



CTE ON THE FRONTIER

STRENGTHENING THE RURAL CTE TEACHER PIPELINE

CTE on the Frontier

Advance CTE — in partnership with the Council of Chief State School Officers and Education Strategy Group, through the New Skills for Youth (NSFY) initiative — is releasing *CTE on the Frontier*, a series of briefs to help states unpack the challenges and potential approaches to expanding access to quality Career Technical Education (CTE) programs in rural communities.¹ The series explores some of the most pressing challenges facing rural CTE, including program quality, access to the world of work, leveraging partnerships to expand program offerings, and the rural CTE teacher pipeline.

Advance CTE identified promising practices and strategies to strengthen access to and the quality of CTE pathways in rural communities, ensuring that all learning is facilitated by knowledgeable experts no matter the learner's zip code. The practices profiled in this brief were informed by interviews with state CTE leaders at both the secondary and postsecondary levels.

The State Role in Strengthening the Rural CTE Teacher Pipeline

Recruiting, retaining and supporting strong teachers and faculty is critical to the success of a high-quality CTE program. In many cases, decisions about which programs are offered in a high school, college or area technical center are determined less by student interest and labor market demand than by who may be available to teach those classes. Rural areas are particularly affected by this reality. According to the National Center for Education Statistics, 20.4 percent of rural schools reported that CTE teaching positions were either very difficult or impossible to fill.²

Decisions about hiring, training and developing teachers and faculty are made at the local level, and many local leaders have been successful at attracting and training new teachers in rural areas. Yet, state leaders have an important role to play in strengthening the CTE teacher pipeline. One area in which states can have an impact is the certification process. While hiring decisions are made locally, states determine what qualifications instructors need to meet before they enter the classroom. States can establish alternative certification pathways to provide flexibility for schools to recruit industry experts as either adjunct or full-time instructors. They can also encourage the re-certification or dual certification of existing instructors so they are prepared to teach high-demand CTE subjects. These policies can be structured to ensure that industry experience is valued in hiring and compensation. While alternative certification can expand pathways into the profession, states must also take steps to balance entry requirements with quality measures and adopt strategies to train and develop CTE instructors.

States can also play the role of convener, establishing peer-to-peer relationships and mentorships to help CTE instructors improve their practice. This approach is all the more critical in rural communities,

Rural CTE in Federal Policy

There are a number of explicit avenues to leverage federal policy to support rural CTE. Additionally, state leaders and policymakers often have the flexibility to leverage both federal policy and federal dollars for rural CTE. Some examples include:

Carl D. Perkins Career and Technical Education Act of 2006 (Perkins Act): State Reserve Funds

States can dedicate up to 10 percent of Perkins local grants to a Reserve Fund, which can be used to support CTE in rural areas or areas with high percentages or high numbers of CTE students. Many states choose to focus at least some of their Reserve Funds on supporting rural areas.

Perkins Act: Forming Consortia and Pooling Funds

At the local level, Perkins grant recipients may elect to form consortia (an option for local recipients that qualify for less than \$15,000 in grant funds) and apply for a Perkins grant collaboratively. Local recipients may also pool a portion of their funds with other eligible recipients for certain uses, including activities related to implementing CTE programs of study (e.g., professional development for CTE teachers, administrators and faculty). States can use Perkins state leadership funds to support these efforts through incentive grants and by providing opportunities for CTE teacher professional development.

High School CTE Teacher Pathway Initiative

In June 2017, the U.S. Department of Education Office of Career, Technical and Adult Education announced a new initiative to strengthen CTE teacher recruitment and development and address widespread teacher shortages across states.³ The program is funded with \$4 million from Perkins National Activities funding, and awards were distributed to five sites, including both state and local recipients. Many of the selected projects target teacher shortages in rural areas.

Workforce Innovation and Opportunity Act (WIOA): Governor's Set-Aside

Under Title I of WIOA, governors may elect to reserve up to 15 percent of their state's allocation "for statewide workforce investment activities."⁴ This funding stream is fairly flexible in terms of allowable expenses and includes career pathway development and implementation, job-driven strategies and local-sector partnerships.⁵

Every Student Succeeds Act (ESSA): Rural Education Achievement Program (REAP)

Through REAP, ESSA supplies formula funds to support eligible districts in rural areas with low numbers of students. These funds are designed to supplement other funding under ESSA, such as Title II Supporting Effective Instruction grants, which can be used to provide professional development to help teachers and leaders integrate academic and technical content and use labor market information in the classroom.⁶

For more, visit <https://careertech.org/resource/cte-frontier-leveraging-federal-policy-strengthen-rural-cte>.

where CTE teachers may not have a subject-area peer in their school, community or even region. Further, states can provide rigorous professional development and ensure that CTE instructors and faculty receive meaningful, targeted training in their subject area.

Whatever the approach, state leaders should diversify their strategies, adopting a menu of policy and programmatic solutions to strengthen the rural CTE teacher pipeline and expand the number of pathways into the profession. This report profiles examples from states that are working to recruit, train and retain high-quality CTE teachers and faculty, drawing lessons learned for rural policymakers.

Building Pipelines into Rural Classrooms

Some colleges and universities have well-established postsecondary programs to train and certify CTE teachers to enter the classroom. Yet, these programs are not always sufficient to meet the demand for CTE teachers, particularly in rural areas. Not to mention, many states have seen these programs shrink or dissolve in recent years.

