Occupations on this list are those with projected annual average job openings equal to or greater than 170 per year.

3. Occupations are ranked by total number of annual average job openings.

4. Average hourly wages provided, median wage not available.

Employer Service Committee

Update on Registered Apprenticeships

Background

Registered Apprenticeship is a work-based learning model that combines on-the-job training and job-related technical instruction, which leads to an industry-recognized credential.

Apprenticeship is a flexible training strategy that can be customized to meet the needs of any business. Apprentices can be new hires, or businesses can select current employees who need skill upgrades to join the apprenticeship program.

Apprenticeship helps businesses develop highly-skilled employees, reduce turnover and decrease recruitment costs. Registered apprenticeships provide:

- **Customized training** that meets industry standards, tailored to the specific needs of businesses that result in highly-skilled employees.
- **Increased knowledge transfer** through on-the-job learning from an experienced mentor, combined with education courses to support work-based learning.
- **Enhanced employee retention:** 91% of apprentices that complete an apprenticeship are still employed nine months later.
- **A safer workplace** that may reduce worker compensation costs, due to the program's emphasis on safety training.
- **A stable and reliable pipeline of qualified workers.**
- **A systematic approach** to training that ensures employees are trained and certified to produce at the highest skill levels required for the occupation.

Workforce Solutions supports apprenticeship as a training strategy by:

- Helping employers recruit and screen qualified apprenticeship candidates
- Providing remediation and tutoring services through our Adult Education providers
- Providing scholarship funds to offset training costs for eligible customers
- Contributing supportive services, such as tools, books, and other supplies to eligible customers.

In October 2016 Workforce Solutions conducted a survey among local companies with registered apprenticeships. Results include:

- 81% told us their apprenticeship programs aid training and retention
- 56% use their programs to diversify their workforces
- 31% view it as a low cost, effective recruiting tool

We also found that there are fewer active apprenticeship programs in the area than we believe our region can support. Our industry liaisons have increased efforts to promote registered apprenticeships as a viable recruitment and training strategy.

Current Situation

Over the next six months, we will identify and engage 50 employers who have an interest in registering an apprenticeship program. We expect these efforts to yield at least two new programs, two expansions and 140 new apprentices.

We are working with companies across various industries to explore apprenticeship opportunities in various occupations. Some examples include:

<i>Employer</i>	<i>Occupations</i>
JP Morgan Chase	Computer Support Specialist, Network & Computer Systems Administrator, Computer Systems Analyst
Harris Health	Medical-Lab Tech, Nurse Assistant, Pharmacist Assistant, Surgical Technologist, Medical Assistant, Radiographer, Diagnostic Imaging Specialty, Magnetic Resonance Imaging Tech, Computed Tomography Tech
ICO-TEX	Welder, Machinist, Inspector – Precision, Welder, Pipefitter, Millwright, Electrician, Industrial Maintenance
National Wire	Extruder Operator, Machine Operator
S & B Engineers and Constructors	Welder, Pipefitter, Millwright, Electrician, Industrial Maintenance
Igloo Products	Industrial Maintenance, Patternmaker - Plastics
Adaptive Construction Solutions	Structural Steel/Ironworker

Our liaisons are working with several partners including our local representative from the U.S. Department of Labor's Office of Apprenticeship, the Texas Workforce Commission and the Registered Apprenticeship College Consortium (RACC.)

In cooperation with the college consortium, Workforce Solutions hosted a forum on April 25, 2017. Over 75 participants representing business, education and labor learned about apprenticeships and the benefits to both employers and workers. In November, partners will work together for events scheduled during National Apprenticeship Week.

Next Steps

We will report the results of these efforts at the next Employer Service Committee meeting.



Tracking Industry-Based Certifications:

PROMISING PRACTICES IN CAPTURING DATA ON THE WORKFORCE
SUPPLY OF INDUSTRY-CERTIFIED WORKERS

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EXECUTIVE SUMMARY

As the number of jobs that require at least a high school diploma decrease, more students are turning to alternative postsecondary education and training pathways to improve employability and overall outcomes. By 2020, about 65 percent of job openings will require some form of postsecondary education or training.¹ While the traditional baccalaureate degree is still viewed as the primary pathway to postsecondary success, interest in middle-skill jobs has increased the desire and need for other avenues of education. Middle-skill jobs are primarily occupations that require education or training beyond high school, but not necessarily a bachelor's degree.

This report will focus on industry-based certifications and national promising practices for capturing relevant certification information and data. Across the nation, the process for collecting data on industry-based certifications is either limited or in development. Without a method to track industry-based certifications, it becomes difficult to determine how industry-based certifications fit into and benefit the overall workforce system. Thus, the question is: Does a reliable model exist to capture the information necessary to determine the workforce supply of industry-certified workers?

This report will first provide the necessary background definitions followed by a review of existing national industry-based certification data systems and programs. Next, selected state case studies of promising practices from Virginia, Maryland, Illinois, and Florida are described. Finally, concluding comments are offered. In order for policy makers and stakeholders to make informed decisions on the performance and direction of workforce development, accurate and timely tracking of statewide industry-based certifications is necessary to complement other educational and training data that are currently being collected.

¹ Carnevale, et al. (June 2013).

SECTION 1: INTRODUCTION

Research Scope

The purpose of this research is to report on promising practices used to capture information and data on industry-based certifications to examine models that may assist in providing insight into the workforce supply of industry-certified workers for demand occupations. This report will present national methods that may be replicated or used as the basis for capturing nontraditional credentials, such as industry-based certifications, in Texas. It will communicate to stakeholders a better understanding of industry-based certifications,² the role of certifications in the workforce system, and the steps required to produce a high-quality tracking system.

Many regions in the United States are currently experiencing a skills shortage. Contributing to the issue is the lack of a coherent and comprehensive system for earning and reporting the breadth of postsecondary credentials, including those conferred by an entity other than a college or university. The voluminous number of educational and training credentials that exist may also dilute the value of earned awards. Traditional four-year degrees only scratch the surface of the available awards an individual may earn. Nontraditional credentials vary from industry to industry and state to state. Additionally, the paths by which various nontraditional credentials are earned can be numerous. As the number of nontraditional credentials increase, distinguishing the differences between the various types can become difficult and blurred. Options may create confusion among students, educators, industry employers, and state policy makers. This confusion therefore creates questions regarding the necessity and value of various credentials in the labor market.

Understanding Workforce Credentials: Distinguishing the Differences

The process of analyzing postsecondary educational and workforce-related credentials can be a daunting task given the sheer breadth of credentials that currently exists. Added to that are the sometimes fractured and inconsistent pathways by which individuals can earn a valid credential. Various public and private institutions, trade schools, and professional organizations offer competing training programs or examinations that provide value that students may not be aware of.

A key step to addressing the aforementioned challenges is to distinguish between various types of postsecondary awards. First, traditional and nontraditional postsecondary awards can all broadly be classified as types of educational or training credentials. Within postsecondary credentials, the distinction between traditional four- and two-year degrees and nontraditional awards is relatively clear. However, within nontraditional credentials, the defining lines are often distorted by varying perspectives, standards, and interested parties. More specifically, nontraditional credential awards encompass numerous forms, such as certificates, licenses, certifications, apprenticeship certificates, non-secondary diplomas, and more. As three of the more commonly awarded nontraditional credentials operating within the workforce environment, certificates, licenses, and certifications require further clarification. These credentials are sometimes incorrectly combined or used interchangeably. While all three are similar in principal and offer the recipient a valuable award, important distinctions will be addressed for this report. The descriptions illustrate the most widely accepted features and characteristics that distinguish each type of credential.³

² For concision and consistency the term “certification” will be used throughout the remainder of this report as a synonym for industry-based certification. For this report, certifications will represent an award or document given to an individual that demonstrates, through assessment only, competency and proficiency in a given field or industry where the examination of knowledge is administered by an independent, third-party testing center. Testing centers are nationally accredited or recognized by industries or professional organizations. In this report, certifications will represent other similar vocabulary commonly used such as industry-recognized certification, industry-ready certification, third-party/independent certification, industry credential(s)(ing), and skills certification(s).

³ Browning, et al. (1996); Downing (1998); Durley (2005); Andrews (2008), (2009); AHA (2009); Knapp and Kendzel (2009).

- *Credential.* A credential is the all-encompassing term used to describe any type of traditional and nontraditional award within the context of education, training, workforce, and employment development. Credentials are awarded by third-party entities, who have relevant authority to issue such credentials, after individuals demonstrate proficiency or competency in a given occupation or field. Credential awards can be earned from a variety of sources, including, but not limited to, educational institutions, industry associations, or government agencies.⁴
- *Certificate.* A certificate may be awarded by either an educational institution or independent education and training provider associated with specific programs of study. Educational and training programs teach students skills related to specific occupations. Certificate programs are generally created, taught, and assessed directly by the provider of a program. Students are awarded certificates after successfully completing instruction and demonstrating proficiency through provider-administered exams. Obtaining a certificate generally signifies the end of the instructional program.
- *License.* A license is a type of nontraditional credential that is generally awarded by a government-regulated agency. This award may be granted by a federal entity, but usually comes from the state level. Of the three types of credentials, a license is the most heavily regulated and restrictive due to its governmental association. Like the two other credentials, a license signals that an individual has completed or achieved certain standards. Unlike the two other credentials, a license is required before an individual may work in specific professions. Plumbers, electricians, real estate brokers, and nurses are examples of occupations that require an individual to have a valid license.
- *Certification.* A certification is a type of nontraditional award to an individual that demonstrates proficiency and knowledge, through examination, in a specific industry or trade. As opposed to a certificate, obtaining a certification award is not dependent on any actual education or training program. Instead, evaluating candidates for certification relies on independent, third-party professional and industry-based groups. These national organizations develop and maintain relevant proficiency standards that are assessed and sanctioned by industry-approved examination facilities, independent of any educational institution or training program. Furthermore, certifications often have an expiration date, requiring individuals to participate in continuing education or reexamination in order to stay current. This characterization of certification awards have been accepted and endorsed by national entities, such as the National Association of Manufacturers (NAM) and the American Association of Community Colleges.⁵

The distinction between certificates, licenses, and certifications is important for this report, which exclusively examines practices for capturing data on industry-recognized certifications awarded through independent third-party organizations. Based on the characteristics of certifications, it is clear that they present an important value for students, employers, policy makers, and other related stakeholders.

Certifications in the Workforce System: Addressing Industry Needs and Related Issues

Traditionally, state and federal agencies collect detailed data on demographics and attainment figures only for bachelor's, associate's, and some certificates granted by colleges or universities. Yet, anecdotally, it is

⁴ U.S. DOL, p. 1 (15 December 2010).

⁵ Manufacturing Institute (2015a).

apparent that businesses also value other types of credentials, as indicated by industry efforts to promote certification education and training.⁶ Manufacturing groups, such as NAM, have long advocated for a

*...system of industry-recognized skills credentials...to reform education and training for twenty-first century manufacturing by providing skills assessments, standardized curriculum requirements and nationally portable credentials that validate the attainment of critical competencies required by industry.*⁷

In order to address a growing interest in certifications and industry concerns regarding the lack of qualified workers, it is important to first examine the issues that certification awards can resolve. The most common preparation method for certification exams is through occupational programs offered by postsecondary institutions. More importantly, certifications provide an optimal solution to several problems associated with postsecondary credentials, such as portability, uniformity, and applicability.⁸

- *Portability.* Validation by an impartial third party helps to authenticate certifications. This affords individuals who obtain a certification award job or career portability because the value and features of a certification are not bound to any particular region of the country or company-defined measure of proficiency.⁹ Certification completers are able to transfer acquired knowledge across state lines and businesses more easily because third-party validation addresses specific standards and requirements within industries. By addressing definite proficiencies, employers have an easier time identifying value and qualified workers.
- *Uniformity.* Variations in grading standards among postsecondary institutions diminish uniformity. This makes it difficult for employers to judge the meaning of credits, grades, and overall grade point averages from the myriad of two- and four-year institutions, for-profit schools, and other institutions across the nation. On the other hand, the characteristics of a certification award are specifically defined. Without having to decipher the value of college classes and credits, employers can immediately identify whether an applicant has the definite and concrete skills required. Moreover, certification exams and results are standardized and help validate skills and knowledge consistently within an industry.
- *Applicability.* Since high-demand and high-skill occupations are constantly changing, certification awards provide a level of flexibility over traditional degrees. Industry activity keeps certification-oriented programs and assessments up to date with the latest industry standards and required proficiencies. Besides evaluating job candidates quickly, the up-to-date standards that certification awards demonstrate can help businesses determine where to start or expand operations to find the most talented workers.

As the proliferation of and confusion about nontraditional credentials increase, the benefits of earning a certification become more apparent. Given the increasing demand for qualified personnel, especially in middle-skill occupations, certification awards have increased in value as an indicator of trained and skilled workers. More consistent language and reporting, and a comprehensive directory would allow stakeholders to more accurately evaluate certification awards to determine their value in the labor market.

While the U.S. Department of Labor (DOL) has an extensive definition that outlines educational and workforce credentials, including both traditional and nontraditional, it is confusing in its reference to

⁶ Wolters Kluwer Law and Business (27 June 2010); Manufacturing Institute (2011); Hall (2 July 2014).

⁷ NAM (2012).

⁸ Carnevale, et al. (September 2012).

⁹ Barnhart (28 January 1997).

postsecondary career-enhancing credentials. Specifically, DOL introduces new language to describe what is otherwise referred to as industry-recognized certifications.

*...developed and offered by, or endorsed by, a nationally recognized industry association or organization representing a sizable portion of the industry sector, or a credential that is sought or accepted by companies within the industry sector for purposes of hiring or recruitment which may include credentials from vendors of certain products.*¹⁰

This report exclusively examines practices for capturing third-party, industry-recognized certification data and information at the national and state levels. Therefore, based on specific characteristics and parameters, the working definition of certifications for this report emulates the State of Florida's Education Code statute due to the statute's specificity. As one of the pioneers in the use of certification data, the State of Florida, through its Department of Economic Opportunity, defines certification as:

*A voluntary process, through which individuals are assessed by an independent, third-party certifying entity using predetermined standards for knowledge, skills and competencies, resulting in the award of a time-limited credential [sic] that is nationally recognized and applicable to an occupation [that is included in the workforce system's targeted occupation list or determined to be an occupation that is critical, emerging, or addresses a local need].*¹¹

Nationally, nearly \$1.5 trillion is spent each year on the development of human capital. Of that figure, approximately \$25 billion is spent on certifications.¹² Certifications are outcomes that can be associated with career and technical education (CTE) program participation. The Carl D. Perkins Career and Technical Education Act of 2006, a reauthorization of Perkins 1998, requires states to update CTE programs to ensure programs are current and relevant to industry demands. Also, CTE programs receiving federal funds are required to report on core performance indicators, including secondary and postsecondary state or industry-recognized certifications.¹³ Several years later, legislative action indicated an increasing awareness among national policy makers regarding the benefits of certifications in the workforce system. A bill was introduced to Congress in 2009 requiring the development of a one-stop delivery system that prioritized services and programs culminating in a portable, high-demand certification.¹⁴ The bill was later updated and reintroduced in 2013.¹⁵ The increase in demand for nontraditional credentials by various stakeholders in the workforce system has helped to shed light on certifications. Policy makers are discovering the value certifications can provide at various levels of the workforce.

The remainder of this report will investigate in more detail promising practices in capturing certification data and related information. The next section provides background on the development of data tracking, broadly, and certifications, specifically. Next, current multistate collaborations and an overview of the Certification Data Exchange Program, a multistate and industry collaboration to track and share certification data, are presented. Then, state-specific case studies from Virginia, Maryland, Illinois, and Florida are examined. Each of these states has embarked on systems and methodologies to better capture

¹⁰ U.S. DOL, p. 6 (15 December 2010).

¹¹ Florida State Senate (2014); FLDOE (2015b). The definition was originally created by the Agency for Workforce Innovation. In 2011, the Agency for Workforce Innovation was merged into the Florida Department of Economic Opportunity by the state legislature.

¹² Calculations based on data from the U.S. Department of Education's IPEDS, the DOL's Employment and Training Administration, the American Association of Community Colleges, the U.S. Department of Education's Office of Vocational and Adult Education, Survey of Employer Provided Training, and Bureau of Labor Statistics from Carnevale et al. (September 2012).

¹³ 109th Congress of the United States Second Session (2006).

¹⁴ 111th Congress of the United States (2009). The bill passed the House in 2010, but not the Senate.

¹⁵ 113th Congress of the United States (2013). Last action on April 23, 2013, when it was referred to the Subcommittee on Higher Education and Workforce Training.

certifications, and credentials in general, that could provide a starting point for Texas. Finally, concluding comments are noted.

SECTION 2: GENERAL DATA TRACKING PRACTICES

Why Collect and Track Data?

As a matter of state policy, collecting and tracking a variety of data have become integral functions of states' performance measurement systems. States across the nation are seeking ways to improve their data and tracking systems to better serve educational and workforce groups. Tracking allows states to focus limited resources more effectively and improve decision making. In order for stakeholders to evaluate the effectiveness of various programs it is necessary to track and identify key outcomes such as participation and completion rates. Tracking outcomes is critical since the diverse population of potential workers often enters the educational and training system under varying circumstances. Moreover, state and local stakeholders need to know where qualified talent exists within their regions or where talent development needs to be bolstered. Stakeholders will then be able to advise businesses and employers where skilled and experienced talent exists to influence expansion or relocation decisions. Tracking participants' certification outcomes is an important tool for understanding performance.

Current Data Tracking System Issues and Limitations

One issue states encounter when creating and implementing data systems is the metrics to be used. While detailed tracking of educational outcomes in the U.S. is improving, completion records of postsecondary awards below an associate's degree are inconsistent, sparse, or completely missing. Likewise, scope and definition variations can further complicate matters. The lack of detailed tracking afforded to nontraditional postsecondary awards, such as certifications, results in an incomplete picture of workforce supply figures that, if complete, could prove invaluable to industries and states. The data programs and associated issues described below broadly represent national, state, and institutional collecting tools.¹⁶

In the 1980s, a few states developed student unit record systems in order to better evaluate and analyze programs. Since then, numerous governmental and nongovernmental entities have designed unit record systems for their own purposes. But, many early designs had problems gathering data on private schools, cross-state transfers, dropouts, and other variables.¹⁷ The National Center for Education Statistics (NCES)¹⁸ operates several databases that gather and report on educational statistics and issues. One such report is the Integrated Postsecondary Education Data System (IPEDS), which gathers data from every postsecondary educational, technical, and vocational institution in the nation that participates in any federal student aid program. By law, institutions are required to participate. Thus, IPEDS collects a wide range of data on information such as enrollment, financial aid, and graduation rates.¹⁹

However, aggregate data present certain restrictions. Due to its expansive nature, IPEDS has difficulty disaggregating and collecting data used to track evolving trends because the framework cannot

*accurately capture changing enrollment and completion patterns in the postsecondary education sector, especially given increasing numbers of nontraditional students.*²⁰

In an effort to address the above-mentioned issues associated with data collection, an independent and nonprofit national organization started tracking postsecondary information. Due to a federal prohibition on collecting student unit-level data, as well as inconsistent reporting procedures by individual states, the

¹⁶ The descriptions are by no means comprehensive, but instead present a relevant timeline on major available resources and the issues most commonly associated with gathering data.

¹⁷ Cunningham, et al. (March 2005).

¹⁸ The NCES is attached to the U.S. Department of Education and gathers information from institutions across the country.

¹⁹ U.S. ED (2015a).

²⁰ Cunningham, et al., p. iv (March 2005).

National Student Clearinghouse (NSC) has become an important resource for educational reporting and research. Originally connected to the student loan industry, the NSC collected student enrollment information to verify loan eligibility and graduation status. Increased utilization of the NSC has been aided by reporting standards instituted by the national government for states receiving federal funding.²¹

While the NSC provides invaluable student data on enrollment, intensity, and graduation, the system has several limitations.²² One issue is the reliability of enrollment data collected by the NSC; participation is voluntary and reporting levels may vary by member schools. Additionally, the NSC's coverage of postsecondary institutions and the formula for calculating student enrollment may influence reliability.²³ Matching errors associated with the NSC's large data set present another issue. Errors may occur because records are primarily matched by a student's name or date of birth. Variations in either category within individual data may create duplicate or missing information. Moreover, postsecondary data acquired by the NSC are from degree-awarding institutions. Thus, awards below an associate's degree are not captured in the data system. Finally, the Family Educational Rights and Privacy Act (FERPA)²⁴ presents an important challenge to assembling any student-oriented database because the law protects the privacy of educational records. Institutions receiving federal funds must comply with FERPA and students or institutions can elect not to disclose any data at all.

In order to innovate and address deficiencies in the system, the NCES recommended that IPEDS be retooled into a national student unit-record system to gather data and track students over time. However, Congress prohibited the creation of a national unit-record database in the Higher Education Opportunity Act of 2008.²⁵ Despite the national prohibition, language in the Higher Education Opportunity Act stipulates that states are not prohibited from developing, implementing, or maintaining their own student-tracking systems. Since then, states have developed and refined their longitudinal data tracking systems.²⁶

In 2012, a report conducted by the State Higher Education Executive Officers Association examined the degree to which postsecondary data systems were being developed and shared across states.²⁷ The report found that 19 states operated their own statewide early education, K–12, higher education, and workforce (P–20W)²⁸ data warehouses or federated data models and 20 more states were developing independent systems. In 45 states, 56 postsecondary entities were participating in data-sharing agreements across state lines. Unlike national surveys, individual state databases are generally more accurate. State-specific databases also provide better context for state stakeholders. However, from state to state the scope, framework, and implementation of database systems may vary. Additionally, data from private schools, for-profit institutions, and cross-state migration variables are usually unaccounted for.

Moreover, every state operates, in some form, a labor market informational database.²⁹ These databases provide state statistics designed to support stakeholders with information on the labor market, occupational areas, and even educational statistics. Labor market data offer several benefits—from employment figures for states, to information that helps in site selection for businesses. While state labor market information is valuable, it does not provide the best projection of state workforce needs because

²¹ U.S. ED (7 March 2009). The State Fiscal Stabilization Fund requires states receiving funding to report various statistics, including enrollment and persistence data. U.S. ED (April 2009).

²² Dynarski (October 2013).

²³ States use a federal formula in conjunction with the NSC that calculates college enrollment based on weeks attended. Four-year, public institutions are the most represented and for-profit institutions are the least represented.

²⁴ FERPA (20 March 2015). FERPA deals with educational records related to students or educational data maintained by educational agencies or institutions. Personally identifiable educational records include student names, mother's maiden names, addresses, dates of birth, social security numbers, and parent's names. Moreover, FERPA prohibits the redisclosure of individual and identifiable student record data.

²⁵ U.S. ED (August 2008).

²⁶ For instance, the Statewide Longitudinal Data System grant has funded efforts by states to create and improve their data systems.

²⁷ Garcia and L'Orange (November 2012).

²⁸ P–20W contains Preschool, Grade 20 or higher education, and workforce information.

²⁹ BLS (16 April 2015). Directs users to state-level labor market data.

issues with data integration, coverage, and overall usability present important challenges.³⁰ These limitations can impact estimations of workforce supply and demand figures, as they have in the manufacturing industry. In order for states to more effectively forecast growth, it has become necessary to increase alignment with industries and employers. The Manufacturing Institute reported that

*many states found that their state-level data weren't classified in a way that matches actual manufacturing conditions. Department of Labor Statistics did not fully reflect potential growth in manufacturing that surveys conducted by employer associations were showing.*³¹

By most standards, the current national education, training, and workforce data-collecting systems are invaluable tools for stakeholders at any level. At minimum, they provide important baseline figures and statistics that researchers use at the start of any national or state-level project. Nevertheless, because of the nature of the data and the size of the systems, limitations exist within the various national systems. Thus, to improve nontraditional credential information and data gathering, many states and national industries have embarked on creating data-collecting and reporting protocols to suit specific issues or demands.

³⁰ Wright (16 July 2008).

³¹ Manufacturing Institute, p. 29 (October 2013).

SECTION 3: KEY NATIONAL AND STATE-LEVEL CERTIFICATION PRACTICES AND TRACKING SYSTEMS

National Industry-Recognized Certifications

Available educational databases can provide invaluable information for stakeholders. But individual educational databases do not currently have the ability to comprehensively track all postsecondary credentials. One reason is the focus on tracking traditional educational pathways—an associate’s degree or higher. As the demand for and usage of certifications has increased, many national industry associations have developed and implemented certification systems to validate the skills certain occupations demand. Not only can national certification systems dictate the necessary qualifications candidates need, they also administer exams or certify independent testing centers.

There are a myriad of certification and certifying groups in the nation. Often times, stakeholders and associated entities organize occupations into broad industry initiatives. One such nationally recognized entity is the Skills Certification System (System), developed by the Manufacturing Institute and endorsed by the National Association of Manufacturers (NAM).³² The goal was to develop a system of certifications designed, utilized, and endorsed by the manufacturing industry. From that point educators would be able to more accurately design programs aligned with current industry needs and standards. Thus, the cyclical nature of the process serves to strengthen and support the future of workforce development in the field. By aligning standards to address the skill shortages in the manufacturing industry, the System has effectively increased the number of certifications and skilled workers. Certifications sanctioned by the System are nationally portable and applicable to nearly all areas of the manufacturing sector. Industry partners are able to validate and understand the meaning of certifications. Furthermore, since the System has been embedded into various levels of postsecondary education, individual schools are able to track what certifications students are earning and the types of employers that are hiring those students.³³ As of 2014, the System has awarded nearly 418,000 certifications.³⁴

Moreover, other national and occupation-specific certification reporting systems provide their own benefits. The National Coalition of Certification Centers was created to strengthen the connection among educational institutions and major industry sectors by emphasizing industry-specific training and certification. As a facilitator of certification development, the coalition is affiliated with certification centers around the nation.³⁵ Many information technology-related certifiers are able to track demographics, exam results, and the relevant history of certification candidates.³⁶ Along with traditional postsecondary tracking, the National Student Clearinghouse (NSC) has recently started offering certification verification services to businesses and organizations.³⁷ The NSC contracts with national certification providers to foster industry efficiency in hiring, promoting, and validating employee skills.

