



# ALIGNING ELECTRICIAN PROGRAMS WITH INDUSTRY DEMANDS IN THE RIO GRANDE VALLEY

A Case Study about  
Texas Southmost College

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Formed in 2014, Workcred is an affiliate of the American National Standards Institute (ANSI). Its mission is to strengthen workforce quality by improving the credentialing system, ensuring its ongoing relevance, and preparing employers, workers, educators, and governments to use it effectively. Workcred's vision is a labor market that relies on the relevance, quality, and value of workforce credentials for opportunities, growth, and development.

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Texas Southmost College (TSC) is a two-year public, open access institution in Brownsville, Texas. Established in 1926 as the first institution of higher education in the Rio Grande Valley, TSC represents the region's boundless potential, and empowers students, families, and industry through practical, affordable, high-quality education that drives personal success and elevates regional economic growth. TSC is driven to be a nationally-leading, community-rooted, and student-centered institution that transforms lives and uplifts families.

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# About Industry Certification + Certificate/Degree Pathways

The practice of integrating or embedding industry credentials like certifications into certificates or degrees is common at community colleges.<sup>1</sup> Embedding refers to a college's alignment of its degree curriculum with an industry-developed credential, although the approach a college may take varies as it seeks to better serve its students and leverage its existing resources. A study among 149 U.S. colleges and four-year institutions by Lumina Foundation found that the most commonly cited benefit of embedding certifications into academic pathways was that it enabled students to earn valuable industry and academic credentials at the same time.<sup>2</sup> The study also showed that these pathways helped colleges and universities align their curricula with prevailing industry standards.

Certifications are distinct from other credentials because they are awarded after an individual demonstrates acquisition of a set of skills through a standardized assessment (e.g., oral, written, or performance-based). Additionally, certifications must be renewed after a designated period of time and can be revoked for incompetence or unethical behavior. Individuals must meet qualifications such as training and experience that are required prerequisites to take the certification examination. Certifications are awarded and tracked by certification bodies—typically nonprofit organizations, professional associations, industry/trade organizations, or businesses. According to Credential Engine, nearly 7,000 industry-recognized certifications are offered across numerous industry sectors.<sup>3</sup>

## About the Project

The alignment between the academic curriculum and the skills employers demand in the labor market is critical to students' ability to successfully transition from their educational program to a career. For this alignment to exist and be maintained, there need to be policies and processes in place. This is especially true when the pathways involve industry certificates or certifications. Workcred partnered with Houston City College (HCC) and Texas Southmost College (TSC) to improve the effectiveness of industry certification + certificate/degree (iC+C/D) pathways in Texas by examining opportunities to align education and workforce stakeholders' processes and policies to better support low-income and first-generation students in completing iC+C/D pathways, earning postsecondary credentials of value, and entering the workforce.

This project provided TSC opportunities to review embedded industry credentials and improve student participation and performance in the certifications and licensures within four targeted pathways—computer information systems and cybersecurity; computer-aided drafting; commercial and residential electrician; and automotive technology. These pathways were chosen based on the following criteria:

- » Baseline enrollment of at least 74 students
- » Available data about students' participation and performance in obtaining industry certifications

- » The value these certifications bring to students
- » Strong job demand trends in the region for these certifications and pathways
- » Employer-identified regional competencies for the targeted occupations