For years, states have been dogged by a shortage of qualified instructors with sufficient industry expertise to lead CTE classes. In a 2016 survey of state CTE directors, 98 percent said that increasing access to industry experts is a high priority in their state.⁷ To meet this challenge, states are taking new and innovative approaches to strengthen and

expand the number of pathways into the classroom. States like **Kentucky** and **Hawai'i**, for example, are working to ease barriers to entry for industry experts and compete with private-sector wages to incentivize professionals to take up a teaching position.

Easing Barriers to Entry for Local Industry Experts

In Kentucky, industry experts can teach CTE students part time without giving up their industry jobs. Under a policy established by the Kentucky Education Professional Standards Board in 1984, schools and districts can contract individuals to teach CTE courses on a part-time basis through an adjunct certification program.⁸ The certification is an annual contract that does not lead to full certification but does provide the flexibility to recruit industry experts and community members who cannot commit to a full-time teaching position.

Individuals applying to be adjunct CTE teachers need a high school diploma and at least four years of work experience in their subject area to qualify, dramatically widening the pool of potential candidates. Adjunct teachers serve as the teacher of record for the classes they are contracted to teach, reducing the need to hire additional co-teachers. Each adjunct teacher's schedule is negotiated locally to accommodate both the school and the employer. Under the policy, for example, a school could contract an emergency medical technician (EMT) for two hours a day to lead a class and help students work toward their EMT certification. And to make up for adjunct teachers' lack of teaching experience, many local schools and districts provide professional development opportunities to prepare adjunct them for success in the classroom.

While many states are turning to alternative certification to draw industry veterans into teaching positions, Kentucky's adjunct certificate goes a step further by increasing flexibility for part-time teachers. Another benefit of this approach is that it allows teachers to have one foot in the classroom and one foot in the field, making staying up to date on the latest industry practices and trends easier. Since 2005, nearly 1,000 certificates have been issued to adjunct teachers. Kentucky's adjunct certification ensures that students get face time with experts in their field and allows schools to recruit teachers without asking them to give up their careers.

Competing with Private-Sector Wages

One major challenge to recruiting and retaining CTE instructors is competition from the private sector. In Hawai'i, the University of Hawai'i Community Colleges system has adopted a sliding pay scale to offset wage disparity for hard-to-fill positions. While the state's tropical climate and expansive beaches are attractive to those on the mainland, the cost of the living in Hawai'i can be prohibitive for new faculty, and many leave for higher wages within a few short years. The policy helps level the playing field and allows community colleges to compete with the local industry for talent.

The differentiated pay scale was adopted in 2014 through Executive Policy 5.222 to help adjust for hard-to-fill positions in specialized fields like health care or science, technology,

	Mean Annual Salary ⁹
Postsecondary CTE Teacher	\$67,690
Physician Assistant	\$113,380
Network and Computer Systems Administrators	\$81,120
Mechanical Engineer	\$81,630

Table 1: Mean annual salary for Hawai'i CTE teachers compared to industry

engineering and mathematics (STEM).¹⁰ Under the traditional pay scale, wages are correlated with years of experience and level of education. The policy change, however, allows institutions of higher education to offer more competitive salaries in fields that are designated as high-demand disciplines.

The policy identifies several subject areas as eligible for automatic pay scale adjustments across the state, including computer science, aeronautics maintenance technology, advanced automotive technology, nursing and new media arts. Designations are updated every three years, but individual institutions can also request certain hard-to-fill positions be eligible for the adjustment. To do so, they must demonstrate that they have made several unsuccessful attempts to recruit qualified faculty members and that wage competition is a direct cause of the shortage, providing evidence of competing salaries in the local labor market.

The University of Hawai'i Community Colleges system also allows new faculty to meet minimum qualifications by demonstrating relevant work experience, a policy that makes transitioning to teaching college classes, either full time or part time, easier for career changers and industry professionals.¹¹ The options are available on a sliding scale so that candidates can combine education and work experience to meet the qualifications. For example, a construction management instructor typically requires a master's degree in a relevant field. However, under the work experience equivalency policy, individuals need only 15 college credits plus seven years of relevant work experience and training.

Other states are working to adopt similar policies to allow schools and institutions to compete with private-sector wages in rural areas. In 2017, Kentucky — with a rural population of 1.8 million, or nearly half the total state population¹² — adopted a new policy to modify the teacher ranking system to allow teachers coming from industry to qualify for more competitive wages.¹³ The ranking system is structured so that teachers with the most experience and highest level of education receive the highest wages. Previously, CTE teachers without a master's degree needed to work at least six years to qualify for Rank I. Under the new regulation, the Education Professional Standards Board will count apprenticeship training and industry experience as equivalent to college experience in determining teacher rankings, allowing industry experts to enter at a higher rank and move up the ladder more quickly. While the policy is still relatively new, state leaders in Kentucky hope the change will attract more CTE teachers to the profession.

Lessons Learned in Hawai'i

- Provide flexible options for candidates to meet qualifications to teach, taking into account both education and work experience.
- Ensure that wages can compete with what is being offered in the private sector to attract more qualified talent.
- Differentiate pay for faculty depending on the competitiveness of the discipline. Some fields are more competitive and harder to staff than others.

