# MEETING THE NEED FOR HVAC TECHNICIANS

A Case Study about
Houston City College

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workcred
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HOUSTON
CITY 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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# About Certification + Degree Pathways

The practice of integrating or embedding industry credentials like certifications into certificates or degrees is common at community colleges.[1] 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.[2] 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.[3]

# 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 path-ways, earning postsecondary credentials of value, and entering the workforce.

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 alignment of HCC's heating, air conditioning, and refrigeration (HVAC) program to address the high demand for HVAC technicians in the Houston metropolitan area.

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

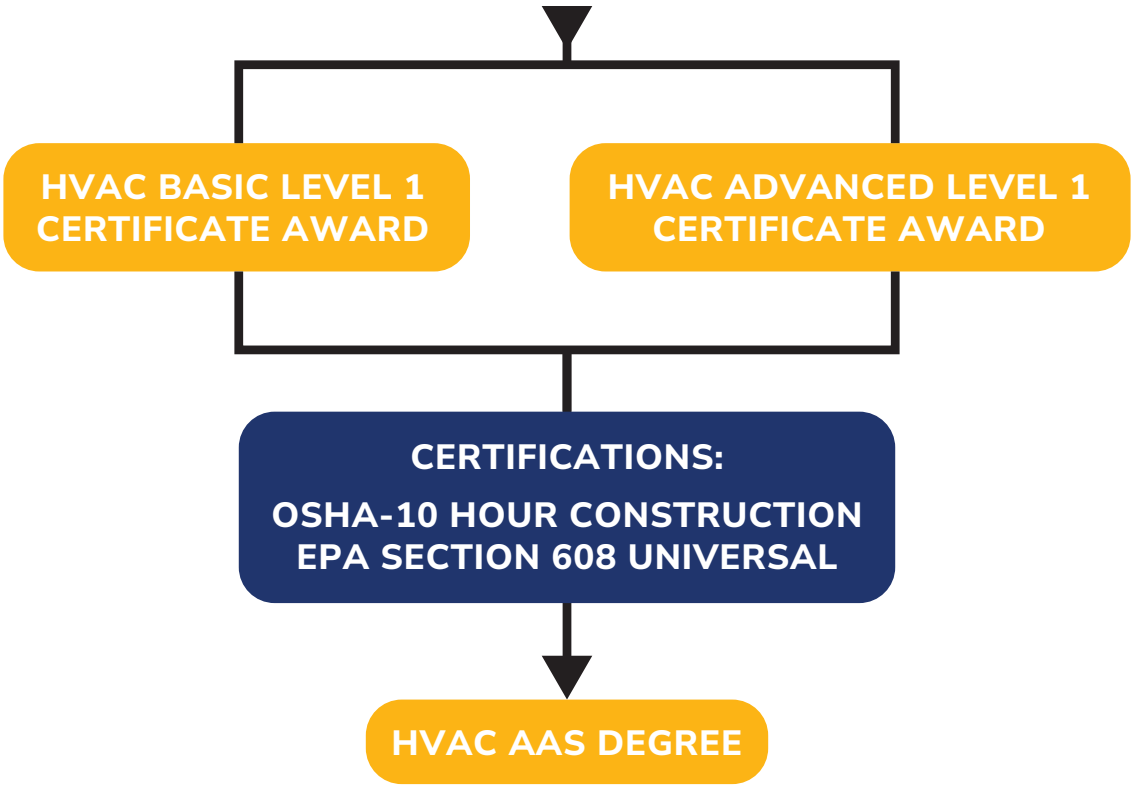
- **Aligning Electrician Programs with Industry Demands in the Rio Grande Valley**
- **Integrating Academic Programs, Third-Party Industry Credentials, and Labor Market Skill Needs**
- **Powering the Rio Grande Valley's Automotive Workforce**
- **Strengthening Business Technology Pathways**

# HCC's HVAC Pathway Program

Nearly every building has some form of climate control and HVAC system that mechanics and installers are responsible for during the construction, maintenance, and repair of these systems in residential, commercial, and industrial environments. In Texas, employment of HVAC mechanics and installers is projected to increase by 17 percent, and in the Gulf Coast region, the increase is even greater, at nearly 20 percent.[4] Workforce Solutions anticipates a need for almost 950 new HVAC mechanics and installers per year to fill growth and replacement needs in the Gulf Coast region of Texas by 2028.[5] HCC's HVAC pathway is an example of how the college is responding to this increase in demand.