Multistate Collaborations

Improved multistate collaborations have also played an important role. As a regional, interstate agency, the Western Interstate Commission for Higher Education was established to improve the transmission of educational data among member states. In an effort to strengthen their own longitudinal data systems, Hawaii, Idaho, Oregon, and Washington were the first states to participate. The Western Interstate Commission emphasizes collaboration and cooperation not only between member states but also between

³² In 1995, NAM, the largest manufacturing association in the U.S., established the Manufacturing Institute as a research and educational entity.

³³ Manufacturing Institute (2015a).

³⁴ Manufacturing Institute (2014).

³⁵ NC3 (2015).

³⁶ ProTraxx (2014); TeraData (2015).

³⁷ NSC (2015).

postsecondary educational and training institutions.³⁸ In 2009, the Multistate Longitudinal Data Exchange Pilot Project (Multistate Exchange) was launched by the Western Interstate Commission to capture educational and workforce data outcomes by connecting individual state system projects to track individual-level data across states.

Several outcomes resulted from the Multistate Exchange. First, by satisfying the Family Educational Rights and Privacy Act (FERPA), the project successfully analyzed confidential student data across agencies and borders. Next, the project addressed gaps and generated a more comprehensive picture of workforce data and outcomes, which represented a greater spectrum of education and labor sectors. The Multistate Exchange increased insight into local workforce demands and state investments in education. Finally, it demonstrated the viability of a longitudinal information-sharing exchange that tracks and analyzes outcome data between agencies, institutions, and states. As individuals move within and between states, policy makers are better equipped to address educational and workforce planning.³⁹

Statewide Longitudinal Data Systems (Statewide Systems)

In January 2002 the Education Sciences Reform Act was passed creating several new entities, including the Institute of Education Sciences and the National Center for Education Statistics.⁴⁰ Also authorized by the act was the Statewide Systems, which awards grants to states for the development and application of longitudinal data systems that track students from early learning into the workforce.⁴¹ Longitudinal data systems are intended to facilitate efficiency and accuracy of educational data within states so that stakeholders can make informed decisions on the direction of student learning and outcomes. Grantees are required to submit annual reports, and since 2005, 47 states have received at least one round of funding.

Thus far the act has provided five separate rounds of funding from 2005 through 2012. States that received grants are in various stages of building and implementing longitudinal data systems. To foster collaboration and expansion within and among states participating in the longitudinal data system, the Common Education Data Standards (Common Standards) tool was created. The Common Standards has become an important tool for states to exchange, compare, and understand educational data across various institutional levels and sectors by standardizing and increasing the value of educational data.⁴² Since integrating the Common Standards, several individual states have improved their systems.

As a grantee, North Carolina instituted the Common Education Data Analysis and Reporting System. The reporting system functions as a centralized repository and analysis tool for state educational data. From early childhood education through one year after high school, the state uses data acquired from different educational levels over time to develop more accurate policy. Components of the state's analysis include student performance and educational attainment, which encompass nontraditional credentials like certifications. A key component of the reporting structure was the creation of a Unique Identifiers system. The Unique Identifiers system tracks students to follow long-term employment outcomes. The system has enabled North Carolina to align standards across educational sectors into the workforce and identify gaps in data or inconsistent definitions between agencies within the system. Moreover, by participating with other states to create a longitudinal data system, North Carolina is now able to share and transmit data across state lines. Through the State Exchange of Education Data, North Carolina joined with seven other states to follow the Common Standards protocol in order to streamline data for students transferring from

³⁸ Sixteen member states include Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming, and the Commonwealth of the Northern Mariana Islands.

³⁹ Bransberger (July 2014); Prescott (July 2014).

⁴⁰ 107th Congress of the United States, Second Session (2002).

⁴¹ U.S. ED (2015b).

⁴² NCES (2015).

one member state to another and for member states to more accurately account for graduates and dropouts.⁴³

Another grantee, Kansas, encountered classification and language issues that stemmed from existing data spread over various state agencies, organizations, and interest groups. The Common Standards were used to create a common language system and to restructure early childhood data. The tool facilitated the integration of existing early childhood data into a new system. The state was also able to more effectively track students through secondary education by issuing student identification variables. This action produced several different data repositories that served stakeholders at different levels.⁴⁴ By instituting a Statewide System initiative, North Carolina and Kansas were able to use the Common Standards component as an efficient and effective tool to unify and integrate data systems to update definitions, identify gaps, and connect data elements to better address policy issues.

Certification Data Exchange Program

According to Perkins Career and Technical Education (CTE) Act of 2006, states are required to track and collect data on certifications, certificates, or degrees.⁴⁵ At the end of the year, states submit progress and performance data on core indicators in a Consolidated Annual Report. Nevertheless, certifications remain one of the more difficult credentials to track since many certifications are obtained post-coursework.

Based on a pilot project conducted by Illinois and the Computing Technology Industry Association (CompTIA), the Association for Career and Technical Education and other partners developed the Certification Data Exchange Program to improve certification tracking and sharing between state and national certifying organizations.⁴⁶ Created as a multi-year project, the program generated a database that states, educational institutions, and interested stakeholders could access to obtain relevant data on students and certifications. The program was developed by selecting eligible states, organized into first and second rounds, to work together with national industries.⁴⁷ States were required to comply with the specific objectives, deliverables, and timelines prior to their initial involvement.⁴⁸ The resulting database helped states and various industry stakeholders raise awareness on the benefits of an improved certification data repository for educational and workforce development. The program also demonstrated the feasibility of developing a national data system.

This program relied on the cooperation between states and national industry representatives. The Certification Data Exchange Program began with CompTIA and the Manufacturing Institute as the primary industry partners representing information technology and various manufacturing consortiums.⁴⁹ As of December 2014, CompTIA completed its original pilot project with Illinois and is currently working with other states as part of the next round in the exchange program. Utilizing the NAM-endorsed Skills Certification System, the Manufacturing Institute has followed the path of CompTIA by leveraging its association with 17 manufacturing certification organizations to work with eligible states to improve

⁴³ North Carolina Department of Public Instruction (2015); Public Schools of North Carolina (17 May 2010); Public Schools of North Carolina (2015). State Exchange of Education Data charter participants: Alabama, Colorado, Florida, Georgia, Kentucky, North Carolina, Oklahoma, and South Carolina.

⁴⁴ Kansas State Department of Education (September 2011); U.S. ED (30 June 2014).

⁴⁵ 109th Congress of the United States, Second Session (2006).

⁴⁶ ACTE (2015).

⁴⁷ This project has drawn interest from the U.S. Department of Education as a solution to address the issues surrounding the collection of data by individual states. Selected first round pilot states: California, Kansas, Maryland, North Carolina, Ohio, and Oklahoma. Selected second round states: District of Columbia, Iowa, Kentucky, Washington, and Florida. ACTE (2013). States that signed the CompTIA data-sharing agreement by October 2014 for live and online meetings: California, Iowa, Oklahoma, North Carolina, and Florida.

⁴⁸ ACTE (2013).

⁴⁹ CompTIA (2015); Manufacturing Institute (2015b).

certification tracking and matching. Potential participating states and major industry representatives are in the process of creating a pilot that is mutually beneficial for all stakeholders.⁵⁰

With the Certification Data Exchange Program well under way, several important issues have been addressed:

- Awareness of the need for a national database that focuses on certifications has increased.
- A long-term investment in data tracking has facilitated better decision making and an improved understanding of student performance. Improved data coherency and reporting practices have helped to further those goals.
- Increased emphasis on CTE initiatives has strengthened the link to certifications.⁵¹
- State and industry connections have increased. Collaborative partnerships have addressed critical issues, needs, and objectives more effectively.
- Because of FERPA, where data originates and how it is transferred between entities was important for states and industries to understand in order to successfully gather and share student information.⁵² Therefore, as the initial participant of the pilot project, Illinois agreed to and signed an indemnification agreement.⁵³ California has since become the second state to successfully negotiate an agreement.⁵⁴

As this section has illustrated, numerous states and national industries have recognized the importance of tracking certifications, as well as other nontraditional credentials. Whether the goal is to bolster industry-relevant skills or to improve statewide data systems to support policy makers, the move toward accurately gathering certification data to incorporate that data with other credential data in tracking systems to produce a more comprehensive education and training dataset is well under way across the nation.

⁵⁰ Koch (17 December 2014); Latto (17 December 2014); Hale (December 2014).

⁵¹ Folkers (31 October 2012).

⁵² King (8 May 2014).

⁵³ An indemnification agreement is a mechanism for transferring risk, liability, or responsibility from one party to another. In this case, agreements between participating states and industry partners are related to the transmission of student data.

⁵⁴ Due to various legal situations in which an indemnification agreement could not be signed, states selected for the first round did not all participate concurrently with California. Both Illinois and California worked with CompTIA as their industry partner. Clarification from the Department of Education later noted that FERPA did not apply to the Certification Data Sharing Project. Instead, future collaborations with CompTIA required only a data-sharing agreement to be signed by participating parties. Koch (17 December 2014).

SECTION 4: SELECTED STATE CASE STUDIES

Credential Tracking and Industry-Based Certifications in Practice

While no comprehensive certification data gathering model exists nationally, many states are becoming more involved with integrating certifications into their workforce system information. State investments in educational and training information have led to more comprehensive records and data gathering systems, along with increased collaboration between associated agencies.⁵⁵ Besides increasing agency collaboration, partnerships and data sharing techniques between states, institutions, and industries have improved.

For instance, by improving career and technical education (CTE) pathways, some states are able to provide students who plan to enter the workforce immediately after high school the opportunity to obtain a certification preparing them for demand occupations.⁵⁶ From this, some states are able to create and endorse a list of certifications based on specific economic needs. States are also structuring their strategic plans to explicitly address the need to improve their data collecting and reporting systems to better assess the value and impact certifications have on their workforce systems.⁵⁷ By aligning related agencies and creating detailed timelines, these states are improving accountability to produce meaningful results.

With one of the strongest state economies in the nation, Texas has long promoted multiple educational and training pathways. Like other states, Texas has developed and instituted robust educational and training data systems. Windham School District offers annual performance reports that track and detail the number of CTE participants, percentage of CTE completions, and overall certifications earned. Certification performance data allows Windham to improve the effectiveness of their programs and client services.⁵⁸ The Texas Education Agency (TEA) also collects data on certifications awarded to senior high school students.⁵⁹

As part of the guidelines, state agencies and institutions that participate in the Perkins grant are required to assess their federal core indicator performance compared to state targets and outline strategies for improvement. TEA helps develop and improve academic and CTE oriented programs for secondary students. Through the Program Effectiveness Report, TEA reports student success at completing certifications and licenses, and operates as a CTE certification guide, though it does not officially operate a list of approved or recognized certifications.⁶⁰

Similarly, the Texas Higher Education Coordinating Board collects data on various postsecondary- and program-level data from community and technical colleges in the state. Texas provides core indicator data through the national Consolidated Annual Report, whereby each applicant is required to meet state targets within 90 percent for each core indicator. As one of the core indicators, credentials, certificates, and degrees (2P1) are reported on. Texas is able to track annual statistics from institutions across the state by campus. Information is further broken down into programs of study and credit hours.⁶¹ However, statistics are aggregated with no distinction between each type of credential earned. Additionally, reported figures focus on credentials awarded by educational institutions. The reports do not account for certifications as defined by this report since certifications are awarded through independent third-party entities, outside of

⁵⁵ Massie (April 2014).

⁵⁶ Louisiana Workforce Investment Council (20 April 2010); Louisiana Workforce Investment Council (December 2013); Louisiana Department of Education (26 February 2014); Louisiana Department of Education (2015).

⁵⁷ North Carolina Works Commission, p. 63 (2 March 2015).

⁵⁸ Windham School District (2013–2014).

⁵⁹ TEA (2015).

⁶⁰ TEA (2007); TEA (December 2013); TEA (29 August 2014).

⁶¹ THECB (2011); THECB (2015a); THECB (2015b).

educational programs and institutions. Nevertheless, standards required by Perkins provides an opportunity to improve certification information and data tracking.

In March 2015, the Texas Workforce Commission (TWC) reported on the Industry-Recognized Skills Certification Initiative for discussion, consideration, and possible action regarding development and funding. One position shared by policy makers and industry leaders is a lack of qualified workers to fill available jobs around the state. TWC identified statewide local workforce development boards as key stakeholders and important for their unique perspective regarding the types of relevant certifications for in-demand occupations in their area. Thus, TWC recommended a certification initiative to increase the number of workers with certifications to support in-demand jobs. The certification initiative includes \$2.8 million in federal workforce funding for two years. The certification initiative requires that local boards and local employers collaborate to identify critical certifications for their workforce areas. Moreover, several foci were emphasized, including: (1) manufacturing, information technology, health care, and construction industries; (2) low-, middle-, and high-skill occupations; and (3) nationally or regionally recognized, portable certifications. Finally, it was recommended that local boards expand or create new skill certification centers and provide annual performance reports regarding relevant certification figures and statistics.⁶² However, the program does not detail a method for creating a system or model to capture certification data to inform supply figures.

The following state case studies illuminate promising practices from Virginia, Maryland, Illinois, and Florida regarding models or methods that may be replicated to bolster existing educational and training databases by including certification data.

Virginia

The Path to Industry Certification

A few states have incorporated strategies to increase certifications into their education and workforce planning to advance skills and credentials among students. Like many states, Virginia has emphasized dual credit participation for high school students. However, instead of focusing solely on credit primarily for transfer to postsecondary education, Virginia has integrated certifications into the general curriculum so students may earn a certification and diploma concurrently. The focus on certification-oriented dual credit later evolved into the High School Industry Credentialing Program. In 2012, Virginia passed legislation intended to enrich education and workforce development, stipulating that:

Beginning with first-time ninth-grade students in the 2013–2014 school year, requirements for the standard diploma shall include a requirement to earn a career and technical education credential...that could include, but not be limited to, the successful completion of an industry certification. School boards shall report annually to the Board of Education the number of Board-approved industry certifications obtained...Numbers shall be reported as separate categories on the School Performance Report Card.⁶³

Under the law, the state reviews and approves the various professional or industry-related competencies and exams. This process distinguishes the type of certifications a student may earn in order to qualify and meet graduation requirements.⁶⁴ Virginia's certification efforts at the secondary level have allowed students to earn qualifying CTE credit approved by the state board of education. The Industry

⁶² TWC (29 March 2015).

⁶³ Virginia General Assembly 2012 Session (30 March 2012).

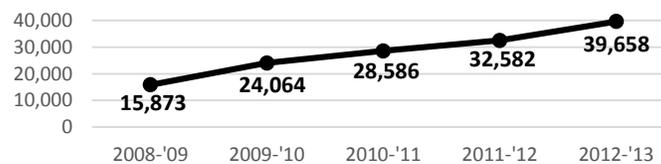
⁶⁴ VDOE (13 January 2011).

Credentialing Program allows high school students that are scheduled to graduate — but have no immediate plan to pursue postsecondary education and have not finished a CTE sequence of courses — a pathway to earn a diploma while receiving technical training in preparation for a certification exam. This program has grown, in part, because it provides a competitive edge for immediate entry into the workforce.⁶⁵

Performance Tracking in Virginia

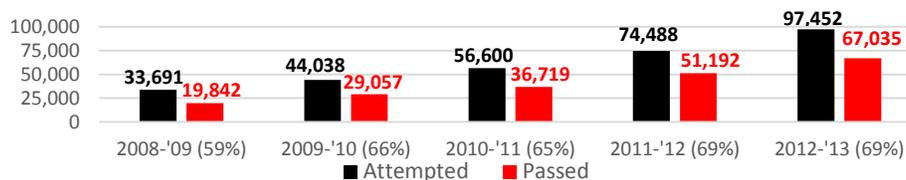
Recognizing the importance of certifications, Virginia began examining certifications in the early 2000s. By instituting a quality tracking system, Virginia has been able to isolate and analyze information and data on certification attainment. In a study conducted by the state in 2002, only 22 percent of students were enrolled on a path that would result in a certification. In order to address the changing workforce landscape and track certifications, the state moved to expand secondary school exposure to certifications. By 2008, nearly all CTE-related programs in the state had an avenue for earning a certification. As a result, more than 13,000 students earned a certification in some form from 2006 to 2007. As Figure 1 demonstrates, since 2008, Virginia has seen a steady increase in secondary school certification attainment. To keep pace with the number of students earning certifications, Virginia has worked to increase the number of teachers that are certification-trained in demand industries. Over 70 percent of CTE teachers in the state are certified in at least one certification-granting field of study.⁶⁶

Figure 1: Total Number of Certifications Awarded in Virginia⁶⁷



Improved tracking has allowed Virginia to more accurately plot the increasing trend of students earning not only certifications, but also state licenses and other assessments.⁶⁸ Figure 2 highlights the total number of exams attempted and passed for all CTE credentials tracked in Virginia. As indicated, the trend of students attempting and passing a credential exam has increased. These data provide important statistics for stakeholders to judge the performance and growth of various credentials in the state.

Figure 2: Total Number of Exams Attempted and Passed, All Credentials (% Pass Rate) in Virginia⁶⁹



⁶⁵ Additional sources: NGA (31 January 2005); Education Commission of the States (September 2006); Strayer (2011); VDOE (2012); Wharff (15 November 2012); Career and Technical Education and Adult Education Services (2015).

⁶⁶ VDOE (19 February 2008).

⁶⁷ VDOE (March 2014).

⁶⁸ VDOE (February 2013).

⁶⁹ VDOE (March 2014). "All credentials" are earned by students, reported by secondary schools, and consist of certifications, National Occupational Competency Testing Institute Assessments, State Licensures, and Workplace Readiness programs.

Certification Supply and Demand

In 2014, Virginia applied for and received a national grant to further support education and workforce system development. As part of the grant requirements, Virginia is developing an online supply and demand database of available regional and state-level middle-skill jobs to better identify skill gaps. The database will focus primarily on nontraditional credentials that are tracked throughout the state.⁷⁰ This action was integrated by executive order into the state's New Virginia Economy Workforce Initiative. The order stipulates an increase in the number of certifications aligned with employer demands. It also calls for an improved tracking system of the state's available supply of workforce credentials for demand occupations.⁷¹ Moreover, the Virginia Community College System conducted a report to better understand the data-tracking process more effectively. The results have been incorporated into the current certification discussion among schools in order to identify and address the barriers institutions encounter when attempting to track students from educational programs through the certification process.⁷²

Maryland

The Skills2Compete (S2C) Initiative

Like other states, Maryland has experienced a shortage of skilled workers to meet new demands. Maryland has determined that its future labor market will be dominated by middle-skill jobs. In fact, middle-skill occupations will represent the largest share of all future job openings in the state.⁷³ In an effort to address the shortage of skilled workers and the increase in demand, Maryland developed its S2C initiative in 2010.⁷⁴ This statewide initiative was designed to bolster the skill level of the state's workforce up to the equivalent of at least two years of postsecondary education or training. The ultimate aim of S2C was to increase the number of individuals receiving skills training by up to 20 percent by 2012, and to expand the state's credential tracking system.⁷⁵

The initiative served as a starting point for Maryland to improve the preparedness of its workforce and increase its competitiveness as an economic and educational leader. Nontraditional credentials have continued to garner interest from policy makers due to demands for qualified and competent workers. In order to evaluate outcomes, a key component of Maryland's initiative is to develop a "means for tracking success toward the governor's goal, an innovative approach to counting Marylanders' degree, credential, and basic skills attainment across a broad array of public programs".⁷⁶

Skills2Compete Assessment

Bringing numerous agencies to the table to align data-collecting efforts and determine performance outcomes for funding was one important hurdle. Addressing this issue helped broaden data-collection efforts to enable improved evaluations on investments in training pathways and highlight certifications as important credentials. The initiative created a process for stakeholders to tangibly measure acquired information to make data-driven decisions. During an evaluation of the existing system, agency representatives identified numerous gaps in data created by a cumbersome, often confusing, array of state and federal mandates with different data-collection procedures. Government and independent

⁷⁰ Virginia Board of Workforce Development (22 July 2014); Virginia Office of the Governor (29 August 2014).

⁷¹ Virginia Office of the Governor (13 August 2014); Zinn (14 August 2014).

⁷² Massie (19 December 2014).

⁷³ National Skills Coalition (March 2010). Between 2010–2016 an estimated 42 percent of all jobs in Maryland will be middle-skill, compared to low- and high-skill.

⁷⁴ Maryland Association of Community Colleges (2 March 2010).

⁷⁵ DLLR (1 July 2010); Woolsey Group (June 2011).

⁷⁶ Unruh and Seleznow, p. 1 (August 2011).

stakeholders collaboratively worked on strategies, analyzed information, and tracked performance outcomes.

The initiative resulted in an annual accountability report that detailed and tracked various outcomes on state policy priorities. Maryland examined the total number of individuals that enrolled and completed programs to gauge progress and success. Annual figures were then compared against the established baseline. Across all state agencies, the baseline figure was created by the state to encompass all individuals enrolled in any type of postsecondary educational or training program. Once the baseline number was established for 2009, performance reports were produced for subsequent years to determine the progress of S2C. Figures 3 and 4 illustrate that Maryland was able to successfully count and track certification and license data on enrollment, graduation, and even on students who started but later exited the program. Moreover, S2C has supplemented the state’s efforts to strengthen its longitudinal database.

Figure 3: Continuing Education Enrollment that Led to a Government or Industry-Required Certification or License in Maryland⁷⁷

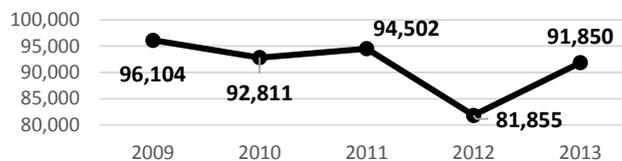
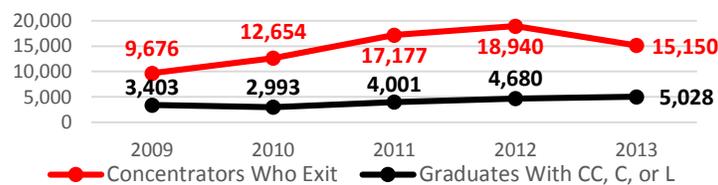


Figure 4: CTE Concentrators Who Exit Programs Aligned to an Industry Certification and CTE Graduates with College Credit (CC), Credential (C), or License (L) in Maryland⁷⁸



Skills2Compete Update

Utilizing S2C, Maryland upgraded its educational and training system and increased the state’s commitment to its data-tracking and exchange system. By reorganizing the state’s data and assessment tools, Maryland has been able to track and compile more accurate annual data to document the progress of various cross-agency initiatives.⁷⁹ By alleviating issues like ineffective agency communication and disparate tracking methods, Maryland has made significant progress toward its educational and workforce goals. More importantly, stakeholders were able to define and find value in reinforcing training pathways and outcomes, such as certifications.⁸⁰

As a resource for tracking performance outcomes, Maryland has also increased and improved accountability and alignment between education and industry stakeholders. Maryland was able to make

⁷⁷ Maryland Department of Information Technology (4 December 2014). Enrollment figures that led to a government or industry certification or license are counted and calculated as part of the Total Annual Entries. The state’s Total Annual Entries over the same time period are 282,150 (2009), 301,186 (2010), 312,475 (2011), 301,592 (2012), and 303,811 (2013).

⁷⁸ Maryland Department of Information Technology (4 December 2014). The CTE Graduate figures are counted and calculated as part of the Total Annual Completions. The state’s Total Annual Completions over the same time period are 36,513 (2009), 41,464 (2010), 41,350 (2011), 42,571 (2012), and 42,099 (2013). The CTE Concentrators who exit are counted and calculated as part of the Total Annual Entries. The state’s Total Annual Entries over the same time period are 282,150 (2009), 301,186 (2010), 312,475 (2011), 301,592 (2012), and 303,811 (2013).

⁷⁹ Unruh and Seleznow, p. 13 (August 2011); Maryland Governor’s Delivery Unit (4 December 2014).

⁸⁰ Unruh and Seleznow (August 2011).

significant investments in its databases and leverage the system efficiently and cost effectively. As of 2013, the state's workforce board reports progress toward its goal of having 20 percent of the workforce population obtain at least two years of postsecondary education or training. Through additional multilateral partnerships, the state anticipates achieving this goal by 2018.⁸¹ Other states are employing similar strategies and initiatives to address their own challenges.⁸²

Illinois

The Need to Address Quality and Reliability Issues

With the proliferation of nontraditional credentials, one reoccurring issue for stakeholders has been the level of quality and reliability of certification awards. Due to the awards' detachment from educational institutions and a rise in the number of associated programs and certifiers, students, schools, employers, and policy makers have difficulty discerning certification quality and reliability. In order to address these challenges, the American National Standards Institute (Institute) took on the responsibility of verifying national accrediting services. Recognized internationally as America's primary accreditor of voluntary standards in developing organizations, the Institute has worked to develop the American National Standards that signify the credibility of an organization's accreditation process.⁸³ But, the issue faced by many national certifying organizations is that the Institute's standards are cumbersome and expensive. While a few large industry organizations have some certifications that are Institute sanctioned, the majority of industries do not.⁸⁴

In an effort to increase awareness, assure relevancy, and build confidence in certifications, major industry certifiers have gone to great lengths to design certification programs. Efforts by organizations such as the Computing Technology Industry Association (CompTIA) and the National Association of Manufacturers to secure credibility and standing within their sectors has resulted in certifications that are current for industries, relevant for students to earn, and beneficial for states to support. Illinois addressed its own issues by cooperating with multiple stakeholders at various points of the certification development process to improve quality and reliability. The partnerships have helped to combat the proliferation of substandard certifications that may jeopardize the integrity of the entire system.