Developing Grow-Your-Own Pathways to Teaching

In **Mississippi**, schools are turning to an underutilized population to establish pathways to teaching: their own students. The state is working to build and expand career pathways into the education profession, cultivating talent at the high school level and partnering with student organizations and institutions of higher education to create seamless pathways. These “grow-your-own” efforts are

targeted at the communities and regions most in need of talent and are helping to address Mississippi's crippling teacher shortages.

The Mississippi Teacher Academy is a four-credit CTE program of study that introduces high school students to the foundations of teaching, examining core educator practices, pedagogy, diversity in education and other essential content.¹⁴ The program includes hands-on teaching experiences and establishes a framework for building partnerships with postsecondary education providers so students can go on to earn an education degree and get certified to teach in the classroom.

Mississippi also plans to use Title II, Part A funds through the Every Student Succeeds Act to expand teaching academies and establish new grow-your-own programs in high-need communities.¹⁵ Title II is a grant program designed to support effective instruction. Funds are generally used to provide professional development to teachers, leaders and administrators. In Mississippi's case, the state plans to use Title II funding to focus on early investment and recruitment in teacher talent to promise all students in the state, no matter their zip code, access to high-quality instructors.

Research conducted in the Appalachian region finds that teaching opportunities in rural areas are enticing because they allow individuals to live and work in the community where they grew up.¹⁷ These teachers also provide the additional value of sharing their students' culture and background. Grow-your-own strategies like Mississippi's help rural areas take full advantage of the local talent pool and establish seamless pathways from high school to postsecondary education and back into the classroom.

Training Rural Teachers for Success on Day One

Once new CTE teachers have been identified, hired and credentialed, how can state leaders make sure they are prepared for the first day of teaching? And how can they connect CTE teachers in rural areas with peers and experienced mentors in their field? Ensuring that rural CTE teachers are supported in

Tennessee's Teaching as a Profession Program of Study

Like Mississippi, **Tennessee** is developing a grow-your-own approach to meet the demand for CTE teachers in rural areas. The Tennessee Department of Education's Experienced Professionals in the Classroom (EPIC) initiative, funded through the High School CTE Teacher Pathway grant program at the U.S. Department of Education Office of Career, Technical and Adult Education, aims to strengthen pathways into the teaching profession in high-need areas.

As part of the initiative, Tennessee plans to administer innovation grants to help local districts expand the Teaching as a Profession program of study.¹⁶ The program builds foundational knowledge in high school and teaches students the fundamental pedagogy and practices for managing a classroom. Students can earn postsecondary credit through dual enrollment and eventually complete their education and participate in a classroom residency experience at the postsecondary level.

While much of the work under EPIC will be piloted in urban districts, Tennessee plans to scale effective practices statewide. The Department hopes that strengthening pipelines into the teaching profession at the high school level will enable rural districts to recruit and develop talent from their own communities.

the classroom, are satisfied with their jobs, and have clear pathways for growth and advancement is critical to retaining a strong teacher workforce.

Missouri's New Teacher Institute and mentorship program is one approach that helps support and develop new CTE teachers in rural areas. The Institute, which was first established in the 1970s, is a four-day summer boot camp that serves newly certified CTE teachers at both the secondary and postsecondary levels. The program is designed to take new CTE teachers from zero to 60 and help them plan for the first few months on the job.

At the New Teacher Institute, new teachers are matched with a group of five to seven subject-alike peers and an experienced "master teacher," who leads them through the program. Master teachers are CTE teachers with at least five years of work experience. Over the course of the program, participants go through a series of workshops and lessons covering topics such as learning theory, assessment, classroom management, lesson planning and instructional strategies.¹⁸ Participants exercise teaching practices by presenting in front of their cohort group and developing a lesson plan for their first day in the classroom. Teachers who complete the full boot camp also qualify for postsecondary credit through the University of Central Missouri, which can be applied toward their college credit requirements for certification. Although attendance at the Institute is optional, approximately 100 teachers participate each year.

In addition to the New Teacher Institute, the Missouri Department of Elementary and Secondary Education (DESE) offers new CTE teachers a mentorship program to match them with experienced mentors in their subject area. For CTE teachers in rural schools, the program helps them go beyond their school or district to get expert advice and coaching.

All teachers in Missouri, not just CTE teachers, are required to receive at least two years of mentoring before they are awarded their full certification. To help teachers meet this requirement, the Office of College and Career Readiness developed the Career Education Mentoring Program in 2003. School counselors were added to the program in 2004.

DESE recruits mentors and provides trainings at the state's annual Missouri Association for Career and Technical Education summer conference.¹⁹ Mentors are then matched with incoming teachers, who are referred to as protégés, and an initial kickoff meeting is held with all program participants. Mentors and protégés have a few structured check-ins throughout the year, including at least two face-to-face meetings. The primary benefit of the program is that it gives new teachers access to an experienced teacher in their same content area who can help them navigate the ups and downs of their first year.

While DESE tries to match protégés with mentors in their geographic area, rural teachers are often matched with teachers outside of their district. This strategy ensures that all participating protégés have access to a subject-alike mentor who can coach them on their teaching practices as well as technical instruction. In many rural and remote communities, new CTE teachers are often the only person in their building, or even in the entire district, teaching in their specific field of study. By enlisting mentors from across the state and conducting matches centrally, DESE is able to bridge regional divides and connect new teachers with mentors in their subject area. During the 2016-17 school year, DESE recruited 90 mentors and matched them with 94 participating protégés.