The HVAC pathway includes a basic level one certificate, an advanced level one certificate, and an HVAC associate of applied science (AAS) degree (see Figure 1). These awards are officially designated as high-demand by the Texas Higher Education Coordinating Board (THECB) based on their classification of instructional program (CIP) codes and regional workforce data. This pathway provides multiple entry points that allow students to combine learning and working in a way that fits their life and career goals.

**Figure 1: HVAC Pathway at HCC**



Students can begin the pathway by enrolling in either the HVAC basic or advanced certificate programs. Students who complete the HVAC basic certificate program are qualified to work as an HVAC helper with an average salary of $37,835.[6] Those who complete the HVAC advanced certificate program can work as an HVAC mechanic or installer with an average salary of $59,648.[7] And, completers of either of the certificate programs can continue their education to earn the HVAC AAS and work as an HVAC supervisor with an average salary of $83,764.[8]

As part of ensuring that the HVAC pathway is aligned with industry needs, HCC also incorporates credentials that are desired by industry (see Figure 2). As part of the HART 1356: EPA Recovery Certification Preparation course, which is a required course for all three of the HVAC programs in the pathway, students earn the EPA Section 608 Universal Technician certification. Having this certification is mandatory before working with any equipment that uses refrigerants.[9]

Students also earn the Occupational Safety and Health Administration (OSHA) 10-hour construction certification upon completion of HART 1341: Residential Air Conditioning, which is a required course in all three HCC HVAC programs as well. By earning this OSHA 10-hour certification, students learn basic safety information that is necessary to work on construction sites. To help remove financial barriers, HCC has purchased 500 vouchers through a Carl D. Perkins grant to pay for the OSHA 10-hour certification exam.

**Figure 2: Embedded Industry-Developed Credentials**

| INDUSTRY-DEVELOPED CREDENTIAL | COURSE CREDENTIAL IS EMBEDDED IN | REQUIREMENT FOR EMPLOYMENT | COMPLETION LOCATION |
|---|---|---|---|
| EPA Section 608 Universal Technician Certification | HART 1356: EPA Recovery Certification Preparation | Yes, the certification is federally required to work with any refrigerants | Exams are taken at an approved location on campus with HCC staff proctors |
| OSHA 10-hour Construction Certification | HART 1341: Residential Air Conditioning | It is an essential safety certification that is often required by employers | Exams are taken as part of the HART 1341 course |

Another strategy to ensure programs remain aligned to industry needs is to integrate industry standards and industry-developed curricula. The HVAC pathway certificate programs are aligned to the National Center for Construction and Education Research (NCCER) standardized, competency-based curricula: the basic certificate curriculum is aligned with the NCCER Core Curriculum: Introduction to Basic Construction Skills, while the advanced certificate is aligned with NCCER's HVACR (heating, ventilation, air conditioning and refrigeration) curriculum, which meets the HVAC Excellence accreditation standards.[10] Additionally, students who complete the advanced certificate are prepared to take HVAC Excellence certification tests, including light commercial air conditioning, light commercial refrigeration, and residential air conditioning upon graduation.[11]

The AAS degree is aligned to the knowledge areas of technician expertise (KATEs) from NATE (North American Technician Excellence), a nonprofit certification organization for HVAC technicians.[12] By aligning the degree to the KATEs, HCC is recognized as a NATE-approved training provider. NATE offers the HVAC Support Technician Certificate and two certification pathways for students to pursue after graduation.[13]

HCC also encourages their students to participate in the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), a professional organization that offers student memberships and recognition programs.[14]

## Enrollment and Demographics

Enrollment across all HVAC programs in the pathway has demonstrated strong growth in recent years. After experiencing a dip to 198 students in academic year (AY) 2021, enrollment has steadily increased to 340 total students in AY 2025. The program also supports a number of students with financial need; 229 students across all HVAC pathways received Pell grants in AY 2025, confirming that financial aid is vital for a significant portion of the students.

*"We don't just sit in a classroom—we actually get to work with real equipment, wiring up systems and troubleshooting problems like we would in the field. It makes everything we learn in the books click because we can see how it works in real life. I feel like I'm actually preparing for a career, not just passing tests."*

*—Student enrolled in the HCC HVAC basic certificate program*

# Institutional Infrastructure Supporting Alignment

Ensuring that the HVAC pathway programs are aligned with industry skill needs and that this alignment is maintained requires institutional infrastructure. HCC's Workforce Program Research and Development (WPRD) department provides essential infrastructure to support and sustain programmatic alignment. One of WPRD's key functions is to lead the creation, launch, and enhancement of career and technical education (CTE) programs that are offered through HCC's 14 Centers of Excellence. The staff ensures that all programs are industry-driven, faculty-led, and aligned with regional labor market needs.