The Illinois Industry Certification Data Sharing Pilot

As referenced earlier, the Certification Data Exchange Program was an extension of the collaboration between Illinois and CompTIA. In 2012, both sides partnered to pilot a project to improve data collection, matching, and integration. As a major source of information technology certifications, CompTIA started developing independent and vendor-neutral certifications in the early 1990s. The Illinois Industry Certification Data Sharing Pilot began with the premise that certification validation, legitimacy, and tracking are critical to measuring performance and efficiency.

The partnership began with CompTIA and the Illinois Community College Board supplying and matching both student unit-record certifications and various student demographics, respectively. That dataset was then incorporated with employment information from the Illinois Department of Employment Security by way of the Center for Governmental Studies at Northern Illinois University. CompTIA and the College

⁸¹ Governor's Workforce Investment Board (2013).

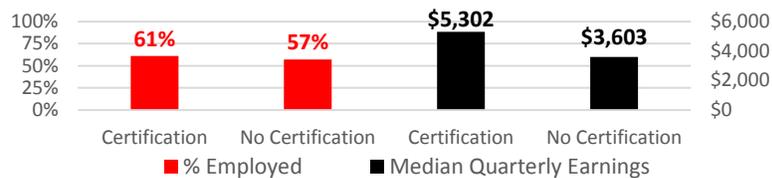
⁸² State of Maryland (2015). Other state endeavors include Skills2Compete Campaign - Illinois, Michigan, Mississippi, New Mexico, Oregon, Rhode Island, Washington, Wisconsin, California EDGE Campaign, Campaign for a Working Connecticut, Iowa Works Campaign, North Carolina Alliance for Workforce Competitiveness, Ohio Workforce Coalition, Rhode Island Workforce Alliance, and Vermont Coalition for Workforce Solutions.

⁸³ ISO (1 September 2004).

⁸⁴ A recent account finds that less than 10 percent of certifications are accredited by any organization and fewer than two percent come from the American National Standards Institute. Jacoby (2 December 2014).

Board were able to produce a large volume of records from 2006 to 2010 to generate the sample period. The combined database produced demographic variables based on whether students passed a certification exam. Upon completion, the pilot had an almost 80 percent successful matching rate. Additionally, students that passed exams had better employment rates and higher initial earnings (Figure 5).⁸⁵

Figure 5: Illinois Certification Exam Participation Outcomes⁸⁶



The Illinois pilot demonstrated the successful merging of information on certification exam participation rates, passage rates, and individual data records. This pilot identified methods by which data matching could be achieved across public and private organizations. Moreover, it provided a blueprint to address privacy and legal concerns when sharing sensitive information. The collaboration between the Illinois Community College Board, CompTIA, and the State of Illinois demonstrated a feasible template for other states and groups to emulate to increase the quality and comprehensiveness of student performance data.⁸⁷

Challenges and the Future of Certifications in Illinois

While developing the database, stakeholders associated with the Illinois pilot encountered several challenges that will need to be addressed in future projects. The first issue was the limited amount of certification data available for matching. While CompTIA and state community college records were available, the amount of data was limited. Over the entire pilot, CompTIA had about 3,500 records. Conversely, the state community college board had over half a million records each year from all of its locations across the state. The discrepancy in the volume of state community college records and the limited data points CompTIA collected made initial matching a challenge.

Another issue was the legality of sharing the performance data of certification exam participants. Student privacy concerns created the need for CompTIA to sign an indemnification agreement with Illinois to release itself from any data liability. This agreement relied on the notion that states would then be held culpable if shared data were misused. Additionally, state-specific laws and jurisdictions did not apply to other states should privacy laws be violated. Thus, many states hesitated to sign agreements with CompTIA for an expanded project due to the uncertainty of protecting privacy across state lines.⁸⁸

Despite challenges, Illinois and CompTIA provided an outline for future data-tracking endeavors and projects. Groundwork by Illinois spawned the industry and multistate Certification Data Exchange Program. Along with a workable solution to data-sharing issues and privacy laws, an improved profile of individuals participating in and receiving certifications was formulated.

As the Illinois pilot moves forward, an expanded timeframe will be necessary to understand long-term trends. Continued collaboration between stakeholders will be necessary to enhance certification data and student-performance matching rates. Expanding the project also means incorporating more identification

⁸⁵ Koch and Parke (December 2014). Student-identifying information included first name, last name, and zip code. Demographic information included age, gender, ethnicity, language, disability status, economic/academic disadvantage status, household makeup, occupation of certification, employment status, and earnings.

⁸⁶ Massie (April 2014) from Koch and Parke (December 2014).

⁸⁷ Massie (April 2014).

⁸⁸ Massie (April 2014), (3 June 2014); Koch (17 December 2014). Thus far, only Illinois and California have signed indemnification agreements.

variables and states, as well as national third-party certifiers, which are needed to ensure a comprehensive database of records. While more certifiers would require additional legal agreements to share information, the potential benefits could include greater data points and coding variables. Aiding this process was a recent U.S. Department of Education reexamination of the Family Educational Rights and Privacy Act (FERPA). Specifically, the department clarified that FERPA does not apply to data-sharing projects such as the Illinois certification program.⁸⁹ Since then states and industry certifiers have reviewed the need for indemnification agreements and have moved toward signing independent data-sharing agreements. In 2014, several newly identified participating states and third-party industry stakeholders agreed on terms and are in various stages of a multistate certification expansion of data collecting and sharing.

Florida

The Career and Professional Education (CAPE) Act

In June of 2007 the CAPE Act was signed into law in Florida.⁹⁰ The act was designed to provide individuals with a certification, and businesses with a standard to quickly and efficiently address employer supply and demand needs. The goal of the partnership between education and industry was to increase the number and quality of certifications to support workforce development across the state. To achieve this goal, CAPE 2007 focused on secondary education as the starting point. The act instituted additional rigorous and career-oriented courses in secondary schools that lead participating students to a certification. To accelerate the integration and compliance of CAPE into the school system, Florida required that all school districts register at least one school under their jurisdiction as a career academy by 2009. Thus, approved CAPE academies were created and quickly emerged across the state. Besides the benefit of bolstering their certification programs, school districts received added incentive to organize and integrate career academies. Registered academies that are approved by the state are eligible to receive additional school funding provided by the Florida Education Finance Program. The program follows an explicit formula that assigns varying weights to eligible certification programs.⁹¹ Furthermore, the state features an approved comprehensive industry certification list to provide guidance on in-demand certifications and required training.⁹² The certification list also helps academies design and tailor programs to the specific needs of individual districts, regions, or industries.

Career and Professional Education Act of 2013

Six years after CAPE was enacted the state updated and reauthorized the act in 2013.⁹³ The updated act was intended to continue improving the state's pipeline of industry-qualified employees and identify the supply of CAPE certifications. Also, CAPE 2013 bolstered the alignment between secondary and postsecondary certification programs by adding academic and career courses, third-party assessment entities, and an enhanced ability to track and record individuals that earn certifications.⁹⁴ At schools across the state, districts collect and send performance reports to the Florida Department of Education. Along with other information, variables such as the school year, region, field of certification, and exam outcome are reported.⁹⁵ Moreover, districts are required to report on individuals that earn a certification outside of their cohort year and all individuals that attempt a certification exam but do not earn a

⁸⁹ FERPA (December 2008); U.S. ED (2011); DQC (March 2013). Data and information owned by third-party groups, which are not considered educational institutions, are not subject to FERPA. Therefore, third-party certifiers are not subject to liability should any data misuse occur.

States and educational institutions must still comply with FERPA by not releasing student-level data, only information in the aggregate.

⁹⁰ CAPE Act of 2007 (26 June 2007a/b); Bradenton Times (2012); Florida Office of the Governor (22 April 2013).

⁹¹ FLDOE (2015a). Florida academy eligibility is based on student enrollment, certification completion, and receipt of a high school diploma.

⁹² CareerSource Florida (2015). Additional sources: FLDOE (2015c). Florida Department of Economic Opportunity and CareerSource Florida created the industry certification list.

⁹³ CAPE Act Bill Text Enrolled (22 April 2013); Florida CAPE Act (2014).

⁹⁴ Goodman (13 November 2013), (November 2014). Additional changes include the industry certification calculating methodology, funding requirements, addition of teacher bonuses, and the removal of graduation requirements.

⁹⁵ FLDOE (1 July 2013). Additional identifiers can be found at the Florida Department of Education website.

certification.⁹⁶ The Florida Division of Career and Adult Education was authorized to provide a summary of enrollment figures and certification awards to ensure individual academy and district accountability.⁹⁷

Career and Professional Education Act Outcomes

The development of CAPE helped to integrate CTE certification awards into Florida’s secondary and postsecondary school systems. This collaboration between education and industry fostered similar initiatives at the elementary- and middle-school levels with grade-level-specific curriculum. As illustrated in Table 1, the integration of career-oriented education and training into secondary schools has increased certification-related activity.

Table 1: Florida Middle School (MS) & High School (HS) Participation and Certification Summary⁹⁸

	'07-'08	'08-'09	'09-'10	'10-'11	'11-'12
# of Individually Registered CAPE HS Academies	246	490	838	1,298	1,511
# of Individually Registered CAPE MS Academies	NA	NA	NA	NA	56
Total	246	490	838	1,298	1,567
# of School Districts with Registered HS Academies	38	66	68	68	68
# of School Districts with Registered MS Academies	NA	NA	NA	NA	9
# of Certifications Attempted	1,112	3,592	29,906	49,383	NA
# of Certifications Earned	954	2,732	16,408	33,189	NA
Pass Rate	85.8%	76.1%	54.9%	67.2%	NA

From 2007 to 2008, one independent study found that secondary students who participated in at least one technology class and one certification exam had improved attendance and higher grade-point averages than students with similar demographics and no certification participation. While the study focused on technology courses, the findings indicated that—at a minimum—there existed a positive relationship between CAPE and educational improvement. The study also indicated, on average, an attendance increase of 17 days and a grade-point average increase from 2.55 to 2.92. Additionally, during the reported 2011 school year, approximately 18 percent of high school students were enrolled in a CAPE academy compared to 2.2 percent in 2007. The percentages represent an increase in the total number of students enrolled in an academy from under 20,000 to over 150,000 students between 2007 and 2011.⁹⁹ Table 2 provides current data on the relationship between certifications and CTE-related courses reported by Florida from 2013 to 2014.

Table 2: Florida CAPE Academy Performance Report, Grades 9–12, 2013–2014¹⁰⁰

Performance Indicator	Non-CAPE, No Certification	CAPE, No Certification	Non-CAPE + Certification	CAPE + Certification
Average GPA	2.66	2.71	2.87	2.99
Chronically Absent	18.1%	16.7%	17.1%	11.2%
At Least 1 Disciplinary Action	14.6%	17.2%	10.0%	9.4%
Dropout Rate	2.8%	1.1%	0.3%	0.3%
At Least 1 Accelerated Course	30.6%	30.4%	45.5%	43.6%
12th Graders Earning Standard Diploma	67.5%	81.9%	88.7%	94.2%

⁹⁶ Duckworth (April 2015).

⁹⁷ Goodman and McLarnon (2013).

⁹⁸ UNC Greensboro (2012); Grunwald Associates LLC (2012). In 2011, the Florida Department of Education listed the number of registered high school CAPE academies at 1,298. Organized by career cluster in descending order: Information Technology (218); Health Sciences (180); Hospitality & Tourism (161); Arts, Audio/Visual Technology & Communications (126); Business Management & Administration (106); Architecture & Construction (102); STEM (95); Agriculture, Food & Natural Resources (82); Transportation, Distribution & Logistics (67); Education & Training (56); Marketing, Sales & Service (53); Finance (29); Law, Public Safety & Security (11); Manufacturing (8); Human Services (2); Other (2).

⁹⁹ Grunwald Associates LLC (2012).

¹⁰⁰ FLDOE (December 2014).

Similar to many states, Florida has a wide range of available jobs in major industries such as manufacturing and engineering, but not enough skilled workers to fill those positions. Coupled with an aging workforce, demand for a new generation of well-trained workers has intensified. Many workers currently lack basic, industry-oriented skills, knowledge, and qualifications that a diploma or degree may not necessarily indicate, but a certification can. Unlike previous attempts to reform the state's education system,

CAPE academies offer curricula designed by industry, taught by industry-certified instructors. Industry tests students' skills and industry awards certifications that are nationally recognized currency in the job market. Most importantly, industry then competes to hire the graduates.¹⁰¹

¹⁰¹ Gaetz and Weatherford (11 June 2013). Special column to the Tampa Bay Times by Florida Senator Don Gaetz and Representative Will Weatherford.

SECTION 5: CONCLUDING COMMENTS

Concluding Comments

Throughout the nation, states recognize the impact that traditional and nontraditional credentials will play in their future economies and workforce systems. As the need for qualified and skilled workers increases, individuals seeking to obtain a variety of workplace credentials, in addition to traditional degrees, will also increase because nontraditional credentials provide numerous benefits to students, employers, and the overall workforce system. The move to collect and report traditional and nontraditional credential data indicates a change in the way stakeholders view the value of education and credentials in the workforce system.

The role traditional credentials play in creating a strong workforce cannot be understated. But more than ever, stakeholders are turning to nontraditional credentials, especially certifications, to complement their existing education and training efforts. Effective data tracking and collaboration between participants are key in understanding the contribution of different credentials to the overall performance of a state and the total supply of potential employees.

As an alternative, or supplement, to traditional credentials, certifications provide important workplace-related benefits and address several industry-related issues such as portability, uniformity, and applicability. Moreover, certification tracking provides invaluable data, such as total certification attainment and demographics, to policy makers that may influence a state's economic development or future workforce.

Certifications will continue to grow and garner interest as an important component of the workforce system. However, as the application of certifications expands, challenges will need to be addressed and solutions tailored to individual states. While the practice of comprehensively tracking and collecting certification data has been limited, states and industries have started to build systems to integrate this data into existing state databases. Numerous states have demonstrated the feasibility of creating a multilevel or cross-state model to capture a variety of information important to their workforce and economy. In particular, Virginia, Maryland, Illinois, and Florida have focused their efforts to improve certification tracking at the secondary and postsecondary level. The results they have obtained not only help guide the direction of future state policy, but have allowed them to address challenges ranging from student performance issues to industry-specific demands.

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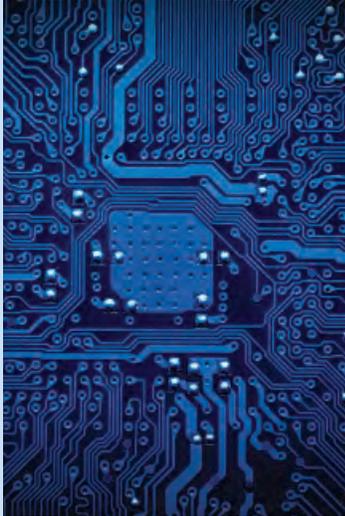
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Defining Middle-Skill STEM Occupations in Texas

December 2015

TEXAS WORKFORCE INVESTMENT COUNCIL

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Executive Summary

Technological advances across all industries have increased the need for further workplace specialization. Specifically, industry specialization has revolved around education and occupations that emphasize science, technology, engineering, and mathematics (STEM). Stakeholders and policymakers at every level are pursuing methods to improve education and training programs that produce qualified workers. Across every educational level, STEM-oriented postsecondary awards continue to increase.

Despite concerted efforts, industries around the nation are still struggling to find qualified workers to fill critical jobs. At the same time, the demand for middle-skill workers with STEM-related training continues to increase. This creates a situation where in-demand middle-skill jobs—those requiring workers with education beyond high school but less than a four-year degree—remain vacant. Consequently, middle-skill STEM occupations have become a major priority for workforce system stakeholders and policymakers.

While concerns over the available supply of middle-skill STEM workers have increased, consistent and accurate research regarding these occupations remains limited. The majority of workforce research has focused on issues relating to educational attainment at or above a four-year degree and occupations associated with those credentials. Therefore, the goal of this report is to present research on middle-skill STEM occupations in the workforce. In particular, this report offers a method for identifying and analyzing middle-skill STEM occupations important to the Texas economy.

This report will first establish the research purpose and provide a clear definition of middle-skill STEM occupations. Next, the process for classifying workers and STEM occupations is described. Middle-skill STEM occupations are then identified and evaluated. Finally, employment and wage information are applied to a list of middle-skill STEM occupations relevant to Texas. Selected occupations are evaluated to understand their importance to the state's economy.

Section 1: Understanding Middle-Skill STEM Occupations

Research Scope

As the national economy continues to improve and grow, more workers will be needed for new and replacement positions in the workforce. New advancements in technology further accelerate economic expansion, often resulting in adjustments to the very nature of work. The rising demand for science, technology, engineering, and mathematics (STEM) trained workers reflects these changes.

Recent reports and surveys indicate that businesses around the nation are having difficulty locating people with the STEM skills and knowledge to fill jobs. A national skills gap is often identified as a cause for various economic issues.¹ However, conflicting research suggests there is insufficient evidence to indicate any significant labor shortages or hiring difficulties for STEM occupations. These data indicate an oversupply of native- and foreign-born STEM workers with four-year or advanced degrees compared to the number of available STEM jobs. The linkage of employment projections and gaps for middle-skill STEM jobs is an area that remains obscure.²

While STEM graduates and workers are key components of the national economy, this report does not explore the debate over national skill gaps or employment shortages. Instead, the purpose of this report is to present research conducted on middle-skill STEM occupations. As a critical segment of the workforce, middle-skill STEM occupations are often understudied and misunderstood. National attention has largely focused on the supply of four-year and graduate-level STEM workers, often overlooking middle-skill STEM occupations where employment shortages may be more prevalent. To improve workforce analyses and decision making, this report offers a method to identify and classify middle-skill STEM occupations in Texas.

What Are Middle-Skill STEM Occupations?

Defining middle-skill STEM occupations is important before any occupations can be classified or analyzed. This report utilizes the most widely accepted definition of middle-skill occupations—those that require education and training greater than a high school diploma but less than a postsecondary four-year degree. This can include subbaccalaureate occupations that require industry-based certifications, associate degrees, or significant on-the-job training, among other credentials.

Conversely, a universally agreed upon definition of STEM occupations does not exist. Instead, traditional conceptualizations of STEM only broadly identify common characteristics. The most basic description of STEM involves high-skill jobs in the fields of science, technology, engineering, and mathematics. These fields are often cross-cutting and build upon each other. Additionally, STEM occupations usually require workers to have knowledge of and utilize computers or other advanced machines. These occupations also generally emphasize training equivalent to or greater than a postsecondary four-year degree.

However, traditional conceptualizations of STEM occupations are losing their relevance as industries continue to evolve and science and technology increasingly permeate all aspects of the workforce. STEM fields are no longer viewed as professions reserved primarily for individuals with four-year degrees or higher. Many occupations once considered non-STEM now require STEM-related skills and knowledge. Continued evaluations based on a limited definition of STEM can be problematic and create workforce analyses that are outdated and inconsistent. Improved evaluations of the workforce must move beyond traditional definitions of STEM to include middle-skill jobs that require STEM knowledge. Middle-skill STEM occupations are a critical segment of the workforce that have not received sufficient attention. These occupations are not only in-demand, they often provide higher wages compared to non-STEM jobs with similar educational requirements.

¹ Business Roundtable (3 December 2014); ManpowerGroup (2015).

² North (2013); Teitelbaum (19 March 2014); Robinson (10 July 2014).

Middle-Skill STEM in the Workforce System: Background and Employment Information

Further research into middle-skill STEM occupations can provide invaluable information and data for workforce stakeholders. The remainder of this section provides a broad description of the way middle-skill STEM occupations are viewed by various entities. It also illustrates the current status of middle-skill STEM occupations as it pertains to several employment-related indicators. Middle-skill STEM occupations are presented separately for context. While the economic and workforce benefits related to middle-skill STEM occupations are discernible, determining the size of the middle-skill STEM workforce has been difficult due to different classification methods.

Explaining Middle-Skill Occupations

Generally, middle-skill occupations are described in terms of educational or training levels. The International Standard Classification of Occupations organizes occupations, including those that are considered middle-skill, based on components that include training, skill levels, and any job related tasks or duties. This multinational database exists as a statistical repository for countries to report, exchange, and better understand labor information. The system has even fostered research on international middle-skill occupations.³

In the United States, middle-skill occupations have been defined by the U.S. Department of Labor and Department of Commerce as jobs requiring workers with more than a high school diploma but less than a postsecondary degree.⁴ The Federal Reserve and other institutions have added both cognitive and manual routine descriptors to identify middle-skill jobs that, in principle, may be carried out by computers.⁵

Middle-skill occupations are associated with a wide range of workforce credentials, from industry-based certifications to apprenticeships to college certificates and associate degrees. Acquiring training or valid credentials are commonly accomplished by passing third-party administered exams, completing course work through community colleges, or fulfilling on-the-job learning requirements. Many of these occupations have consistent or growing job opportunities, especially those that require substantial levels of science and math.⁶

Middle-Skill Employment

Maintaining a well-trained workforce is vital to economic growth. Over the past several decades, the national economy and workforce has changed. While middle-skill occupations have been traditionally associated with technical or manual jobs, an increasing number of administrative and professional occupations are now viewed as middle-skill. As a critical component of the workforce, middle-skill jobs have generally been considered the primary pathway to the middle class. In the past, a high school education was typically sufficient for workers to earn middle class wages. But national expansion and development have fueled economic growth causing many industries to require greater levels of education and training.

Over a 10 year period, from 2012 through 2022, national employment is predicted to increase by nearly 11 percent, approximately 16 million workers.⁷ At the same time, 65 percent of all future jobs will require some type of postsecondary education or training. Of those jobs requiring postsecondary education, nearly half will be in middle-skill occupations.⁸ Current national data indicates that approximately 70 million people are employed in middle-skill occupations, representing over 45 percent of all employment.⁹ Middle-class wages are generally characterized as earnings between \$35,000 and \$95,000 per year.¹⁰ Based on median wage estimates, the percent

³ ILO (18 September 2004); Benton, et al. (July 2014).

⁴ Perez and Pritzker (11 September 2013).

⁵ Autor, et al. (November 2003); Autor (April 2010); Cheremukhin (May 2014).

⁶ Holzer and Lerman (March 2008); NSC (August 2011).

⁷ BLS (19 December 2013).

⁸ Carnevale, et al. (26 June 2013).

⁹ BLS (7 May 2015). Middle-skill occupations relative to low- and high-skill occupations.

¹⁰ Carnevale, et al. (September 2012).

of workers with an associate's degree earning between \$75,000 and \$100,000 are slightly greater than the percentage of those with bachelor's or master's degrees.¹¹ In terms of median hourly wages, middle-skill occupations typically range from \$13.84 to \$21.13.¹² By obtaining postsecondary education and training for middle-skill jobs, workers can improve their job opportunities and increase their average annual earnings by \$24,000 to \$37,000.

Despite competing perspectives regarding the overall decline of available middle-skill jobs over the past several decades, they still represent a larger share of new openings and replacements compared to low- and high-skill occupations.¹³ Many future new and replacement middle-skill jobs will be concentrated in several occupational fields, such as, manufacturing, healthcare, and construction.¹⁴ Middle-skill data for states also reflect similar trends—projections indicate that middle-skill occupations will continue to make up the majority of all skilled workers for nearly every state. As the largest segment of the national workforce, most estimates show a strong current and future demand for middle-skill jobs.

Categorizing STEM Occupations

The creation and popularization of the term STEM is often credited to the National Science Foundation. It crosses all grade levels in the educational spectrum and, in some form, encompasses one of the four subjects that make up the acronym.¹⁵ Depending on the source, STEM occupations may be described very narrowly or broadly. The America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Reauthorization Act of 2010 broadly views STEM to include academic and professional disciplines.¹⁶ This characterization provides federal entities wide latitude to approach and determine STEM occupations.

For instance, the National Science and Technology Council limits STEM to technology, engineering, mathematics, and physical and natural science disciplines. This cabinet-level council of the executive branch recognizes formal or informal and in-school or out-of-school options for education and training for STEM occupations.¹⁷ The U.S. Department of Commerce views STEM occupations as technical support and professional jobs in computer science, mathematics, engineering, and life and physical sciences. This characterization includes several occupations considered to be indirectly related to STEM and jobs that require or utilize STEM-related training, but excludes social scientists and educational jobs.¹⁸

Alternatively, the National Science Foundation's interpretation does include social scientists and certain educational professions. This broader approach not only encompasses core science fields, but also disciplines such as economics, political science, and psychology.¹⁹ Moreover, the U.S. Department of Homeland Security recently expanded its original classification of STEM to include fields of study that lead to professions in pharmaceuticals and economics.²⁰

STEM Workforce Statistics

As stakeholders around the nation discuss ways to increase interest and employment in STEM, many disagree on the number of STEM workers in the workforce due to the method by which STEM occupations are classified. Private sector estimations indicate that total national employment in STEM ranges from five million to over 10

¹¹ Sommers and Morisi (April 2012).

¹² NELP (August 2012).

¹³ Holzer and Lerman (February 2009); NSC (2014).

¹⁴ Carnevale, et al. (November 2011).

¹⁵ Dugger (2010); Gonzalez and Kuenzi (15 November 2012); TIES (2015).

¹⁶ 111th Congress (2010).

¹⁷ NSTC (31 May 2013).

¹⁸ Langdon, et al. (July 2011).

¹⁹ NSF (6 August 2013).

²⁰ U.S. DHS (11 May 2012).

million workers in all fields.²¹ Estimates based on federal data illustrates an even wider range of workers employed in STEM or STEM-related occupations—between seven and 16 million workers.²² Despite variations in employment figures, STEM occupations are expected to increase significantly in the future.