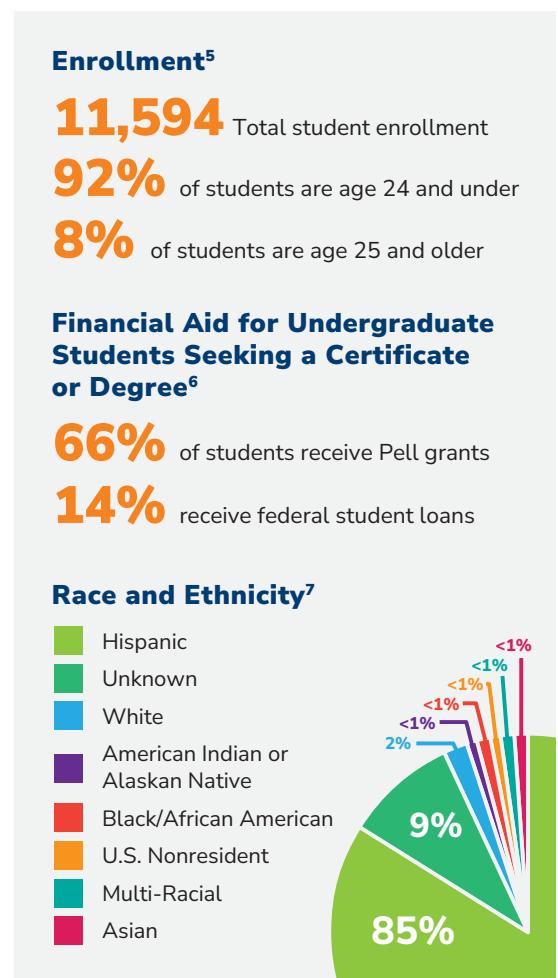
This is one of four case studies, two at both HCC and TSC, that highlight the processes used to create and maintain alignment of iC+C/D pathways. This case study focuses on the residential and commercial electrician pathway at TSC, which is critical to produce the electricians needed to support the economy in the Rio Grande Valley.<sup>4</sup> The combination of rapid population growth, large-scale infrastructure projects, and the expansion of housing and commercial developments in the Rio Grande Valley continues to drive the demand for commercial and residential technicians and electricians, making this pathway an ideal program for enhancing processes to examine the effectiveness of aligning academic curricula to industry skill needs.

The other case studies, as well as a guidebook for community colleges, can be found in the following publications:

- » **Integrating Academic Programs, Third-Party Industry Credentials, and Labor Market Skill Needs**
- » **Meeting the Need for HVAC Technicians**
- » **Powering the Rio Grande Valley's Automotive Workforce**
- » **Strengthening Business Technology Pathways**



**Figure 1: Student Demographics at TSC**



# **Growing Need for Residential and Commercial Electricians**

Texas has the ninth largest economy in the world and has led the United States in job growth over the past year. By 2036, 70 percent of jobs in Texas will require a postsecondary credential.<sup>8</sup> Yet, only 54 percent of Texans age 24-34 and 52 percent of those age 35-64 have earned a postsecondary credential.<sup>9</sup> Texas also consistently ranks among the top states for new construction, and the Rio Grande Valley is one of the fastest-growing regions, with new businesses, neighborhoods, and public facilities being built every year. Each of these ventures requires skilled technicians and electricians to ensure safe and reliable electrical systems for homes, schools, hospitals, and industries.

The demand for electricians is also impacted by an aging workforce. Many experienced electricians are approaching retirement, leaving a gap that must be filled by a new generation of trained professionals. At the same time, advances in technology, such as renewable energy systems, smart homes, and energy-efficient construction require electricians to master new knowledge and skills. This creates an urgent need for well-prepared technicians who can install, maintain, and troubleshoot both traditional and modern electrical systems. As a result, commercial and residential technicians and electricians have been identified as a high-demand career by the Texas Workforce Commission for the Rio Grande Valley.<sup>10</sup>

## **Strengthening the Alignment of Credentials for Commercial and Residential Electricians**

TSC plays a vital role in addressing this workforce shortage through its commercial and residential electrician programs, a Residential Electrician Certificate of Proficiency – Level One and a Commercial and Residential Electrician Associate of Applied Science (AAS) Degree. The programs incorporate industry-aligned curriculum taught by faculty who bring real-world expertise to the classroom, and are designed to provide hands-on training in electricity fundamentals, residential, commercial, and industrial wiring, electrical safety protocols, electrical codes, transformers, programmable logic controllers, and emerging technologies ensuring students are prepared to meet industry standards.