The department is also responsible for developing and maintaining employer, industry association, and other workforce partnerships that provide information to ensure the CTE programs meet employer needs and promote economic advancement for HCC's students. WPRD staff also actively pursues grant opportunities that support CTE program innovation and workforce alignment, and identifies industry-recognized credentials that can be integrated into the CTE programs. HCC has made workforce alignment a priority and the creation of the WPRD department is proof of that commitment.

# Curriculum Alignment Process at HCC

HCC developed an industry-driven and faculty-facilitated curriculum alignment process that was applied to all CTE programs. Each program, including HVAC, utilizes the following processes.

## Identify Current Needs

HVAC faculty and WPRD staff research labor market data to determine primary and secondary occupations and whether the occupations are high-skilled, high-wage, and in-demand. This includes identifying occupationally specific, industry-validated competencies with a focus on both technical and employability skills.

## Industry Review

The HVAC program faculty review the findings with the its advisory committee to identify any skill/competency gaps and to validate the skills that they agree are critical for each program. Faculty use the Workforce Education Course Manual (WECM), a statewide inventory of workforce education courses offered for semester credit hours and continuing education units, to identify the approved technical courses in the state of Texas that include the industry-validated competencies.

### Curriculum Alignment Mapping

HVAC faculty work with a curriculum specialist to build or revise the curriculum alignment map. This also includes identifying which skills are introduced, reinforced, and mastered in each course and whether any adjustments need to be made to ensure that all needed skills and competencies are adequately covered. In addition, course sequencing is determined to ensure the proper flow of knowledge as students progress through the programs.

### Review

Industry partners, faculty, and advisory committee members review the curriculum map to ensure adequate coverage of all skills and competencies, check for skill redundancies, and examine the course sequencing. As part of this process, the course learning objectives and activities are cross-referenced with the aligned competencies from the curriculum alignment map.

### Implement and Evaluate

Once the curriculum map has been reviewed and the course alignment is confirmed, the new curriculum can be implemented. As part of the continuous quality improvement process, every two years the competencies must be reviewed to ensure the program is still aligned with industry skill needs. If skill needs have changed, then the curriculum alignment process must be completed again to incorporate the new competencies.

## State of Texas Approval Process

In addition to the internal processes described previously, all HCC awards must be approved by THECB prior to institutional delivery. The process for approving a new certificate or workforce degree begins with institutional planning and internal review.[15] Once that is complete, then a formal proposal using THECB templates and submission guidelines can be created and submitted.

For HVAC specifically, HCC had to identify the need for the program, confirm alignment with local and state workforce demand, and obtain internal approvals from its curriculum and governing committees. Once those steps were taken, a proposal was created and submitted to THECB for approval of the program title, CIP code, credential level, curriculum outline, projected enrollments and completions, faculty qualifications, facilities and equipment requirements, a budget analysis, and a labor-market justification. For workforce programs, the curriculum must also align with courses listed in the WECM.[16]

After submission, THECB initiates a 30-day public comment period to notify nearby institutions and allow feedback on program duplication or regional need. Once the comment period closes, THECB staff review the proposal for completeness, alignment with state goals, labor-market validation, and financial feasibility, or request revisions or additional documentation. Proposals accepted as is or needing minor modifications can be approved in as few as 30-60 days, while programs with significant new content may take 60-90 days or more, especially if they require any additional reviews or approvals.

Once approved, THECB issues formal approval and authorizes the institution to implement the new program with a two-year launch window. Once the program has been launched, the institution must notify THECB within 90 days and then include it in ongoing productivity reporting and review cycles to ensure it is meeting minimum enrollment or completion. Throughout the process, HCC must continue to demonstrate strong ties to workforce demand, ensure curriculum integrity and alignment with WECM, and provide data to support the program's contribution to the state's higher education goals.[17]

# Texas State Policy Driving Program Alignment with Industry Credentials

During the 89th Texas Legislative session in 2023, 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.[18] Specifically, community colleges 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 public 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.

# HVAC Stakeholder Engagement

In addition to the college-wide process of aligning curriculum with industry needs outlined in the previous sections, the HVAC program incorporated feedback from a variety of stakeholders to improve the pathway, as discussed in the following sections.