Led by fields such as computing, engineering, research, and physical science, estimates of job growth in STEM through 2024 are promising, significantly outpacing all other occupations. Approximately 80 percent of the fastest growing occupations are in STEM fields.²³ Most states are also anticipating substantial STEM growth; for instance, Texas is expected to represent nearly 10 percent of future STEM opportunities in the nation.²⁴ Additionally, when compared to all occupations, jobseekers for STEM occupations traditionally have lower unemployment rates and greater opportunities. This difference can be seen across the nation and is especially significant for workers seeking STEM-related healthcare positions. Not only are jobs in STEM fields available, an increasing number of STEM-trained workers are finding employment in non-STEM fields.²⁵

STEM occupations, regardless of education level, also offer higher wages that are consistent over time.²⁶ National data shows that STEM occupations can provide average annual wages of \$80,000, nearly twice the annual average for all jobs in the nation. The distribution of earnings within STEM occupations can vary, with engineering and information technology jobs predominantly responsible for increasing wage estimates since these occupations usually have higher base wages. Nevertheless, even the lowest paying STEM occupations provide workers with average annual wages around \$50,000.²⁷

Despite the role that all STEM-trained workers have in the modern economy, descriptions of STEM workers and occupations have focused predominately on those that achieve at least a postsecondary four-year degree. This focus has unintentionally created research and policy that overlooks the impact and importance of middle-skill workers with STEM-related training.²⁸

Overlooking the value of middle-skill STEM occupations has produced several issues. One major concern involves the inconsistent tracking of workforce relevant statistics. National estimates of middle-skill STEM employment range from 1.2 to 7.4 million workers, which illustrates the drastic variance between entities collecting workforce data.²⁹ Considered as a percentage of total national employment, middle-skill STEM workers represent anywhere from less than one percent to six percent of the workforce. This wide variance is startling considering that middle-skill STEM workers make up more than one-third of all national STEM-related workers. Moreover, estimates indicate that of those middle-skill STEM workers, more than 40 percent have an associate's degree.³⁰

More than ever, opportunities to participate in STEM occupations are increasingly available to workers with subbaccalaureate education and training. Of all available STEM jobs, about half are available to workers without a bachelor's degree.³¹ More than 60 percent of middle-skill STEM jobs require six months or less of formal classroom training.³² In many instances, middle-skill STEM workers obtain workforce-related education and training in order to operate in highly specialized environments. Based on educational attainment levels, more middle-skill workers are employed in STEM or STEM-related occupations than workers that have a bachelor's degree.

²¹ Information (30 November 2012); Camarota and Zeigler (May 2014).

²² BLS (May 2014); Vilorio (Spring 2014).

²³ AMT (2015).

²⁴ Educate Texas (28 January 2015).

²⁵ Langdon, et al. (July 2011); Change the Equation (2015); BLS (25 March 2015).

²⁶ Carnevale, et al. (November 2011).

²⁷ Jones (April 2014); Vilorio (Spring 2014).

²⁸ Rothwell (10 June 2013).

²⁹ BLS (May 2014). Estimates calculated from occupational employment statistics based on various classifications of middle-skill STEM jobs.

³⁰ Estimates based on Census employment characteristics of STEM occupations.

³¹ AMT (2015).

³² Carnevale, et al. (September 2012).

Developing a List of Middle-Skill STEM Occupations

As this section illustrated, middle-skill STEM occupations are critical to the workforce system. National estimates indicate significant growth and economic opportunities for workers in many middle-skill STEM occupations. However, these occupations have often been underserved by workforce research in favor of jobs requiring at least a four-year degree. Additionally, national stakeholders have further obscured the subject by offering inconsistent definitions or classification principles. Consistently defining middle-skill STEM occupations is essential to producing accurate information.

The next section examines the initial process for identifying middle-skill STEM occupations. The section begins by briefly describing the method for classifying occupations. In addition, the section explains the process and relevant sources used in this report to identify STEM occupations. Selected sources are organized in order to create a list of STEM occupations for further analysis.

Section 2: Classifying Workers and STEM Occupations

Classifying Workers by Occupational Categories

As the previous section illustrated, estimates of the middle-skill and STEM workforces can differ. One reason for the significant variance is due to the way stakeholders have defined and classified STEM occupations. Accurately classifying STEM occupations is the first step to identifying middle-skill STEM occupations. This section offers relevant background information creating the basis for identifying middle-skill STEM occupations.

Developing the framework begins with a general description of the Standard Occupational Classification (SOC) system. The occupation code standards established by the SOC system form the structure used to compare occupations across various sources. After discussing the SOC system, an annotated description of each STEM occupation classification source is presented. Each organization identifies and determines a different number of jobs as STEM or STEM-related.

Occupational information has long been collected as part of the national census. However, a thorough effort to collect more accurate occupational data did not occur until the SOC system was created in the late 1970s. The SOC system was created to replicate the occupational structure of the nation, and as such, does not include every available individual job title. Instead, SOC organizes jobs and individual titles by designed classification principles. The SOC system organizes and classifies occupations based on similar job duties, skills, education, or training. Thus, while the SOC system includes fewer detailed occupation codes compared to the total number of possible jobs, in general, the system identifies the broadest list of occupations for pay or profit in the national economy.

The SOC system serves as a tool for numerous entities across the nation to efficiently identify, organize, and analyze workforce data. For instance, the U.S. Bureau of Labor Statistics and the U.S. Census Bureau are charged with gathering and publishing information on national employment figures for SOC occupations. The SOC system organizes and codes jobs into 23 major, 97 minor, and 461 broad occupation groups totaling 840 unique and detailed occupations by which workers can be classified. Since its inception, the SOC system has been revised and updated to accurately reflect the economy and workforce system. The 2010 SOC system is currently under revision in preparation for an update in 2018.³³

Classifying STEM Occupations

Using SOC detailed occupation codes to standardize the identification process, this report combines and compares data of 11 sources from nine federal, state, and institutional organizations based on the occupations each recognizes as STEM (see Appendix 1, Step 1, for process details). Based on specific standards, each organization distinguishes a different number of STEM occupations. The number of occupations classified as STEM by each organization ranges from a low of 85 to a high of 184 out of the total 840 SOC detailed occupations. A brief description of the nine organizations and the 11 data sources are presented next.

1. Bureau of Labor Statistics (BLS)/Occupational Employment Statistics (OES)³⁴

As part of the OES publication series, the BLS highlights employment and wage statistics with emphasis on STEM occupations. The report includes a list of occupations used in the OES STEM definition. The OES survey provides employment information on wage and salary jobs in nonfarm industries. Besides typical scientific, engineering, and mathematical occupations, the BLS/OES classification includes several managerial, postsecondary teaching, and sales occupations that are associated with and generally require scientific or technical training. In total, 100 detailed occupations are identified as STEM.

³³ BLS (2015).

³⁴ Watson (August 2014).

2. U.S. Census Bureau (Census)³⁵

The Census methodology for defining STEM occupations follows recommendations from the Standard Occupational Classification Policy Committee. The path between the Census occupation codes and the SOC codes creates a STEM occupation list that distinguishes between STEM, STEM-related, and non-STEM jobs. The Census list of STEM occupations includes computer, mathematical, engineering, and social science groups, while STEM-related jobs are concentrated in healthcare-oriented occupations. Educational teaching occupations at any level are excluded because the Census does not include teaching sectors in its identification of STEM jobs. Occupations that are distinguished as STEM or STEM-related by the Census are combined and broadly cataloged as STEM for this report. In total, 163 detailed occupations are identified as STEM or STEM-related.

3. Center on Education and the Workforce (CEW)³⁶

The CEW provides research on connections between education and training, the workforce, and labor market demands. This report uses two studies conducted by the CEW. The 2010 CEW study examines the relationship between future jobs and the associated educational requirements. The study defines STEM occupations within five occupational groups: computer and mathematics, architects and technicians, engineers and technicians, life and physical sciences, and social sciences.

The 2011 CEW study focuses exclusively on the growth and demand of STEM occupations, along with an examination of trends and STEM competencies. The 2011 study includes most of the STEM occupations from the 2010 study, except it excludes STEM social scientists and middle-skill technical workers. In total, 96 and 85 detailed occupations are identified as STEM in the 2010 and 2011 CEW studies, respectively.

4. U.S. Department of Commerce (Commerce)³⁷

The Commerce report provides a broad overview of the STEM workforce, including employment, wage, and educational data for STEM workers. The report expands on traditional STEM occupations to include professional and technical support jobs in STEM fields. It counts STEM-associated management occupations, but excludes education jobs and social scientists. STEM occupations are analyzed and determined from the SOC system of broad and detailed occupation codes. In total, 85 detailed occupations are identified as STEM.

5. Florida Department of Economic Opportunity (FLDEO)³⁸

As part of the process to improve the state's economy, Florida has increased emphasis on STEM-oriented education and training to fulfill various workforce needs. Florida operates a state-specific list of occupations that identifies STEM jobs. In conjunction with BLS, the FLDEO created a STEM occupation list based on statewide industry priorities, among other things. The list matches SOC codes and occupations to state-specific codes and estimates of education level for entry. As expected, the types of occupations considered STEM by the FLDEO are state specific, including several management, business, media, and production occupations. In total, 156 detailed occupations are identified as STEM.

6. National Science Foundation (NSF)³⁹

The NSF examines the science and engineering (S&E) workforce by highlighting major national and international topics, including, educational, labor force, and employment trends. The NSF considers the broader classification of

³⁵ Census (2015a).

³⁶ Carnevale, et al. (15 June 2010); Carnevale, et al. (20 October 2011).

³⁷ Langdon, et al. (July 2011).

³⁸ FLDEO (2015).

³⁹ NSF (2014).

STEM occupations to include S&E occupations as well as computer, management, and technical jobs. The NSF report distinguishes between occupations that directly or indirectly use STEM skills and knowledge.

Based on SOC major groups, direct STEM jobs include computer and mathematical occupations, architecture and engineering occupations, life, physical, and social science occupations, and postsecondary S&E educators. Indirect STEM jobs encompass certain managers, technicians, and technologists. STEM or STEM-related occupations are analyzed and identified from the NSF's classification of these major occupational groups. In total, 116 detailed occupations are identified as STEM.

7. Occupational Information Network (O*Net) STEM Career Cluster and STEM Discipline⁴⁰

The O*Net system uses a content-based framework to identify specific characteristics of individual occupations that can be applied across multiple sectors or industries. This framework includes six features: worker characteristics, worker requirements, experience requirements, occupational requirements, workforce characteristics, and occupation-specific information.

O*Net Career Cluster outlines jobs in the same field that require similar skills. It includes jobs that require planning, managing, and providing scientific research and other technical professions. O*Net Career Cluster emphasizes educational planning to obtain required competencies in specific career pathways.

O*Net STEM Discipline organizes occupations by required STEM education and training. While O*Net's category of STEM Discipline includes a wider range of jobs in all major occupational groups, compared to O*Net's STEM Career Cluster, it excludes social science professions. Both O*Net STEM Career Cluster and STEM Discipline exclude nearly all healthcare occupations. In total, 103 and 126 detailed occupations are identified as STEM in the O*Net STEM Career Cluster and STEM Discipline, respectively.

8. Standard Occupational Classification Policy Committee (SOCPC)⁴¹

The STEM acronym was commonly used before any formal definition was created. In 2011, at the request of the Office of Management and Budget, the BLS formally defined STEM through the SOCPC. The workgroup identified existing definitions and developed a STEM framework that includes occupations matched to SOC classification principles to ensure consistency across agencies and organizations.

The SOCPC workgroup created a classification system with two major STEM domains—science, engineering, mathematics, and information technology domain and science- and engineering-related domain—each consisting of two subdomains. This categorization distinguishes between primary and secondary types of STEM occupations. The subdomains for primary STEM jobs are life and physical sciences, engineering, mathematics, and information technology occupations and social science occupations. Secondary STEM jobs distinguish between architecture occupation and health occupation subdomains.

The subdomain categories are applied to every SOC detailed occupation code to distinguish between STEM and non-STEM jobs. Moreover, identified STEM occupations are further organized into five types of occupations within each subdomain—research, development, design, or practitioner occupations; technologist and technician occupations; postsecondary teaching occupations; managerial occupations; and sales occupations. In total, 184 detailed occupations are identified as STEM.

⁴⁰ O*Net (2015).

⁴¹ BLS (2015).

9. Texas Workforce Commission (TWC) Strategic Workforce Assessment Program (SWAP)⁴²

Developed by the TWC as a tool to understand occupational skills and training required for various industry clusters, SWAP provides skill profiles for individual or broad occupations. Among other things, SWAP provides occupational profiles, employment figures, and general education and training requirements. SWAP helps stakeholders identify skills and training by industry cluster or sector based on labor market information. The SWAP program includes a wide range of occupations considered STEM, but excludes social science teachers at any level. In total, 134 detailed occupations are identified as STEM.

Analysis of STEM Occupations Across Nationwide Sources

In all, 11 total sources that identify STEM occupations are collected from nine different organizations. The sources are combined alphabetically to form a comparative list of STEM occupations. Detailed SOC occupation titles and codes are matched to each source to provide a visual overview of jobs classified as STEM (see Appendix 2).

For the most part, occupations considered STEM by each source were already formatted by SOC detailed occupation codes. The Census categorized several STEM occupations in terms of SOC broad groups instead of detailed occupations and the NSF only organized general S&E and S&E-related occupations into categories of STEM or science and technology (S&T).⁴³ Thus, STEM occupations classified by the Census and NSF required further interpretation to match SOC detailed occupation code standards.

After the STEM occupations are organized, the comprehensive list is analyzed. A total of 257 out of 840 possible detailed SOC occupations are identified as STEM by at least one of the sources. Across all sources, 18 of the 23 major occupation groups are represented. Of those 18 major groups, STEM occupations are concentrated around six major groups.⁴⁴ However, only three major groups contain occupations that are considered STEM by all nine organizations, totaling 42 matched STEM occupations (see Appendix 2, matched STEM occupations identified in yellow).⁴⁵ Several organizations classified a greater variety of occupations outside of the SOC major groups most commonly associated with STEM occupations.⁴⁶

The next section details the process for identifying occupations considered middle-skill from the analysis of STEM occupations. Based on the list of identified middle-skill STEM occupations, selected major occupation groups are broadly highlighted and described.

⁴² TWC (2015a).

⁴³ For instance, the Census identifies the entire SOC broad group of software developers and programmers as STEM occupations. The SOC broad group of software developers and programmers encompasses four SOC detailed occupations (computer programmers; software developers, applications; software developers, systems software; and web developers). Using the S&E and S&E-related designations, the NSF groups occupations into general categories (physical scientists, engineers, etc.) and broadly classifies those occupation categories as either STEM or S&T.

⁴⁴ The six major groups are management; computer and mathematics; architecture and engineering; life, physical, and social sciences; education, training, and library; and healthcare practitioners and technical occupations.

⁴⁵ The three major groups are computer and mathematics; architecture and engineering; and life, physical, and social sciences occupations.

⁴⁶ The FLDEO, O*Net STEM Discipline, and TWC SWAP classify additional STEM occupations in the major groups of business and financial operations; art, design, entertainment, sports, and media; and production occupations, among others.

Section 3: Middle-Skill STEM Occupations in the National Workforce

Classifying Middle-Skill STEM Occupations

With the advent of new technologies and processes, more jobs will require STEM or STEM-related skills and knowledge. The analysis of STEM occupations illustrates classification inconsistencies between various sources nationwide. Outside of occupations that are overwhelmingly considered STEM, such as engineering and math related jobs, stakeholders disagree on the total number of STEM occupations in the workforce.

This report constructs a complete list of middle-skill STEM occupations by considering the entire list of STEM occupations (see Appendix 1, Step 2, for process details). With 257 classified jobs, the list of STEM occupations is incorporated with national occupational information regarding typical levels of education required for entry. National data on education and training assignments are obtained from BLS employment projections. Typical entry-level education estimates are based on education and training levels most workers need to enter an occupation. Eight educational categories are identified by the BLS, with half of the categories representing education and training that produces middle-skill workers.⁴⁷ Once education and training levels are applied to the list of STEM occupations, jobs representing middle-skill are identified (see Appendix 3).

Of the 257 occupations considered STEM or STEM-related, 85 occupations are identified as middle-skill STEM occupations. The list of middle-skill STEM occupations represent 14 different major occupational groups. The majority of identified middle-skill STEM jobs are located within three BLS major groups—architecture and engineering; life, physical, and social science; and healthcare practitioners and technical occupations. Based on education and training levels, the majority of middle-skill STEM occupations typically require an associate’s degree for entry. Moreover, only five occupations are identified as middle-skill STEM of the 42 STEM occupations matched across all sources in section two (see Appendix 3, occupations in yellow are matched across all STEM sources).

Analysis of Middle-Skill STEM Occupations by Major Occupation Groups

The following segments describe four major occupation groups that encompass many common middle-skill STEM jobs around the nation.⁴⁸ Each segment briefly describes the overall major occupational group and its associated middle-skill STEM occupations. Collectively, these four major occupation groups encompass over 7.5 million workers—almost 70 percent of the entire middle-skill STEM workforce in America.

Architecture and Engineering Occupations (SOC 17-0000)

The architecture and engineering group includes all occupations associated with these two broad fields, including, surveyors, drafters, and associate technicians. National employment estimates (see Table 1) across the group indicate approximately 2.5 million workers that earn an annual average wage of over \$80,000. Employment in this group is concentrated heavily in service related industries. Top paying occupations are found in industries related to oil and gas extraction, and architecture and engineering information services. Employment is also broadly dispersed throughout the nation, with the highest levels located in California, Texas, Michigan, New York, and Florida.

Middle-skill STEM architecture and engineering occupations constitute almost 30 percent of employment in the group. In terms of employment, aerospace engineering and operations technicians (11,230) and electrical and electronics engineering technicians (137,040) represent the fewest and highest numbers, respectively. The lowest average annual salary belongs to surveying and mapping technicians (\$43,870), while aerospace engineering and

⁴⁷ The four BLS categories of education and training that produce middle-skill workers are high school diploma or equivalent; some college, no degree; postsecondary non-degree award; and associate’s degree.

⁴⁸ The four major groups are architecture and engineering; life, physical, and social science; healthcare practitioners and technical; and installation, maintenance, and repair occupations.

operations technicians earn the highest (\$64,310). Almost every identified middle-skill STEM occupation in this group expects growth either marginal (civil engineering technicians) to faster than average (environmental engineering technicians) over the next decade. Employment as an industrial engineering technician is projected to decline slightly.

Table 1: National Employment for SOC Major Group: Architecture and Engineering (A&E) Occupations

	Employment	Hourly Wage (Mean)	Annual Wage (Mean)
All A&E Occupations	2,418,020	\$39.19	\$81,520
A&E STEM	1,735,080	\$44.36	\$92,350
A&E Middle-Skill STEM	682,960	\$26.73	\$55,610

Life, Physical, and Social Science Occupations (SOC 19-0000)

Similar to the previous major group, the life, physical, and social science group encompasses occupations that require some degree of STEM skills and knowledge. Estimates of employment (see Table 2) indicate over one million workers across the nation. The average annual salary for the entire group is slightly above \$70,000, with workers earning an average of \$30 per hour. Employment in this group is primarily concentrated in scientific research and development services. Industries with the highest earning potential are highly specialized, revolving around securities and commodities, monetary authorities, and oil and gas extraction entities. States with the highest number of workers in this group are in California and Texas.

Middle-skill STEM workers in this group make up more than 20 percent of the workforce. Nuclear technicians (6,380) have the smallest employment figures, but have the highest average annual earnings (\$75,960). Representing the most workers, life, physical, and social science technicians (67,140) are primarily employed at colleges, universities, and professional schools. Technicians across several specializations employ the most workers and have average annual salaries over \$45,000. The majority of middle-skill STEM occupations in this group are projected to grow at a faster than average pace over the next decade (i.e. chemical, environmental science and protection, geological and petroleum, and nuclear technicians). Conversely, forest and conservation technician employment is expected to decline.

Table 2: National Employment for SOC Major Group: Life, Physical, and Social Science (LPS) Occupations

	Employment	Hourly Wage (Mean)	Annual Wage (Mean)
All LPS Occupations	1,144,440	\$33.69	\$70,070
LPS STEM	878,670	\$38.06	\$79,162
LPS Middle-Skill STEM	265,790	\$23.68	\$49,251

Healthcare Practitioners and Technical Occupations (29-0000)

Healthcare practitioners and technical workers encompass a wide variety of occupations—from medical records technicians to physicians and surgeons. Relative to every major occupational group, healthcare practitioners and technicians have the seventh highest employment number, representing nearly eight million workers (see Table 3). Additionally, this group has the fifth highest average annual wage estimate at over \$75,000. Industries with the most employment and highest wage earners are concentrated in independent physician offices and general medical and surgical hospitals. Workers in this group are primarily concentrated around major metropolitan areas across the nation, especially in California, Texas, New York, and Florida.

Within this group, middle-skill STEM workers represent over 70 percent of the workforce. Registered nurses represent nearly half of all middle-skill STEM healthcare workers (2,687,310), earning an average of nearly \$70,000 annually. Hearing aid specialists employ the fewest number of workers (5,570) and radiation therapists earn the

highest annual average (\$83,710). The job outlook for every middle-skill STEM occupation in this group is projected to grow over the next decade—increasing by nearly 1.5 million workers. Growth for most of these middle-skill STEM jobs are expected to increase much faster than average. Specifically, employment for registered nurses are projected to grow by more than half a million workers.

Table 3: National Employment for SOC Major Group: Healthcare Practitioners and Technical (HP&T) Occupations

	Employment	Hourly Wage (Mean)	Annual Wage (Mean)
All HP&T Occupations	7,854,380	\$36.54	\$76,010
HP&T STEM	2,310,820	\$59.62	\$121,881
HP&T Middle-Skill STEM	5,543,540	\$24.08	\$50,093

Installation, Maintenance, and Repair Occupations (49-0000)

The installation, maintenance, and repair group includes over 50 different detailed occupations. Workers in the group are found in nearly every industry, from automotive and avionics to medical and information technology services. Nationally, there are more than five million workers employed in this group (see Table 4). Annual wages are slightly above the national average, with workers earning just over \$45,000. Employment across industries in this group is primarily located in automotive, building equipment, and local government. Texas employs the greatest number of workers in this group, representing approximately 42 jobs for every 1,000 jobs in the state.

Middle-skill STEM workers make up about 20 percent of the workforce within the group. Automotive service technicians and mechanics represent the largest portion of middle-skill STEM workers with over 600,000 employed around the nation. Aircraft mechanics and service technicians earn the highest annual average salary (\$58, 850), while electronic home entertainment equipment workers earn the least (\$38,140). Although they represent the smallest number of workers (3,710), wind turbine service technicians earn well over the annual national average. Additionally, as demand for wind energy increases, employment is projected to rise much faster than the average for all occupations. Automotive service and medical equipment repairers are also expected to see increased and improved job growth.

Table 4: National Employment for SOC Major Group: Installation, Maintenance, and Repair (IM&R) Occupations

	Employment	Hourly Wage (Mean)	Annual Wage (Mean)
All IM&R Occupations	5,244,670	\$21.74	\$45,220
IM&R STEM	1,068,540	\$23.62	\$49,122
IM&R Middle-Skill STEM	1,068,540	\$23.62	\$49,122

While not detailed in this section, three other occupation groups—computer and mathematical, healthcare support, and construction and extraction—are worth mentioning based on their impact on employment. While only 10 detailed occupations are identified as middle-skill STEM, about three million workers are employed in jobs across the three groups. Chief among those jobs are electricians, dental assistants, and medical-related assistants. The next section utilizes the identified list of middle-skill STEM occupations to analyze the Texas workforce system. Several additional jobs are identified and combined with the list of middle-skill STEM occupations. These additional jobs represent other middle-skill STEM occupations important to the Texas economy. Statewide employment and wage information are then matched to each middle-skill STEM occupation for further evaluation.

Section 4: Middle-Skill STEM Occupations in the Texas Economy

Identifying Middle-Skill STEM Occupations in Texas

Relative to other states, the economic health of Texas remained strong during and after the Great Recession. In 2011, Texas surpassed its pre-recession employment peak of 10.6 million jobs. Over the next four years the state added an additional 1.2 million jobs.⁴⁹ Despite a slight decrease in the demand for middle-skill workers over the last decade, middle-skill jobs still represent the greatest share of statewide employment by skill level. Many major Texas metropolitan areas are also consistently among the top areas in the nation for middle-skill job growth.⁵⁰ Moreover, estimates of future job openings in the state indicate that demand for middle-skill jobs will remain strong.⁵¹

Overall, the demand and opportunity for STEM talent has remained strong in Texas. The economic and workforce environment has fostered significant growth and development in STEM fields. Texas has been recognized as the largest tech-exporting state in the nation. Additionally, the state was ranked in the top 10 for STEM job growth and technology-related entrepreneurship.⁵² In terms of employment opportunities, there are roughly 2.5 STEM-related jobs for every unemployed worker, compared to only one non-STEM job for every 3.3 unemployed workers in the state. Employment in STEM jobs will only increase over the next decade—nearly 25 percent—with significant opportunities in computing, engineering, and advanced manufacturing fields. Potential earnings for STEM occupations are also nearly double that of all other jobs in Texas.⁵³ The demand for STEM education has also seen a meteoric rise in the state. Over the last decade, the number of STEM bachelor's, associate's, and certifications (BACs) awarded in Texas has increased steadily. In 2014, the state awarded over 21,500 STEM BACs—an 80.2 percent increase in awards since 2000.⁵⁴

Not surprisingly, the direction of the Texas economy and workforce has fostered a greater need for middle-skill STEM workers, especially in occupations such as manufacturing, construction, and energy. However, like most states, the challenge for many industries has been finding enough qualified talent to fill available middle-skill STEM positions. The emphasis on traditional four-year degrees usually overshadows the fact that middle-skill jobs, especially those that require STEM training, are capable of providing high wages for workers. In Texas, the average first-year earnings for a worker with a two-year technical degree is roughly \$50,000—over \$10,000 more than the average graduate with a four-year degree.⁵⁵

This final analysis step generates a middle-skill STEM occupation list for Texas. The final list of occupations for Texas combines additional statewide jobs with the 85 identified middle-skill STEM occupations (see Appendix 1, Step 3, for process details). An additional 12 middle-skill STEM occupations were identified based on relevance and importance to the Texas economy.⁵⁶ Thus, a total of 97 middle-skill occupations are identified as STEM or STEM-related. Statewide employment information are matched to each occupation to present a broad view of middle-skill STEM jobs in Texas (see Appendix 4, occupations in blue are the additional 12).