The state also provides stipends to compensate mentors for their commitment and to defray the cost of participation for protégés. Mentors receive \$500 for the year, and sending districts receive \$200 per

protégé, which can be used to pay for transportation to in-person meetings (subsidizing costs for teachers traveling from rural areas) and to hire substitute teachers in their absence.

According to a 2008 study of the Career Education Mentoring Program, participants who completed the program demonstrated higher retention rates when compared to a baseline group. The retention rate for this group was around 17 percentage points higher, indicating a sizable effect. Protégés also reported that their mentors were instrumental in helping them navigate the first year of teaching and had a positive influence on their decision to stay in the profession.²⁰

Other states are modifying teacher induction and mentorship programs to better equip new CTE teachers for the first day on the job, specifically designing program content to accommodate rural

Lessons Learned in Missouri

- Connect rural teachers with experienced mentors in their field so they can get coaching that is specific to their content area.
- Invest in new teacher trainings to set teachers up for success on day one. These trainings can help teachers feel more prepared and increase retention, particularly in hard-to-recruit regions and subject areas.
- Provide stipends to help rural teachers cover transportation costs to attend new teacher trainings.

teachers. In Mississippi, state leaders made changes to the Vocational Instruction Program in 2012 using the Southern Regional Education Board's teacher induction curriculum. With these modifications, the program, now called New Teacher Induction, includes a two-week, face-to-face summer institute; three regional trainings during the school year; and an additional eight-day training in June following the teacher's first year of teaching. Since this change was made, completion of the program has increased from 77 percent to 88 percent, and post-program evaluations demonstrate that teachers feel more prepared to enter the classroom.

Kentucky also made changes to its New Teacher Institute in 2017. This change was part of Kentucky's work under NSFY, an initiative of 10 states working to expand access to high-quality career pathways and

the program through which this report was developed. Previously, Kentucky's New Teacher Institute was a five-day bootcamp designed to get new teachers up to speed for their first day in the classroom. Now, Kentucky is shifting to a more structured network of supports, providing a two-year learning experience for new CTE teachers. The program will include face-to-face convenings, online meetings, school-based mentorship, and regional supports from nearby faculty in the university system. These modifications were made to address retention challenges. State leaders in Kentucky hope these changes will make new CTE teachers, particularly those in remote areas, feel more supported in the classroom.

Allowing for Re-Certification in Similar Program Areas

CTE teachers often have expertise outside of the specific subject they are assigned to teach. Rural schools and institutions can expand the breadth of courses they offer by re-certifying teachers, including academic teachers, in new disciplines. Further, re-certifying teachers helps transition out low-quality programs while retaining talent to lead career pathways that are aligned to high-wage, high-demand opportunities.

Flexible Certification Options in South Dakota

Historically, CTE teachers in **South Dakota** were required to demonstrate vastly differing levels of work experience and education coursework to be certified to teach specific Career Cluster® program areas. In November 2015, the State Board of Education adopted a new certification rule to allow for more flexibility and consistency in the certification process. Based on stakeholder input, the board developed a framework of new rules that was consistent across Career Clusters but still provided necessary flexibility to districts and schools.

Under the new rules, CTE teachers may receive an endorsement at either the Career Cluster or Career Pathway level.²¹ Under the National Career Clusters Framework, Career Clusters are broad groupings of similar industries, while Career Pathways are more specific to individual occupations. A Career

South Dakota CTE Endorsements		
	Career Cluster Endorsement	Career Pathway Endorsement
Requirements	<ul style="list-style-type: none"> ➤ Completion of education requirements for traditional or alternative certification ➤ Completion of CTE Methods course ➤ Completion of Principles of Teaching Praxis examination 	
	<ul style="list-style-type: none"> • 15-18 credits of Career Cluster-specific coursework <li style="text-align: center;">OR • Praxis or state-designated test 	<ul style="list-style-type: none"> • 9 credits of Career Pathway-specific coursework <li style="text-align: center;">OR • 4,000 hours of validated work experience <li style="text-align: center;">OR • State-designated test or industry certification
Permitted to teach	All courses within the corresponding Career Cluster	All courses within the corresponding Career Pathway

Cluster endorsement requires teachers to pass a state certification exam or complete 15 credits of coursework and allows teachers to teach any course within a Career Cluster, including all Career Pathway-level courses. A Career Pathway endorsement requires teachers to pass the state certification exam, complete nine credits of coursework, or have 4,000 hours of work experience. With the Career Pathway endorsement, teachers may teach any course within a Career Pathway but must complete more coursework to earn an endorsement for an entire Career Cluster.

For example, the Human Services Career Cluster has multiple Career Pathways that are all fairly different from each other in practice. Under the new system, a person who has extensive work experience in the Early Childhood Development Career Pathway can receive an endorsement in that field and would be certified to teach any courses within that Career Pathway. However, only an individual with a Human Service Career Cluster endorsement could teach in the Early Childhood Development and Counseling and Mental Health Services Career Pathways. This allows

Table 2: South Dakota's CTE endorsement pathways

individuals who have been certified in a specific content area to re-certify and expand the breadth of courses they are able to teach. In addition, all teachers must complete a CTE Methods course, and those who enter a classroom by way of an alternative certification must participate in a mentored internship with a veteran teacher.