## Employers

For the HVAC programs to meet and continue to meet employers' skill needs, employer engagement must be ongoing, and incorporate both formal and informal input. For example, HVAC program alumni who are employed in the area will often contact HCC about hiring one of its students. This provides an informal opportunity for the company representative and the HVAC faculty or staff to discuss current skills needs and any skills changes that have emerged.

### Advisory Committees

The HVAC programs have an advisory committee that meets semi-annually. The advisory committee is comprised of 25 individuals representing small and large commercial, industrial, and residential HVAC companies. Advisory committee members hold various positions, including technicians, hiring managers, project managers, and CEOs, but must have extensive knowledge of HVAC skill requirements to be a part of the advisory committee as members are asked to review the HVAC curriculum and provide updates on any changes to skill requirements or industry credentials. The industry credentials valued by employers and identified by the advisory committee are then mapped to the competencies in the academic programs to ensure alignment.

In addition, since both for-credit and non-credit programs benefit from employer insights, a shared governance system is being implemented in areas such as HVAC, where continuing education courses can be linked to a related for-credit academic program. This allows both for-credit and non-credit faculty to leverage industry input to ensure all courses and credentials remain viable.

### Other Formal Partnerships

The HVAC program also actively seeks partnerships with employers. HCC organizes discussions with companies about the importance of certification needs and the company's skill expectations. Johnson Controls participated in this type of discussion and agreed to assist in mock interviews for current HVAC students.

HCC also works with a local restaurant group that currently hires HVAC students and graduates. And to provide students with more hands-on experience, HCC is exploring partnerships in which employers, such as a leading provider of advanced, high-quality air conditioning solutions, will donate equipment to allow students interested in pursuing careers in residential HVAC to gain more hands-on training.

HCC is also focusing on expanding work-based learning experiences. HCC is in the initial stages of formalizing a memorandum of understanding with a global climate and energy solutions company to develop a work-based learning or cooperative education component for the AAS degree, which would include commitments to hire HVAC program graduates and to train their incumbent workers.

### Employer Recognition of Credentials of Value

HCC is actively seeking commitments from employers to recognize their credentials of value, which according to THECB is a postsecondary certificate or degree that provides a measurable return on investment for students by improving their economic opportunity and career outcomes.[19] Additionally, the credential must allow students to recover their educational costs within about ten years, achieve earnings that meet or exceed both the median wage of Texas high school graduates and a self-sufficiency standard, and align with high-demand occupations in the state.[20] Furthermore, programs that compile credentials of value in a given field into career progressions (i.e., pathways that students can use to plan their education with the end occupation in mind) should be designed with the minimum proficiency required for success in the intended career, with credentials bundled to build a career progression.[21] The HVAC pathway is an example of this career progression by embedding credentials of value into certificates that ultimately lead to an AAS degree and careers in various HVAC roles.

## Faculty and Administrators

In the fall of 2024, HCC implemented a new college-wide system to review all workforce awards and academic pathways to ensure curricula continues to reflect regional competency needs in a systematic way. Faculty and administrators in each academic pathway play critical roles in ensuring that each program has a system for curriculum review.

For the HVAC pathway, the review process begins with a meeting with the dean, the faculty chair, the program coordinator, and the vice president of Central College, and is facilitated by staff from the curriculum and compliance department. During the meeting, attendees identify the sequence of skills for the HVAC pathway and consider how competencies are introduced, reviewed, or mastered within each course. This process allows the team to identify redundancy and knowledge gaps. If there is redundancy between courses, the team determines which course should include the competency and remove it from the other course(s). If a knowledge gap is identified, faculty then determine which courses could accommodate those competencies and whether some competencies should be removed, especially if they are no longer relevant.

One issue that was identified in the HVAC pathway review was the need to create an Institutional Credential Leading to Licensure or Certification (ICLC) at HCC for the EPA Section 608 Universal certification. An ICLC is an academic credential designed for students seeking to gain in-demand technical skills in a short period of time, and must lead to an industry-recognized certification or license. In a high-demand field such as HVAC, the ICLC must include at least 80 contact hours, the actual number of hours a student is engaged in organized instructional activity. To solve this issue, HCC WPRD staff are working with the HVAC program to bundle a

series of courses to achieve the requirements to create this ICLC. Before being implemented though, the ICLC will need to be approved by the HVAC advisory committee, and will need to be entered into THECB program inventory and conferred on a student's transcript to qualify for state funding.

Another change that resulted from this HVAC curriculum review process was to include the continuing education program director and instructors in the HVAC advisory committee activities. Their participation, alongside the for-credit faculty, allows all departments that have HVAC offerings to leverage employer feedback for all offerings across the college district.