This section presents an overview of Texas middle-skill STEM occupations described in the context of four major occupational groups. Next, selected high-growth middle-skill STEM occupations are analyzed in order to highlight employment and wage data and the regions that foster these occupations.

⁴⁹ Texas Comptroller (1 July 2015).

⁵⁰ Kotkin (24 October 2013); Webster (September 2014).

⁵¹ NSC (August 2011); NSC (2014).

⁵² USCCF (June 2014).

⁵³ Carnevale, et al. (26 June 2013); Change the Equation (2015).

⁵⁴ THECB (June 2015).

⁵⁵ College Measures (2015).

⁵⁶ The 12 additional STEM occupations include healthcare support; construction and extraction; installation, maintenance, and repair; and production occupations.

Analysis of Texas Middle-Skill STEM Occupations by Major Occupation Groups

Current middle-skill STEM employment in Texas is estimated near 1.2 million workers—about 10.5 percent of total state employment.⁵⁷ Based on available employment information, nearly every identified middle-skill STEM occupation will see growth through 2022.⁵⁸ Overall, the entire Texas middle-skill STEM workforce is projected to increase by 24 percent to nearly 1.5 million workers. This rise represents a cumulative growth of almost 300,000 middle-skill STEM jobs. The current median annual income for the middle-skill STEM workforce in Texas is about \$46,000. Comparatively, the middle-skill STEM median income estimate is almost twice the amount of the federal poverty threshold for a family of four and just slightly less than the middle-skill STEM national median income.⁵⁹

The following segments provide further detail on four important major occupation groups in Texas based on estimates of employment growth and income potential. These major occupation groups are briefly described in broad terms to include all occupations within the group. The descriptions are then narrowed to illustrate middle-skill STEM occupations within each major group.

Healthcare Practitioners and Technical Occupations (SOC 29-0000)

As illustrated by the national description of this occupational group, healthcare practitioners and technical occupations offer some of the highest paying jobs among all groups. Representing over 600,000 workers in Texas, this group is projected to increase dramatically over the next decade. Additionally, this group is projected to represent 6.5 percent of Texas' total employment by 2022.

Middle-skill STEM workers in this group are expected to increase by well over 100,000 workers by 2022. The most common jobs in this group are those considered middle-skill STEM, such as, registered nurses (45 percent), licensed practical and vocational nurses (17 percent), and pharmacy technicians (7 percent). Additionally, diagnostic sonographers (57.5 percent), cardiovascular technicians (44.3 percent), and surgical technologists (39.3 percent) are projected to have the largest change in growth for all middle-skill STEM occupations in the group.

Healthcare Support Occupations (SOC 31-0000)

While healthcare support occupations are related to healthcare practitioners and technical occupations, workers in this group generally assist and are supervised by workers from the latter group. Nevertheless, this group represents approximately 300,000 workers in Texas. This occupational group is about three percent of current total employment in the state.

Depending on the occupation, middle-skill STEM workers in this group can earn annual wages upwards of \$70,000 (occupational therapy assistants). About 25,000 middle-skill STEM workers are expected to be added to the workforce by 2022, with the majority of workers employed as medical and dental assistants. Occupational (44.1 percent) and physical (38 percent) therapy assistants represent the highest changing middle-skill STEM occupations.

Construction and Extraction Occupations (SOC 47-0000)

Construction and extraction occupations consist of numerous trade, skilled, and manual workers. Workers in this group are primarily found in contracting industries. With more than 600,000 workers, Texas has the highest number of individuals employed in this group in the nation. Construction and extraction occupations make up 5.5 percent of total employment in the state, but 11.7 percent of all construction and extraction jobs in the nation.

⁵⁷ TWC (2015b).

⁵⁸ Employment in four middle-skill STEM occupations are projected to decline: farmers, ranchers, and other agricultural managers; animal breeders; fallers; and prepress technicians and workers.

⁵⁹ Census (2015b); HHS (3 September 2015).

Overall, Texas workers in this occupation group can earn an average annual salary near \$40,000, and even upwards of \$67,000.

Several occupations in this group are expected to grow significantly over the next decade in Texas, with several middle-skill STEM occupations leading the way. Specifically, electricians (10,700) and operating engineers and construction operators (8,500) are projected to have the largest total increase in employment among middle-skill STEM occupations in the group. By 2022, middle-skill STEM occupations are expected to make up approximately 15 percent of the entire group in the state.

Production Occupations (SOC 51-0000)

There are over 100 occupations identified within this major group, from assemblers and fabricators to machine and chemical plant operators. Production occupations represent nearly 700,000 workers in Texas, with more than 60 jobs for every 1,000 jobs. The majority of production occupation workers are employed in various manufacturing industries. Employment is estimated to increase by 14 percent in the state by 2022, adding more than 100,000 workers. On average, workers in this group can earn more than \$65,000 per year.

Middle-skill STEM production occupations are expected to increase by nearly 20 percent by 2022. Average annual earnings for middle-skill STEM production workers reach nearly \$46,000. Overall, the middle-skill STEM production occupations are projected to add more than 20,000 workers to the group, totaling almost 130,000 workers by 2022. Chemical equipment and gas plant operators earn well over the state average, reaching nearly \$66,000.

Critical Middle-Skill STEM Occupations in Texas

Utilizing the list of middle-skill STEM occupations, a more detailed regional analysis of Texas can be developed. Workforce information for statewide development boards are matched with specific middle-skill STEM occupations and highlighted below based on projected employment and wage information. Based on occupational growth and wage data, the top middle-skill STEM occupations come from six different major occupation groups.⁶⁰ Overall, projections indicate that each occupation will increase in employment across the state, with significant growth concentrated near major metropolitan areas.

Computer User Support Specialists (SOC 15-1151)

As the state's technology industry continues to grow, computer user support specialists will see increased employment opportunities. Support specialists provide technical assistance to a variety of computer users, from hardware to installation related information. By 2022, almost 60,000 computer user support specialists will be employed across the state. That figure represents a 15 percent increase from 2012. Overall, average annual earnings are around \$45,000, with workers in the Gulf Coast region earning nearly \$60,000. Along with the Gulf Coast region, the Alamo, Capital Area, Greater Dallas, and North Central regions will account for almost 80 percent of total employment growth across the state.

Registered Nurses (SOC 29-1141)

Of all the identified middle-skill STEM occupations in Texas, registered nurses are projected to increase the greatest number by 2022. Currently, nearly 200,000 workers are employed as registered nurses in Texas, second only to California. However, by 2022, the number of registered nurses in Texas will increase by more than 20 percent, adding more than 50,000 workers. The Alamo, Greater Dallas, and Gulf Coast regions will account for almost half of the total growth in the state. Registered nurses in Texas can earn an average of \$65,000, with

⁶⁰ Computer and mathematical occupations (15-0000); healthcare practitioners and technical occupations (29-0000); healthcare support occupations (31-0000); construction and extraction occupations (47-0000); installation, maintenance, and repair occupations (49-0000); and production occupations (51-0000).

workers in the Middle Rio Grande region earning upwards of \$90,000. Registered nurses in the North East Texas region earn an average greater than \$55,000.

Licensed Practical and Licensed Vocational Nurses (SOC 29-2061)

Compared to other states, Texas employs the highest number of licensed practical and vocational nurses in the nation. Of the top jobs in the state, this occupation is expected to increase dramatically over the next several years. With nearly 20,000 new workers, representing a 27 percent increase, licensed practical and vocational nurses will reach almost 100,000 total workers by 2022. While statewide annual averages for this occupation are near \$45,000, workers in the Middle Rio Grande (\$35,267) earned the lowest and those in Greater Dallas (\$49,709) earned the highest. The majority of workers in this occupation are employed at nursing care facilities and home healthcare services. Much of the growth in this occupation is concentrated around three major areas of the state. Nearly 6,000 jobs will be added to the North Central Texas, Tarrant County, and Greater Dallas areas, while the Alamo area will increase by 2,000 workers. The most significant increase will be seen in the Gulf Coast region (4,300), an area consisting of Harris and Galveston County.

Medical Assistants (SOC 31-9092)

Similar to nursing occupations, medical assistants are heavily involved in the healthcare industry. Generally, medical assistants perform a variety of administrative and clinical duties under the direction of a physician. With the nation's second highest employment total, medical assistants in Texas are expected to grow by more than 30 percent. By 2022, Texas will have nearly 70,000 workers employed as medical assistants. The majority of these workers will be employed at hospitals and physician offices around the state. Generally, medical assistants in Texas can earn an average of \$28,000, with the Lower Rio Grande Valley (\$21,310) and the Greater Dallas (\$31,850) areas earning the lowest and highest, respectively. Not surprisingly, growth in the medical assistance profession follows growth in other major healthcare industries. The North Central Texas, Tarrant County, and Greater Dallas regions will add an additional 5,200 workers, while the Gulf Coast region is projected to increase the most, with over 4,000 new workers.

Electricians (SOC 47-2111)

As a vital workforce occupation, demand for electricians will continue to grow in Texas. Texas has the highest number of employed electricians in the nation, with over 50,000 workers. Over the next several years this occupation is projected to increase employment by over 20 percent, adding 11,000 workers to the Texas workforce. Generally, electricians can earn upwards of \$45,000 each year working as building equipment contractors or in other construction services. Electricians in Cameron, the southernmost area of the state, take home an average of \$30,000, while those in Southeast Texas can earn as much as \$52,440 per year. Significant employment growth for electricians will occur in the Gulf Coast (3,660) and Greater Dallas (1,470) regions. Additionally, the Alamo and Capital Area are projecting growth rates of 18.3 and 25.7 percent, respectively. Both of these areas offer an average hourly wage of \$22.

Automotive Service Technicians and Mechanics (SOC 49-3023)

As the national population continues to grow, new estimates indicate that drivers can spend an average of 84 hours a year in gridlock. Predictably, the largest metropolitan areas are the most impacted by growth in these occupations.⁶¹ As the number of vehicles increases so does the need for automotive service technicians and mechanics. Currently, Texas has the second highest employment level for this occupation in the nation—about 50,000 workers. In the upcoming years this occupation projects to increase by over 17 percent, adding almost 10,000 workers. The majority of these workers are employed at repair and maintenance stores or automotive dealerships, earning an average annual salary of \$39,000. Workers in the Cameron (\$29,565) and Lower Rio Grande Valley (\$32,087) generally earn less than workers in the Southeast (\$42,713) and North Central (\$43,724)

⁶¹ INRIX (26 August 2015).

Texas regions. Growth in this occupation will primarily be located around the Gulf Coast, Greater Dallas, and North Central Texas areas.

Welders, Cutters, Solderers, and Brazers (SOC 51-4121)

Workers in this occupation predominantly work with fabricated metal products in a variety of environments. Nationally, Texas has the most workers employed in this occupation, more than double the number of similar workers in California. With employment growth projected at over 20 percent, this occupation expects to add nearly 10,000 workers by 2022. Workers can earn an average of \$41,000 per year in many manufacturing and construction industries across Texas. Depending on the region, the distribution of wages can be significant, with workers in the Cameron area earning an estimated \$26,000 and those in Greater Dallas earning \$56,000. Moreover, growth in this occupation is expected to occur around major population areas in North (North Central, Tarrant County, Greater Dallas), West (Permian Basin), and Southeast (Gulf Coast) Texas.

Section 5: Concluding Comments

While traditional STEM workers with four-year degrees are important to the economy, middle-skill STEM occupations represent many of the fastest growing and most needed jobs around the nation. Contrary to many reports, middle-skill workers—individuals with education and training beyond high school but less than a four-year degree—will continue to represent the largest segment of the workforce population for the foreseeable future. At the same time, many jobs once considered non-STEM now need STEM-related knowledge.

However, evaluations of STEM occupations have been hindered by different definitions of STEM. In order to improve economic and workforce assessments, a more accurate list of occupations must be developed. Various sources that define STEM jobs were identified to create a more comprehensive list of middle-skill STEM occupations. These occupations were combined with employment and wage data to understand their impact on the Texas economy. Not only do middle-skill STEM workers earn above average wages, findings suggest that these workers will continue to have significant employment opportunities in the future. Most importantly, they make up a critical segment of the workforce population integral to the development and sustained health of the state.

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Appendix 1: Process for Developing a Middle-Skill STEM Occupations List

This section describes the process used to develop and classify the list of middle-skill STEM occupations in the report. The process involves three separate steps:

1. Identifying and Comparing STEM Occupation Sources
2. Classifying Middle-Skill STEM Occupations
3. Creating a List of Middle-Skill STEM Occupations Critical to the Texas Economy

Each step in the process is described in further detail below.

1. Identifying and Comparing STEM Occupation Sources (See Appendix 2: Analysis of STEM Occupations by Source)

The first step in developing a list of middle-skill STEM occupations is to identify national organizations that classify occupations as STEM. After examining various federal, state, and independent organizations, nine different organizations were identified for analysis. Each organization identifies a different number of occupations as STEM based on varying definitions and classification procedures. Cumulatively, the nine organizations generate 11 different lists of occupations considered STEM. For consistency and coding purposes this report follows SOC detailed occupation code principles. A total of 257 SOC detailed occupations are identified as STEM by at least one of the 11 STEM occupation source lists.

After identifying the occupations classified as STEM from each of the 11 sources, a detailed spreadsheet cataloging each organization was developed. Corresponding SOC detailed occupation codes and titles were then matched to each of the 11 sources. Occupations identified as STEM by each source are indicated by a “✓” mark. The numbers in parentheses indicate total occupations classified as STEM by each source. The U.S. Census Bureau is the only source that distinguishes between STEM and STEM-related occupations. Occupations classified as STEM-related by the U.S. Census Bureau are indicated by an “X” mark. A total of 63 occupations are classified as STEM-related by the U.S. Census Bureau, primarily from the SOC major group of healthcare practitioners and technical occupations (61).

The STEM occupation list was then analyzed to determine classification similarities. Across all organizations, 18 of the 23 major occupation groups are represented. Of the 18 major groups, STEM occupations are concentrated around six SOC major groups. Identified in yellow, only 42 detailed occupations classified as STEM were matched across all sources. These occupations are found within the SOC major groups of computer and mathematical occupations; architecture and engineering occupations; and life, physical, and social science occupations. Most of the 42 detailed occupations matched across all sources require a four-year degree or higher.

2. Classifying Middle-Skill STEM Occupations (See Appendix 3: Middle-Skill STEM Occupations List)

After developing the list of STEM occupations, the next step in the process reduced the list down to only those occupations considered middle-skill STEM. The first objective was to determine the most comprehensive number of STEM occupations to be used for analysis. In all, 257 detailed occupations are considered STEM by at least one of the 11 sources.

The complete list of 257 identified STEM occupations are matched with BLS detailed occupation education and training assignments. The BLS education and training assignment identifies typical education levels needed for entry into every SOC occupation. As described in the report, middle-skill occupations are those that require more than a high school diploma but less than a postsecondary four-year degree. Of the original 257 occupations considered STEM by at least one of the 11 sources, 85 are classified as middle-skill. These 85

occupations represent the complete list of middle-skill STEM occupations classified in this report. These middle-skill STEM occupations are found in 14 of the 23 SOC major groups.

Additionally, of the 42 STEM occupations matched across all sources in Step 1, only five are considered middle-skill STEM occupations. These five middle-skill STEM occupations are identified in yellow and found in only two major SOC groups.

3. Creating a List of Middle-Skill STEM Occupations Critical to the Texas Economy
(See Appendix 4: Texas Middle-Skill STEM Occupations, Wages, and Employment Projections)

The final step in this process builds upon the list of 85 classified middle-skill STEM occupations derived in Step 2. This step analyzes the Texas economy to identify middle-skill STEM jobs important to the state to create the final list of Texas middle-skill STEM occupations.

Using BLS education and training assignments, every middle-skill occupation not included in the 85 middle-skill STEM occupations list was evaluated to locate possible STEM occupations critical to Texas based on job growth and salary data. Upon examination, 12 additional middle-skill classified occupations were identified (highlighted in blue). While the 12 additional middle-skill occupations are not considered STEM by any of the 11 sources, they require significant STEM-related skills and knowledge. Thus, a total of 97 middle-skill STEM occupations are identified for the Texas economy.

Lastly, state wage and employment information is added to the list of Texas middle-skill STEM occupations. This information is obtained from TWC's Labor Market and Career Information portal where users can find various workforce related data. Employment estimates for 2012 to 2022 and average annual wages are included for each identified Texas middle-skill STEM occupation. Moreover, absolute employment change (#Δ) and percentage change (%Δ) are included with employment figures.

Appendix 2: Analysis of STEM Occupations by Source

Detail SOC Code	SOC Occupation Title	BLS/OES (100)	Census (163)	CEW 2010 (96)	CEW 2011 (85)	Commerce (85)	FL DEO (156)	NSF (116)	O*Net Career Cluster (103)	O*Net STEM Discipline (126)	SOCPC (184)	TWC SWAP (134)
11-0000	Management Occupations											
11-3021	Computer and Information Systems Manager	✓	✓			✓	✓	✓		✓	✓	✓
11-3031	Financial Managers						✓	✓				✓
11-3051	Industrial Production Managers						✓	✓	✓	✓		
11-9013	Farmers, Ranchers, and Other Agricultural Managers						✓			✓		
11-9021	Construction Managers									✓		
11-9041	Architectural and Engineering Managers	✓	✓			✓	✓	✓	✓	✓	✓	✓
11-9111	Medical and Health Services Managers		X					✓			✓	✓
11-9121	Natural Sciences Managers	✓	✓			✓	✓	✓	✓	✓	✓	✓
11-9199	Managers, All Other									✓		

13-0000	Business and Financial Operations Occupations											
13-1041	Compliance Officers									✓		
13-1051	Cost Estimators						✓		✓	✓		
13-1081	Logisticians						✓		✓			
13-1161	Market Research Analysts and Marketing Specialists								✓			
13-1199	Business Operations Specialists, All Other									✓		
13-2011	Accountants and Auditors						✓			✓		✓
13-2021	Appraisers and Assessors of Real Estate						✓					
13-2031	Budget Analysts						✓					✓
13-2051	Financial Analysts						✓					✓
13-2061	Financial Examiners											✓
13-2081	Tax Examiners and Collectors, and Revenue Agents											✓
13-2099	Financial Specialists, All Other									✓		✓

15-0000	Computer and Mathematical Occupations											
15-1111	Computer and Information Research Scientists	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
15-1121	Computer Systems Analysts	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
15-1122	Information Security Analysts	✓	✓	✓	✓	✓	✓	✓		✓	✓	
15-1131	Computer Programmers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
15-1132	Software Developers, Applications	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
15-1133	Software Developers, Systems Software	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
15-1134	Web Developers	✓	✓	✓	✓	✓	✓	✓			✓	
15-1141	Database Administrators	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
15-1142	Network and Computer Systems Administrators	✓	✓	✓	✓	✓	✓	✓			✓	✓
15-1143	Computer Network Architects	✓	✓	✓	✓	✓	✓	✓		✓	✓	

Detail SOC Code	SOC Occupation Title	BLS/OES (100)	Census (163)	CEW 2010 (96)	CEW 2011 (85)	Commerce (85)	FL DEO (156)	NSF (116)	O*Net Career Cluster (103)	O*Net STEM Discipline (126)	SOCPC (184)	TWC SWAP (134)
15-1151	Computer User Support Specialists	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
15-1152	Computer Network Support Specialists	✓	✓	✓	✓	✓	✓	✓		✓	✓	
15-1199	Computer Occupations, All Other	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
15-2011	Actuaries	✓	✓	✓	✓		✓	✓		✓	✓	✓
15-2021	Mathematicians	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
15-2031	Operations Research Analysts	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
15-2041	Statisticians	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
15-2091	Mathematical Technicians	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
15-2099	Mathematical Science Occupations, All Other	✓	✓	✓	✓	✓		✓	✓		✓	

17-0000	Architecture and Engineering Occupations											
17-1011	Architects, Except Landscape and Naval	✓	X	✓	✓		✓			✓	✓	✓
17-1012	Landscape Architects	✓	✓	✓	✓						✓	✓
17-1021	Cartographers and Photogrammetrists	✓	✓	✓	✓	✓	✓		✓		✓	✓
17-1022	Surveyors	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
17-2011	Aerospace Engineers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-2021	Agricultural Engineers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-2031	Biomedical Engineers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-2041	Chemical Engineers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-2051	Civil Engineers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-2061	Computer Hardware Engineers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-2071	Electrical Engineers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-2072	Electronics Engineers, Except Computer	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-2081	Environmental Engineers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-2112	Industrial Engineers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-2121	Marine Engineers and Naval Architects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-2131	Materials Engineers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-2141	Mechanical Engineers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-2161	Nuclear Engineers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-2171	Petroleum Engineers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-2199	Engineers, All Other	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-3011	Architectural and Civil Drafters	✓	✓		✓	✓	✓		✓	✓	✓	
17-3012	Electrical and Electronics Drafters	✓	✓	✓	✓	✓	✓		✓		✓	
17-3013	Mechanical Drafters	✓	✓	✓	✓	✓	✓				✓	
17-3019	Drafters, All Other	✓	✓	✓	✓	✓			✓		✓	

Detail SOC Code	SOC Occupation Title	BLS/OES (100)	Census (163)	CEW 2010 (96)	CEW 2011 (85)	Commerce (85)	FL DEO (156)	NSF (116)	O*Net Career Cluster (103)	O*Net STEM Discipline (126)	SOCPC (184)	TWC SWAP (134)
17-3021	Aerospace Engineering and Operation Technicians	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
17-3022	Civil Engineering Technicians	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
17-3023	Electrical and Electronics Engineering Technicians	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-3024	Electro-Mechanical Technicians	✓	✓	✓	✓	✓	✓	✓	✓		✓	
17-3025	Environmental Engineering Technicians	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
17-3026	Industrial Engineering Technicians	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-3027	Mechanical Engineering Technicians	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-3029	Engineering Technicians, Except Drafters, All Other	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
17-3031	Surveying and Mapping Technicians	✓	✓	✓	✓	✓	✓	✓	✓		✓	

19-0000	Life, Physical, and Social Science Occupations											
19-1011	Animal Scientists	✓	✓	✓	✓	✓	✓	✓		✓	✓	
19-1012	Food Scientists and Technologists	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
19-1013	Soil and Plant Scientists	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
19-1021	Biochemists and Biophysicists	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19-1022	Microbiologists	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19-1023	Zoologists and Wildlife Biologists	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19-1029	Biological Scientists, All Other	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
19-1031	Conservation Scientists	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19-1032	Foresters	✓	✓	✓	✓	✓		✓		✓	✓	✓
19-1041	Epidemiologists	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19-1042	Medical Scientists, Except Epidemiologists	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19-1099	Life Scientists, All Other	✓	✓	✓	✓			✓	✓		✓	
19-2011	Astronomers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
19-2012	Physicists	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19-2021	Atmospheric and Space Scientists	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19-2031	Chemists	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19-2032	Materials Scientists	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19-2041	Environmental Scientists and Specialists, Including Health	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19-2042	Geoscientists, Except Hydrologists and Geographers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19-2043	Hydrologists	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19-2099	Physical Scientists, All Other	✓	✓	✓	✓	✓	✓	✓	✓		✓	
19-3011	Economists		✓	✓			✓	✓	✓		✓	✓
19-3022	Survey Researchers		✓	✓			✓	✓	✓		✓	✓
19-3031	Clinical, Counseling, and School Psychologists		✓	✓				✓		✓	✓	✓
19-3032	Industrial-Organizational Psychologists		✓	✓			✓	✓		✓	✓	
19-3039	Psychologists, All Other		✓	✓				✓	✓	✓	✓	
19-3041	Sociologists		✓	✓				✓	✓		✓	

Detail SOC Code	SOC Occupation Title	BLS/OES (100)	Census (163)	CEW 2010 (96)	CEW 2011 (85)	Commerce (85)	FL DEO (156)	NSF (116)	O*Net Career Cluster (103)	O*Net STEM Discipline (126)	SOCPC (184)	TWC SWAP (134)
19-3051	Urban and Regional Planners		✓	✓				✓			✓	
19-3091	Anthropologists and Archeologists		✓	✓				✓	✓		✓	
19-3092	Geographers		✓	✓			✓	✓	✓		✓	
19-3093	Historians		✓	✓				✓	✓			
19-3094	Political Scientists		✓	✓				✓	✓		✓	
19-3099	Social Science and Related Workers, All Other		✓	✓				✓	✓	✓	✓	
19-4011	Agricultural and Food Science Technicians	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
19-4021	Biological Technicians	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19-4031	Chemical Technicians	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19-4041	Geological and Petroleum Technicians	✓	✓	✓	✓	✓	✓	✓			✓	✓
19-4051	Nuclear Technicians	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
19-4061	Social Science Research Assistants		✓	✓	✓	✓		✓	✓		✓	
19-4091	Environmental Science and Protection Technicians, Including Health	✓	✓	✓	✓	✓		✓		✓	✓	✓
19-4092	Forensic Science Technicians	✓	✓	✓	✓	✓		✓			✓	✓
19-4093	Forest and Conservation Technicians	✓	✓	✓	✓	✓		✓		✓	✓	
19-4099	Life, Physical, and Social Science Technicians, All Other	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓

21-0000	Community and Social Service Occupations											
21-1091	Health Educators											✓
21-1099	Community and Social Service Specialists, All Other								✓			