Re-Certifying Experienced Teachers in New Disciplines

Another opportunity for rural districts is re-certifying veteran teachers to better align career pathway offerings with industry demand. As many states work to expand program offerings in key industry areas, they are left with the dual challenges of staffing new programs and discontinuing outdated programs efficiently and effectively. Training veteran teachers to meet this demand addresses both challenges simultaneously.

In **Nebraska**, for example, state leaders have been working hand in hand with rural program administrators through the reVISION initiative to identify key industry areas in their community and

Connecting Rural Learners with Dual Credit Instructors

Rural schools and districts can also turn to neighboring colleges and universities for qualified teaching talent, allowing learners to receive expert instruction and even qualify for dual credit in high school.

In **North Carolina**, the Career and College Promise program was established in 2011 to help high school student earn credits toward a postsecondary certificate or degree. The program includes three dual credit pathways — a college transfer pathway, a CTE pathway, and a cooperative innovative high school program — and high schools and community colleges can share faculty to offer dual credit courses.

Career and College Promise helps rural schools meet the demand for expert instructors. Vance-Granville Community College in rural Henderson, NC, for example, has seen sustained enthusiasm for and enrollment in a number of CTE pathways in fields such as computer science, construction technologies, engineering technologies and more. According to reporting by WUNC 91.5 North Carolina Public Radio, the program had an 89 percent graduation rate in 2015.²²

Some states, however, are struggling to meet accreditation requirements to offer dual credit opportunities to rural high school students. In 2015, the Higher Learning Commission, which oversees accreditation of degree-granting institutions in 19 states, clarified that individuals would need to either hold a master's degree or complete 18 graduate-level credits in their subject area to be qualified to teach dual credit courses in high school.²³ This policy is anticipated to have a deleterious impact on rural communities in Midwestern states and exacerbate the CTE teacher shortage.

In 2016, **Minnesota** passed H.F. 279 to provide \$3 million in one-time funding to help dual credit teachers obtain sufficient graduate-level course credits to meet the new requirements.²⁴ Eligible teachers can earn up to 18 credits online through a partnership of Lake Country Service Cooperative, Northwest Service Cooperative and Minnesota State University Moorhead.²⁵ And in **Indiana**, a grant fund was established through H.B. 1005 to help subsidize tuition for dual credit teachers to earn the requisite graduate credits.²⁶

Such one-off fixes minimize the impact of dual credit accreditation policies but do little to reduce the long-term impacts they have on dual credit CTE teacher recruitment in rural areas.

ensure that program offerings are aligned. Through this work, Nebraska has documented the largest need, which is in areas such as agriculture, health care and precision manufacturing, and identified an overabundance of program offerings in traditional family and consumer sciences fields, which are not supported by regional labor market data.

Many schools and local districts are now helping family and consumer sciences teachers update their CTE teaching endorsements and transition to teaching courses in higher-demand Career Clusters. Several have cut traditional programs to half time and are offering the education and training program of study instead. Others are helping family and consumer sciences teachers transition from courses such as sewing or foods to behavioral health and human nutrition, careers that are better aligned with workforce needs in Nebraska.

Likewise, **New Jersey** is piloting a new CTE Teacher Bridge Program under the High School CTE

Teacher Pathway initiative at the U.S. Department of Education Office of Career, Technical and Adult Education.³¹ The objective of the program is to train and certify general education teachers to lead CTE programs in priority industries. Interested teachers will be invited to participate in industry externships, mentorships and opportunities to earn industry certification to equip them with the knowledge and training to transition to high-demand disciplines. While this work has just begun, New Jersey hopes the program will help meet the demand for qualified CTE instructors in high-demand areas.

Other Notable Efforts to Strengthen the Rural CTE Teacher Pipeline

- **Rural School Leaders Academy:** In 2013, Teach For America launched the Rural School Leaders Academy to cultivate school leaders in rural communities.²⁷ The academy is a year-long program aimed at both current school leaders and teachers with leadership aspirations. In 2018, the program was expanded to include non-Teach For America participants.
- **STEM Goes Rural:** Hosted by Purdue University's College of Education, STEM Goes Rural is a teacher preparation program designed to train and place talented science, technology, engineering and mathematics (STEM) teachers in rural Indiana schools. The program is designed to build cultural competence, train instructors to teach a breadth of disciplines, and equip rural teachers with mentors.²⁸
- **Mississippi Teacher Fellowship Program:** The University of Mississippi offers tuition scholarships, professional development and mentorship for teachers who commit to teaching for three years in a region with a critical teaching shortage. The program helps recruit and train teachers for placements in rural schools.²⁹
- **Tennessee Micro-Credentialing:** To provide teachers more targeted professional development aligned to their specific needs, the Tennessee Department of Education is rolling out a new micro-credentialing approach to teacher training. Teachers can choose from a variety of different programs, which they can complete in their own time, and receive micro-credentials or badges designating the competencies they have acquired.³⁰

Supporting Veteran Teachers through Continued Professional Development

State leaders also play an important role in supporting professional development and continuous learning for rural CTE teachers. All school leaders know that the teacher pipeline does not end when teachers walk through the door. Opportunities like industry externships, professional development and ongoing training help CTE instructors stay up to date with the latest industry developments and can make them feel more supported and happier in the classroom.