## Student Involvement

Student feedback and involvement is vital to ensuring that the programs and pathways also meets students' needs. The HVAC faculty gathered it through surveys, focus groups, and discussions or other interactions with faculty. This information provides HVAC faculty with critical insights that are used to continuously improve the course and the pathway.

For example, each semester students complete course evaluation surveys. Recent feedback has included a desire for more hands-on training experiences. Students also expressed their enjoyment of the course HART 1307: Refrigeration Principles, which helped them overcome an initial fear of using torches for tasks such as soft soldering and silver brazing.

Students also have direct interaction with employers, which provides them with opportunities to gain insights about industry trends and employment opportunities. For example, Johnson Controls offers job readiness seminars, mock interviews, and introduces students to industrial-sized HVAC equipment. The HVAC pathway also provides students with preparation and information for upcoming job fairs on campus and in the community.

## Secondary Schools

HCC's dual credit department is housed under the college of readiness division, and is led by the associate vice chancellor of college readiness who has a team that supports the daily operations and administration for dual credit students. They also provide direct contacts to high schools in all the HCC service areas. The following staffing model ensures compliance between HCC and the regional school districts:

- Dean, Dual Credit, Partnerships and Initiatives
- Associate Dean of Dual Credit
- Director of P-16 (6 positions)
- Dual Credit Pathways Advisors (4 positions)

Two schools within the Houston Independent School District (HISD), North Forest High School and Jones Futures Academy, have a partnership with HCC so their students can earn dual credit in HVAC. Students in these high schools can enroll in and complete the HVAC basic certificate. Upon graduation from high school, students who

want to continue to pursue their education in HVAC can enroll at HCC to complete the advanced certificate and/or the AAS degree. Dual credit allows these students to get a head start on their career and earn college credit while still in high school.

Additionally, high school students who live within the HCC taxing district can take dual credit courses at no charge. Students who reside outside of this district do not pay tuition, but they do have to pay out of district fees.[22] However, it should be noted that regulations by state and licensure/certification agencies do not allow minors to pursue certain credentials due to age requirements and contact hour regulations.

Despite the interest in HVAC among local high school students, there are challenges that need to be addressed. Access to equipment, space to house HVAC labs, and the availability of qualified HVAC instructors limit opportunities to expand dual credit opportunities in HVAC to more schools, or even increase capacity in the two schools that are existing partners.

# Outcomes of the Alignment Process for the HVAC Pathway

## Stackability

As part of the review process, each course in the pathway is crosswalked to determine how it supports the program's progression from entry-level to advanced skills, and remove any overlaps. The crosswalk clarifies where introductory skills, such as electrical fundamentals and basic refrigeration, are introduced in the basic certificate, and how they are later reinforced through advanced topics like system diagnostics, load calculations, and environmental control systems in the advanced certificate. It also ensures that courses in both certificates align with the corresponding AAS courses, allowing credit transfer without duplicating learning. When necessary, faculty refine course sequencing, adjust course titles for clarity, and modify prerequisites to promote a seamless transition between program levels.

The pathway is meant to stack credentials, allowing students to enter the workforce at multiple points while maintaining a clear route to higher credentials. The HVAC basic certificate serves as the entry point, preparing students for positions such as installer or maintenance technician. After completing this level, students can continue to the HVAC advanced certificate, which builds on foundational skills with advanced training in system operations, energy efficiency, and regulatory compliance. The pathway culminates in the AAS degree, during which students complete general education courses, advanced technical electives, and capstone experiences that prepare them for supervisory or contractor-level roles. This stackable structure ensures that each credential connects to the next without redundancy, maximizing both time and financial efficiency for students while maintaining compliance with THECB program approval and reporting standards.

## Retirement of Credentials

One of the issues that is addressed during the program review process is to determine if any credentials should be retired (i.e., no longer used). For example, faculty determined that the residential building high-performance level 1 certification should be retired because it did not align with the AAS degree, and therefore should no longer be a part of the HVAC pathway.

## Integrated Certification Training

The HVAC pathway was developed to include the training prerequisites for the embedded certifications—EPA Section 608 and OSHA 10—into the curriculum. This was designed to help increase access for all students and remove barriers to employment, since the EPA certification is required for employment in the HVAC industry and OSHA 10 is frequently required by employers.

## Maintaining Program Information and Providing Credential Transparency

The HVAC pathway faculty, along with all other instructional workforce programs, update HCC's central credential database yearly and to ensure information on course alignment, location, labor market information, current status, etc. remains accurate. The data can be viewed internally on HCC's intranet.