25-0000	Education, Training, and Library Occupations											
25-1011	Business Teachers, Postsecondary									✓		
25-1021	Computer Science Teachers, Postsecondary	✓					✓	✓		✓	✓	✓
25-1022	Mathematical Science Teachers, Postsecondary	✓					✓	✓	✓	✓	✓	✓
25-1031	Architecture Teachers, Postsecondary	✓					✓	✓	✓	✓	✓	✓
25-1032	Engineering Teachers, Postsecondary	✓					✓	✓	✓	✓	✓	✓
25-1041	Agricultural Sciences Teachers, Postsecondary	✓					✓	✓		✓	✓	✓
25-1042	Biological Science Teachers, Postsecondary	✓					✓	✓	✓	✓	✓	✓
25-1043	Forestry and Conservation Science Teachers, Postsecondary	✓					✓	✓			✓	
25-1051	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	✓					✓	✓	✓	✓	✓	✓
25-1052	Chemistry Teachers, Postsecondary	✓					✓	✓	✓	✓	✓	✓
25-1053	Environmental Science Teachers, Postsecondary	✓					✓	✓		✓	✓	
25-1054	Physics Teachers, Postsecondary	✓					✓	✓	✓	✓	✓	✓
25-1061	Anthropology and Archeology Teachers, Postsecondary							✓	✓		✓	

Detail SOC Code	SOC Occupation Title	BLS/OES (100)	Census (163)	CEW 2010 (96)	CEW 2011 (85)	Commerce (85)	FL DEO (156)	NSF (116)	O*Net Career Cluster (103)	O*Net STEM Discipline (126)	SOCPC (184)	TWC SWAP (134)
25-1062	Area, Ethnic, and Cultural Studies Teachers, Postsecondary							✓	✓		✓	
25-1063	Economics Teachers, Postsecondary						✓	✓	✓		✓	✓
25-1064	Geography Teachers, Postsecondary							✓	✓		✓	
25-1065	Political Science Teachers, Postsecondary							✓	✓		✓	
25-1066	Psychology Teachers, Postsecondary							✓		✓	✓	✓
25-1067	Sociology Teachers, Postsecondary							✓			✓	
25-1069	Social Science Teachers, Postsecondary, All Other							✓	✓		✓	
25-1071	Health Specialties Teachers, Postsecondary						✓	✓	✓	✓	✓	✓
25-1072	Nursing Instructors and Teachers, Postsecondary						✓	✓			✓	✓
25-1125	History Teachers, Postsecondary								✓			
25-1126	Philosophy and Religion Teachers, Postsecondary								✓			
25-1192	Home Economics Teachers, Postsecondary									✓		
25-1194	Vocational Education Teachers, Postsecondary								✓			
25-4011	Archivists								✓			
25-4012	Curators								✓			
25-4013	Museum Technicians and Conservators								✓			
25-9021	Farm and Home Management Advisors									✓		
25-9099	Education, Training, and Library Workers, All Other								✓			

27-0000	Art, Design, Entertainment, Sports, and Media Occupations											
27-1014	Multimedia Artists and Animators											✓
27-1021	Commercial and Industrial Designers						✓					
27-1024	Graphic Designers									✓		
27-3042	Technical Writers								✓			
27-4012	Broadcast Technicians						✓					
27-4014	Sound Engineering Technicians						✓					
27-4031	Camera Operators, Television, Video, and Motion Picture						✓					
27-4032	Film and Video Editors						✓					

29-0000	Healthcare Practitioners and Technical Occupations											
29-1011	Chiropractors		X								✓	✓
29-1021	Dentists, General		X				✓				✓	✓
29-1022	Oral and Maxillofacial Surgeons		X				✓				✓	
29-1023	Orthodontists		X				✓				✓	✓
29-1024	Prosthodontists		X				✓				✓	
29-1029	Dentists, All Other Specialists		X								✓	
29-1031	Dietitians and Nutritionists		X				✓		✓	✓	✓	✓

Detail SOC Code	SOC Occupation Title	BLS/OES (100)	Census (163)	CEW 2010 (96)	CEW 2011 (85)		FL DEO (156)	NSF (116)	O*Net Career Cluster (103)	O*Net STEM Discipline (126)	SOCPC (184)	TWC SWAP (134)
29-1041	Optometrists		X				✓				✓	✓
29-1051	Pharmacists		X				✓				✓	✓
29-1061	Anesthesiologists		X				✓				✓	✓
29-1062	Family and General Practitioners		X				✓		✓		✓	✓
29-1063	Internists, General		X				✓				✓	✓
29-1064	Obstetricians and Gynecologists		X				✓				✓	✓
29-1065	Pediatricians, General		X				✓				✓	✓
29-1066	Psychiatrists		X				✓				✓	✓
29-1067	Surgeons		X				✓				✓	✓
29-1069	Physicians and Surgeons, All Other		X				✓				✓	✓
29-1071	Physician Assistants		X				✓				✓	✓
29-1081	Podiatrists		X				✓				✓	✓
29-1122	Occupational Therapists		X								✓	✓
29-1123	Physical Therapists		X								✓	✓
29-1124	Radiation Therapists		X								✓	✓
29-1125	Recreational Therapists		X								✓	✓
29-1126	Respiratory Therapists		X				✓				✓	✓
29-1127	Speech-Language Pathologists		X								✓	✓
29-1128	Exercise Physiologists		X				✓				✓	✓
29-1129	Therapists, All Other		X								✓	
29-1131	Veterinarians		X				✓				✓	✓
29-1141	Registered Nurses		X				✓				✓	
29-1151	Nurse Anesthetists		X				✓				✓	
29-1161	Nurse Midwives		X				✓				✓	
29-1171	Nurse Practitioners		X				✓				✓	
29-1181	Audiologists		X								✓	✓
29-1199	Health Diagnosing and Treating Practitioners, All Other		X				✓				✓	✓
29-2011	Medical and Clinical Laboratory Technologists		X				✓				✓	✓
29-2012	Medical and Clinical Laboratory Technicians		X				✓				✓	✓
29-2021	Dental Hygienists		X				✓				✓	✓
29-2031	Cardiovascular Technologists and Technicians		X				✓				✓	✓
29-2032	Diagnostic Medical Sonographers		X								✓	✓
29-2033	Nuclear Medicine Technologists		X							✓	✓	✓
29-2034	Radiologic Technologists		X								✓	
29-2035	Magnetic Resonance Imaging Technologists		X								✓	
29-2041	Emergency Medical Technicians and Paramedics		X				✓				✓	
29-2051	Dietetic Technicians		X						✓	✓	✓	
29-2052	Pharmacy Technicians		X								✓	

Detail SOC Code	SOC Occupation Title	BLS/OES (100)	Census (163)	CEW 2010 (96)	CEW 2011 (85)		FL DEO (156)	NSF (116)	O*Net Career Cluster (103)	O*Net STEM Discipline (126)	SOCPC (184)	TWC SWAP (134)
29-2053	Psychiatric Technicians		X								✓	
29-2054	Respiratory Therapy Technicians		X				✓				✓	✓
29-2055	Surgical Technologists		X								✓	
29-2056	Veterinary Technologists and Technicians		X								✓	✓
29-2057	Ophthalmic Medical Technicians		X								✓	
29-2061	Licensed Practical and Licensed Vocational Nurses		X								✓	
29-2071	Medical Records and Health Information Technicians		X								✓	✓
29-2081	Opticians, Dispensing		X								✓	
29-2091	Orthotists and Prosthetists		X								✓	✓
29-2092	Hearing Aid Specialists		X				✓				✓	
29-2099	Health Technologists and Technicians, All Other		X								✓	
29-9011	Occupational Health and Safety Specialists		X								✓	
29-9012	Occupational Health and Safety Technicians		X								✓	
29-9091	Athletic Trainers		X								✓	
29-9092	Genetic Counselors		X				✓				✓	
29-9099	Healthcare Practitioners and Technical Workers, All Other		X				✓				✓	

31-0000	Healthcare Support Occupations											
31-2011	Occupational Therapy Assistants											✓
31-2021	Physical Therapist Assistants											✓

33-0000	Protective Service Occupations											
33-3031	Fish and Game Wardens									✓		

35-0000	Food Preparation and Serving Related Occupations											
35-1012	First-Line Supervisors of Food Preparation and Serving Workers									✓		
35-2012	Cooks, Institution and Cafeteria									✓		

41-0000	Sales and Related Occupations											
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	✓									✓	
41-9031	Sales Engineers	✓	✓				✓				✓	

43-0000	Office and Administrative Support Occupations											
43-9111	Statistical Assistants						✓		✓	✓		✓

45-0000	Farming, Fishing, and Forestry Occupations											
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers									✓		

Detail SOC Code	SOC Occupation Title	BLS/OES (100)	Census (163)	CEW 2010 (96)	CEW 2011 (85)	Commerce (85)	FL DEO (156)	NSF (116)	O*Net Career Cluster (103)	O*Net STEM Discipline (126)	SOCPC (184)	TWC SWAP (134)
45-2021	Animal Breeders									✓		
45-3011	Fishers and Related Fishing Workers									✓		
45-4011	Forest and Conservation Workers									✓		
45-4021	Fallers									✓		
45-4022	Logging Equipment Operators									✓		
45-4023	Log Graders and Scalers									✓		

49-0000	Installation, Maintenance, and Repair Occupations											
49-2011	Computer, Automated Teller, and Office Machine Repairers						✓					
49-2021	Radio, Cellular, and Tower Equipment Installers and Repairs						✓					
49-2091	Avionics Technicians									✓		
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment						✓					
49-2097	Electronic Home Entertainment Equipment Installers and Repairers						✓					
49-3011	Aircraft Mechanics and Service Technicians									✓		
49-3023	Automotive Service Technicians and Mechanics									✓		
49-9044	Millwrights						✓					
49-9062	Medical Equipment Repairers						✓					
49-9081	Wind Turbine Service Technicians									✓		

51-0000	Production Occupations											
51-2023	Electromechanical Equipment Assemblers									✓		
51-3092	Food Batchmakers									✓		
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic											✓
51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic						✓			✓		✓
51-4111	Tool and Die Makers						✓					
51-5111	Prepress Technicians and Workers						✓					
51-8011	Nuclear Power Reactor Operators						✓					
51-8091	Chemical Plant and System Operators									✓		
51-9011	Chemical Equipment Operators and Tenders									✓		

53-0000	Transportation and Material Moving Occupations											
53-2011	Airline Pilots, Copilots, and Flight Engineers											✓
53-6041	Traffic Technicians						✓					
53-6051	Transportation Inspectors									✓		

Appendix 3: Middle-Skill STEM Occupations List

Detailed SOC Code	SOC Occupation Title
11-0000	Management Occupations
11-9013	Farmers, Ranchers, and Other Agricultural Managers
11-9199	Managers, All Other

13-0000	Business and Financial Operations Occupations
13-1199	Business Operations Specialists, All Other

15-0000	Computer and Mathematical Occupations
15-1134	Web Developers
15-1151	Computer User Support Specialists
15-1152	Computer Network Support Specialists

17-0000	Architecture and Engineering Occupations
17-3011	Architectural and Civil Drafters
17-3012	Electrical and Electronics Drafters
17-3013	Mechanical Drafters
17-3019	Drafters, All Other
17-3021	Aerospace Engineering and Operations Technicians
17-3022	Civil Engineering Technicians
17-3023	Electrical and Electronics Engineering Technicians
17-3024	Electro-Mechanical Technicians
17-3025	Environmental Engineering Technicians
17-3026	Industrial Engineering Technicians
17-3027	Mechanical Engineering Technicians
17-3029	Engineering Technicians, Except Drafters, All Other
17-3031	Surveying and Mapping Technicians

19-0000	Life, Physical, and Social Science Occupations
19-4011	Agricultural and Food Science Technicians
19-4031	Chemical Technicians
19-4041	Geological and Petroleum Technicians
19-4051	Nuclear Technicians
19-4061	Social Science Research Assistants
19-4091	Environmental Science and Protection Technicians, Including Health
19-4093	Forest and Conservation Technicians
19-4099	Life, Physical, and Social Science Technicians, All Other

Detailed SOC Code	SOC Occupation Title
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations
27-4012	Broadcast Technicians
27-4014	Sound Engineering Technicians

29-0000	Healthcare Practitioners and Technical Occupations
29-1124	Radiation Therapists
29-1126	Respiratory Therapists
29-1141	Registered Nurses
29-2012	Medical and Clinical Laboratory Technicians
29-2021	Dental Hygienists
29-2031	Cardiovascular Technologists and Technicians
29-2032	Diagnostic Medical Sonographers
29-2033	Nuclear Medicine Technologists
29-2034	Radiologic Technologists
29-2035	Magnetic Resonance Imaging Technologists
29-2041	Emergency Medical Technicians and Paramedics
29-2051	Dietetic Technicians
29-2052	Pharmacy Technicians
29-2053	Psychiatric Technicians
29-2054	Respiratory Therapy Technicians
29-2055	Surgical Technologists
29-2056	Veterinary Technologists and Technicians
29-2057	Ophthalmic Medical Technicians
29-2061	Licensed Practical and Licensed Vocational Nurses
29-2071	Medical Records and Health Information Technicians
29-2081	Opticians, Dispensing
29-2092	Hearing Aid Specialists
29-2099	Health Technologists and Technicians, All Other
29-9012	Occupational Health and Safety Technicians
29-9099	Healthcare Practitioners and Technical Workers, All Other

31-0000	Healthcare Support Occupations
31-2011	Occupational Therapy Assistants
31-2021	Physical Therapist Assistants

33-0000	Protective Service Occupations
33-3031	Fish and Game Wardens

35-0000	Food Preparation and Serving Related Occupations
35-1012	First-Line Supervisors of Food Preparation and Serving Workers

Detailed SOC Code	SOC Occupation Title
45-0000	Farming, Fishing, and Forestry Occupations
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers
45-2021	Animal Breeders
45-4011	Forest and Conservation Workers
45-4021	Fallers
45-4022	Logging Equipment Operators
45-4023	Log Graders and Scalers
49-0000	Installation, Maintenance, and Repair Occupations
49-2011	Computer, Automated Teller, and Office Machine Repairers
49-2021	Radio, Cellular, and Tower Equipment Installers and Repairs
49-2091	Avionics Technicians
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment
49-2097	Electronic Home Entertainment Equipment Installers and Repairers
49-3011	Aircraft Mechanics and Service Technicians
49-3023	Automotive Service Technicians and Mechanics
49-9044	Millwrights
49-9062	Medical Equipment Repairers
49-9081	Wind Turbine Service Technicians
51-0000	Production Occupations
51-2023	Electromechanical Equipment Assemblers
51-3092	Food Batchmakers
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic
51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic
51-4111	Tool and Die Makers
51-5111	Prepress Technicians and Workers
51-8011	Nuclear Power Reactor Operators
51-8091	Chemical Plant and System Operators
51-9011	Chemical Equipment Operators and Tenders
53-0000	Transportation and Material Moving Occupations
53-6041	Traffic Technicians
53-6051	Transportation Inspectors

Appendix 4: Texas Middle-Skill STEM Occupations, Wages, and Employment Projections

Detailed SOC Code	SOC Occupation Title	Total Employ (2012)	Total Employ (2022)	#Δ	%Δ	\$ Mean (2014)
11-0000	Management Occupations					
11-9013	Farmers, Ranchers, and Other Agricultural Managers	20,390	18,040	-2,350	-11.50%	67,170
11-9199	Managers, All Other	39,460	46,540	7,080	17.90%	122,010

13-0000	Business and Financial Operations Occupations					
13-1199	Business Operations Specialists, All Other	65,010	77,950	12,940	19.90%	80,830

15-0000	Computer and Mathematical Occupations					
15-1134	Web Developers	10,420	13,080	2,660	25.50%	66,997
15-1151	Computer User Support Specialists	47,460	60,550	13,090	22.79%	50,168
15-1152	Computer Network Support Specialists	17,760	20,180	2,420	13.60%	68,068

17-0000	Architecture and Engineering Occupations					
17-3011	Architectural and Civil Drafters	10,680	11,320	640	6.00%	54,601
17-3012	Electrical and Electronics Drafters	4,020	4,890	870	21.60%	73,035
17-3013	Mechanical Drafters	4,670	5,100	430	9.20%	63,508
17-3019	Drafters, All Other	1,510	1,860	350	23.20%	64,241
17-3021	Aerospace Engineering and Operations Technicians	760	830	70	9.20%	61,250
17-3022	Civil Engineering Technicians	11,030	11,530	500	4.50%	45,084
17-3023	Electrical and Electronics Engineering Technicians	14,570	17,130	2,560	17.60%	62,550
17-3024	Electro-Mechanical Technicians	1,550	1,940	390	25.20%	58,887
17-3025	Environmental Engineering Technicians	1,070	1,360	290	27.10%	57,878
17-3026	Industrial Engineering Technicians	4,450	5,060	610	13.70%	65,430
17-3027	Mechanical Engineering Technicians	4,410	5,350	940	21.30%	57,671
17-3029	Engineering Technicians, Except Drafters, All Other	9,100	10,920	1,820	20.00%	64,705
17-3031	Surveying and Mapping Technicians	8,020	9,940	1,920	23.90%	40,729

19-0000	Life, Physical, and Social Science Occupations					
19-4011	Agricultural and Food Science Technicians	1,600	1,780	180	11.30%	32,554
19-4031	Chemical Technicians	5,700	6,960	1,260	22.10%	51,556
19-4041	Geological and Petroleum Technicians	6,490	8,380	1,890	29.10%	60,673
19-4051	Nuclear Technicians	20	30	10	50.00%	76,740
19-4061	Social Science Research Assistants	890	1,050	160	18.00%	38,344
19-4091	Enviro. Science & Protection Techs, Including Health	2,940	3,630	690	23.50%	45,676
19-4093	Forest and Conservation Technicians	380	430	50	9.50%	39,920
19-4099	Life, Physical, and Social Science Technicians, All Other	5,780	6,960	1,180	20.40%	49,071

Detailed SOC Code	SOC Occupation Title	Total Employ (2012)	Total Employ (2022)	#Δ	%Δ	\$ Mean (2014)
27-0000	Art, Design, Entertainment, Sports, and Media Occupations					
27-4012	Broadcast Technicians	2,250	2,440	190	8.40%	34,050
27-4014	Sound Engineering Technicians	490	560	70	14.30%	51,140

29-0000	Healthcare Practitioners and Technical Occupations					
29-1124	Radiation Therapists	810	1,050	240	29.60%	79,800
29-1126	Respiratory Therapists	10,010	12,940	2,930	29.30%	55,213
29-1141	Registered Nurses	186,390	239,590	53,200	27.45%	68,584
29-2012	Medical and Clinical Laboratory Technicians	11,300	15,530	4,230	37.40%	37,975
29-2021	Dental Hygienists	12,390	16,030	3,640	29.40%	71,977
29-2031	Cardiovascular Technologists and Technicians	3,950	5,700	1,750	44.30%	54,583
29-2032	Diagnostic Medical Sonographers	4,380	6,900	2,520	57.50%	65,720
29-2033	Nuclear Medicine Technologists	1,230	1,610	380	30.90%	71,039
29-2034	Radiologic Technologists	13,350	17,410	4,060	30.40%	54,245
29-2035	Magnetic Resonance Imaging Technologists	2,530	3,320	790	31.20%	66,578
29-2041	Emergency Medical Technicians and Paramedics	14,820	19,080	4,260	28.70%	35,015
29-2051	Dietetic Technicians	1,060	1,340	280	26.40%	28,249
29-2052	Pharmacy Technicians	27,630	35,290	7,660	27.70%	31,830
29-2053	Psychiatric Technicians	3,090	3,770	680	22.00%	28,256
29-2054	Respiratory Therapy Technicians	1,350	1,740	390	28.90%	50,711
29-2055	Surgical Technologists	9,090	12,660	3,570	39.30%	44,050
29-2056	Veterinary Technologists and Technicians	9,020	11,510	2,490	27.60%	28,528
29-2057	Ophthalmic Medical Technicians	3,410	4,540	1,130	33.10%	34,306
29-2061	Licensed Practical and Licensed Vocational Nurses	71,890	91,740	19,850	27.60%	44,882
29-2071	Medical Records and Health Information Technicians	16,460	21,330	4,870	29.60%	37,562
29-2081	Opticians, Dispensing	5,620	6,760	1,140	20.30%	30,812
29-2092	Hearing Aid Specialists	720	950	230	31.90%	41,732
29-2099	Health Technologists and Technicians, All Other	3,160	4,110	950	30.10%	42,921
29-9012	Occupational Health and Safety Technicians	2,900	3,570	670	23.10%	50,113
29-9099	Healthcare Practitioners and Technical Workers, All Other	1,350	1,670	320	23.70%	52,958

31-0000	Healthcare Support Occupations					
31-2011	Occupational Therapy Assistants	2,700	3,890	1,190	44.10%	70,606
31-2021	Physical Therapist Assistants	5,180	7,150	1,970	38.00%	69,368
31-9091	Dental Assistants	23,130	28,090	4,960	21.40%	34,192
31-9092	Medical Assistants	51,560	67,960	16,400	31.80%	28,550

33-0000	Protective Service Occupations					
33-3031	Fish and Game Wardens	450	500	50	11.10%	58,590

Detailed SOC Code	SOC Occupation Title	Total Employ (2012)	Total Employ (2022)	#Δ	%Δ	\$ Mean (2014)
35-0000	Food Preparation and Serving Related Occupations					
35-1012	First-Line Supervisors of Food Preparation and Serving Workers	76,260	99,620	23,360	30.60%	33,560

45-0000	Farming, Fishing, and Forestry Occupations					
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	4,120	4,400	280	6.80%	44,340
45-2021	Animal Breeders	250	200	-50	-20.00%	32,410
45-4011	Forest and Conservation Workers	200	220	20	10.00%	34,460
45-4021	Fallers	440	280	-160	-36.40%	38,360
45-4022	Logging Equipment Operators	750	840	90	12.00%	38,260
45-4023	Log Graders and Scalers	N/A	N/A	N/A	N/A	29,270

47-0000	Construction and Extraction Occupations					
47-2073	Operating Engineers and Other Construction Equipment Operators	36,250	44,750	8,500	23.40%	38,730
47-2111	Electricians	50,220	60,920	10,700	21.30%	45,130
47-4041	Hazardous Materials Removal Workers	3,470	4,100	630	18.20%	34,820

49-0000	Installation, Maintenance, and Repair Occupations					
49-2011	Computer, Automated Teller, and Office Machine Repairers	13,890	15,470	1,580	11.40%	34,120
49-2021	Radio, Cellular, and Tower Equipment Installers and Repairers	1,830	2,190	360	19.70%	42,950
49-2091	Avionics Technicians	1,490	1,720	230	15.40%	51,048
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	7,390	9,120	1,730	23.40%	57,380
49-2097	Electronic Home Entertainment Equipment Installers and Repairers	2,290	2,300	10	0.40%	33,530
49-3011	Aircraft Mechanics and Service Technicians	13,020	15,190	2,170	16.70%	56,383
49-3023	Automotive Service Technicians and Mechanics	51,540	60,680	9,140	17.70%	39,217
49-9044	Millwrights	3,470	4,390	920	26.50%	45,410
49-9062	Medical Equipment Repairers	2,980	4,160	1,180	39.60%	44,746
49-9081	Wind Turbine Service Technicians	1,250	1,790	540	43.20%	51,728

51-0000	Production Occupations					
51-2023	Electromechanical Equipment Assemblers	4,350	5,020	670	15.40%	33,330
51-3092	Food Batchmakers	7,860	8,900	1,040	13.20%	23,750
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	9,930	13,710	3,780	38.10%	38,293
51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	1,740	2,700	960	55.20%	54,608
51-4111	Tool and Die Makers	1,990	2,390	400	20.10%	44,920
51-4121	Welders, Cutters, Solderers, and Brazers	47,830	57,610	9,780	20.40%	40,895
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	3,810	5,460	1,650	43.30%	36,801
51-5111	Prepress Technicians and Workers	2,180	2,010	-170	-7.80%	39,690
51-8011	Nuclear Power Reactor Operators	N/A	N/A	N/A	N/A	N/A
51-8013	Power Plant Operators	3,370	3,630	260	7.70%	66,125

Detailed SOC Code	SOC Occupation Title	Total Employ (2012)	Total Employ (2022)	#Δ	%Δ	\$ Mean (2014)
51-8091	Chemical Plant and System Operators	6,130	6,950	820	13.40%	65,433
51-8092	Gas Plant Operators	1,820	2,110	290	15.90%	62,320
51-9011	Chemical Equipment Operators and Tenders	9,520	10,770	1,250	13.10%	54,840
51-9081	Dental Laboratory Technicians	2,300	2,640	340	14.80%	38,552
51-9082	Medical Appliance Technicians	1,130	1,360	230	20.40%	46,430
51-9083	Ophthalmic Laboratory Technicians	2,670	3,120	450	16.90%	26,903

53-0000	Transportation and Material Moving Occupations					
53-6041	Traffic Technicians	680	790	110	16.20%	39,840
53-6051	Transportation Inspectors	2,690	3,460	770	28.60%	71,170

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**TEXAS WORKFORCE
INVESTMENT COUNCIL**

Middle-Skill STEM Industry-Based Certification System Initiative

**Presentation to the Texas Association of Workforce Boards
Executive Directors' Council**

May 8, 2017

Today's Presentation and Discussion ... 30 minutes

THE WHY

Introduce the Council's industry-based certification work.

THE WHAT

Provide the research basis for the Council's system initiative.

THE HOW

Explain the Council's actions regarding the initiative.

Outline recommended action at the regional level.

THE ASK

Gauge interest, input, and feedback.

THE WHY: Foundation of the Strategic System Initiative

The Texas Workforce System Strategic Plan FY 2016-FY 2023

Goal Area I: Focus on Employers

System Objective: Expand Licensure and Industry Certification

System Strategy: Use third-party, industry-based certifications where relevant as an education or training outcome to connect graduate competencies to job skill requirements.