Under the Carl D. Perkins Career and Technical Education Act of 2006, states can use leadership funds to provide professional development for CTE teachers. According to a 2017 survey of state CTE directors, teacher development continues to be a top priority for these funds.³² While these supports are common for CTE teachers and faculty, states like **Georgia** and **Louisiana** have adopted approaches to specifically meet the needs of rural CTE teachers.

In Georgia, local education agencies banded together in 2002 to pool Perkins funds and establish a statewide resource network for teachers. The Career, Technical and Agricultural Education Resource Network (CTAERN) provides professional development through in-person workshops, webinars, full-unit lesson plans and foundation skills activities. Resources span all 17 Career Clusters offered in the state (in addition to the 16 national Career Clusters, Georgia also recognizes energy) and are accessible to teachers in urban, suburban and rural areas. As of 2016, the CTAERN had more than 10,000 registered users representing teaching positions in all of the Career Clusters as well as work-based

Traverse Bay Area Intermediate School District Career-Tech Center Teacher Academy

As discussed above, many states are looking to expand grow-your-own teacher pathway models as a strategy to strengthen the CTE teacher pipeline in rural areas. This model allows schools, districts and colleges to recruit and train talent from their own communities.

The grow-your-own model is employed by the Teacher Academy at the Traverse Bay Area Intermediate School District Career-Tech Center in Traverse City, Michigan. The program, which won a 2018 Advance CTE Excellence in Action award in the Education and Training Career Cluster, brings together juniors and seniors from 26 high schools across five rural counties to experience all aspects of the teaching program.³³

The Teacher Academy blends academic, technical and real-world knowledge and skills. Throughout the two-year program of study, Teacher Academy learners work directly with students in a variety of classroom settings and earn over 400 hours of field experience. Academy students can receive up to four industry certifications and earn postsecondary credit at local colleges and universities.

In the 2016-17 school year, 100 percent of Teacher Academy students participated in work-based learning, 100 percent earned an industry-recognized credential and 91 percent earned postsecondary credit.

Grow-your-own models like the Teacher Academy in Traverse City, Michigan provide learners the hands-on experience and training they need to be prepared for classroom teaching while simultaneously strengthening the teacher pipeline and cultivating talent in their own communities.

learning coordinators and professional school counselors. In the 2015-16 school year alone, the network held 366 workshops for more 7,900 total attendees.³⁴

By leveraging their collective resources through the CTAERN, local education agencies can achieve economies of scale, buoying professional development efforts across the state. CTAERN allows rural schools and districts to tap into a wider network of resources and trainings than they could develop alone.

Separately, **Louisiana** is working to expand virtual externship opportunities to rural CTE teachers through a platform call Nepris, allowing teachers to connect face to face with industry leaders in their field and learn how to enhance their own instruction through virtual technology. This work is funded by NSFY and is part of the statewide Jump Start initiative, the state's CTE program that requires CTE students to earn one or more industry-based credentials to graduate. The virtual externship program is a five-day training initiative that allows teachers to interact with industry experts and Jump Start career pathways experts from the comfort of their home using their computer.³⁵ In addition to enhancing their own skills and getting up to speed on the latest industry developments, program participants can also learn strategies to integrate Nepris within their own curriculum.

The program was launched in the 2016-17 school year with help from The Orchard Foundation and is still in the early stages of implementation. In the first year, 34 teachers from 22 schools and 12 business partners participated in the virtual externship program. Nearly half of the teachers participating in the program were from rural parishes. Overall, the approach was well received, with 98 percent of educators reporting that the program helped raise awareness of workforce needs.

The virtual externship for educators is one component of a statewide push to integrate virtual technology in the classroom and better connect rural learners with meaningful career-focused learning experiences. Under NSFY, Louisiana has provided local education agencies with licenses to use Nepris to video conference directly with industry leaders. While the technology is new and is in the process of being implemented statewide, Nepris has helped rural CTE teachers enhance the classroom experience where it has been adopted.

State Strategies to Strengthen the Rural CTE Teacher Pipeline

Addressing the shortage of qualified CTE teachers and faculty is a nearly universal challenge, spanning all states, communities and geographies. Yet recruitment challenges are often exacerbated in rural areas, where finding qualified instructors can make or break a CTE program. To help school communities and regional colleges find the talent to lead CTE classrooms, state leaders must consider a menu of different policy and programmatic strategies. Different approaches include building pipelines into the classroom, developing effective training programs to prepare new teachers for day one, allowing for re-certification in similar program areas, and supporting veteran teachers with continuous learning and development opportunities. States should consider the following strategies:

- **Recruit from your own community:** Rural communities have a wealth of untapped talent waiting in nearby school buildings, worksites and business complexes. Tapping into this human capital takes the right policy environment to cultivate and guide future talent. Grow-your-own strategies like Mississippi's allow rural communities to recruit teachers and instructors beginning in high school, equipping them with the experiences and skills they need to succeed in the classroom. Likewise, states can help industry experts transition into the classroom by adopting flexible part-

time teaching options or modifying certification requirements to credit candidates for prior work experience.