Additionally, HCC is collaborating with Credential Engine to enhance credential transparency and pathway data by publishing information about all of its awards – more than 2,100 course offerings, 400 credentials, and 25 total pathways – in Credential Finder through the Texas Credential Library.[23] The Texas Credential Library is a partnership among Credential Engine, THECB, the Texas Education Agency, and the Texas Workforce Commission to provide information and transparency to all Texans about all credentials that are issued by postsecondary institutions in the state.

## Need for Fast-Track Options

Students, particularly adult students, expressed an interest in having a fast-track option that allows them to earn a credential and enter the workforce more quickly. This is particularly important because many students have an immediate need to enter the workforce. Frequently, students who may enroll in a longer program drop out because they are offered jobs. Creating the ICLC for the EPA Section 608 certification is intended to address this need.

Other fast-track options could allow industry employees to take a specific class or group of classes. For example, an ICLC could be developed for someone interested in refrigeration by combining HART 1356 and HART 1307. This would meet THECB requirements to create an ICLC to enter the HVAC industry more rapidly, and the learner could use the ICLC as a way into the HVAC pathway certificate programs or AAS degree at HCC. However, it is important to note that some industry certifications are not eligible for HCC to create an ICLC because they do not meet the 144 contact-hour eligibility requirements.

By creating ICLCs, HCC provides opportunities for students to earn a credential to immediately enter the workforce or to upskill to a different career, while also providing the first step for students to continue their education and earn other academic credentials.

## Employer Feedback and Validation

Overall, positive employer feedback and labor market validation confirms that the HVAC pathway is addressing real workforce needs in a field with a skilled-trades shortage. Employers also provided specific feedback that students need to strengthen specific skills, such as being able to read a tape measure and make calculations using fractions. Faculty responded by providing additional tutoring to students to ensure these needs were being addressed. Faculty also took employer input and developed the diagram (Figure 1) that articulates the relationship between the industry credentials and the academic programs, and how each connects to form a seamless pathway.

## Student Feedback

Obtaining feedback from students also provides an opportunity to address issues that have arisen. For example, one issue that was raised by students is a concern about the use of virtual reality (VR) for initial exposure to certain concepts. This is often done since there is limited lab space for the number of students enrolled in the program. However, students expressed strong reservations about the VR training, preferring hands-on experiences where they can "physically wire it." This issue can be discussed as part of the review process to identify strategies to overcome student concerns about VR, maximize lab accessibility, or increase more hands-on training opportunities.

## Professional Development

HVAC faculty currently hold key industry certifications like the EPA Section 608 and OSHA 10-hour construction certifications as well as the Texas Department of Licensing and Regulation: Air Conditioning and Refrigeration Contractor or Air Conditioning and Refrigeration Technician certifications. Many are also active ASHRAE members. For those that need additional training or credentials, HCC offers faculty $2,000 in annual professional development funding, plus tuition reimbursement.

## Alumni Engagement

HVAC program alumni regularly interact with faculty and students through participation in advisory committee meetings, career fairs, and visiting classrooms to share their experiences. Faculty are able to gain insights about how well alumni felt they were prepared to succeed in the workforce. In addition, creating opportunities for alumni to interact with students can inspire the students to continue or advance in the HVAC pathway.

### External Partnerships

HCC continues to engage in external partnerships that can strengthen the HVAC programs. For example, HCC is collaborating with Educate Texas to incorporate more work-based learning into AAS degrees. Building on the work completed in this project, the HVAC pathway faculty are using the gathered, essential data and improved employer connections to begin including either internships or a form of cooperative education in the programs so that students have opportunities to apply the knowledge they are learning before they complete a program(s).

## Conclusion

The HVAC pathway highlights a successful model for aligning academic programs with high-demand work-force needs. By engaging employers, faculty, and students both formally and informally, HCC ensures its HVAC curricula and programs accurately reflect competencies and credentials needed by industry. The program also undergoes regular program review, supports faculty professional development, and creates and sustains external partnerships to maintain alignment to industry needs, enhance credential transparency, and better support the diverse students pursuing careers in the rapidly growing HVAC field in the Houston metropolitan area.

*"The HVAC program is great to get a better understanding on terms used in the field, hands-on experience, and instructors that help break down the information so it's easier to absorb. I would highly recommend the HVAC program if it's something you are interested in."*

*—Student enrolled in the HCC HVAC AAS degree program*

# Endnotes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