The certificate program requires students to earn 24-credit hours and provides hands-on training focused on all aspects of maintenance, operations, troubleshooting, and repair of circuits.<sup>11</sup> Upon completion of this certificate, students are able to obtain an entry-level position in an area of the electrical profession such as an electrician I, electrician helper, or assistant to the journeyman electrician. Students who want to continue their education can continue to earn the AAS degree once they complete the certificate.<sup>12</sup> Learners who earn the AAS degree enter the field in positions such as an electrical technician, maintenance electrician, electrician II, and data center electrician technician.

TSC is working closely with regional contractors, utility companies, and construction firms to ensure that the academic programs remain aligned with regional workforce needs, which ensures that graduates have the knowledge and practical experience to keep pace with the evolving demands of the field. The employers provide guidance and information about which industry-recognized credentials TSC should use to align with or incorporate into its curriculum. Currently, the ELPT 1321: Introduction to Electrical Safety and Tools course is aligned with the National Center for Construction Education and Research (NCCER) Core Curriculum certification and the Occupational Safety and Health Administration (OSHA) 10-hour Training Card so learners who earn either the certificate or the AAS degree also earn these industry credentials.<sup>13</sup>

Additionally, the state of Texas requires that anyone who performs electrical work must be licensed. The courses in the electrician programs at TSC provide the relevant technical knowledge that supports what apprentices are doing on the job and what is covered on licensure exams. Students can apply to the Texas Department of Licensing and Regulation to obtain an Apprentice Electrician License, which allows them to legally work on electrical jobsites under supervision and accumulate the required on-the-job training hours (8,000 hours over four years) needed to eventually qualify for the journeyman exam. Students can also apply for a Residential Appliance Installer Electrician License.<sup>14</sup>

By providing opportunities for students to earn these industry credentials and obtain relevant licenses, TSC students have a competitive edge in the job market and provide local employers with a pipeline of qualified workers who are ready to contribute immediately.

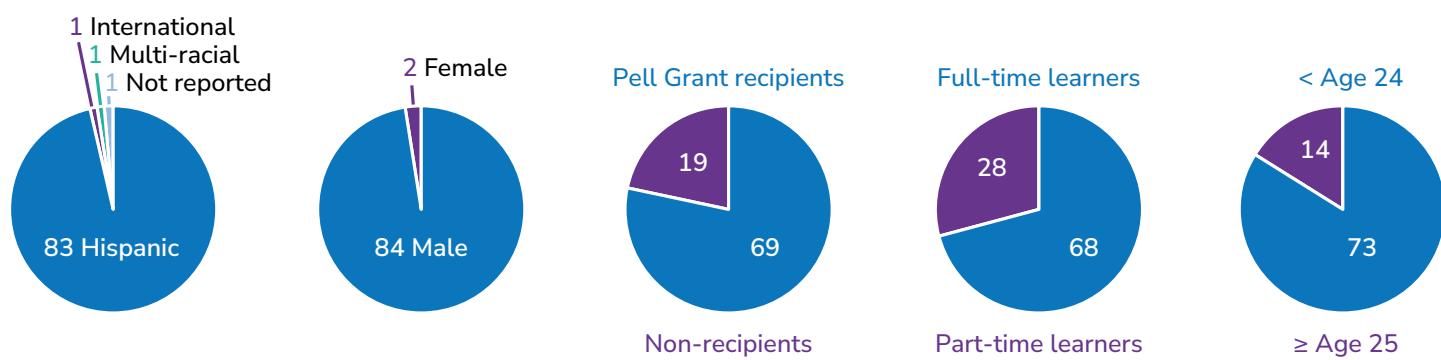


# Commercial and Residential Electrician Student Demographics

Student enrollment in the commercial and residential electrician pathway has steadily increased from 66 students in 2022-2023 to 86 students in 2024-2025. See Figure 2 for additional information about the student demographics of the commercial and residential electrician pathway.