- **Innovate to compete with industry:** Private-sector wages constantly drive competition for CTE teachers, drawing talent toward alternative career options or drawing experienced teachers out of the classroom after only a few years. While rural schools and community colleges may never be able to match private-sector wages in all industries, states can provide more flexibility to help draw talent to high-demand disciplines. States like Hawai'i and Kentucky have adopted policies allowing schools and colleges to offer higher wages for hard-to-recruit positions, enabling them to compete for talent in the field.
- **Provide a continuum of supports for new, learning and veteran teachers:** Pathways into the teaching profession do not end when the teacher walks through the door. Teachers and faculty benefit from a continuum of supports that help them grow and learn during their career. Not only does this support help them stay up to date on the latest knowledge and practices, but it also can increase job satisfaction, which will positively affect retention. States should also consider how to differentiate supports for teachers and faculty depending on their experience. New teachers may benefit from a boot camp on pedagogy and lesson planning before their first day of class, but a veteran teacher requires a different level of support to improve his or her teaching. Further, allowing teachers, including academic teachers, the opportunity to re-certify enables school districts to shift to offering higher-quality career pathways and repurpose existing teaching staff to fill critical shortages.
- **Strengthen relationships with traditional teacher preparation pipelines:** State leaders can strengthen existing pathways into the profession by turning to tried-and-true methods: traditional postsecondary teacher training programs. In many states, an infrastructure is already in place to recruit, train and place CTE teachers. Some programs, like Purdue University's STEM Goes Rural program, offer incentives to teach in rural areas. By solidifying relationships with established postsecondary teacher preparation programs, state leaders can help sustain long-tested CTE teacher pipelines.
- **Do not put all your eggs in one basket. Adopt a diversified approach to recruiting and training new instructors:** Strengthening the rural CTE teacher pipeline is a complex problem that requires complex solutions. State leaders should consider a menu of different policy and programmatic solutions to help staff hard-to-fill CTE teaching positions in rural communities. Solving this problem means expanding the variety of pathways into the teaching profession and dismantling barriers to entry for different populations. It also means not being afraid to try new things and pilot innovative programs to strengthen CTE teacher pipelines.

All too often, access to meaningful career pathways in rural communities comes down to a matter of teacher recruitment. Finding the right teachers and faculty to lead courses in rural high schools, area technical centers and colleges can make or break a program. And states should not expect to resolve persistent teacher shortages through traditional methods alone. This challenge has dogged states for decades. To strengthen the CTE teacher pipeline and expand access to high-quality career pathways for all learners, states must consider a diversified approach to recruiting, training and retaining qualified professionals.

Acknowledgments

Advance CTE would like to give special thanks to Laura Arnold, associate commissioner of the Office of Career and Technical Education, Kentucky Department of Education; Dennis Harden, coordinator of career education, Missouri Department of Education; Casey Haugner Wrenn, associate commissioner of college, career and technical education, Tennessee Department of Education; Bernadette Howard, state CTE director, University of Hawai'i; Rich Katt, state CTE director, Nebraska Department of Education; Dave "Lefty" Lefkowitz, assistant superintendent, Louisiana Department of Education; Jean Massey, executive director for secondary education, Mississippi Department of Education; Tiffany Sanderson, former director of CTE, South Dakota Department of Education; Laura Schiebe, director of CTE, South Dakota Department of Education; and Barbara Wall, state CTAE director, Georgia Department of Education.

This brief was developed through the New Skills for Youth initiative, a partnership of the Council of Chief State School Officers, Advance CTE and Education Strategy Group, generously funded by JPMorgan Chase & Co.