Five Partner Agencies with Actions and Performance Measures:

- Texas Education Agency
- Texas Higher Education Coordinating Board
- Texas Veterans Commission
- Texas Workforce Commission
- The Windham School District (Texas Criminal Justice Department)

THE WHAT: Overview of the Research

**Summary of Council Research
Industry-Based Certifications for Middle-Skill STEM Occupations in Texas**

Report 1:
Defining and Capturing Information and Data for Industry-Based Certifications

Report 2:
Defining Middle-Skill STEM Occupations in Texas

Report 3:
Linking Middle-Skill STEM Occupations and Related Industry-Based Certifications

Credentials – overarching term used to describe any traditional or other postsecondary award earned by an individual

- Bachelor’s degree (or higher) – four-year (or more) degree awarded by a university
- Associate’s degree – two-year degree awarded by a community college, technical college, or similar
- Certificates – less than a two-year degree, awarded by a community college, technical college, or similar
- Licenses – awarded by regulatory entities and generally require an exam
- **Certifications – awards based on national industry standards and assessed by third-party providers**

Industry-Based Certification - Working Definition

An industry-based certification is the result of a voluntary process, through which an individual is assessed by an independent, third-party certifying entity using predetermined standards for knowledge, skills, and competencies, resulting in a time-limited award that is nationally recognized and applicable to a specific occupation.

Defining Characteristics

- Recognized by industry
- National scope
- Third-party assessed
- Independent of any education provider

Classifying STEM occupations

- 9 organizations, 11 STEM-defining sources
- 257 total identified STEM occupations

Classifying middle-skill STEM occupations

- 257 STEM occupations + DOL education/training assignments
- 84 middle-skill STEM occupations

Identifying Texas middle-skill STEM occupations

- 84 middle-skill STEM + 13 additional middle-skill STEM-related
- 97 Texas middle-skill STEM occupations

- Identify certifications for middle-skill STEM occupations
- U.S. Department of Labor certification databases
- Almost 2,400 certifications were identified for the 97 middle-skill STEM occupations in Texas
- Identified certifications were analyzed and filtered based on established definitions and parameters, and de-duplicated

- About 1,500 unique certifications from over 300 national certifying organizations identified for the 97 middle-skill STEM occupations
 - Approximately 500 certifications unique to IT, reduces to approximately 84 occupations if excluded
 - List of certifications requires further examination to identify which third-party, industry-based certifications are key in Texas
-

➤ Requirement articulated by the Council:
reduce based on value to employers.

THE HOW: System Strategic Initiative Task Group (July 2016)

Employer Representatives (2)

Tom Halbouty, Retired, Pioneer Natural Resources (task group chair)

Steve Boecking, Hillwood Properties

Agency Representatives (6)

Doyle Fuchs, Labor Market and Career Information, Texas Workforce Commission
Quentin Suffren, Texas Education Agency

Dr. Garry Tomerlin, Texas Higher Education Coordinating Board

Connie Simon, Texas Juvenile Justice Department

Tim Shatto, Texas Veterans Commission

Dr. Clint Carpenter, Windham School District, Texas Department of Criminal Justice

External Stakeholder Representatives (4)

Pat Bubb, Rio Grande Valley Linking Economic and Academic Development

Robin Painovich, Career and Technology Association of Texas

Jacob Fraire, Texas Association of Community Colleges

Mike Sandroussi, Craft Training Center of the Coastal Bend

Charge to the Task Group

Recommend process to reduce research results through regional employer feedback on value of industry-based certification.

TG Recommendation: Regional Employer Feedback

Goal of Employer Feedback = Value Proposition

“Value” Question

All things being equal, if two job applicants possess the same educational credentials and job experience, but one applicant has earned a third-party, industry-based certification that is relevant to the position, would the certification provide evidence for preference in hiring?

TG Recommendation: Regional Employer Feedback

Preliminary Analysis and Preparation Steps (4) by the Council:

1. Identify total regional, in-demand occupations by local workforce development areas (matrix: by occupation and LWDA - from board plans).
2. Derive and prioritize middle-skill STEM occupations (MSSO) from statewide analysis in #1 (matrix: MSSO sub-set sorted by total aggregate need and number of areas).
3. Assign each MSSO to multiple LWDA's for feedback.
 - minimum 4 - maximum 7 areas based on priority, relevance in region, and statewide sample of areas
 - not to exceed 10-15 MSSOs for any single area

TG Recommendation: Regional Employer Feedback

Preliminary Analysis and Preparation Steps (4) by the Council:

4. Based on 3, prepare regional profiles by LWDA, to include:
 - Assigned occupations, with industry-based certifications and certifying entity information
 - Suggested process considerations:
 - rural and urban representation based on industry/occupation distribution in LWDA;
 - number of employers and time considerations in gaining feedback based on the value proposition of certifications
 - Output specification (Excel) for final documentation for transmittal to the Council

TG Recommendation: Regional Employer Feedback

Final steps at the regional level post-receipt of regional profile from previous step 4:

5. Implement regional employer feedback process.

TG considered both CTCs and LWDBs as the entity to interface with employers and determined that LWDBs' collaboration with employers and their employer engagement strategies best position boards to carryout feedback process.

- LWDB determines all aspects of regional process based on regional profile and process considerations.
 - LWDB “shortcuts” feedback on specific certifications where their value to regional employers has already been verified.
6. Based on results of previous board work and new input from employers, prepare MSSO and valued industry-based certification list and forward to Council in specified format.

Discussion Questions

1. Interest in assisting the Council?
2. Incorporation of LWDB work on industry-based certifications to ensure non-duplication?
3. Thoughts on regional feedback with regard to flexibility and effectiveness?
4. Other opportunities or barriers the Council needs to consider?
5. Timing:
 - Of the amount of time for feedback from employers?
 - Of the potential implementation of a regional feedback process?
6. Desirability of biennial refresh?

Proposed Process for Input and Feedback

Step 1 – May TAWB meeting:

TWIC provides research background and process information to the EDs. Discuss questions that will assist TWIC to refine the proposed process.

Step 2 – June and July:

TWIC revisits and modifies process, based on EDs input. TWIC sends revisions to EDs for review and comment. (Revise again and repeat if required.)

Step 3 – August TAWB meeting:

TWIC briefs TAWB EDs and Chairs on the proposed process. TWIC seeks input on possible implementation timeline.

Step 4 – Sept:

Based on outcomes of step 3 and discussion at the Sept TWIC meeting, TWIC provides final documentation on process to TAWB members.



TEXAS WORKFORCE
INVESTMENT COUNCIL

Wes Jurey, Chairman

Lee Rector, Director

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Gulf Coast Workforce Board
System Performance
October 2016 to April 2017

Board Measures

These measures gauge progress toward meeting the results set out in the Board’s strategic plan. There are two sets of measures: one for the entire regional workforce system and one for the Board’s operating affiliate, Workforce Solutions.

We report on the Board measures for Workforce Solutions at each meeting.

More Competitive Employers

Measure	Annual Target	Current Performance	Performance Last Year
<u>Employers Receiving Services (Market Share)</u> We expect to provide services to 22,000 employers this year. We provided services to 11,471 employers in the period October 2016 through April 2017	22,000	11,471	23,591
<u>Employer Loyalty</u> Of a possible 20,759 employers, 6,958 returned to Workforce Solutions for additional services in the period October 2016 through April 2017	60.0%	33.5%	56.0%

More and Better Jobs

Measure	Annual Target	Current Performance	Performance Last Year
<u>New jobs created</u> New jobs created in the region as a result of Workforce Solutions partnering with economic development organizations. This information is captured quarterly and reflects a two-year average through March 2017.	3,200 666		928
<u>Customers employed by the 1st Qtr. after exit</u> 171,644 of the 221,188 customers who exited service in the period October 2015 through June 2016 were employed by the quarter after exit.	76.0% 77.6%		78.4%

Higher Real Incomes

Measure	Annual Target	Current Performance	Performance Last Year
<u>Earnings Gains of at least 20%</u> 65,767 of the 229,343 customers who exited in the period April 2015 through December 2015 had earnings gains of at least 20%.	36.0% 28.7%		33.4%

A Better Educated Workforce

Measure	Annual Target	Current Performance	Performance Last Year
<u>Customers pursuing education diploma, degree or certificate who achieve one</u> 826 of 1,196 customers who pursued an education diploma, degree or certificate and exited from July 2016 through March 2017, attained a diploma, degree or certificate by the end of the quarter after exit.	74.0% 69.1%	74.2%	

Production

In addition to the Board’s measures, Workforce Solutions works to meet Texas Workforce Commission expectations for production. For the performance year that began October 1, 2016, we are meeting or exceeding the target for thirteen of eighteen state measures. Based on the most recent report from the state, March 2017, these are the measures we are not achieving:

- Number of Employers Receiving Workforce Assistance: The annual target for this measure is 26,235. We provided services to 10,776 employers from October 2016 through March 2017.
- Average number Children Served (Discrete Month): The target for this measure is 21,465. Our performance for customers served from March 2017 through March 2017 was 18,435. We plan to meet this measure by the end of June.
- Median Earnings Q2 Post Exit – Adult: The target for this measure is \$3,910. Our performance for customers who exited from July 2015 through March 2016 was \$3,669.
- Median Earnings Q2 Post Exit – Dislocated Worker: The target for this measure is \$6,980. Our performance for customers who exited from July 2015 through March 2016 was \$6,319.
- Credential Rate – Dislocated Worker: The target for this measure is 66.6%. Our performance for customers who exited from January 2015 through September 2015 was 62.7%.

Adult education measures for the period July 2016 through February 2017 include:

- Total enrollments are the number of individuals who begin an adult education class.
- 12+ hour enrollments count the number of individuals who are in class 12 or more clock hours.
- Transitions enrollments count the number of individuals in adult education classes designed to lead to further post-secondary training.
- Career Pathways enrollments counts the number of individuals in contextualized learning (basic education and occupational skills at the same time) classes.
- Integrated English Language and Civics courses will be integrated with some workforce training that result in a job and/or certificate/credential.
- TWC Accelerate Texas includes individuals enrolled in an integrated education and training module.

	Target	Year to Date
Total Enrollments	20,865	21,089
<i>12+ Hour Enrollments</i>	19,500 1	9,450
<i>Transitions</i>	883	1,050
<i>Career Pathways</i>	842 633	
<i>Integrated English Language & Civics Ed.</i>	655	156
<i>TWC Accelerate Texas</i>	220 274	

GULF COAST WORKFORCE DEVELOPMENT BOARD
FINANCIAL STATUS REPORT
For the Four Months Ended April 30, 2017

	ANNUAL BUDGET	BUDGET YEAR TO DATE	ACTUAL YEAR TO DATE	DOLLAR VARIANCE
WORKFORCE REVENUES				
WORKFORCE REVENUES	214,944,634	71,648,211	67,616,887	4,031,324
WORKFORCE EXPENDITURES				
BOARD ADMINISTRATION	5,907,699	1,969,233	1,632,110	337,123
SYSTEM IT	385,000	128,333	96,601	31,732
EMPLOYER SERVICES	8,300,000	2,766,667	2,064,567	702,100
RESIDENT SERVICES	200,351,935	66,783,978	63,823,609	2,960,369
OFFICE OPERATIONS	40,237,593	13,412,531	12,096,530	1,316,001
FINANCIAL AID	142,679,997	47,559,999	46,915,619	644,380
ADULT EDUCATION	17,434,345	5,811,448	4,811,460	999,988
TOTAL WORKFORCE EXPENDITURES	214,944,634	71,648,211	67,616,887	4,031,324

VARIANCE ANALYSIS

Note: Except for Special Projects that are currently funded through September 30, 2017, the "Budget Year to Date" column reflects straight-line estimate of expenditures for the twelve-month period, assuming equal expenditures every month in order to fully expend the budget in a year.

Labor Market Information
 APRIL 2017 Employment Data

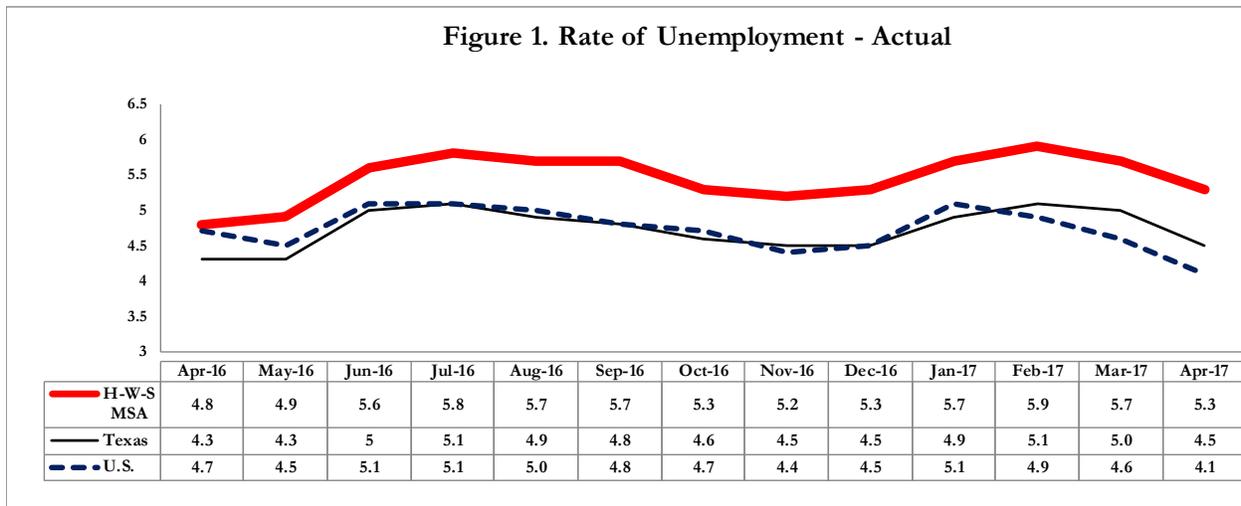
HOUSTON-THE WOODLANDS-SUGAR LAND METROPOLITAN STATISTICAL AREA

Visit our website at www.wrksolutions.com

The rate of unemployment in the Houston-The Woodlands-Sugar Land Metropolitan Statistical Area (H-W-S MSA) dropped four-tenths of a percentage point in April to 5.3 percent, five-tenths of a percentage point higher than one year earlier. The rate of unemployment at the state and national level also fell in April, down five-tenths of a percentage point each to 4.5 percent and 4.1 percent respectively.

Unemployment Rate (Actual)

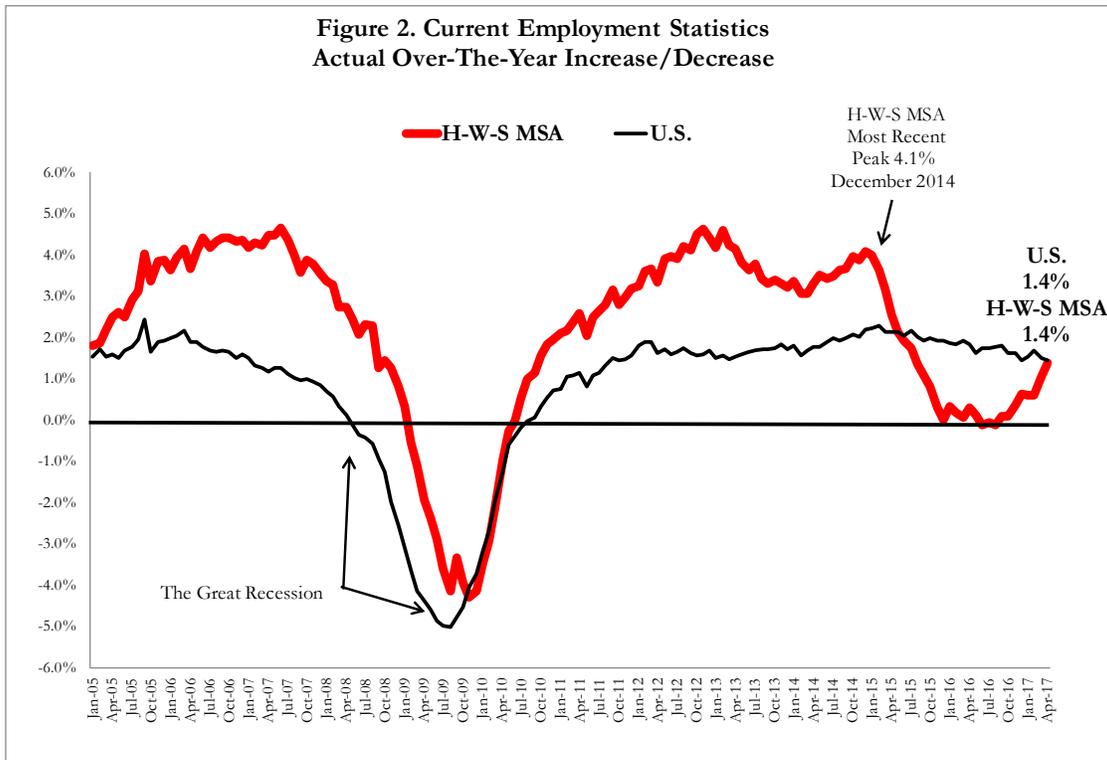
	APR 2017	MAR 2017	APR 2016
Civilian Labor Force	3,337,041	3,328,900	3,278,084
Total Employed	3,161,239	3,138,857	3,119,401
Unemployed	175,802	190,043	158,683
Unemployment Rate	5.3%	5.7%	4.8%



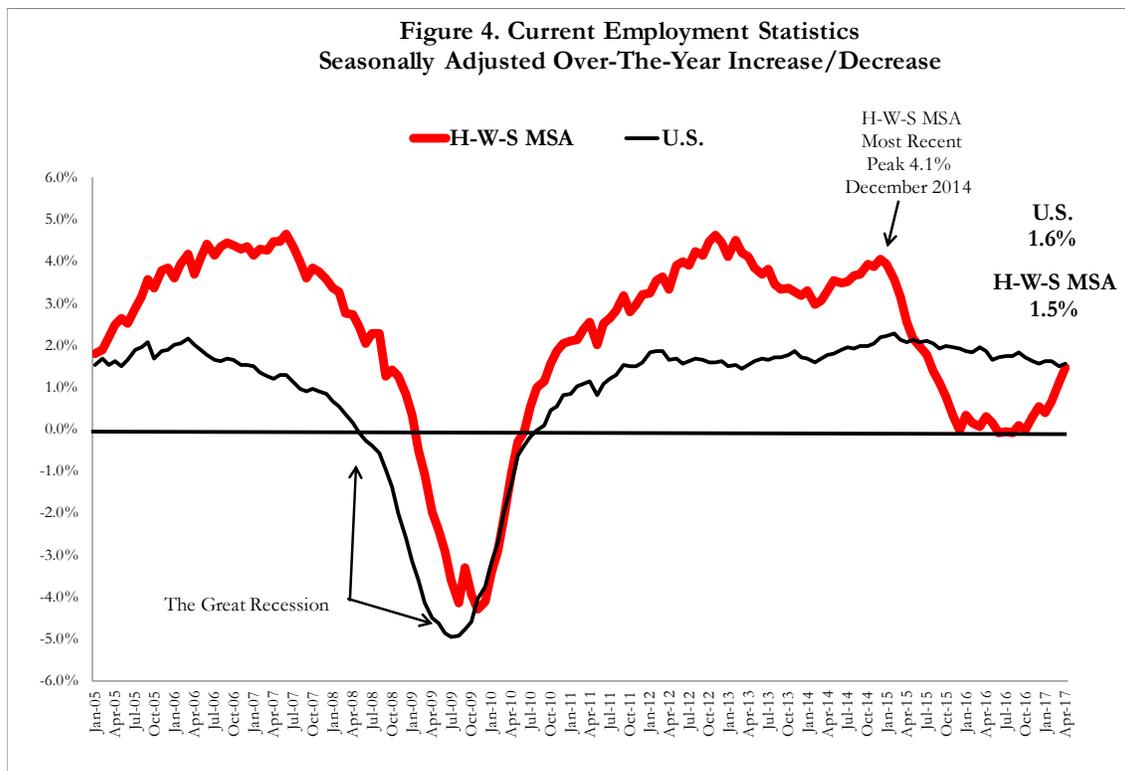
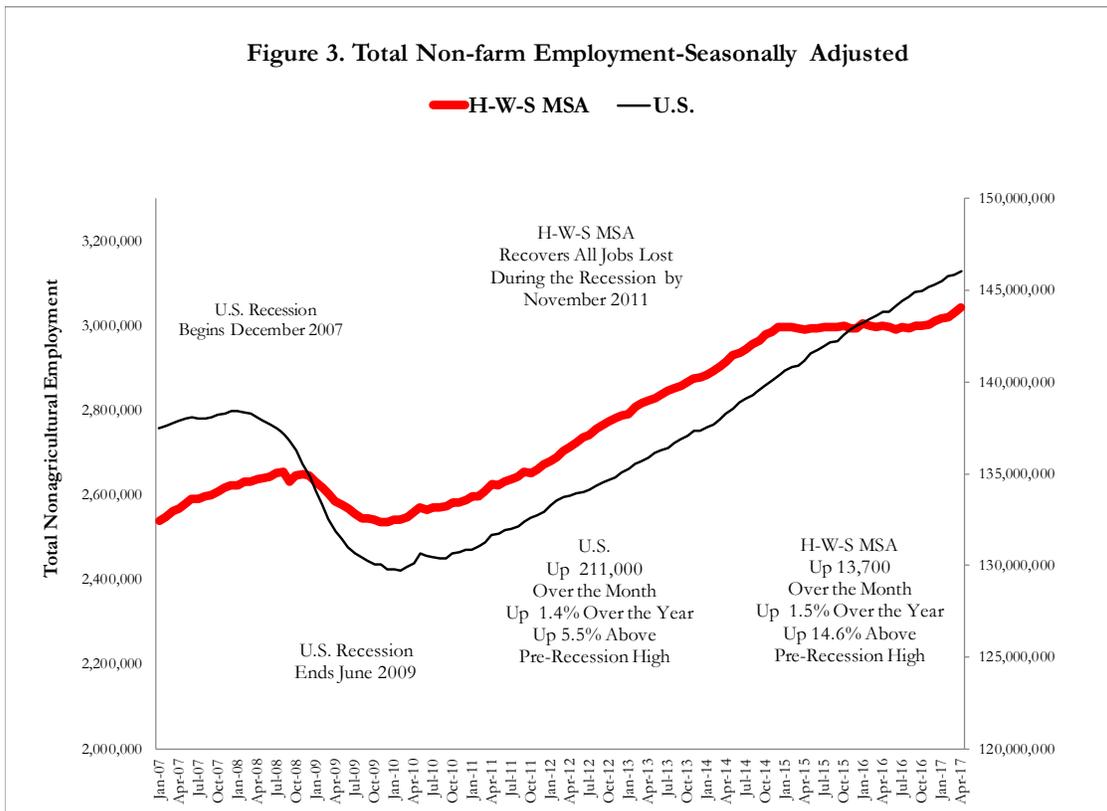
Total Nonfarm Employment in the H-W-S MSA increased by 18,700 jobs in April. The 0.6 percent increase was much stronger than an average 0.2 percent increase over the last twenty years. Robust hiring in Manufacturing, Trade Transportation and Utilities, and Employment Services, in conjunction with typical seasonal gains in other industries accounted for April’s increase. Construction activity slowed in April with the super sector suffering a substantial loss of 4,100 jobs down 1.9 percent.

Payrolls in the H-W-S MSA were up 41,900 jobs over the year with the pace of job growth rising to 1.4 percent, the same as that of the nation. This was the first time the local pace of job growth was not lower than the nations since May 2015. Most industry sectors that serve the H-W-S MSA’s growing population continue to report healthy over-the-year gains with strongest growth in Government, Leisure & Hospitality, and Educational & Health Services. Retail Trade has been an exception, however, as it struggles with rapid changes in the purchasing habits of consumers. The Manufacturing and Professional and Business Services sectors are also reporting substantial over-the-year increases due to recent hiring. Losses in Mining and Logging continue to be on the decline

as the industry responds to rising active rig counts. Losses in Construction continued to rise in April as the number of construction starts decline and as many heavy industrial projects are nearing completion. Comments by super sector can be found beginning on page 3. Detailed data can be viewed on pages 8 & 9.