**Figure 2: Commercial and Residential Electrician Pathway Student Demographics<sup>15</sup>**

2022-23	49 in degree	17 in certificate	66 students enrolled
2023-24	49 in degree	30 in certificate	79 students enrolled
2024-25	52 in degree	34 in certificate	86 students enrolled



## Texas State Policy Driving Program Alignment with Industry Credentials

During the 89<sup>th</sup> Texas Legislative session in 2023, House Bill (HB) 8 was passed, which transformed community college funding. HB 8 replaced the existing enrollment-based funding structure for community colleges with a finance model that was based on outcomes and aligned with student success and workforce needs.<sup>16</sup> Specifically, community colleges now need to show the following outcomes to receive funding:

- » The number of high school students who complete 15 semester credit hours in dual credit or dual enrollment courses;
- » The number of community college students who transfer successfully to four-year universities or complete 15 semester credit hours in a structured co-enrollment program; and

- » The number of community college students who earn credentials of value as defined by Texas, which offer purpose in the economy, value in the labor market, and opportunities for good jobs and meaningful careers.

The bill also included a number of strategies that were already underway at TSC to enhance the effectiveness of pathways. For example, the academic and industry credential alignment process is driven by quantitative data, which includes labor market statistics from the Texas Workforce Commission and high-demand job designations determined by state legislation and district-level workforce studies. This data confirmed that commercial and residential electricians continue to be a high-demand occupation both in Texas and the Rio Grande Valley.

## **Creating a New Certificate Program**

As TSC continued to review HB 8 and its impact on the college and its students, the opportunity to offer a new type of certificate, Occupational Skills Award (OSA), emerged. The for-credit OSA certificates are offered in career and technical education (CTE) programs, such as electrical technicians. The Electrical Technician OSA is composed of three courses (ELTN 1321, ELPT 1391, and ELPT 1329) that are part of the Residential Electrician Certificate of Proficiency – Level One program at TSC. Students who have an interest in working in the electric industry but need to enter the workforce quickly can complete the three courses to earn the OSA, then get right into the workforce as an electrical apprentice or electrician helper, and continue on the path to complete the electrician certificate or AAS degree if they chose to.<sup>17</sup> Students who complete the Electrical Technician OSA will also earn the NCCER Core Certification and the OSHA 10-hour Training Card as part of the ELTN 1321 course and can apply for an apprentice license with the State of Texas.

## **Enhancing Partnerships with High Schools**

HB 8 is also enhancing funding for high school students earning college credit through dual credit programs. Aligning dual credit pathways is a data-driven process. School districts use the Texas Education Agency (TEA) website to obtain state-wide data and understand the legislative mandates that are used to determine high-demand career programs.<sup>18</sup> As part of the public school accountability system, TEA must include high school students who earn industry certification(s) as an indicator of student achievement.<sup>19</sup> TEA creates a list of approved industry-based credentials that prepare students for career, postsecondary education, and military success. This list is publicly available and is used to help secondary schools develop their academic programs.<sup>20</sup>

To further strengthen connection with high school partners, TSC participates in high school partners' CTE advisory committees to review the pathways they are identifying for their students. Some high school partners engage even deeper with TSC. For example, one school district's administration meets with TSC dual credit and instruction leadership to discuss the impact of legislative changes and how TSC can partner to capitalize upon new legislation. Their regular meetings also serve as a time to resolve any issues that may have arisen.

Currently, dual credit for the commercial and residential electrician program is scheduled to be offered in one high school in the spring of 2026; however, there are other school districts looking to offer this program for their students as well. The TSC dual credit department works very closely with school district CTE directors to examine which programs align with their students' needs, as well as meet state requirements. TSC also engages in weekly meetings with high school partners to ensure alignment of offerings, operations, and future ventures, and all dual credit programs are reviewed annually.

By intentionally aligning curriculum with industry demand, TSC's commercial and residential electrician programs not only fulfill the objectives of Texas HB 8 but also accelerate students' entry into stable, high-paying careers, ultimately fueling economic growth in the region.

## Collecting Stakeholder Input

Developing and improving the effectiveness of pathways must be rooted in comprehensive stakeholder input. TSC faculty and administrators gather stakeholder feedback through a variety of mechanisms.