-
- ¹ This report and all other briefs in the *CTE on the Frontier* series use the federal definition of “rural,” which includes fringe, distant and remote communities. See <https://nces.ed.gov/surveys/ruraled/definitions.asp>
- ² U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey. Public school data file 2011-12 (table C.1.c.-1). Retrieved from <https://nces.ed.gov/surveys/ruraled/tables/c.1.c.-1.asp>
- ³ The five award recipients include The School Board of Broward County, the Southeast Kansas Education Service Center, the New Jersey Department of Education, Portland Community College, and the Tennessee Department of Education. See <https://cte.ed.gov/initiatives/high-school-cte-teacher-pathway>
- ⁴ Workforce Innovation and Opportunity Act. (2014). Retrieved from <https://www.congress.gov/113/bills/hr803/BILLS-113hr803enr.pdf>
- ⁵ Wilson, B., & DeRenzis, B. (2015). Realizing innovation and opportunity in WIOA: A playbook for creating effective state plans. Retrieved from <http://www.nationalskillscoalition.org/resources/publications/file/2015-09-WIOA-playbook-for-creating-effective-state-plans.pdf>
- ⁶ U.S. Department of Education. (2017, February). Small, rural school achievement program. Retrieved from <https://www2.ed.gov/programs/reapsrsa/index.html>; U.S. Department of Education. (2017, April). Rural and low-income school program. Retrieved from <https://www2.ed.gov/programs/reaprlisp/index.html>
- ⁷ Advance CTE. (2016). The state of Career Technical Education: Increasing access to industry experts in high schools. Retrieved from <https://careertech.org/resource/state-of-cte-increasing-access-to-industry-experts>
- ⁸ Kentucky Education Professional Standards Board. Pathways to teacher certification in Kentucky. Retrieved from <http://www.epsb.ky.gov/mod/book/view.php?id=94&chapterid=47>
- ⁹ Hawai'i Department of Labor and Industrial Relations, Research and Statistics Office. (2017). Occupational employment and wages in Hawai'i 2016. Retrieved from https://www.hiwi.org/admin/gsipub/htmlarea/uploads/OES_2016_publication.pdf
- ¹⁰ University of Hawai'i. Executive Policy 5.222. Retrieved from <https://www.hawaii.edu/policy/index.php?action=viewPolicy&policySection=ep&policyChapter=5&policyNumber=222&menuView=closed>
- ¹¹ University of Hawai'i Community Colleges. Faculty minimum qualifications. Retrieved from http://uhcc.hawaii.edu/ovpcc/docs/hr/MQs-liberal_arts-voc_tech_rev-Dec2017.pdf
- ¹² U.S. Department of Commerce. (2012). Kentucky: 2010: Population and housing unit counts. Retrieved from <https://www.census.gov/prod/cen2010/cph-2-19.pdf>
- ¹³ Kentucky Education Professional Standards Board. (2017). Rank system and change. Retrieved from <http://www.epsb.ky.gov/mod/page/view.php?id=101>
- ¹⁴ Mississippi State University. Education and training: Teacher academy. Retrieved from: <http://www.rcu.msstate.edu/Curriculum/EducationandTraining.aspx?tag=Teacher>
- ¹⁵ Mississippi Department of Education. (2017). Mississippi consolidated state plan: The Elementary and Secondary Education Act of 1965, as amended by the Every Student Succeeds Act. Retrieved from http://www.mde.k12.ms.us/docs/state-superintendent/essa-consolidated-state-plan-2017-09-14-signed_20170920140640_133684.pdf?sfvrsn=2
- ¹⁶ Tennessee Department of Education. Education & training. Retrieved from <https://www.tn.gov/education/career-and-technical-education/career-clusters/cte-cluster-education-training.html>
- ¹⁷ CAN Analysis and Solutions. (2015). Appalachia rising: A review of education research. Retrieved from https://www.cna.org/cna_files/pdf/CRM-2015-U-011063.pdf
- ¹⁸ American Institutes of Research Center on Great Teachers and Leaders. (2014). Supporting 21st century educators [Webinar]. Retrieved from https://gtlcenter.org/sites/default/files/Supporting_21st_Century_Educators_Webinar_Slides.pdf
- ¹⁹ Mentor trainings are based on the Missouri Department of Elementary and Secondary Education's Career Education Mentoring Manual, available at https://dese.mo.gov/sites/default/files/bmit-mentoring-manual-fy17-18_1.pdf
- ²⁰ Watkins, L., & Scott, D. G. (2008). Retention of early career teachers engaged in Missouri's career education mentorship program: A longitudinal study. Retrieved from <https://dese.mo.gov/sites/default/files/2008-mentor-study.pdf>

-
- ²¹ South Dakota Department of Education. Endorsement requirements. Retrieved from <http://www.doe.sd.gov/certification/endorsements.aspx>
- ²² WUNC. (2016). Perils and promise: Rural students thrive in early college programs. Retrieved from <http://wunc.org/post/perils-and-promise-rural-students-thrive-early-college-program#stream/0>
- ²³ Higher Learning Commission. (2015). Assumed practices: Policy changes adopted on second reading. Retrieved from http://download.hlcommission.org/policy/updates/AdoptedPoliciesAssumedPractices_2015_06_POL.pdf
- ²⁴ Minnesota. (2016). House File 2749. Retrieved from <https://www.revisor.mn.gov/laws/?id=189&doctype=Chapter&year=2016&type=0>
- ²⁵ Minnesota State University Moorhead. What is 18 Online? Retrieved from <https://www.mnstate.edu/18online/about.aspx>
- ²⁶ Indiana. (2016). House Bill 1005. Retrieved from <https://iga.in.gov/legislative/2016/bills/house/1005>
- ²⁷ Teach For America. Rural School Leadership Academy. Retrieved from <https://www.teachforamerica.org/alumni/awards-fellowships-programs/rural-school-leadership-academy>
- ²⁸ Weller, J., & Bryan, L. A. (2016). What it takes to teach science in a rural school. *Education Week*. Retrieved from <https://www.edweek.org/ew/articles/2016/10/26/what-it-takes-to-teach-science-in.html>
- ²⁹ The University of Mississippi. Mississippi Teacher Fellowship Program. Retrieved from <http://mtfp.olemiss.edu/>
- ³⁰ Povich, E. S. (2017). To improve teacher training, states try “micro credentials.” The Pew Charitable Trusts. Retrieved from <http://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2017/09/28/to-improve-teacher-training-states-try-micro-credentials>
- ³¹ Perkins Collaborative Resource Network. High school CTE teacher pathway. Retrieved from <http://cte.ed.gov/initiatives/high-school-cte-teacher-pathway>
- ³² The survey was conducted from June 23, 2017, through August 8, 2017. The survey garnered responses from 50 states, the District of Columbia and Guam.
- ³³ Advance CTE. (2018). Traverse Bay Area Intermediate School District Career-tech Center Teacher Academy Program. Retrieved from <https://careertech.org/excellence-action-2018>
- ³⁴ CTAE Resource Network. Retrieved from <https://www.ctaern.org/>
- ³⁵ The Orchard Foundation. Virtual Externship for Educators Program. Retrieved from <https://www.theorchardfoundation.org/Events/TabId/98/ArtMID/509/ArticleID/101/Virtual-Externship-for-Educators-Program.aspx>