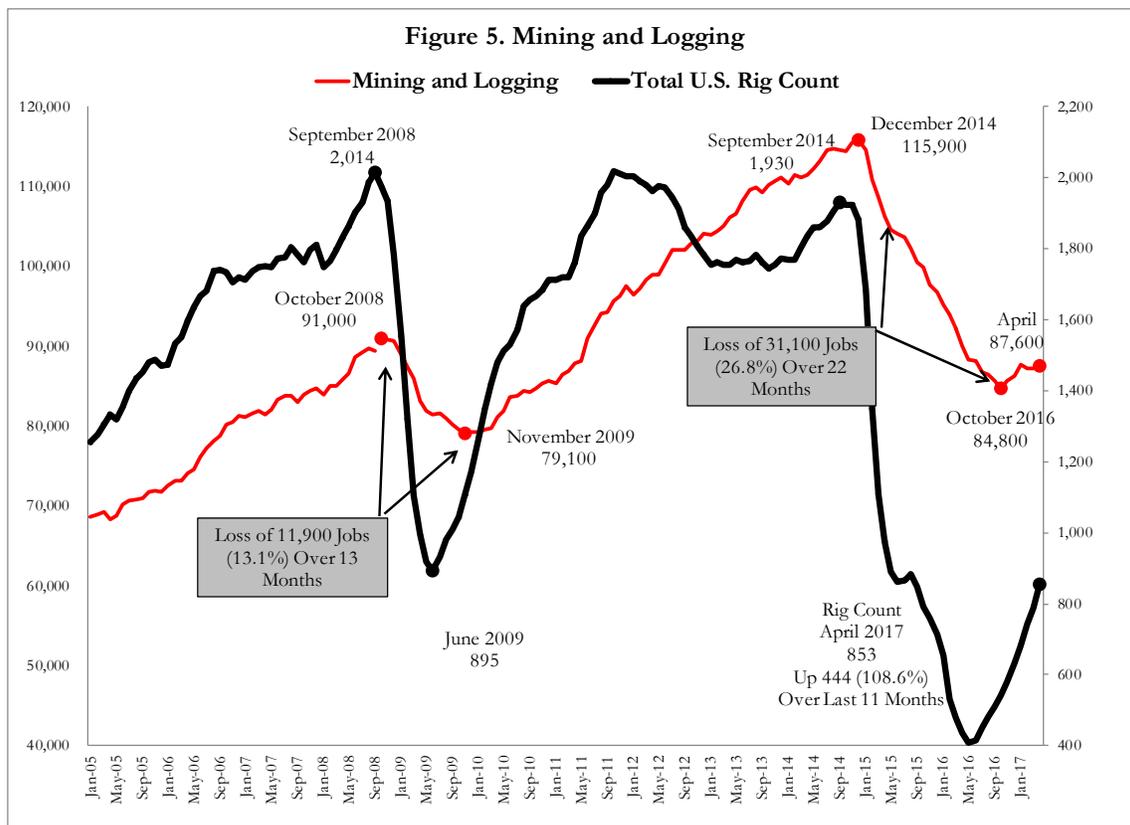
Seasonally adjusted estimates for the H-W-S MSA and U.S. seen in figure 3 and 4 provide an additional view of growth-trends removing the erratic month-to-month seasonal patterns. On a seasonally adjusted basis, Total Nonfarm Employment rose for the eighth consecutive month in April, up 13,700 jobs. Payrolls in the H-W-S MSA were up 44,000 jobs over the year with the pace of job growth rising to 1.5 percent, just one-tenth of one-percent lower than the nation’s 1.6 percent rate. Despite weaker growth rates since the collapse in oil prices, overall growth of Total Nonfarm Employment in the H-W-S MSA has outperformed the nation with payrolls up 14.6 percent above the prerecession high compared to 5.5 percent at the national level.



DETAILS BY SUPER SECTOR

Mining and Logging added 300 jobs in April, up 0.3 percent. Hiring in the super sector has been mostly positive since October 2016 in response to increased land-based drilling activity. Accrued losses in Mining and Logging since its most recent peak in December 2014 reached more than 31,000 jobs in October 2016. The 26.8 percent decline was twice as deep as a 13.1 percent loss of 11,900 jobs during the Great Recession, see figure 5. Since October 2016 the super sector has recovered some 2,800 jobs. The pace of over-the-year losses peaked in January 2016 at 16.9 percent and have since steadily declined, currently down 2.7 percent representing a loss of 2,400 jobs.

The average U.S. rig count was 853 in April, up 64 from March and 416 over the year but down 1,077, 55.8 percent, from the most recent peak of 1,930 in September 2014. The average Texas rig count was 425 in April, up 26 from March and 232 over the year but down 479, 53.0 percent, from the most recent peak of 904 in November 2014.

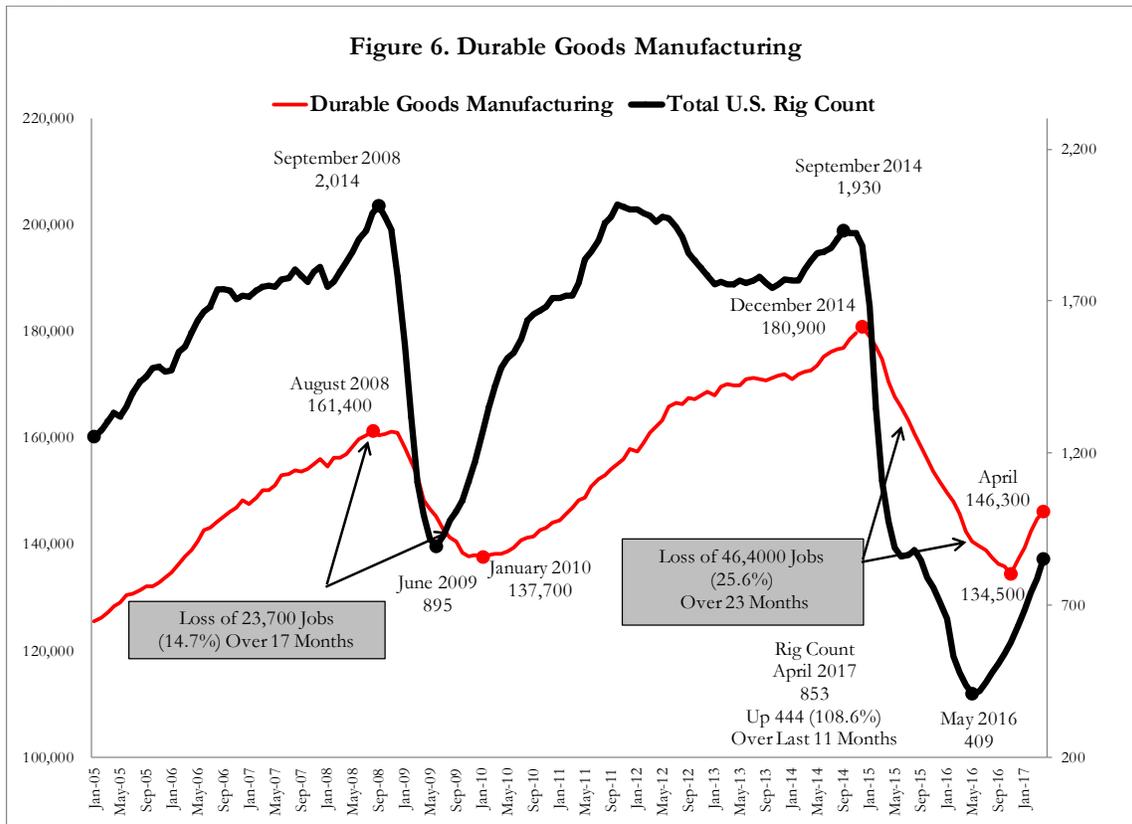


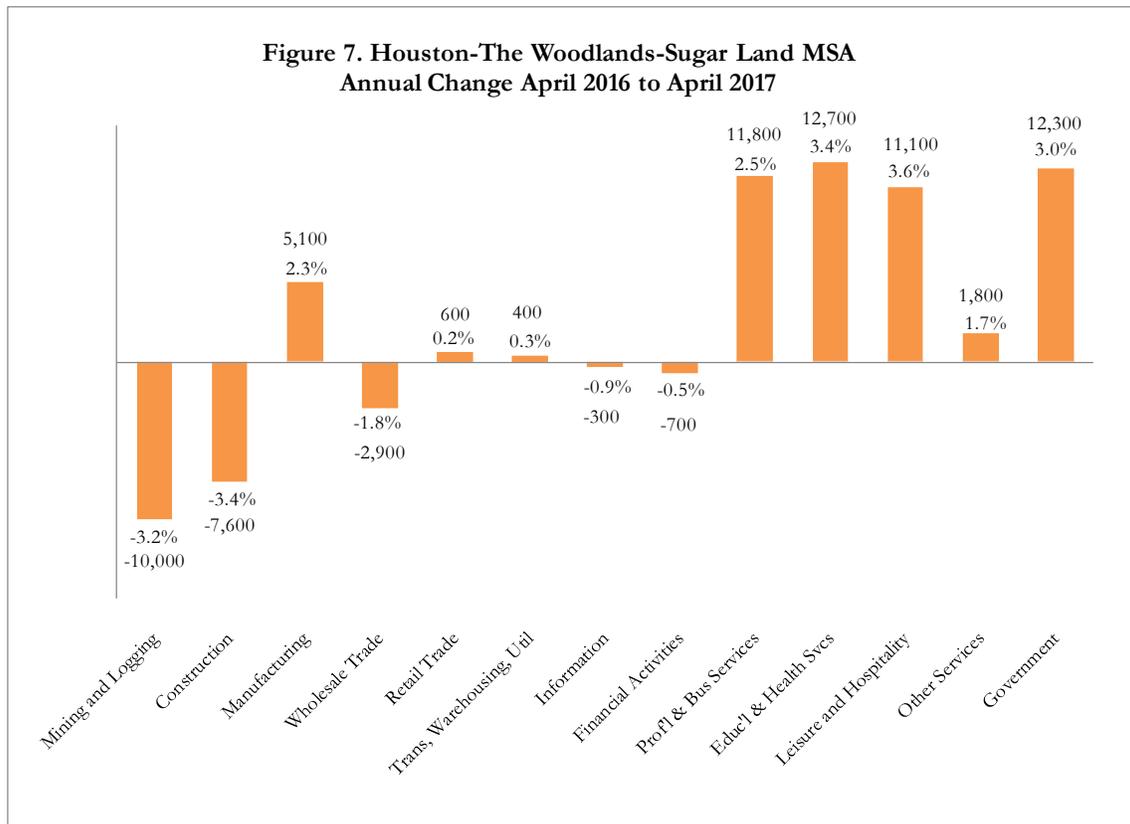
Construction was the largest declining sector over the month reporting its largest April loss since 2009, down 4,100 jobs or 1.9 percent. Losses were found across all subsectors as the number of construction starts decline and major projects in the chemical processing industry wrap up. Heavy and Civil Engineering Construction was hit the hardest with payrolls down 2,200 jobs or 4.5 percent. Over-the-year losses in Construction rose from 0.5 percent in March to 3.7 percent representing a loss of 7,600 jobs. Heavy and Civil Engineering Construction was responsible for much of the decline, down 4,900 jobs or 9.5 percent. Construction of Buildings and Specialty Trade Contractors were also reporting losses, down 2.1 percent and 1.3 percent respectively.

Manufacturing reported its fifth consecutive increase in April, up 2,400 jobs or 1.1 percent. The super sector has added some 12,000 jobs since hitting a bottom in November 2016 with all but 200

of the new jobs being created in Durable Goods Manufacturing, see figure 6. Manufacturing was up 5,100 jobs or 2.3 percent over the year. Most of the increase was in Durable Goods Manufacturing which reported an over-the-year increase for the first time since March 2015, currently up 3,900 jobs or 2.7 percent. While Fabricated Metal Product Manufacturing was up 3,800 jobs or 7.9 percent, Machinery Manufacturing continues to report losses, down 5,400 jobs or 12.2 percent. Non-durable Goods Manufacturing was up 1,200 jobs or 1.5 percent over the year.

The Houston Purchasing Managers Index was 54.1 in April, up 2.7 points from its March level of 51.4. This was the seventh consecutive month for the index to be positive. The Houston PMI indicates likely shifts in production three or four months in advance. Readings over 50 generally indicate production expansion over the near term, while readings below 50 show coming contraction.





Trade Transportation & Utilities added 4,200 jobs over the month. The 0.7 percent increase was much stronger than a five-year average increase of 0.3 percent. Labor market conditions in the super sector improved substantially over the month with the pace of losses declining from 0.9 percent in March to 0.3 percent representing a loss of 1,900 jobs over the year. Wholesale Trade was responsible for the loss with payrolls down 2,900 jobs or 1.8 percent. After briefly dipping into the red in March with payrolls down 300 jobs, Retail Trade returned to positive-growth reporting a slight increase of 600 jobs or 0.2 percent over the year. Transportation, Warehousing and Utilities was also reporting a slight increase of 400 jobs over the year, up 0.3 percent.

Information lost 400 jobs in April with payrolls down 300 jobs or 0.9 percent over the year. About half of the MSA's employment in information resides in telecommunications where payrolls were down 600 jobs or 4.2 percent over the year. The remainder of jobs in the industry sector are found in newspaper and periodical publishing, software publishing, motion picture and sound recording, and data processing hosting and related services.

Financial Activities reported a loss of 400 jobs in April, down 0.3 percent. The super sector has reported losses in five of the last eight months. April's decline resulted from a loss of 800 jobs, 1.8 percent, in Credit Intermediation and Related Activities. An increase of 400 jobs in Real Estate and Rental and Leasing helped offset the loss. Because of recent declines, Financial Activities reported its first over-the-year loss since October 2010, down 700 jobs or 0.5 percent. A loss of 1,200 jobs, 2.2 percent, in Real Estate and Rental and Leasing was primarily responsible for the decline. The Finance and Insurance sector continued to report a slight increase of 500 jobs despite one of its components, the Depository Credit Intermediation subsector, reporting a loss of 1,200 jobs, down 4.1 percent

Professional and Business Services was the largest gaining sector reporting its strongest April increases since during the shale boom in 2011, up 7,000 jobs or 1.5 percent over the month. Hiring in Employment Services (staffing agencies) was responsible for most of the increase, up 4,800 jobs or 5.6 percent. Services to Buildings and Dwellings made the second largest contribution to April's increase with a seasonal gain of 1,200 jobs, up 2.4 percent. The pace of job growth in Professional and Business Services rose substantially from 1.4 percent in March to 2.5 percent, up 11,800 jobs over the year. The increase was made possible by an addition of 14,400 jobs, 18.9 percent, in Employment Services. Sectors related to Professional, Scientific, and Technical Services continued to report over-the-year losses but at a declining pace, down 1.9 percent over the year, 4,300 jobs, compared to 2.7 percent, 6,000 jobs in March. Most of the decline in Professional, Scientific, and Technical Services are found in the Architectural, Engineering and Related Services subsector and related to weak oil prices.

Education and Health Services added 2,600 jobs to payrolls in April, up 0.7 percent. Hiring was across most of the super sector except for Ambulatory Health Care Services where payrolls fell 200 jobs, down 0.1 percent. Education and Health Services was the second largest contributor of over-the-year job growth in the H-W-S MSA with payrolls up 12,700 jobs or 3.4. All subsectors were reporting over-the-year gains. Educational Services added jobs at fastest pace of 6.0 percent, up 2,000 jobs, but the majority job-growth was in Health Care and Social Assistance, up 9,100 jobs or 3.3 percent.

Leisure and Hospitality added 4,700 jobs in April. The 1.5 percent seasonal increase was stronger than an average 1.0 percent increase over the last five years. Payrolls in Leisure and Hospitality were up 11,100 jobs or 3.6 percent over the year. Most of the new jobs are found at eating establishments with Food Services and Drinking Places up 8,700 jobs or 3.4 percent over the year. Arts, Entertainment, and Recreation added jobs at the fastest pace, up 2,000 jobs or 6.0 percent.

Other Services added 1,600 jobs in April, up 1.5 percent, with payrolls up 1,800 jobs or 1.7 percent over the year. Other Services is partially comprised of various repair service companies (industrial equipment, mining machinery and equipment, and many others related to the oil and gas industry). Additional establishments in this category include personal care services, dry cleaning and laundry services, and religious and social advocacy organizations.

Government added 800 jobs in April with payrolls up 12,300 jobs over the year. Most of the increase has been related to education with Local Government Educational Services up 10,600 jobs or 5.1 percent over the year and State Government Educational Services up 1,600 jobs or 3.2 percent over the year.

NONAGRICULTURAL EMPLOYMENT
Houston-The Woodlands-Sugar Land MSA

	APR 2017	Month Change		Year Change	
		Net	Percent	Net	Percent
Total Nonfarm	3,042,800	18,700	0.6%	41,900	1.4%
.Total Private	2,624,900	17,900	0.7%	29,600	1.1%
.Goods Producing	531,300	-1,400	-0.3%	-4,900	-0.9%
...Mining, Logging, and Construction	301,400	-3,800	-1.2%	-10,000	-3.2%
...Mining and Logging	87,600	300	0.3%	-2,400	-2.7%
.....Oil and Gas Extraction	45,900	-600	-1.3%	-5,500	-10.7%
.....Support Activities for Mining	37,700	500	1.3%	500	1.3%
...Construction	213,800	-4,100	-1.9%	-7,600	-3.4%
.....Construction of Buildings	57,000	-400	-0.7%	-1,200	-2.1%
.....Heavy and Civil Engineering Construction	46,500	-2,200	-4.5%	-4,900	-9.5%
.....Specialty Trade Contractors	110,300	-1,500	-1.3%	-1,500	-1.3%
..Manufacturing	229,900	2,400	1.1%	5,100	2.3%
...Durable Goods	146,300	1,600	1.1%	3,900	2.7%
...Fabricated Metal Product Manufacturing	52,000	200	0.4%	3,800	7.9%
....Machinery Manufacturing	38,900	-200	-0.5%	-5,400	-12.2%
.....Agriculture, Construction, and Mining Machinery Manufacturing	25,800	0	0.0%	-4,200	-14.0%
....Computer and Electronic Product Manufacturing	15,400	200	1.3%	0	0.0%
...Non-Durable Goods	83,600	800	1.0%	1,200	1.5%
....Petroleum and Coal Products Manufacturing	10,100	100	1.0%	200	2.0%
....Chemical Manufacturing	38,800	-100	-0.3%	100	0.3%
.Service Providing	2,511,500	20,100	0.8%	46,800	1.9%
.Private Service Providing	2,093,600	19,300	0.9%	34,500	1.7%
..Trade, Transportation, and Utilities	604,400	4,200	0.7%	-1,900	-0.3%
...Wholesale Trade	160,600	700	0.4%	-2,900	-1.8%
....Merchant Wholesalers, Durable Goods	92,600	0	0.0%	-1,700	-1.8%
.....Professional and Commercial Equipment and Supplies Merchant Wholesalers	13,400	0	0.0%	-100	-0.7%
....Merchant Wholesalers, Nondurable Goods	44,500	100	0.2%	-1,000	-2.2%
...Retail Trade	304,300	2,500	0.8%	600	0.2%
....Motor Vehicle and Parts Dealers	42,300	200	0.5%	600	1.4%
....Building Material and Garden Equipment and Supplies Dealers	21,900	300	1.4%	-1,000	-4.4%
....Food and Beverage Stores	67,100	0	0.0%	200	0.3%
....Health and Personal Care Stores	19,300	0	0.0%	100	0.5%
....Clothing and Clothing Accessories Stores	27,400	-600	-2.1%	-200	-0.7%
....General Merchandise Stores	62,500	300	0.5%	1,300	2.1%
.....Department Stores	23,100	-100	-0.4%	300	1.3%
.....Other General Merchandise Stores	39,400	400	1.0%	1,000	2.6%
...Transportation, Warehousing, and Utilities	139,500	1,000	0.7%	400	0.3%
....Utilities	16,000	100	0.6%	-200	-1.2%
.....Air Transportation	21,700	0	0.0%	100	0.5%
.....Truck Transportation	24,500	100	0.4%	-200	-0.8%
.....Pipeline Transportation	10,800	0	0.0%	-200	-1.8%
..Information	32,100	-400	-1.2%	-300	-0.9%
...Telecommunications	13,700	-200	-1.4%	-600	-4.2%
..Financial Activities	153,500	-400	-0.3%	-700	-0.5%
...Finance and Insurance	99,300	-800	-0.8%	500	0.5%
....Credit Intermediation and Related Activities	43,600	-800	-1.8%	-800	-1.8%
.....Depository Credit Intermediation	27,800	-200	-0.7%	-1,200	-4.1%
....Securities, Commodity Contracts, and Other Financial Investments and Related Activities	19,900	0	0.0%	200	1.0%
....Insurance Carriers and Related Activities	35,800	0	0.0%	1,100	3.2%
...Real Estate and Rental and Leasing	54,200	400	0.7%	-1,200	-2.2%

NONAGRICULTURAL EMPLOYMENT
Houston-The Woodlands-Sugar Land MSA

	APR 2017	Month Change		Year Change	
		Net	Percent	Net	Percent
..Professional and Business Services	479,700	7,000	1.5%	11,800	2.5%
...Professional, Scientific, and Technical Services	216,400	1,400	0.7%	-4,300	-1.9%
....Legal Services	24,800	100	0.4%	200	0.8%
....Accounting, Tax Preparation, Bookkeeping, and Payroll Services	27,700	-400	-1.4%	400	1.5%
....Architectural, Engineering, and Related Services	64,300	500	0.8%	-3,500	-5.2%
....Computer Systems Design and Related Services	31,900	100	0.3%	-400	-1.2%
...Management of Companies and Enterprises	37,300	600	1.6%	400	1.1%
...Administrative and Support and Waste Management and Remediation Services	226,000	5,000	2.3%	15,700	7.5%
....Administrative and Support Services	214,200	5,100	2.4%	15,400	7.7%
.....Employment Services	90,400	4,800	5.6%	14,400	18.9%
.....Services to Buildings and Dwellings	50,600	1,200	2.4%	500	1.0%
..Educational and Health Services	390,500	2,600	0.7%	12,700	3.4%
...Educational Services	60,500	700	1.2%	2,600	4.5%
...Health Care and Social Assistance	330,000	1,900	0.6%	10,100	3.2%
....Ambulatory Health Care Services	154,800	-200	-0.1%	4,000	2.7%
....Hospitals	88,600	300	0.3%	3,500	4.1%
..Leisure and Hospitality	323,500	4,700	1.5%	11,100	3.6%
...Arts, Entertainment, and Recreation	35,300	500	1.4%	2,000	6.0%
...Accommodation and Food Services	288,200	4,200	1.5%	9,100	3.3%
....Accommodation	26,600	0	0.0%	400	1.5%
....Food Services and Drinking Places	261,600	4,200	1.6%	8,700	3.4%
..Other Services	109,900	1,600	1.5%	1,800	1.7%
Government	417,900	800	0.2%	12,300	3.0%
.Federal Government	28,700	100	0.3%	600	2.1%
.State Government	86,100	900	1.1%	1,700	2.0%
..State Government Educational Services	51,700	700	1.4%	1,600	3.2%
.Local Government	303,100	-200	-0.1%	10,000	3.4%
..Local Government Educational Services	216,500	-700	-0.3%	10,600	5.1%

UNEMPLOYMENT RATE

	APR 2017	MAR 2017	APR 2016
H-W-S MSA	5.3	5.7	4.8
Texas (Actual)	4.5	5.0	4.3
United States (Actual)	4.1	4.6	4.7

Houston-The Woodlands-Sugar Land MSA: Includes Austin, Brazoria, Chambers, Ft. Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties. All Data is Subject to Revision.

Sources: U.S. Department of Labor, BLS, Texas Workforce Commission, Institute for Supply Management, Kiley Advisors, Metrostudy, and The Federal Reserve Bank of Dallas.

Career Office Committee Customer Service Award

Background

As we have noted to you in previous meetings, our contractors regularly identify staff members they believe best exhibit the I AM Workforce Solutions principles of excellent customer service:

- I AM Workforce Solutions to my customer
- I use my customer's perspective to guide my work
- I understand the resources available throughout our system
- I can always help my customer even when I have to say "no"
- I learn from my mistakes and gain a better understanding of how to help my customer

The Regional Management Team—made up of Board staff and contractor management—reviews nominations and selects one or more individuals for recognition.

I AM Workforce Solutions Customer Service Award

- ❖ **Dennita Allen**, Greeter
Workforce Solutions – Westheimer

As a Greeter and Team Lead at the Westheimer office, Dennita is an inspiration to both customers and staff. She sets the tone for each customer's experience as they enter the office, ensures they get to the resources or staff they need, and helps them leave the office encouraged about their employment outlooks. Her enthusiasm and knowledge is infectious, and she shares her expertise by training her coworkers or participating on regional workgroups.

- ❖ **Workforce Solutions – Southeast Management Team**
Jaime Campos, Eva Hernandez, Johna Reiss and Robert Seidenberger

The Southeast Management Team understands the importance of helping employers find qualified candidates. They instill this idea in their staff and collaborate with Employer Service and other community partners to ensure that employers are able to find the right talent to help their businesses succeed. No employer is too big or opportunity too small; the Southeast Management team works equally as hard to make all employers feel valued. By keeping the employer's needs in mind, the Southeast office is not only able to help employers get what they need, but they also help customers find good jobs to support themselves and their families.

Dennita, Jaime, Eva, Johna and Robert *ARE* Workforce Solutions!

Education & Training Network

Training for Construction Jobs

Background

Construction is one of the key sectors in the Gulf Coast region's economy. April 2017 estimates show 213,800 jobs in the industry – which includes industrial, commercial, heavy/civil and residential construction firms.

There is also a continuing demand for construction industry workers, particularly those in the skilled trades. Projections through 2024 show growth rates exceeding 25% for electricians and plumbers/pipefitters; growth for welders, carpenters, and masons; and growth for construction-related maintenance workers such as heating, ventilation, and air conditioning mechanics.

The Board has long recognized the importance of the industry and the need for skilled workers in construction trades, supporting scholarships for training in these occupations, custom and on-the-job training directly with employers, and upgrading for current trades workers.

Current Situation

The Board's Education & Training Network includes providers around the region offering entry-level and advanced training in our high-skill, high-growth occupations – including those key occupations in the construction industry. Individuals who are eligible for a Workforce Solutions scholarship choose the occupations in which they wish to train and among providers in the network for their training. The Board establishes baseline performance levels for network providers, currently set at 60% completion and 60% entered employment.

We wanted to recognize the providers in our network that have exceeded the Board's performance levels in training for jobs in the construction industry – and in future, those providers who exceed the Board's expectations in the other key industry sectors.

- Since 2010, we have provided scholarships for more than 3,200 individuals to train for construction jobs at network providers. (We have trained more than 1,500 additionally directly with employers).
- Overall, about 70% of these individuals complete their courses and are employed six months beyond the end of their training.

Network providers training in construction occupations that have exceeded the Board's performance levels in one or more occupational areas include:

Alvin Community College
Brazosport College
College of the Mainland
Everest Institute
Galveston College
Houston Community College
Houston School of Carpentry
Industrial Welding Academy
Lee College
Lone Star College
MIAT College of Technology
Milestone Technical Institute
San Jacinto College District
Wharton County Junior College

Action

Recognize these network providers for training Workforce Solutions' customers in construction occupations.