### Advisory Committees and Focus Groups

Advisory committees play an essential role in pathway development and sustainability, offering valuable insight into labor market trends, emerging technologies, and employer expectations. Their input allows colleges to stay ahead of workforce demands and adapt programs quickly to meet the needs of both students and employers.

TSC committee members are composed of program coordinators, faculty, and industry partners who represent various aspects of their industries. These committees meet twice per year to provide input into the program curriculum, examine program enrollment, review and update marketing materials, discuss changes in skills for relevant occupations, review certifications that are valued by employers, and discuss career opportunities.

Additionally, a focus group composed of advisory committee members along with program coordinators, employers, and faculty was convened by TSC's chief institutional editor and special projects to identify example occupational job titles to evaluate, key competencies needed to perform in each role, required certifications and/or licenses, amount of experience required, and pay ranges per skill level (see Figure 3).

### Faculty and Administration

Commercial and residential electrician faculty and administrators, including the director of curriculum, assessment and quality enhancement plan, and the dean of business, engineering, architecture, and technology (B.E.A.T.), meet to discuss the recommendations from the advisory committee and focus group meetings, and how changes can be made to better align the programs with industry needs. Then, the changes and recommendations are formally submitted to the curriculum and instruction committee for approval. Once that committee approves the updates, the changes are implemented, and the B.E.A.T. dean ensures that it is done in a timely manner.

As faculty are the main points of contact for students during their community college experience, it is also critical that they have also earned the industry credentials that they are teaching and that employers value. Commercial and residential electrician faculty at TSC hold the Apprentice Electrician License, NCCER Certified Instructor Certification, OSHA 10-hour Training Card, and/or the Journeyman Electrician License. TSC provides faculty \$2,500 annually to be used for professional development, including the cost to maintain these credentials as needed.

**Figure 3: Feedback from the Commercial and Residential Electrician Focus Group**

ENTRY LEVEL	LEVEL TWO	LEVEL THREE	LEVEL FOUR
<b>EXAMPLES OF OCCUPATIONAL TITLES</b>	Electrician I Electrician helper Assistant to the journeyman	Electrician II Electrician apprentice Residential wireman Residential installer	Electrician in charge Lead electrician
<b>KEY KNOWLEDGE, SKILLS, AND ATTRIBUTES</b>	Mathematics fundamentals Knowledge of basic hand tools	Knowledge of electrical and power tools Basic safety standards	Training for task management Knowledge of electrical equipment Live voltage safety standards
<b>CERTIFICATIONS AND/OR LICENSES REQUIRED</b>	Apprentice Electrician License	NCCER Core Certification OSHA 10-hour Training Card	Journeyman Electrician License
<b>EXPERIENCE REQUIRED</b>	0	6 months	4½ years
<b>PAY RANGE</b>	\$10–\$11/hour	\$12–\$15/hour	\$20+/hour
			\$25+/hour

## Industry Partners

Other industry partnerships also play a critical role in helping TSC faculty align the commercial and residential electrician pathway with the evolving needs of the workforce. Industry partners help bridge the gap between education and employment through offering internships, apprenticeships, and cooperative education opportunities. Students in the commercial and residential electrician pathway complete internships with companies such as Metro Electric, which focuses on commercial electric services, to provide students with real-world exposure that enhances their employability and confidence as they transition from the classroom to the workplace.

For students, these relationships also translate into a stronger return on their educational investment. They benefit from updated facilities, access to modern equipment provided through industry support, and increased networking opportunities that often lead to job placement after graduation. For example, it was suggested that

students would benefit from being able to work on a new charging station for electric cars. This suggestion was approved and is budgeted for 2026. In addition, new companies have moved to the Rio Grande Valley, which open new opportunities for students studying to become commercial and residential electricians.

### **TSC Industry Partner Summits**

To assist in evaluating four closely related TSC programs—commercial and residential electrician, construction technology, heating, air conditioning, and refrigeration, and plumbing—TSC hosted an Industry Partner Summit. Attendees, including industry partners and advisory committee members, were given a rubric and asked to review each course in these programs in five areas—curriculum content, lab equipment, software and technology, hands-on training, and certification preparation—using a four-point scale (see Figure 4).

Attendees also discussed advances in each of the industries and made recommendations for how these changes could be addressed in each academic program. The data collected from the rubrics provided valuable feedback, which was used to update the skills and competencies that students need to learn to be well prepared to enter the workforce.

Ultimately, industry partners are vital to fulfilling TSC's mission of promoting economic mobility, regional economic development, and workforce readiness. By working closely with local and regional industry leaders and employers, TSC is able to keep the curriculum relevant, provide students with experiential learning opportunities, and strengthen pathways to high-demand careers.

## **Career Services and Job Readiness**

Career services staff play a critical role in preparing students to transition confidently from the classroom into the workforce by offering connections to industry representatives and opportunities to learn about the types of jobs that are available and the skills needed to succeed in those jobs. Career services staff also provide students with comprehensive support that emphasizes three essential components of job readiness: resume development, mock interviews, and job fairs.

### **Resume Development**

Resume development is often the first step toward successful job placement. Students may lack experience effectively showcasing their skills, credentials, and accomplishments in a professional format. Career services staff provide individual guidance to help commercial and residential electrician students craft resumes that are specifically tailored to the electrical industry, highlight their unique skills, and showcase their ability to apply what they have learned.

### **Mock Interviews**

Mock interviews further prepare students to succeed by offering practice in a supportive, feedback-rich environment. These simulated experiences help students build confidence, articulate the skills they have gained,

**Figure 4: Workforce Alignment Rubric**

PROGRAM AND COURSE NAME _____															
<b>CURRICULUM CONTENT</b> Is the curriculum meeting current industry standards?															
<b>1</b> Not meeting	<b>2</b> Somewhat meeting	<b>3</b> Mostly meeting	<b>4</b> Fully meeting												
<b>LAB EQUIPMENT</b> Are lab tools and equipment current or outdated?															
<b>1</b> Outdated	<b>2</b> Somewhat outdated	<b>3</b> Mostly current	<b>4</b> Fully Current												
<b>SOFTWARE AND TECHNOLOGY</b> Is the software and technology training aligned with what is used in the workforce?															
<b>1</b> Not aligned	<b>2</b> Somewhat aligned	<b>3</b> Mostly aligned	<b>4</b> Fully Aligned												
<b>HANDS-ON TRAINING</b> Is the training comparable to real-world tasks?															
<b>1</b> Not comparable	<b>2</b> Somewhat comparable	<b>3</b> Mostly comparable	<b>4</b> Fully Comparable												
<b>CERTIFICATION PREPARATION</b> Is the offered certification aligned with industry needs?															
<b>1</b> Not aligned	<b>2</b> Somewhat aligned	<b>3</b> Mostly aligned	<b>4</b> Fully Aligned												
<b>TOTAL SCORE</b>															
<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>

**NOTES:**

strengthen their communication skills, and learn to respond to common interview questions with clarity and professionalism. Electrical industry partners also work with career services staff to provide constructive feedback, enabling students to refine their body language, tone, and overall presence, ultimately enhancing their ability to make a strong impression during real interviews.

## **Job Fairs**

Job fairs represent another opportunity for students to connect directly with employers and explore available career pathways and job opportunities. By bringing employer partners to campus, career services staff created a structured setting where students can apply their networking skills, share their resumes, and engage in meaningful conversations with potential employers. These events not only open doors to immediate job opportunities, but also foster long-term professional relationships that can support graduates throughout their careers.

# **Innovation at TSC and Beyond**

While working on enhancing the effectiveness of commercial and residential electrician pathways at TSC, other innovations and experimentations emerged and were implemented that can be replicated by other colleges.

## **Industry Partner Summits**

The Industry Partner Summits at TSC create a safe and collaborative space where industry representatives, faculty, and college leadership can come together to exchange ideas and perspectives. These summits not only provide an opportunity for open dialogue, allow industry partners to share their workforce needs, and faculty and administrators can gain valuable insights into how academic programs could be better aligned to meet those demands. The summits also serve as an important validation process—confirming the real and current needs of the programs, ensuring that decisions and alignment are grounded in both industry input and community demand. In addition, industry partners shared that it was their intent to hire TSC students upon completion of their certificate(s) and/or AAS degree programs, and indicated that TSC would be a feeder for their human capital needs.

## **Industry Partner Meet and Greet Events**

In addition to the summits, the B.E.A.T. division hosted its first annual Industry Partner Meet and Greet Event in 2025. It was meant to thank the industry partners for their participation in TSC's advisory committees, focus groups, and summits. TSC also wanted to raise awareness of the college as a venue for networking among the advisory committee members, program faculty, current students, alumni, and college leadership, which included the president and members of the board of trustees. And the event served to solicit informal feedback from participants, gaining awareness of issues and ideas that could be used to further enhance TSC courses and pathways.

## From Class to Career: How Industry Certifications Give You the Edge

TSC faculty and administrators developed a workshop for students enrolled in any of the four pathways from this project—computer information systems and cybersecurity, computer-aided drafting, automotive technology, and commercial and residential electrician. During the workshop, the TSC dean, program faculty, and industry representatives presented about the importance of industry certifications and certificates. They addressed how higher education had changed, how these pathways are in high-demand in the Rio Grande Valley, and that graduates can earn good careers and salaries pursuing these pathways. Employers also highlighted the importance of industry certifications to signal that prospective candidates had the knowledge and skills for a specific occupation. Some even said that prospective employees who do not hold the industry certification would not be hired, even if they had the recommended years of experience, which was a very eye-opening statement for the participants. Other key topics of the workshop included the importance of employability skills, such as problem solving, critical thinking, oral and written communication, punctuality, and professionalism.

## Future Events

### Building the Workforce of the Future Conference

As a result of the successful Industry Partner Summits, the B.E.A.T. division is working on creating a bigger event, “Building the Workforce of the Future Conference,” to be held annually. The intent of the conference is to “close the loop” between the education and training provided by TSC and the local and regional hiring processes, by working with employers to make TSC their higher education talent development partner. During the conference, participants will learn about career paths, speak directly with industry representatives to learn about the skills and industry-developed credentials that are valued in the Rio Grande Valley, and connect senior students and alumni with open jobs, thus “closing the loop.”

### B.E.A.T. Olympics 2026

In the summer of 2026, the B.E.A.T. division will also host its first ever B.E.A.T. Olympics for all its academic programs. Each program will develop its own competition where different types of students (e.g., dual credit, adult learners, full time) will compete in various hands-on activities based on their skill levels. The competitions will be judged by industry representatives and the winners will earn a bronze, silver, or gold medallion and bragging rights.

# Conclusion

There has been a shift in higher education where a four-year degree is no longer the universal route for all students, especially when the value of an industry-recognized credential combined with an academic certificate or degree may be preferred by industry. Commercial and residential electrician students who earn this combination of credentials are in demand as companies such as SpaceX and the liquid nitrogen gas industry locate to the Rio Grande Valley, and the Port of Brownsville is expanded.

The state of Texas has also recognized the importance of industry-developed credentials and the need to have alignment between those credentials and academic programs, which is evident by the passage of HB 8. The increased emphasis placed on awarding credentials of value was an important move for Texas as companies continue to select their business locations, in part, based on whether there is an education and training system in place that can develop the workforce. TSC built upon these external factors to strengthen their pathways and offerings to boost students' earning power, while experimenting with new ideas and strategies that enhance alignment between academic programs and industry skill needs.

As the area continues to grow, the commercial and residential electrician program is now the largest program at TSC. By preparing skilled commercial and residential electricians, TSC supports both the economic growth of the Rio Grande Valley and the broader needs of Texas. The college not only empowers students with pathways to stable, well-paying jobs but also ensures that communities and businesses thrive and can rely on a strong, homegrown workforce to power the future.

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